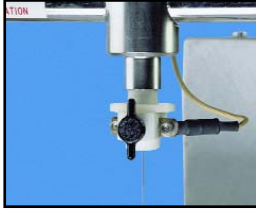


# BLOCK ROOM PRODUCTS & ACCESSORIES

## HUESTIS STYRO-FORMER®



**Quick Change Wire System**



**Convenient Power Lift LT Controls**



**869-160 Styro-Former® with Power Lift LT**

The manual lift is a rotating friction drive and calibrated tie-rod system to adjust the source point and block tray position.

### Quick, Smooth Operation

- Spring-loaded, Teflon tracing stylus moves freely in every direction
- Unhampered by limitations of an X or Y axis for complete maneuverability
- Can be adjusted to any treatment machine for universal application
- Work area remains stationary at a comfortable desktop working height
- Free-standing table and calibrated column can be placed in almost any small area without wall attachment

### Standard Foam Block Holders

Included holders position standard 8", 10", or 12" foam blocks.

### Power Lift LT

- Drive controls are panel mounted for quick, push-button height adjustments
- Position measurements are easily read directly from the vertical column
- Easily adjustable thumb screws allow quick cutting wire changes
- Wire measuring template included
- Convenient storage bin holds up to three tracing tips

### Auto Boost Option

- Automatically boosts wire temperature to adjust for wire deflection
- Simple switching system reroutes the current through another circuit with its own potentiometer
- Can be pre-set to minimize distortion and maximize productivity
- Inexperienced operators can have limits set by supervisor
- Audio/visual alarm warns when too much pressure is applied by operator

### Specifications

**Electrical:** 120 Vac, 60 Hz, 5 A

**Table Size:** 33.5" W x 24" D x 29.5" H (85.1 x 60.9 x 74.9 cm)

**Column Height:** 8.75' (2.67 m)

**The Styro-Former® is FDA registered and CE certified.**

Item	Description
869-100	Huestis Styro-Former®
869-110	Huestis Styro-Former® with Auto Boost
869-160	Huestis Styro-Former® with Power Lift LT
869-162	Huestis Styro-Former® with Power Lift LT and Auto Boost

Renowned as the worldwide industry standard, more Styro-Formers® are in use than all other shielding block mold cutters combined. Styro-Former® offers accurate, easy and fast cutting with minimal training. A hand-held tracing stylus allows quick radiograph outlining to provide a smooth and efficient block cutting procedure.

Styro-Former® Power Lift LT features panel-mounted drive controls for both source and block arm distances. A quick change wire system uses unique thumb screws and a table-mounted measuring template for quick, easy wire changes.

### Accurate Cutting

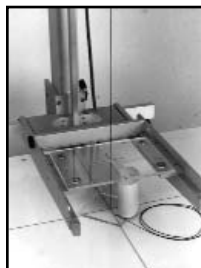
- Manual tracing produces smooth, accurate cuts with minimal training
- Accurate cuts save time and material
- Verification light included

### Rigid Box Frame

- Short cutting wire is kept tight in a rigid box frame to eliminate bowing
- Never necessary to apply downward pressure to keep the wire tight
- Rigid box frame ensures that cutting wire is precisely aligned between the source point and the block tray
- Nichrome cutting wire fits into the frames unique electro-mechanical bushings
- Bushings hold wire with a flat grip, for long wire life and easy wire changes
- Free cutting wire for life of machine

## ALIGNMENT SYSTEM

### For Huestis Styro-Former



The Alignment System will check the target to film alignment with the block tray moving over its entire range.

Item #	Description
869-180	Alignment System For Huestis Styro-Former

**A**

# BLOCK ROOM PRODUCTS & ACCESSORIES

## COMPU-CUTTER® III



- Cutter is safely enclosed in cutting bay.
- Adjustable temperature for variations in foam densities.
- Safety interlock for open door position.
- Custom defaults: S.F.D., S.A.D., S.T.D.
- Distance changes can be factored in after digitizing or TPS import.
- Determines smallest block required for shape or combination of shapes.
- System can accommodate from 8"x8" to 12"x12" size blocks.

### Versatile Configurations

- Our full system for the Compu-Cutter® III includes the cutter, computer, custom software, printer, digitizer and an optional label printer.

### Easy Installation

- Footprint is smaller than our Styro-former®.
- Size: 15.75" W x 30" D x 30" H (40 x 76.2 x 76.2 cm)
- Weight: Approximately 60 lb (27.27 kg)
- Electrical Requirements: 120 VAC, 60 Hz, 10A (Optional 220 VAC, 50 Hz, 5A)

### Modular Design

Designed for versatility, our stand-alone cutting bay is supplied as a fully integrated system.

### Extremely Accurate

Fully articulating and gimballed cutting mechanism is accurate  $\pm 1$  mm at the block tray level for precise, divergent cuts.

### Compu-cutter® III Digital Versatility

Operators can easily transfer digitized block outlines from treatment planning systems or may trace radiographs with a digitizing mouse. The outline is visible on the monitor and can be sent to the printer for examination of the printout, or to the hot wire cutter for block cutting. Operator may select any cut path to connect multiple block outlines.

### Ensured Accuracy

Multiple verification checks include a paper printout to verify the tracing and a second paper template to mount the shielding block on a lexan tray.

### User friendly

Characteristics include Windows® compatibility allowing for easy image manipulation, correction and cutting.

### Versatile Configurations

Modular design includes standalone cutting bay, computer, monitor, printer and digitizer.

### Compu-Cutter III™ Block Cutting System Includes

- Automatic 4 axis computer driven hot wire cutter including beam divergence.
- Data collection can be obtained directly from radiograph via digitizer.
- Import of patient information provided through interface with the most common Treatment Planning Systems.
- Free standing, back-lit digitizer.
- Printer (for verification purposes)
- Computer System with a Pentium processor, network card and flat panel monitor.
- Windows XP Operating System and Huestis Custom Software with drawing package feature that allows for easy manipulation and correction of images.
- System includes electron beam capability.
- 1 Carton (52pcs), 8" X 8" X 3" foam blocks
- System may be vented to atmosphere. Fan is included.
- Electrical requirement: 120 VAC / 220 VAC
- Product is CE marked.
- CBC DICOM, DICOM-RT interface

Item	Description
868-000	Compu-Cutter® III, 120 VAC
868-005	Compu-Cutter® III, 220 VAC

Radiotherapy departments can now take advantage of the cost savings and versatility of a compact tabletop Compu-cutter® system. The Compu-cutter® III is less than half the size of its predecessor without sacrificing quality and accuracy. Available as a complete package or as a single unit which can plug and play with your existing configuration. Huestis software is compatible with any Windows® based O/S, allowing for easy image manipulation, correction and cutting. The Compu-cutter® III is a CE certified radiotherapy shielding block cutter.

### Precision Accuracy

- Computerized, four-axis cutter ensures accuracy of  $\pm 1$  mm.
- Built-in checks minimize operator error and time consuming re-cuts.
- Allows review of outline on monitor.
- Drawing package feature allows for easy image manipulation and correction.
- Cut path simulation prior to actual block cut.
- All functions and set ups are completely computer controlled.
- Radiograph printout verifies tracing.
- Template printout facilitates mounting shielding block on tray.

### Treatment Planning Interfaces

- Digitized block outlines can be easily transferred from treatment planning.
- Eliminates redundant input of block outlines from radiographs.
- Imported outlines may be cut immediately or stored for later use.

### Radiograph Digitizing (optional)

- Radiograph is aligned on crosshairs and traced with a digitizing mouse.
- Windows® based program digitizes and stores data and patient files for easy reference or modifications.
- Easy input of patient/block information.
- Pre-set operational function keys.
- User may select any cut path to connect multiple block outlines.

### Quick Modifications

- Ability to "flip" image for fast AP/PA or L/R lateral blocks, or change any parameter without re-digitizing.

### Hot Wire Cutting

- Image can be moved to any position on the block to allow for the conservation of styrofoam use.
- Fast 0.45 in/sec (1 cm/sec) cut speed.

# BLOCK ROOM PRODUCTS & ACCESSORIES

## FOAM CUTTER WITH ADJUSTABLE HEAT



- On/Off switch
- Electronic variable temperature control knob.
- Lockable feed bar/fence for angle cuts.
- One spool of NiChrome wire, 0.008" diameter x 98 ft L
- One year warranty

**Includes:** Hotwire Cutter, Miter Guide, Fence/Feed Bar, Spool of Wire, and Users Guide.

### Specifications

**Transformer Secondary Volts:** 10V at 1.0A (Double Insulated)

**Cutting Wire Temperature:** 210 - 390°F (100 - 200°C)

**Worktable Size:** 15 3/8" x 11" (390 x 280mm)

**Throat:** 13 3/4" (350mm)

**Cutting Height:** 5 1/2" (140mm)

**NiChromeWire:** 0.008" dia. x 98 Ft (0.02 cm x 30 m)

**Voltage:** Item 869-910 - 110-120V AC, 60 Hz, 1 Amp, 50/60 Hz  
Item 869-912 - 230V, 50/60 Hz, 20 watt

**Weight:** 6.6 lb (3 kg)

**Item 869-912:** CE marked

Item	Description
869-910	Foam Cutter w/Adjustable Heat, 110-120V
869-9101	NiChrome Wire, 0.008" Dia. x 98 ft. on spool
869-912	Foam Cutter w/Adjustable Heat, 230V, 50/60Hz

- A slippery work surface that is Alu Corbond compound making it easier to push Styrofoam around the large table.
- Very fine cut
- Solid aluminum overarm.
- The holder and wire spool may be shifted and adjusted along the overarm to enable miter cutting.
- An LED indicates operation and thus reminds you not to touch the hot wire to prevent burnt fingers (the wire heats to the maximum temperature in less than 1 second).
- Printed grid and protractor on worktable assist with division and cutting.

## ELECTRON BLOCK FOAM CUTTER



The Electron Block Foam Cutter's white formica cabinet includes a lighted power switch and an 8' grounded power cord. The unit has an easily replaceable nic-chrome cutting wire. Recommended maximum Styrofoam thickness is 1" (2.54 cm)

### Specifications

**Size:** 11 3/4" W x 14" L x 7" H

**Weight:** 8 lbs

Item #	Description
869-900	Electron Block Foam Cutter Power: 110 VAC, 50/60 Hz & 3 Amp
869-902	Electron Block Foam Cutter Power: 220/240 VAC, 50/60 Hz, 1.5 Amp
869-903	Replacement Wire for Electron Block Foam Cutter

## EBC-2000 ELECTRON BLOCK CUTTER



The EBC-2000 Electron Block Cutter is a manual tabletop cutter for electron block cutouts. It provides clean hot wire cutting of radiotherapy foam shapes with no divergence angle. It is capable of cutting foam blocks from 1cm thick to 3 inches thick. This unit is also easily field convertible to be used with 120 or 220VAC power so there is no need to order a special unit.

### Specifications

**Size:** 12" W x 16.5" L x 9.9" H (30.48x41.9x25.1 cm)

**Weight:** 10 lb (4.5 kg)

Item	Description
869-920	EBC-2000 Electron Block Cutter

# BLOCK ROOM PRODUCTS & ACCESSORIES

## NIC-CHROME CUTTING WIRE



The Nic-chrome Cutting Wire is 26 gauge x 10' long. It is used with the styroformers.

Item #	Description	Quantity
875-026	Nic Chrome Cutting Wire	1
875-026-6	Nic Chrome Cutting Wire	6

## STYROFOAM BLOCKS



The Dow Chemical 25 and 30 PSI Styrofoam Blocks have planed flat top and bottom surfaces. This extremely smooth surface, when placed against a flat Cooling Plate, does not allow the alloy to leak out when filling the styrofoam.

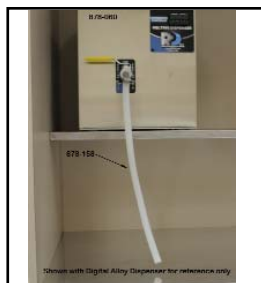
Item #	Block Size	PSI	Quantity
870-708	3/4" x 8" x 8" (1.9 x 20.4 x 20.4 cm)	25	48
870-708-12	3/4" x 8" x 8" (1.9 x 20.4 x 20.4 cm)	25	12
870-710	3/4" x 10" x 10" (1.9 x 25.5 x 25.5 cm)	25	36
870-710-12	3/4" x 10" x 10" (1.9 x 25.5 x 25.5 cm)	25	12
870-711	3/4" x 11.5" x 11.5" (1.9 x 29.3 x 29.3 cm)	25	60
870-711-12	3/4" x 11.5" x 11.5" (1.9 x 29.3 x 29.3 cm)	25	12
871-008	1" x 8" x 8" (2.5 x 20.4 x 20.4 cm)	25	48
871-008-12	1" x 8" x 8" (2.5 x 20.4 x 20.4 cm)	25	12
871-010	1" x 10" x 10" (2.5 x 25.5 x 25.5 cm)	25	36
871-010-12	1" x 10" x 10" (2.5 x 25.5 x 25.5 cm)	25	12
871-012	1" x 12" x 12" (2.5 x 30.6 x 30.6 cm)	25	96
871-012-12	1" x 12" x 12" (2.5 x 30.6 x 30.6 cm)	25	12
872-008	2" x 8" x 8" (5 x 20.4 x 20.4 cm)	25	72

Item #	Block Size	PSI	Quantity
872-010	2" x 10" x 10" (5 x 25.5 x 25.5 cm)	25	36
872-010-12	2" x 10" x 10" (5 x 25.5 x 25.5 cm)	25	12
873-008	2.83" x 8" x 8" (7.6 x 20.4 x 20.4 cm)	30	72
873-008-12	2.83" x 8" x 8" (7.6 x 20.4 x 20.4 cm)	30	12
873-010	2.83" x 10" x 10" (7.6 x 25.5 x 25.5 cm)	30	48
873-010-12	2.83" x 10" x 10" (7.6 x 25.5 x 25.5 cm)	30	12
873-012	2.83" x 12" x 12" (7.6 x 30.6 x 30.6 cm)	30	32
873-012-12	2.83" x 12" x 12" (7.6 x 30.6 x 30.6 cm)	30	12
874-807	2.83" x 7 5/8" x 7 5/8" (7.6 x 19.4 x 19.4 cm)	30	72
874-807-12	2.83" x 7 5/8" x 7 5/8" (7.6 x 19.4 x 19.4 cm)	30	12
874-811	2.83" x 11.5" x 11.5" (7.6 x 29.3 x 29.3 cm)	30	32
874-811-12	2.83" x 11.5" x 11.5" (7.6 x 29.3 x 29.3 cm)	30	12

# BLOCK ROOM PRODUCTS & ACCESSORIES

## DIGITAL ALLOY DISPENSERS

For High (203°F) and Low (158°F) Melting Alloy



878-158 shown attached to 878-060

- Alloy Temperature Stability  $\pm 4^\circ$
- Microprocessor PID Temperature Control
- "J" Thermocouple
- Open Thermocouple Sensor Will Shut Unit Down
- Over Temperature Bi-Metal Disc Thermostat
- Temperature is Displayed in Fahrenheit or Celsius
- Easy View Temperature Controls
- Set Point Reading Is Green and Alloy Temperature Is Red
- Insulated Container Preserves Power Consumption
- Exterior Stays Cool Even After Hours of Operation
- Easy to Clean Round Container
- Stainless Steel Corrosion-Resistant Interior and Exterior

The compact yet rugged design makes this alloy dispenser universally ideal for clinical use. It features polished stainless steel corrosion-resistant interior and exterior housing, a stainless steel cover and a side mounted, easy to view temperature control. Power switch, fuses and cord receptacle are mounted on the back side.

The EZ-Zone® Digital Proportional-Integral-Derivative (PID) Temperature Controller has two digital readouts, temperature and set point. It can maintain alloy at a controlled temperature up to a maximum of 250°F (121°C). The heating element provides even temperatures throughout the entire unit.

Controlling the power to the heater is done with a heavy duty Triac with Zero Crossover Switching to prevent noise from being induced into other equipment thru the AC Line.

The units are constructed with a ball valve faucet with hose barb connector for easy alloy removal. An optional 3/8" ID x 18" long (0.96 x 45.88 cm) drain tube (Item 878-158) can be attached to the faucet hose barb fitting when the dispenser is set on a shelf over the alloy blocks.

The temperature displayed is set to Fahrenheit at the factory; however, this can be changed to Celsius by the end user.

A 6' (1.8 m) AC Cord with grounded hospital grade plug is standard.

All units are single phase.

This product is not ISO certified or UL listed.

### Specifications

Item	878-060	878-065
Gallons	1.5	1.5
120 VAC 50/60 Hz	X	
208/240 VAC 50/60 Hz		X
Watts	665	576/665
Amps	5.6	3.2/2.8
Alloy Capacity	120 lb (54 kg)	120 lb (54 kg)

**Alloy Dispenser Temperature Range:** 0° to 250°F (-18° to 121°C)

**Temperature Accuracy:**  $\pm 4^\circ\text{F}$

**Temperature Controller Type:** PID

**Thermocouple:** J

**Electronic Switching:** Triac with Zero Crossover Switching

**Over Temperature:** 250°F Bi-Metal Disc Thermostat - Manual Reset

**On/Off Switch:** 10 Amp Rating

**Fused:** Two Line Fuses for AC Lines

**Power Cord:** 6' (1.8 m) 3 Wire, 10 Amp, 300 Volt, SJT, with Hospital Grade Plug

**Faucet:** Ball Valve with Hose Barb

**878-158 Optional Drain Tubing:** 3/8" ID x 18" L (0.96 x 45.72 cm)

**Interior Dimension:** 7 1/8" Dia. x 8 5/8" Deep (18 x 21.9 cm)

**Interior Material:** Stainless Steel

**Exterior Dimensions:** 9.75" D x 12" W x 14.5" High (25 x 30.5 x 37cm)

**Exterior Material:** Stainless Steel

**Weight:** 17.5 lbs (8 kg)

### Environmental Conditions

**Altitude Limits:** 3000 Meters

**Ambient Temperature Range:** 32° - 104°F (0° - 40°C)

**Relative Humidity Range:** 0 to 75%

**Pollution Degree:** 2

### FOR INDOOR USE ONLY

Item	Description
878-060	1.5 Gal, 158°/203°F, 120VAC
878-065_	1.5 Gal, 158°/203°F, 208/240V Specify Country for correct plug
878-158	Optional Drain Tubing, 3/8" ID x 18" L

## FAUCET REPLACEMENTS



878-109-111



878-109-114

Item #	Description
878-109-111	Replacement Faucet for 158/203°F Alloy Dispenser, 120 VAC with 15 Watt Heater and Set Screw
878-109-114	Replacement Faucet for 158/203°F Alloy Dispenser, 240 VAC with 20 Watt Heater and Set Screw

## BLOCK CASTING STATIONS



878-350



878-352

The Block Casting Station maximizes the size of your block room and can improve labor and production efficiencies while improving block quality.

### FEATURES

- A 1.5 gallon alloy dispenser with a digital readout, precise digital temperature control and a no-drip heated ball valve dispenser. The alloy dispenser base plate is a roller carriage which allows for easy side-to-side movement over a range of 28" (71.37cm) over the cold plate
- A large capacity, precision surfaced refrigerated cold plate measuring 42.875" x 23.3125" (109 x 59.3cm) that accommodates up to six photon blocks. Cold water is recirculated by means of a closed loop system through a pump and refrigeration system
- The sturdy cabinet has a convenient storage space on the left side underneath the cold plate that measures 20.5" W x 23" D x 23" H (52 x 58.4 x 58.4 cm). The right side underneath cabinet houses the refrigeration system and has two (2) air vents on the side of the cabinet. These air vents need a 2" minimum clearance on the right side of the cabinet. All front and sides of the cabinet are covered with Formica brand oyster gray laminate. The back side is covered with a Formica brand phenolic resin backing sheet.
- An electronic air cleaner provides safer, cleaner air in your block room – 98% efficient at 0.03 microns.
- Power Cord: 8' (2.4m) 3 Wire, 16ga.
- Two Power Switches
  - A. Turns on electronic air cleaner
  - B. Turns on pump and compressor
- No plumbing is required

### Items 878-350 and 878-351 Includes

- An electronic air cleaner provides safer, cleaner air in your block room – 98% efficient at 0.03 microns. Run at low speed.
- Power Switch to turn on electronic air cleaner

### Specifications

#### Items 878-350 and 878-351

**Overall Size:** 85" H x 28" D x 43.5" W (216x71x110.5 cm)

#### Items 878-352 and 878-353

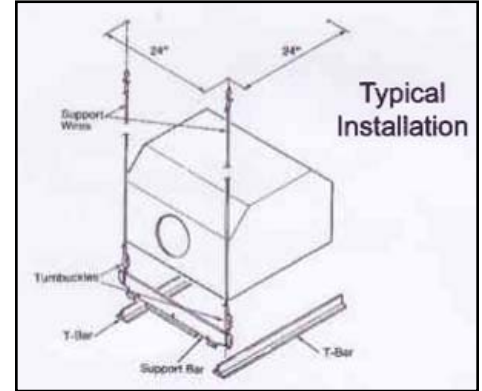
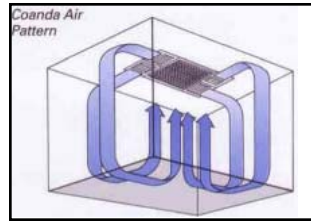
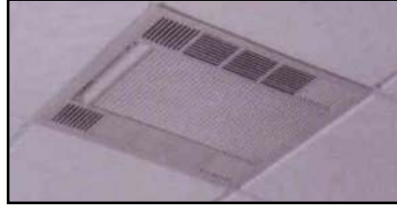
**Overall Size:** 50" H x 28" D x 43.5" W (127 x 71 x 110.5 cm)

Item	Description
878-350	Block Casting Station, 120 VAC, 85" High
878-351_	Block Casting Station, 220 VAC, 85" High Specify Country for correct plug
878-352	Block Casting Station, 120 VAC, 50" High
878-353_	Block Casting Station, 220 VAC, 50" High Specify Country for correct plug

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# BLOCK ROOM PRODUCTS & ACCESSORIES

## X-400 SMOKEMASTER ELECTRONIC AIR CLEANER



- **Totally self-contained air cleaner**
- **Ultimate 'flush with ceiling' mounted workhorse**
- **Features industrial-rated electronic filtration cell**
- **The X-400 quietly captures both airborne particles and gaseous contaminants**

The X-400 air cleaner features a high efficiency electrostatic cell designed to capture both particulate and gaseous contaminants. Contaminant particles, such as those in tobacco smoke, receive an electrical charge as they pass into the electronic cell and are then attracted to oppositely charged collector plates, where they are held, similar to the way that metal filings collect to a magnet. The air vent provides dilution control of gaseous contaminants. Standard activated carbon filter adsorbs odors and gases to further freshen the air.

The attractive grille fits flush with the ceiling and is completely inconspicuous. The cabinet is hidden in the unused space above the drop ceiling tile.

The X-400 success is due to the "Coanda Aerodynamic Principle". Effective 360° airflow gently and evenly distributes clean air and returns dirty air to the unit. The unique 4-way method of air recirculation gets the maximum amount of contaminated air to the machine most efficiently. More air reaches the Smokemaster while eliminating annoying drafts. This eliminates "stuffy" air pockets and creates people comfort as well as much better air cleaning results.

### FEATURES

- **High Efficiency:** Removes dust, smoke, pollen and other particles using high efficiency electronic collector cells.
- **Quiet:** Three-speed controller is standard and allows for quiet operation without sacrificing effectiveness.
- **Easy Installation:** Special mounting brackets simplify the installation and do not require any additional space above the cabinet height of 13-5/8".
- **Economical:** Permanent electronic collector cells assure low operating cost by eliminating costly filter replacements when maintained per instructions. Moreover, because collector cells offer no airflow restriction, only limited horsepower is necessary, thus reducing noise and electrical draw.
- **Comprehensive:** Includes 2 Carbon Post Filters for odor control

### Specifications

**Electrical Rating:** 120v / 60 Hz (220v / 50Hz)  
**Low Speed:** 175 CFM / .4 amps (175 CFM / .45 amps)  
**Medium Speed:** 275 CFM / .6 amps (275 CFM / .5 amps)  
**High Speed:** 400 CFM / .8 amps (400 CFM / .7 amps)  
**Color:** White  
**Motor:** 0.05 Hp Thermally Protected  
**Dimensions:** 24" x 24" x 13 5/8" (61 x 61 x 34.6 cm)  
**Installed Weight:** 44 lb (20 kg)  
**Shipping Weight:** 54 lb (24.5 kg)  
**Primary Filter Collection Area:** 52.9 square feet (133 cm)  
**Sorbent Media:** 2 Carbon Post Filters  
**Air Cleaning Efficiency:** Up to 99.7% ASHRAE 52.2

Item	Description
878-370	X-400 Smokemaster Electronic Air Cleaner, 120 VAC
878-371	X-400 Smokemaster Electronic Air Cleaner, 220 VAC
878-375	Replacement Electronic Collector Cell
878-377	Replacement Aluminum Mesh Prefilter
878-379	Replacement Carbon Filter

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# BLOCK ROOM PRODUCTS & ACCESSORIES

## MELTING ALLOY

158°F and 203°F



On average approximately 20 pounds (9.1 kg) of Melting Alloy is needed per patient.

**Note:** To dispose of melting alloy, place the used alloy in a container or box (Item 879-301) and send it to RPDinc. RPDinc also recycles alloy, call for details. **THIS IS HAZARDOUS AND TOXIC WASTE, DO NOT THROW IT INTO THE GARBAGE.**

### Specifications

#### 158°F Low Melting Alloy

**Density:** 9.38 g/cm<sup>3</sup>

**Composition:** Bismuth 50%, Lead 26.7%, Tin 13.3%, Cadmium 10%

#### 203°F High Melting Alloy - Cadmium Free

**Density:** 9.83 g/cm<sup>3</sup>

**Composition:** Bismuth 52.5%, Lead 32%, Tin 15.5%

Item #	Description	Quantity
879-158	158°F Low Melting Alloy	50 lb (22.7 kg)/Pkg
879-202	203°F High Melting Alloy	50 lb (22.7 kg)/Pkg

## GALLON BUCKETS AND BOX CARTONS FOR RETURNING USED ALLOY



To comply with Federal, State and Local Laws used alloy should be recycled or stored in sealed containers for future disposal. To properly dispose of alloy, contact your hospital hazardous waste department or your local Pollution Control Agency.

To aid in disposal, Radiation Products Design will accept all slag and used alloy.

The gallon plastic bucket has a handle for easier carrying and includes the lid. Cartons must be ordered separately to ship the buckets to Radiation Products Design for disposal.

Item #	Description
879-309	Gallon Plastic Bucket with Cover, Qty 4
879-311	Cartons for Gallon Plastic Buckets, Qty 4
879-302	Shipping Tape, 2" Wide, Clear
879-303	Tape Dispenser for 2" Wide Tape, Plastic

## THERMOMETER

T-Handle, Waterproof, Drop-Proof



- Waterproof construction
- Top-reading design
- Stainless steel probe - 0.19" dia x 8" L
- Drop-proof from 5' (1.5 m)
- Large, bright, highly readable LCD display is 0.25" (6.3 mm) High
- Reading is updated every second
- With a silver-oxide battery
- Range: -58° to +536°F (-50° to + 280°C)
- Resolution: 0.1° from -20° to + 200°C; 1°C outside this range
- Accuracy: ±1°C between -20° to + 100°C
- Dimensions: 3.5" W x 9.5" H x 1" D
- Weight: 1.25 oz.

Item #	Description
878-155	Thermometer, T-Handle, Waterproof, Drop-Proof



# BLOCK ROOM PRODUCTS & ACCESSORIES

## SOLDERING IRON



### Specifications

**Power:** 120 VAC, 50/60 Hz, 175 Watts  
**Chisel Tip:** 5/8" (1.6 cm) Diameter - Included  
**Length:** 12.5" (31.75 cm)  
**Weight:** 1 lb (.45 kg)

Item #	Description
875-200	Soldering Iron with Chisel Tip
875-224	5/8" Replacement Chisel Tip for Soldering Iron
875-240	Stand for Soldering Iron

## SOLDERING GUN

Dual Heat



### Specifications

**Power:** 120 VAC, 50/60 Hz  
**UL Listed**

Item #	Description
875-100	Soldering Gun (260/200 Watts)
875-122	Unbent Tip End for Soldering Gun, Replacement, Pair
875-126	Pre-bent Tip w/Nuts for Soldering Gun, Replacement, Each

## HEAT GUN



### Specifications

**Item 878-186**  
**Power:** 120 VAC, 12 Amps, 1440 Watts

**Item 878-186-2**  
**Power:** 120 VAC, 14 Amps, 1680 Watts

Item #	Description	Degrees
878-186	Heat Gun	300° to 500°F
878-186-2	Heat Gun	500° to 750°F

## EMERGENCY ALLOY MELTER



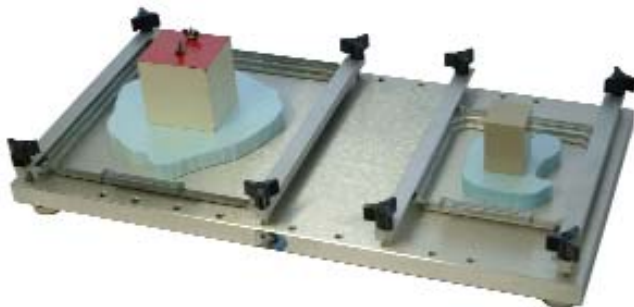
The Emergency Alloy Melter works on all alloy dispensers. Easy to use, just plug in and insert tip into alloy.

### Specifications

**Power:** 110-120 VAC, 50/60 Hz, 500 watts

Item #	Description
875-250	Emergency Alloy Melter

## COOLING PLATE FOR VARIAN III ELECTRON CONE INSERT FRAMES



This cooling plate will accommodate up to two 25 cm electron cone frame inserts at one time. The two end bars are spring raised and need not be removed. The two center bars can be moved to fit the insert frame being used. The bars are made to fit the tri-step of the insert frame. The cooling plate sits on four leveling pads.

### Specifications

**Overall Size:** 24" W x 12" D x 1" H (61.2 x 30.6 x 2.5 cm)  
**Bar Size:** 0.75" W x 12" D x 1/2" H (1.9 x 30.6 x 1.3 cm)  
**Material:** Aluminum  
**Knobs:** Four (4) Three-Arm, 1.5" diameter (3.8 cm)

Item	Description
896-042	Cooling Plate f/Varian III Electron Cone Insert Frames

A

# BLOCK ROOM PRODUCTS & ACCESSORIES

## ALUMINUM COOLING PLATE



The Aluminum Cooling Plate aids in the cooling process of alloy blocks. It has 4 leveling feet.

### Specifications

**Size:** 1" x 12" x 24" (2.5 x 30.6 x 61.2 cm)

**Weight:** 24.6 lb (11.2 kg)

Item	Description
878-270	Aluminum Cooling Plate

## WATER COOLED ALUMINUM PLATES



The Water Cooled Aluminum Plate with corrosion resistance inside liner uses an external water supply to rapidly cool alloy blocks. It is anodized black for faster heat absorption. The Water Cooled Plate has a vinyl intake and discharge hose with shut off valve. The unit can be attached to a sink faucet or it can be used with our Water Transfer Tank (Item 695-000) for use in rooms without plumbing.

### Specifications

**Size:** 1" x 12" x 24" (2.54 x 30.48 x 60.96 cm)

**Fits:** 3/8" (0.97 cm) Inside Diameter Hose

**Weight:** 28 lb (12.7 kg)

Item	Description
878-271	Water Cooled Aluminum Plate

## STYROFOAM LEAD WEIGHT



The Styrofoam Lead Weight with handle is used to hold down the blocking tray when molds are being poured. Use the Aluminum Cooling Plate (Item 878-270 or 878-271) to aid in the cooling process and the Aluminum Tray (Item 878-182) to catch any excess alloy leakage. Both are pictured in use.

### Specifications

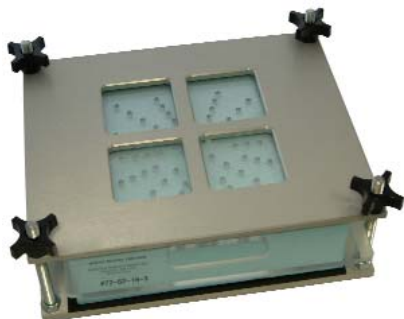
**Size:** 2" W x 7" L x 3" H (5.1 x 17.8 x 7.6 cm)

**Finish:** Painted polyurethane tan

**Weight:** 16 lb ( 7.3 kg)

Item	Description
878-274	Lead Weight w/Handle for Styrofoam

## STYROFOAM BLOCK COMPRESSOR



The Styrofoam Block Compressor is used to hold the styrofoam block and the treatment tray while pouring in the alloy. The block compressor will hold a maximum styrofoam block size of 12 3/4" (32.5 cm) square and a maximum treatment tray width of 12 3/4" (32.5 cm).

A 3/16" (0.5 cm) thick rubber pad is placed under the styrofoam to seal all voids when using styrofoam that does not have a planed surface. The top plate can be tightened by turning the knobs on the threaded rods.

Item	Description
878-273	Styrofoam Block Compressor

# BLOCK ROOM PRODUCTS & ACCESSORIES

## ALUMINUM TRAY



The Aluminum Tray is used under the Aluminum Cooling Plate (Item 878-270 and 878-271) or the Alloy Dispensers (Item 878-015 thru 878-048) to catch the alloy leakage.

**Size:** 25.75" L x 17.75" W x 1" D (65.4 x 45.1 x 2.54 cm)

Item	Description
878-182	Aluminum Tray

## D-LEAD® HAND SOAP



876-400



876-403

D-Lead® Hand Soap quickly and efficiently removes heavy metal dusts, lead and contaminants from the skin and hands. The mild formula with skin conditioning coconut oil is designed for frequent clean up throughout the day. Fast acting and economical D-Lead® Hand Soap is the hand and skin care choice for cleanup anywhere rinse water is available.

Item	Description
876-400	D-Lead Hand Soap with Hand Pump, 8 oz
876-402	D-Lead Hand Soap Refill, 32 oz
876-403	D-Lead Hand Soap Packets, 10/Pkg

## D-LEAD® ALL PURPOSE CLEANER CONCENTRATE



Multi-purpose, concentrated, low sudsing, phosphate free cleaning formula quickly lifts and suspends metals, grease, oil, dirt, paint dust and firing range residue in a single application.

Item	Description
876-405	D-Lead® All Purpose Cleaner Concentrate, 32 oz Bottle

## D-WIPE TOWELS



876-450 and 876-453



876-452



876-450 and 876-454

Disposable towels are generously saturated with a gentle pH balanced cleaner to quickly remove lead and heavy metal dusts from skin and most surfaces. The soft towels lift, bind and hold lead and other heavy metal dusts and take them away without smearing. With Aloe skin moisturizers, D-Wipe towels are the portable and convenient way to clean the hands, arms, face and body.

Use D-Wipe Towels to clean

- Hands and face
- Respirators and personal protective equipment
- Desks, tables and work benches
- Telephone and keyboards
- Tools and field instruments
- Environmental and industrial health equipment
- Smooth, water washable surfaces

Item	Description
876-450	D-Wipe Towels, 6" x 6.5", 150/Pkg
876-452	Stainless Steel Wall Bracket
876-453	Plastic Wall Bracket
876-454	Locking Stainless Steel Wall Bracket

# BLOCK ROOM PRODUCTS & ACCESSORIES

## SCOTCH-BRITE CLEANING PADS



### Specifications

Size: 3" x 4 1/2" (7.62 cm x 11.43 cm)

Item #	Description	Quantity
878-160	Scotch-Brite Cleaning Pads	10

## TUBE/FAUCET CLEANING BRUSH



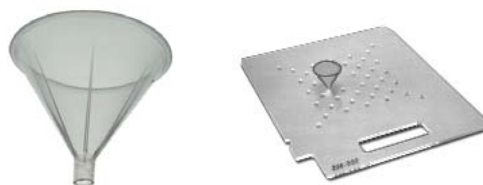
Item #	Description	Size
878-156	Tube Cleaning Brush	3/8" (0.96 cm) Diameter
878-157	Faucet Cleaning Brush	3/4" (1.9 cm) Diameter

## ALLOY POURERS



Item #	Description
878-169	14 oz. Stainless Steel Alloy Pourer
878-170	16 oz. Plastic Alloy Pourer
878-171	33 oz. Stainless Steel Alloy Pourer

## PLASTIC FUNNEL



Item #	Description
878-178	Plastic Funnel

## WIRE STRAINER For Low Melting Alloy



Item #	Description
878-163	Wire Strainer for Low Melting Alloy, 5" (12.7 cm) Dia.

## SKIMMING SPOON



Item #	Description
878-164	Skimming Spoon

## RASP



Item #	Description
878-165	Rasp, 10" (25.4 cm)

## BLOCK GRIP TOOL



The Block Grip Tool is used to lower alloy blocks into the alloy melting dispenser.

Item #	Description
878-166	Block Grip Tool

A

# BLOCK ROOM PRODUCTS & ACCESSORIES

## RUBBER MALLET



Item #	Description
878-167	Rubber Mallet

## UTILITY KNIFE WITH RETRACTABLE BLADE



Item #	Description
878-168	Utility Knife with Retractable Blade

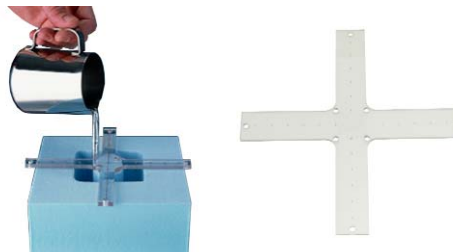
## POLYPROPYLENE WASTE P-TRAP For Standard 1 1/2" (3.8 cm) Plumbing



The Polypropylene Waste P-Tray can be used on sinks in the block/mold room to retain alloy that may possibly get into the drain.

Item #	Description
879-100	Polypropylene Waste P-Trap

## ISLAND BLOCKING DEVICE 10" (25.4 cm)



Item #	Description
878-275	Island Blocking Device, 10" (25.4 cm)

## SCREWS AND WASHERS



878-2565

878-264

878-266

The stainless steel screws are used to secure the alloy blocks to the treatment trays. The nylon washers are used under the screw head to prevent the tray from cracking.

Item	Description	Quantity
878-256	S.S. Screw-Hex/Washer Head, #12 x 1"	100
878-2565	S.S. Screw-Hex/Washer Head, #12 x 1 1/2"	100
878-264	Nylon Washer for 1/4" diameter Holes	100
878-266	Nylon Washer for 3/8" diameter Holes	100

## NEEDLE NOSE PLIERS With Cutter



Item	Description
878-730	Needle Nose Pliers with Cutter, 6"

## CUSHION GRIP NUTDRIVER



Item	Description
878-930	Cushion Grip Nut Driver, 5/16"

A

# BLOCK ROOM PRODUCTS & ACCESSORIES

## STANDARD HEX KEY SETS



### Specifications

**Tool Type:** Hex End Keys  
**Fastener Type:** Standard Hex  
**Measurement Type:** Inch  
**Handle Type:** L-Key Long Arm  
**Hex Size Range:** 1/20 - 3/8  
**Container Type:** Plastic Holder  
**Number of Pieces:** 13  
**Fractional Hex Sizes:** 0.050; 1/16; 5/64; 3/32; 7/64; 1/8; 9/64; 5/32; 3/16; 7/32; 1/4; 5/16; 3/8

Item #	Description
878-757	Hex Key Set, Long Arm - 13 pc, Standard (Inch)

## METRIC HEX KEY SETS



### Specifications

**Tool Type:** Hex End Keys  
**Fastener Type:** Standard Hex  
**Measurement Type:** Metric  
**Handle Type:** L-Key Long Arm  
**Hex Size Range:** 1.5 - 10.0mm  
**Container Type:** Plastic Holder  
**Number of Pieces:** 9  
**Metric Hex Sizes:** 1.5; 2; 2.5; 3; 4; 5; 6; 8; 10

Item #	Description
878-758	Hex Key Set, Long Arm - 9 pc, Metric

A

## 62-PIECE TOOL SET WITH TOOL BOX

This Tool Set has 62 tools and a general purpose storage box with tray.



### Tool Set Contains

- (9) Hex key Fold-up Tool
- (9) Combination Wrenches 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8"
- (9) Sockets Standard: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8"
- (9) Sockets Deep: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8"
- (1) Drive Extensions 3"
- (1) Drive Extensions 6"
- (1) Drive Universal Joint
- (1) Ratchet Handle
- (1) Adjustable Wrench 6"
- (1) Adjustable Wrench 10"
- (1) Phillips Screwdriver #1
- (1) Phillips Screwdriver #2
- (1) Slotted Screwdriver 1/4"
- (1) Slotted Screwdriver 5/16"
- (1) Slotted Screwdriver 3/8"
- (1) Pliers, Diagonal Heavy Duty
- (1) Pliers, Chain Nose with Wire Cutters
- (1) Pliers, Quick Release Locking with Curved Jaw
- (1) Pliers, Slip Joint
- (1) Pliers, Tongue & Groove
- (1) Hammer, Ball Pein
- (1) Hammer, Dead Blow
- (1) Punch, Pin 1/8"x5/16"x5"
- (1) Punch, Pin 3/16"x3/8"x5 1/4"
- (1) Punch, Drift 3/16"x1/2"x9"
- (1) Punch, Center 3/8" x 5"
- (1) Punch, Center 1/2" x 6"
- (1) Chisel, Cold 3/8"x5/16"x5 1/8"
- (1) Chisel, Cold 1/2"x7/16"x6"
- (1) Chisel, Cold 3/4"x5/8"x7"

### Specifications

**Storage Box:** 9.5" H x 8.5" D x 20" W (24.13 x 21.59 x 50.80 cm)  
**Weight:** 35.5 lb (16.10 kg)



Item	Description
878-745	62 Piece Tool Set with Tool Box

# BLOCK ROOM PRODUCTS & ACCESSORIES

## DRILL DRIVER KIT, CORDLESS, COMPACT, LITHIUM-ION, 1/2"



The DCD771C2 20V Max Lithium Ion Compact Drill/Driver Kit is lightweight and compact for working in tight spaces for long periods of time. High-speed transmission delivers 2-Speed variations allowing users to choose the level of performance needed for various applications.

### Includes

(2) 20-volt Max compact Lithium ion battery packs, a compact charger and durable contractor bag

### Specifications

**Chuck Size:** 1/2"  
**Chuck Type:** Keyless  
**Clutch Settings:** 16  
**Max Power:** 300 UWO  
**No Load Speed:** 0-450/0-1,500 rpm  
**No of Speed Settings:** 2  
**System:** 20V Max  
**Battery Type:** Lithium Ion  
**Item Dimensions:** 9.9" x 13.9" x 4.25" (25.1 x 35.3 x 10.8 cm)  
**Power Source:** Battery-Powered  
**Item Weight:** 3.6 lb (1.63 kg)

Item	Description
878-221	Drill Driver Kit, Cordless, Compact, Lithium-Ion, 1/2"

- Compact, lightweight design fits into tight areas
- High speed transmission delivers two speeds (0-450 & 1,500 rpm) for a range of fastening and drilling applications
- Ergonomic handle delivers comfort and control
- High performance motor delivers 300 unit watts out (UWO) of power ability completing a wide range of applications
- 1/2" single sleeve ratcheting chuck provides tight bit gripping strength

## 3/8" ELECTRIC DRILL Variable Speed and Reversible



- DW223G: 7.0 Amps; 0-1200 rpm
- Helical-cut, steel gears for smooth operation
- Metal gear housing for increased durability
- Two-finger anti-slip trigger for increased comfort
- 3/8" chuck capacity for a wider range of accessories
- DIN nose for acceptability of side handle or rig mount

### Specifications

**Power:** 120 VAC, 50/60 Hz

Item	Description
878-230	3/8" Electric Drill

A

# BLOCK ROOM PRODUCTS & ACCESSORIES

## HEX HEAD DRIVER SOCKET

For Drill



Item	Description
878-240	5/16" Hex Head Driver Socket

## DRILL BITS

\*\*\*Specially Modified\*\*\*



These Drill Bits are specially modified for plastic, lead or cerrobend.

Item	Description
878-257	11/64" Dia. Drill Bit for Item 878-256 Screw
878-258	1/4" Dia. Drill Bit for Plastic ONLY
878-259	3/8" Dia. Drill Bit for Plastic ONLY

A

## SNIPS



The Bulldog Aviation snips can be used to cut lead sheets up to 1/8" thick. This bulldog snip cuts straight and can be used in either hand. It has serrated blades.

### Specifications

**Nominal Length:** 9" (22.9 cm)

**Cut Length:** 7/8" (2.22 cm)

**Weight:** 1 lb (0.5 kg)

Item	Description
878-738	Snips, Bulldog Aviation, 9" L



These Bulldog Blade Snips can be used to cut 1/4" thick lead sheets. This bulldog snip cuts straight and wide curves and can be used in either hand.

### Specifications

**Nominal Length:** 16" (40.64 cm)

**Cut Length:** 2.5" (6.35 cm)

**Weight:** 3.5 lb (1.6 kg)

Item	Description
878-740	Snips, Bulldog Blade, 16" L



# BLOCK ROOM PRODUCTS & ACCESSORIES

## LEATHER GLOVE - UNLINED



Item #	Description
878-285	Leather Glove, Unlined - Small
878-286	Leather Glove, Unlined - Medium
878-287	Leather Glove, Unlined - Large
878-288	Leather Glove, Unlined - X-Large

## LEATHER GLOVES - HEAVY DUTY



Item	Description
878-298	Leather Gloves, Heavy Duty

## LEATHER APRON



The leather apron is 24" wide x 36" long with cotton ties at the neck and back.

Item	Description
878-290	Leather Apron

## SAFETY GOGGLES



These anti-fog Safety Goggles with indirect venting are designed to be worn over existing glasses. One size fits all.

Item	Description
878-294	Safety Goggles

## FACE SHIELD



The Headgear has a ratchet adjustment that can be tightened while wearing. The shield is attached with durable quarter turn retainers. The shield is replaceable and is unbound and clear.

Meets ANSI287.1 Standards

Item	Description
878-335	Head Gear with Face Shield
878-336	Head Gear
878-337	Face Shield

## 3M™ RESPIRATOR



- Meets NIOSH 42 CFR 84 N100 requirements
- 3M™ Cool Flow Exhalation Valve has patented one-way valve offering easy exhalation and cool, dry comfort
- Adjustable nose clip for custom fit and reduces the potential for eyewear fogging
- Lightweight construction with an all filter design

The 3M™ Particulate Respirator is well suited for those who want NIOSH's highest rated filtration efficiency in a maintenance free respirator. It provides a minimum filter efficiency of 99.97% against non-oil based particles. This respirator is an excellent choice for lead abatement, pharmaceutical manufacturing, welding and work involving substance specific regulated particles including lead, cadmium, and arsenic, excluding those containing oil aerosols and asbestos.

**Note:** This respirator contains no components made from natural rubber latex.

Item	Description
878-296	3M Dust/Mist Respirator Mask

# BLOCK ROOM PRODUCTS & ACCESSORIES

## AIR SAMPLING TEST KIT



Air sampling is required by OSHA safety standards. Air sampling must be conducted within an 8 hour accumulated time period. Test results will indicate the lead and cadmium levels an individual is being exposed to. If results indicate levels that exceed OSHA guidelines, action must be taken to lower the lead and/or cadmium levels within the work area and testing should be repeated. Results of all tests should be kept on file.

Item	Description
879-520-RENTAL	RENTAL UNIT Air Sampling Pump Kit
879-525	Air Sampling Filter ONLY
879-522	Testing of Sample Filter, Cadmium & Lead

A

## CLEANLINE® STICKY MAT AND FRAME



### Specifications

**Mat Size:** 18" x 36" (45.9 x 91.8 cm)

**Quantity:** 40 sheets to a mat

**Color:** White

### Frame

- Provides uniform base for adhering Sticky Mats
- No maintenance required
- Enhances appearance of mats
- Pre-assembled, ready for use

The CLEANLINE® Sticky Mat Frame consist of a sloping, 3" anodized aluminum edge with a permanently secured plastic base. Overall height is 5/16".

Item	Description
877-900	CLEANLINE® Sticky Mat, 40sheets/mat
877-901	Frame for CLEANLINE® Sticky Mat

### CLEANLINE® Sticky Mat

- Prevents tracking of Alloy
- Numbered corner tabs
- Smooth, effective surface
- Simple to install
- No sheet delamination
- No adhesive transfer

# BLOCK ROOM PRODUCTS & ACCESSORIES

## U.L.P.A. FILTERED LEAD VACUUM



877-110004



877-110005



877-384003



877-761177



877-800056

### Item 877-115 U.L.P.A. Vacuum Includes

- 3 cm x 2.4 m Crush-Proof Hose
- 3 cm Telescopic Wand
- 30 cm Crevice Tool
- 8 cm Round Dust Brush
- 13 cm Uphostery Tool
- Combintion Floor Tool
- U.L.P.A Filter
- Pre-Filter Assembly for U.L.P.A. Filter, 6/pkg
- Paper Collector Bags, 10/pkg
- Polyester Filter with Wire Frame
- Protector Bags for Polyester Filter, 10/pkg

### Specifications

**Tank Size:** 6 gallons (22 liters)

**Power:** 1.25 hp

**Air Flow:** 95 CFM

**Water Lift:** 2159 mm (85")

**Dry Capacity:** 0.46 ft<sup>3</sup> (0.01 m<sup>3</sup>)

**Cord:** 50' (15.25 m)

**Casters:** 1.13 cm

**Weight:** 17 lb (8 kg)

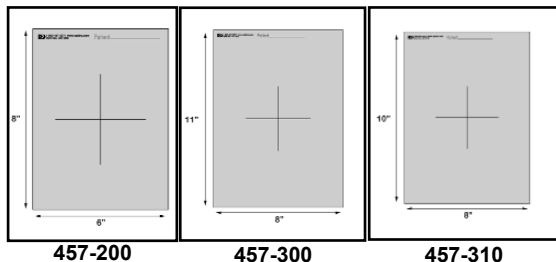
Item	Description
877-115	U.L.P.A. Vacuum

Item	Replacement Parts
877-110004	U.L.P.A Filter, Replacement
877-110005	Pre-Filter Assembly for U.L.P.A. Filter, Replacement, 6/pkg
877-384003	Paper Collector Bags, 10/pkg
877-800056	Polyester Filter with Wire Frame
877-761177	Protector Bags for Polyester Filter, 10/pkg

- Equipped with U.L.P.A. (Ultra Low Penetration Air) filter which is 99.999% efficient at 0.12 microns
- Non-woven, embossed, polyester filter bag provides 50% more filtration area than standard bags
- State-of-the-Art polypropylene lid assembly is acousitcally designed to minimize noise to 74 dba
- Polyethylene tanks are durable, non-corrosive and dent-proof for years of reliable service
- Convenient 50' (15.25 m) cord

U.L.P.A Filtered Vacuum is used for the recovery of lead, dust, paint chips, and other hazardous materials. Conventional vacuum cleaners exhaust unseen lead particles back into the environment, compounding the existing hazard, while the U.L.P.A Filtered Vacuum collects particles directly in a disposable collection bag. The lead vacuum has been specifically designed for safe and efficient daily use in commerical and industrial sites.

## MYLAR TEMPLATES



The Mylar Templates can be cleaned with Alcohol for reuse. The thickness of Items 457-200 and 457-300 has been increased to 0.010" (0.0254cm). Package Quantity: 100

Item	Mylar Template	Mark
457-200	8" x 6" x 0.010" (20.32 x 15.24 x 0.0254 cm)	+
457-300	8" x 11" x 0.010" (20.32 x 27.94 x 0.0254 cm)	+
457-310	8" x 10" x 0.005" (20.32 x 25.49 x 0.0127 cm)	+

# BLOCK ROOM PRODUCTS & ACCESSORIES

## CUSTOM BLOCK TRAY

All of the Block Trays are custom machined. Once Manufacturing begins, an order can not be canceled. RPDinc may request a sample tray be sent in for exact measurements with any first time tray order. Indicate the slot or hole pattern, if it is different from the sample tray. The specifications will be kept on file for any future orders.

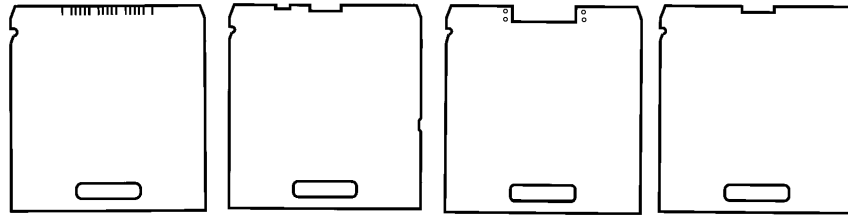
- Choose a Tray Style and the number associated with it
- Choose scribing and the number associated with it
- Choose a pattern and the number associated with it
- Choose the material and thickness desired and the number associated with it

When you've made your choices, the item number should look like  
AAA - BB - CC - D.

To build your Custom Block Tray:

### Tray Styles (AAA)

All Trays Are Shown In Target View. Tray Pictures Are Not Proportionally Scaled.

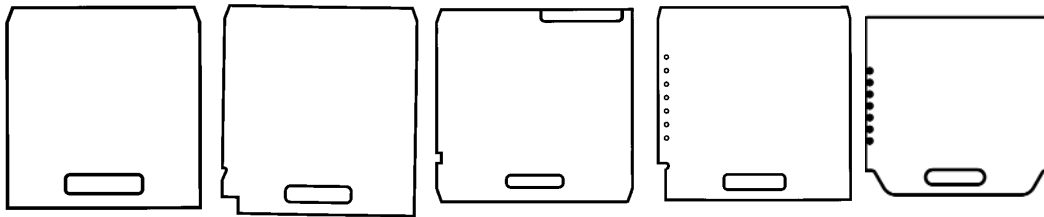


**071**  
Siemens  
Screw Coding

**072**  
Siemens  
Screw and Digital  
Coding By-Pass

**073**  
\*\*Siemens  
Digital Coding  
Socket

**084**  
Siemens  
Digital Coding  
By-Pass



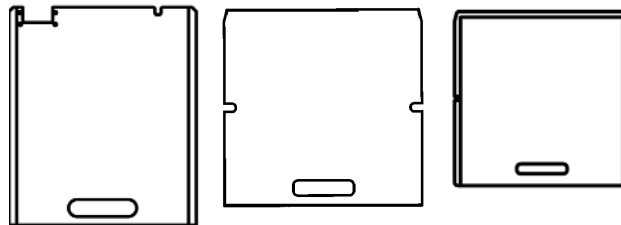
**085**  
10" Wide  
Varian CL 4

**086**  
Varian Type II  
11 3/4" Wide Tray

**087**  
\*Varian Type III  
Optical Coded  
No Holes

**120**  
Elekta

**122**  
Elekta  
Synergy/Precise



**090**  
MDS Nordian/  
Best Theratronics

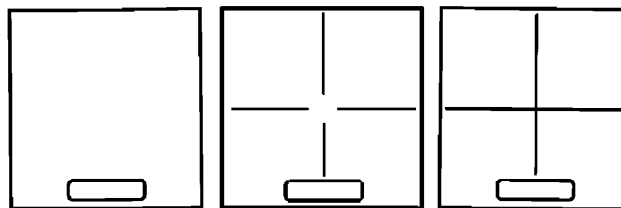
**160**  
AECL/MDSNordion/  
Best Theratronics

**161**  
Best Theratron-  
Phoenix

\* Coding Labels Optional

\*\*Accepts 3 1/8" coding plugs: 1884-10-5, 1884-11-5

### Scribing (BB)



**00**  
No Scribing

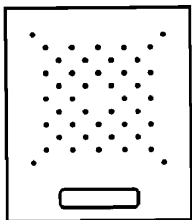
**60**  
Open CA Scribing  
Target Side

**62**  
CA Scribing  
Target Side

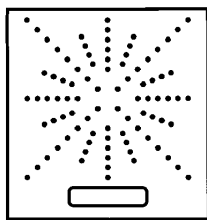
# BLOCK ROOM PRODUCTS & ACCESSORIES

## Hole and Slot Pattern (CC)

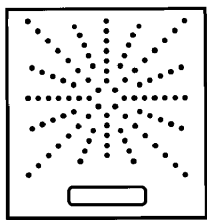
Hole Diameters available in 1/4", 3/8", or custom. Slot Widths available in 1/4", 7/32", or custom. Hole patterns available in 44 holes, 88 holes, 96 holes, or custom)



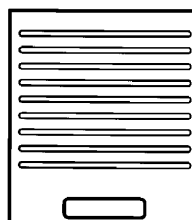
16 - 44 Holes  
1/4" Dia.  
17 - 44 Holes  
3/8" Dia.



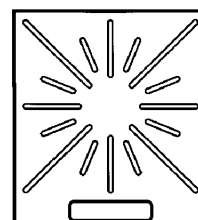
18 - 88 Holes  
1/4" Dia.  
19 - 88 Holes  
3/8" Dia.



20 - 96 Holes  
1/4" Dia.  
21 - 96 Holes  
3/8" Dia.



40 - 9 Slots 7/32" W  
41 - 9 Slots 1/4" W



44 - 16 Slots 7/32" W  
45 - 16 Slots 1/4" W

## Block Tray Material and Thickness (D)

1/4" and 3/8" thick trays are most common. For very heavy blocks you may want to use 3/8" or 1/2" thick trays. Thicker trays are machined along the edges to fit the slots of the tray holder.

### Acrylic

Acrylic is more rigid and scratch resistant than Lexan, however, it will break if dropped. Acrylic block trays will discolor from large amounts of radiation and may become brittle. Cracked trays should be removed from patient use, however, they could be used in the block room as set-up trays.

**Acrylic Density:** 1.17 to 1.20 g/cm<sup>3</sup>

### Polycarbonate (Lexan)

Polycarbonate (Lexan) is virtually unbreakable, scratches easily and will flex more under a heavy load.

**Polycarbonate (Lexan) Density:** 1.2 g/cm<sup>3</sup>

Thickness	1/4"	3/8"	1/2"
Acrylic	1	3	5
Polycarbonate (Lexan)	2	4	6

## Coding Labels and Plugs for Some Tray Styles



087-000



087-001

For Use on 087 Varian Trays ONLY

Item	Labels
087-000	Solid Black (Varian Light Blocking)
087-001	Black with Varian Coding Hole Pattern



1884-10-X



1884-11-X

For Use on 073 Siemens Trays ONLY

Plugs with threaded holes will be used on a tray that has countersunk through holes with no thread.

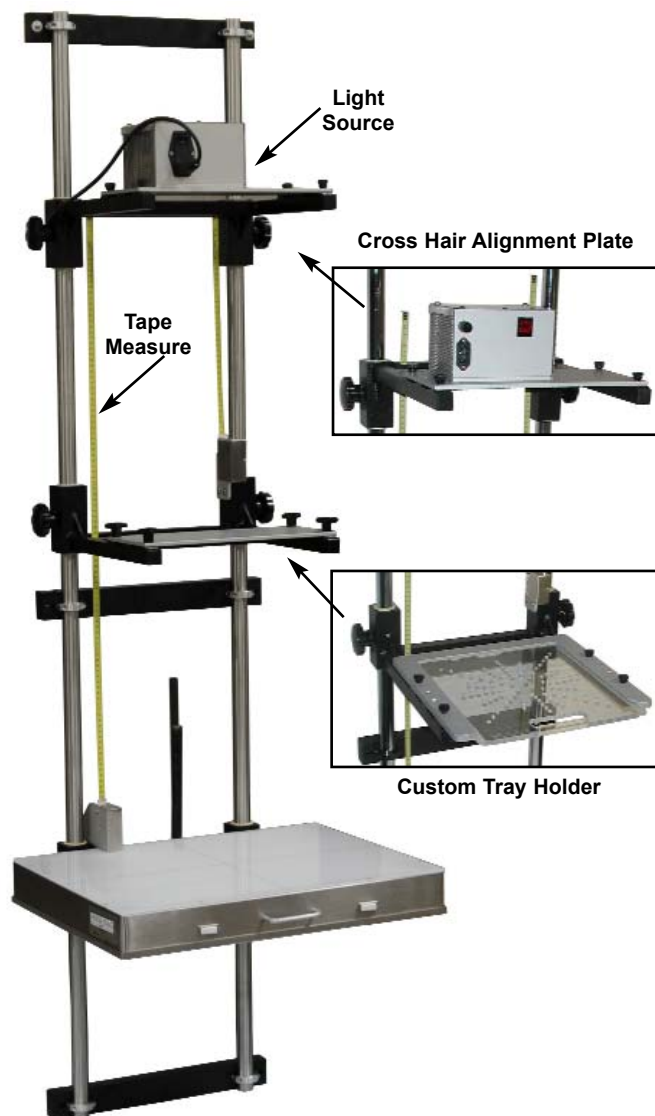
Plugs with countersunk holes are used on a tray that has threads in the hole.

Item	Siemens Digital Coding Plugs
1884-10-1	Threaded Mounting Holes, 3 3/8"
1884-10-5	Threaded Mounting Holes, 3 1/8"
1884-10-6	Countersunk Mounting Holes, 3 1/8"
1884-10-7	Countersunk Mounting Holes, 3 3/8"
1884-11-1	Double Coded Threaded Mounting Holes (MLC), 3 3/8"
1884-11-5	Double Coded Threaded Mounting Holes (MLC), 3 1/8"
1884-11-6	Double Coded Countersunk Mounting Holes (MLC), 3 1/8"
1884-11-7	Double Coded Countersunk Mounting Holes (MLC), 3 3/8"

# BLOCK ROOM PRODUCTS & ACCESSORIES

## TREATMENT BLOCK VERIFICATION SYSTEM with Halogen Target Lamp and View Box

A



The wall mounted Treatment Block Verification System is used to verify patient treatment blocks to a port film. Due to the system's openness it gives a less confined area to work in. This adjustable system covers long target to film and target to block tray distances.

This unit uses a high intensity quartz lamp (12 volt, 50 watt) with power switch and indicator light. The Halogen lamp and power supply are mounted on a removable tray for easy replacement of the lamp. The lamp aperture hole is 2 mm in diameter and is adjustable in both the X and Y plane. A lock holds the vertical position over a 30 cm range.

The blocking tray is adjustable from 8 cm to 95 cm and has an adjustable scale that reads the target to tray distance. A vertical lock holds the tray in position. Different type treatment tray frames are available for all manufacturer's machines. This block verification unit allows inter-mixing of treatment type frames, allowing for verification of all blocks. Adjustability of each frame to central axis is mechanically done by a removable metal plate.

This high intensity view box has four 20 watt lamps with a high and low intensity switch. This allows easy viewing and alignment of the x-ray films over the crosshairs inscribed on top of the view box. The view box sits inside an adjustable metal pan which allows for easy removing and insertion, but retains alignment when re-installed. This pan is adjustable in the X and Y directions and fixed in place by locking four knobs on the bottom. A scale along the side reads target to film distance. For easier viewing of the treatment field areas, the film can be held in place with masking tape and a thin white sheet of paper can be taped down over the film. By tracing the x-ray film outline through to the white sheet of paper, visibility of the blocking area is easily seen under the high intensity light.

Both the block holding tray scale and the view box scale adjust when either the lamp tray, block tray or view box is moved.

### Calibration

Central axis alignment is accomplished by using the stationary crosshair alignment plate and securing it to the block holding tray. When the target and view box are adjusted properly, the crosshairs on the blocking tray will superimpose over the view box cross-hairs and over its entire range of travel (8 cm to 95 cm). When calibration is complete, remove the crosshair alignment plate and install the block holding tray.

### Specifications

**Target to Block Tray Distance:** 8 cm to 95 cm

**Target to Film Distance:** 45 cm to 195 cm

**Ceiling Height:** 8 ft. 2 1/2" (unit can be made shorter if requested)

### Light Source

**Halogen Lamp:** 12 V, 50 watt

**Power:** 115 VAC 60 Hz or 220 VAC 3 Amp

### View Box

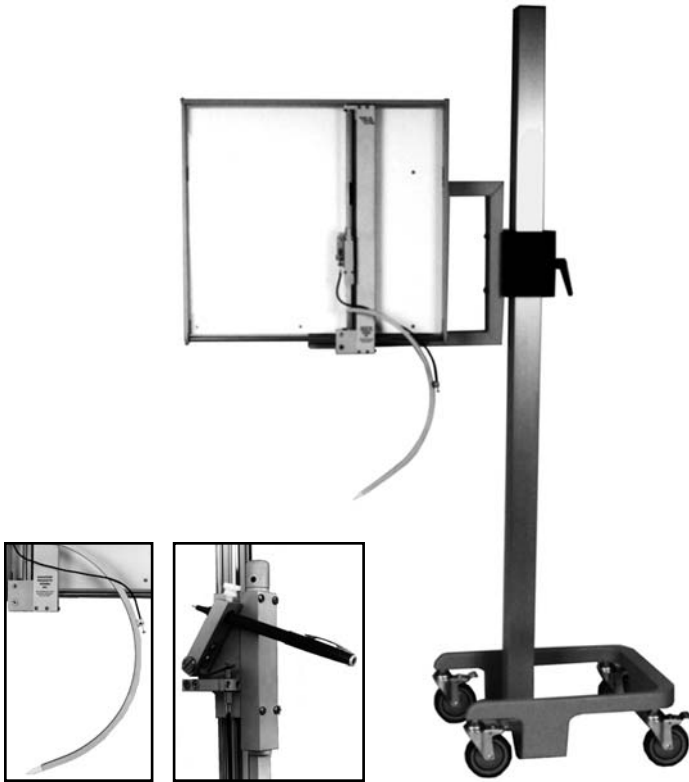
**Lamps:** Four (20 watt)

**Size:** 18" x 24 3/4" x 2 3/4"

**Power:** 115 VAC 60 Hz or 220 VAC 3 Amp

Item	Description
869-400	Treatment Block Verification System, 115 VAC
869-401	Treatment Block Verification System, 220 VAC

## MOBILE CONTOUR PLOTTER



- **Accepts all types of pens**
- **Finger plunger engaged pen**
- **360° rotatable drawing board**
- **Counterbalanced drawing board**
- **Counterbalanced base**

The Mobile Contour Plotter was designed as a simple system to accurately and rapidly transfer the patient's surface contour to a sheet of paper while the patient is on a simulator table or treatment table. This contour drawing can then be used on treatment planning computers and in conjunction with CT information for the treatment plan. It can be a permanent part of the patient's record.

The contour plotter has a mechanical mechanism which links a drawing pen to a stylus arm. Upon contact with the body, it translates body contours to an overhead drawing board. When the finger plunger is depressed, engaging the pen, a continuous plot is drawn as the operator follows the physical contour of the patient. Marks can be made along the contour to indicate beam entry and laser light locations.

The pen can be any type of pencil, ball point pen, or fine felt tip marker. The pen is secured in a special holder with a thumb screw so that the pen tip is about 1/2" (1.3 cm) or less from the paper. The pen to paper engagement is made through a cable by a finger controlled plunger or locked in place by a locking screw. The finger engaging system is attached to the aluminum stylus arm, allowing easy engagement of the finger plunger while following the contour with the stylus. The nylon stylus tip is not cold to the touch. It is designed to permit skin contact even in the close spacing between the table top and the patient.

The drawing board can rotate 360°. It can lock at any angle, enabling lateral and sagittal contours. The counterbalanced drawing board is easily adjustable in height to accommodate different patient thicknesses and table heights commonly encountered in radiotherapy departments.

It is recommended that computer plotting paper be used for taking contours due to its paper surface hardness and smoothness (Items 146-900 or 146-902). Other paper with the same characteristics will also work. The paper can be secured to the board with masking tape.

Four 5" (12.8 cm) diameter swivel and locking casters allow the unit to be easily positioned or transported to various areas of the department.

### Maintenance Check

Routinely rotate the stylus arm around a point to check the accuracy of the white plastic tip. There should be no more than a 2 mm wobble. Check for fraying of the counterweight cable in the post once a year.

### Specifications

**Drawing Board Size:** 26 7/8" W x 24" H (68.5 x 61 cm)

**Paper Size:** 21" x 24" (54 x 61 cm)

**Mechanical Tolerance:** 2 mm

**Drawing Pen:** Pencil, ball point pen, or felt tip marker with a maximum diameter of 13/32" (1 cm)

**Base Size:** 19" W x 24" L (48.5 x 61 cm)

**Height:** 82.75" (210 cm)

**Weight:** 187 lb (85 kg)

**Shipping Weight:** 230 lb (105 kg)

Item	Description
146-801	Mobile Contour Plotter

B

## CONTOUR WIRE



Item	Lead Contour Wire	Weight
149-081	2.36 mm (0.093") Dia x 1 lb Spool	1 lb (0.5 kg)
149-125	3 mm (0.125") Dia x 1 lb Spool	1 lb (0.5 kg)

B

## AQUAPLAST RT® CUSTOM BOLUS

Density 1.1 g/cm<sup>3</sup>



Ideal for hard-to-bolus areas such as: chest wall, nose, parotid, groin, ears, and any irregularly surfaced anatomical feature. The attenuation characteristics of this product are comparable to other polymer-based products; however, its physical properties are superior.

The Aquaplast RT® Custom Bolus softens in hot water and becomes moldable just like Aquaplast. It reduces setup time, and unlike other products, it minimizes air gaps and day-to-day variability.

3.2 mm thickness is equivalent to 0.32 cm bolus.

4.8 mm thickness is equivalent to 0.5 cm bolus.

Item #	Thickness	Dimensions	Quantity
RT-1913-3	3.2 mm	30 cm x 30 cm (12" x 12")	5
RT-1908-4	4.8 mm	7 cm x 22 cm (3" x 9")	5
RT-1910-4	4.8 mm	20 cm x 23 cm (8" x 9")	5
RT-1913-4	4.8 mm	30 cm x 30 cm (12" x 12")	5
RT-1930-4	4.8 mm	43 cm x 43 cm (17" x 17")	5
RT-1931-4	4.8 mm	30 cm x 45 cm (12" x 18")	5

- No mixing, No wet gauze
- Available in sheet or pellet form
- Won't dry out or change shape

## ADAPT-IT™ THERMOPLASTIC PELLETS

Density 1.1 g/cm<sup>3</sup>



Adapt-It™ Pellets soften quickly in hot water for easy shaping. Fabricate custom bolus, build-up, and bite blocks with these easy-to-mold pellets. Just pour them into a strainer (Item 878-163) then place strainer with pellets into hot water and allow pellets to turn clear. The pellets will form into a solid mass.

The mass, in its solid state, will bond to any head and neck mask or breast support to form a permanent fixture. Thus, allowing for better positioning and repositioning of bolus or build-up material.

To mold softened pellets in the patients mouth, place the pellets in a sealed plastic bag before insertion to prevent accidental bonding to dental compounds.

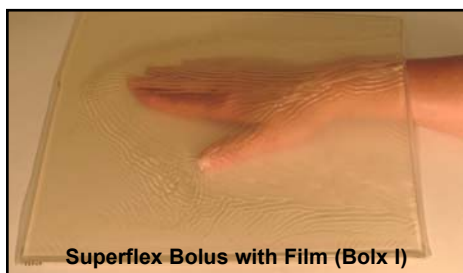
Item	Description	Pounds
RT-7001	Adapt-It™ Thermoplastic Pellets	1
RT-7003	Adapt-It™ Thermoplastic Pellets	3



# BOLUS, BEAM SPOILERS & COMPENSATORS, CONTOURING

## SUPER-FLEX TRANSPARENT BOLUS (BOLX)

With (Bolx I) or Without (Bolx II) Transparent Film



Superflex Bolus with Film (Bolx I)



Superflex Bolus without Film (Bolx II)

- Latex Free
- Calibrated
- Equivalent to soft tissue in radiation interaction
- Transparency allows visual beam location
- May be cut with scissors and stacked to increase thickness
- Unaffected by one million rads of radiation
- Non-allergenic and non-toxic
- Conforms to body contours with minimal change to thickness
- Easily cleaned with soap and water
- 1.03 density
- 1.02 electron density

Superflex material is calibrated with photon and electrons in the energy range greater than 1 MeV. This assures accurate measurement and administration of the prescribed dose of radiation. Close quality control of the thickness promotes quality results time after time. The materials do not flow, creep, or sag out of shape and may be cut with scissors to fit the patient and layered as required to build up the thickness.

### Ultrasound

Super-Flex is used because of its excellent ability to conform to body surfaces. As a transducer array stand off it makes a smoother surface and acts as a separator in near-surface imaging, making the imaged objects appear clearer.

### Radiation Therapy

In the energy range greater than 1 MeV using photons or electrons, Super-Flex calibrations curves are available. Calibration allows greater accuracy in dosimetry and in therapy. In use, a bolus is placed over or around the irradiated area to provide build-up, energy reduction/attenuation, or extra scattering. Super-Flex conforms well to most human surfaces without significant change in thickness. The soft tissue equivalence density, approximately 1.03, results from its chemical composition which is mostly carbon, oxygen, and hydrogen.

### Miscellaneous

Super-Flex is nearly the ideal material for use as the matrix for test-object phantoms. The material can also be used as missing tissue or as internal heterogeneity compensation in x-ray imaging techniques that require the compensator to be on or near the patient.

### Additional Items

When using bolus on a curved area such as the chest wall, the use of Spandage (Items 674-308 through 674-312) or gauze will hold the bolus against the skin to prevent gaps.

Item	Superflex Bolus with Film (Bolx I)
486-50315	0.3 cm T x 15 cm sq
486-503306	0.3 cm T x 30 cm x 6 cm
486-503	0.3 cm T x 30 cm sq
486-503356	0.3 cm T x 30 cm x 56 cm
486-50344	0.3 cm T x 40 cm sq
486-50515	0.5 cm T x 15 cm sq
486-50522	0.5 cm T x 20 cm sq
486-505	0.5 cm T x 30 cm sq
486-50534	0.5 cm T x 30 cm x 40 cm
486-505345	0.5 cm T x 30 cm x 45cm
486-50535	0.5 T x 30 x 50 cm
486-505356	0.5 cm T x 30 cm x 56 cm
486-50544	0.5 cm T x 40 cm sq
486-505456	0.5 cm T x 40 cm x 56 cm
486-50555	0.5 cm T x 50 cm sq
486-510115	1.0 cm T x 10 cm x 15 cm
486-51015	1.0 cm T x 15 cm sq
486-51022	1.0 cm T x 20 cm sq
486-510	1.0 cm T x 30 cm sq
486-51034	1.0 cm T x 30 cm x 40 cm
486-51035	1.0 cm T x 30 cm x 50 cm
486-51036	1.0 cm T x 30 cm x 56 cm
486-51044	1.0cm T x 40 cm sq
486-510456	1.0 cm T x 40 cm x 56 cm
486-51055	1.0 cm T x 50 cm sq
486-51056	1.0 cm T x 56 cm sq
486-51515	1.5 cm T x 15 cm sq
486-515	1.5 cm T x 30 cm sq
486-520115	2.0 cm T x 10 cm x 15 cm
486-52015	2.0 cm T x 15 cm sq
486-520	2.0 cm T x 30 cm sq
486-530	3.0 cm T x 30 cm sq

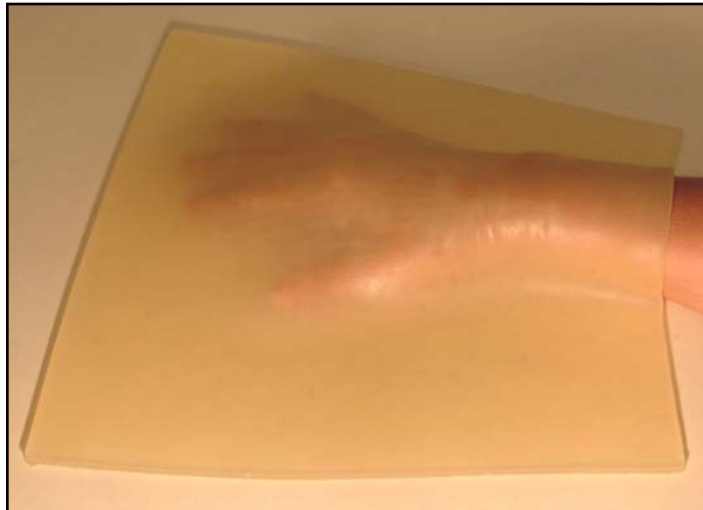
Item	Superflex Bolus without Film (Bolx II)
486-405	0.5 cm T x 30 cm sq
486-40534	0.5 cm T x 30 cm x 40 cm
486-40544	0.5 cm T x 40 cm sq
486-40555	0.5 cm T x 50 cm sq
486-410	1.0 cm T x 30 cm sq
486-41044	1.0 cm T x 40 cm sq
486-410456	1.0 cm T x 40 cm x 56 cm
486-41055	1.0 cm T x 50 cm sq
486-415	1.5 cm T x 30 cm sq
486-420	2.0 cm T x 30 cm sq
486-430	3.0 cm T x 30 cm sq
486-440	4.0 cm T x 30 cm sq

B

# BOLUS, BEAM SPOILERS & COMPENSATORS, CONTOURING

## SUPERFLAB BOLUS MATERIAL

Density: 1.02 g/cm<sup>3</sup>



Superflab is exceptionally elastic, conforming to patient contours, while maintaining uniform thickness

- For enhanced dose build-up to skin
- Conforms well to patient's contour
- Very elastic and quite "flabby"
- Maintains uniformity of thickness
- Semi-transparent
- Made of synthetic oil gel
- Will not dry out
- Reusable, can be washed with soap and water
- Can be cut with scissors
- Approved for human contact

Item	Superflab Bolus
486-302	0.2 cm T x 30 cm sq
486-303	0.3 cm T x 30 cm sq
486-305	0.5 cm T x 30 cm sq
486-310	1.0 cm T x 30 cm sq
486-315	1.5 cm T x 30 cm sq

### Optimal Dose Build-Up for Radiation Therapy

Superflab increases the targeted radiation dose during photon and electron treatment by providing scattering of the beam and build-up of the radiation dose at the skin surface. The unique material was designed to conform completely to a variety of uneven surface geometries, eliminating air gaps and further optimizing dose absorption.

### Proven Clinical Usage

The dosimetric properties of the Superflab bolus material have been tested superior to polystyrene, the previous gold standard in bolus material, when using both photon and electron beams energies. The specific gravity of Superflab is very similar to that of water at 1.02, approximating tissue-equivalence closer than polystyrene, resulting in broad clinical acceptance. Therefore, Superflab found wide acceptance in radiotherapy clinics worldwide.

### Advanced Elasticity

Superflab is made of a proprietary synthetic gel, resulting in a molded material that does not suffer inelastic strain from normal stresses. Consequently, Superflab does not have to be bagged or wrapped in plastic film to maintain its shape during treatment.

Custom sizes are available and would incur a set-up per size and per piece cost. Please contact RPDinc to request custom sizes.

### Additional Items

When using bolus on a curved area such as the chest wall, the use of Spandage (Items 674-308 through 674-312) or gauze will hold the bolus against the skin to prevent gaps.

CE

Item	Superflab Bolus
486-320	2.0 cm T x 30 cm sq
486-325	2.5 cm T x 30 cm sq
486-330	3.0 cm T x 30 cm sq
486-340	4.0 cm T x 30 cm sq
486-370	Custom SuperFlab Bolus Set-up

# BOLUS, BEAM SPOILERS & COMPENSATORS, CONTOURING

## ELASTO-GEL

Density 1.20 gm/cm<sup>3</sup>



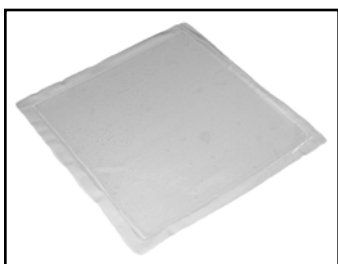
- Easy to Use
- Conforms to Contoured Areas
- May be Cut to Desired Shape
- May be Layered for Additional Thickness
- Does not stick to tender skin
- Never Dries Out, may be used throughout Patient's Treatment
- No adhesive - No trauma per removal or reposition of product
- Uniform thickness that decreases set-up time.
- Latex Free

When used in radiation therapy, the Elasto-Gel EP padding can act as a bolus material.

This product is designed for skin contact and is not an irritant

**Note:** Single patient use only - Not to be used on multiple patients.

Item	Elasto-Gel
486-970	0.5 cm T x 30 cm sq
486-971	1.0 cm T x 30 cm sq
486-979	0.3 cm T x 20 cm x 40 cm
486-980	0.5 cm T x 20 cm x 40 cm
486-981	1.0 cm T x 20 cm x 40 cm



**B**

# BOLUS, BEAM SPOILERS & COMPENSATORS, CONTOURING

## SUPER STUFF BOLUS MATERIAL

Density: 1.02 g/cm<sup>3</sup>

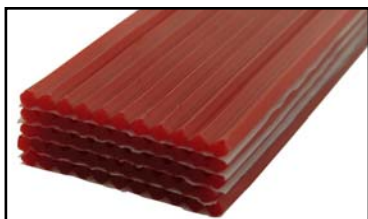


Super Stuff Bolus Material has a density of 1.02g/cm<sup>3</sup>. Item 489-050 is 50 - 1 ounce packages of powder which are packaged in a plastic bag with a black water fill line indicated on the bag. Item 489-100 is a 10 lb bulk package of powder. After mixing, Super Stuff takes on the consistency of Jello®. Wrap with plastic wrap and shape to fit the patient.

Item	Super Stuff Bolus Material
489-050	1 oz (0.03 kg) Packages, 50
489-100	10 lb (4.5 kg) Package, 1

B

## RED ROPE WAX



### Specifications

**Size:** 3/16" Dia x 11" L (0.5 x 28 cm)

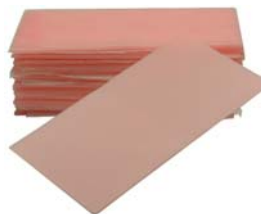
**Quantity:** 55 Strips

**Specific Gravity (H<sub>2</sub>O = 1):** 0.90

**Package Weight:** 0.5 lb (0.23 kg)

Item	Description
488-001	Red Rope Wax

## DENTAL BASE PLATE WAX



### Specifications

**Size:** 0.15 x 7.5 x 14.2 cm

**Quantity:** 35 sheets

**Specific Gravity (H<sub>2</sub>O = 1):** 0.90

**Weight:** 1 lb (0.5 kg)

Item	Description
933-122	Wax Sheets, 1 lb

## BEES WAX PELLETS



At 25° C or solid state, Density is 0.954 g/cc.

### Specifications

**Color:** Bleached White

**Package Weight:** 5 lb (2.3 kg)

Item	Description
488-005	Bees Wax Pellets

## CLEAR PLASTIC WRAP



- Made of 100% polyethylene
- High cling; low tangle

The high-cling properties of this film enables wrapping with an extraordinarily tight seal that stays in place. Low-tangle properties ensure that it won't ball up when being handled. Carton has convenient metal tear-off bar.

### Specifications

**Size:** 12" W x 100' L (30.5 cm x 30.5 m)

Item	Description
119-750	Clear Plastic Wrap

## WARMING PLATE AND STAINLESS STEEL CUP



933-140-1

933-140-2

The Warming Plate and Stainless Steel Cup are used for melting wax to coat eye shields.

The wax is melted in a small stainless steel cup with a wide top on a small electric warming plate. When the wax is melted grip the eye shield with a forceps and dip into the wax for ten seconds and then remove. Constantly rotate it in all directions while the wax is cooling to prevent wax from building up in any one place. If the wax temperature is too low, it may go on the eye shield too thick and cause it to become bumpy. If the wax temperature is too high, it will not coat the eye shield evenly with a smooth surface layer.

### Specifications

**Item 933-140-1 Stainless Steel Cup**

**Capacity:** 2.5 oz

**Finish:** Polished Stainless Steel

**Item 933-140-2 Warming Plate**

**Heating Surface:** 3.75" Diameter (9.5 cm) Non-Stick

**On-Off Switch**

**Neon Light Indicator**

**Extra Long 60" (152 cm) Cord**

**Overall Size:** 4" Diameter x 1.6" H (10.2 x 4.0 cm)

**Color/Finish:** White and Gray

**Weight:** 15 oz (0.43 kg)

**Voltage:** 120 V

**Watts:** 24 W

**UL Approved**

*Refer to "Wax Coatings", The Physics of Radiation Therapy by F.M. Khan, Ph.D., under 14.6 Field Shaping part D. Internal Shielding, last paragraph on page 340.*

Item #	Description
933-140-1	Stainless Steel Cup, 2.5 oz
933-140-2	Warming Plate

**B**

## MT SPANDAGE™ TUBLAR NET

### Latex Free Elastic Retainer Net



When wrapping bolus around the side of a chest wall or head, use the Spandage to hold the bolus against the skin to prevent gaps.

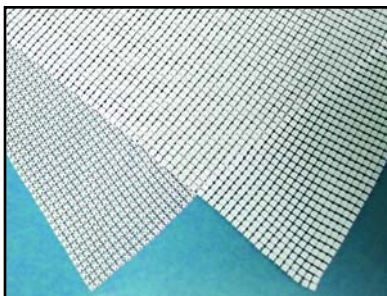
Tubular elastic stretch net can accommodate a wide variety of medical needs involving virtually every part of the body. Size should be determined by patient's shirt size.

Item #	Size	Length Stretched
674-308	Medium Chest	10 yards
674-309	Large Chest	10 yards
674-310	XL-Large Chest	10 yards
674-311	XX-Large Chest	10 yards
674-312	3X-Large Chest	10 yards

**Others Sizes Available**

# BOLUS, BEAM SPOILERS & COMPENSATORS, CONTOURING

## BRASS MESH BOLUS - OFF WHITE



If you are using 15MV or higher energy beam, there might be neutron activation which may increase the skin dose and/or give dose to the hands of the therapist who handles the bolus. Some patients have had skin reactions, see the papers "Skin dose effects of post mastectomy chest wall radiation therapy using brass mesh as an alternative to tissue equivalent bolus" and "Dosimetric assessment of brass mesh bolus for postmastectomy photon radiotherapy".

The Brass Mesh Bolus has been painted off white to limit reflection when using surface tracking systems such as Vision RT or C-Rad.

The Brass Mesh Bolus can be cut with an Aviation Snips (Item 878-738) . The Brass Mesh Bolus life expectancy, with normal handling, is over 1 (one) year.

### Specifications

**Material:** Brass

**Size:** 50 x 50 cm

**Brass Mesh Bolus Thickness:** 1.5 mm (.060") with hollow centers

**Tissue Equivalent Thickness:** 2.0 mm to 3.0 mm

**Paint Color:** Off-White High Temperature Enamel

**Weight:** 1 lb. (.44kg)

**Limited Warranty Product:** Radiation Products Design's Brass Mesh Bolus should be handled with care due to its delicate structure. RPD carefully inspects and interleaves each sheet with tissue paper to ensure product is fully functional. Tissue paper will prevent links from entanglement. If material does become entangled, use caution to carefully unhook entangled links. Do not tear apart as links will be removed creating a hole in material.

visionrt | COMPATIBLE

This bolus type has been evaluated and has been confirmed by Vision RT as compatible for use with Vision RT products provided that:

- Vision RT is unable to comment on, nor make claims, about the Dosimetric properties or clinical effectiveness of the bolus itself or patient alignment reproducibility when using the bolus;
- Compatibility is subject to users following your guidelines for usage of this bolus with Vision RT's SGRT system, and subject to users following Vision RT's guidelines for drawing Regions of Interest for use in Breast treatments;
- The bolus vendor is responsible for ensuring that users are in receipt of guidelines for using bolus in conjunction with Vision RT's SGRT system. Vision RT is not liable for misuse of bolus;
- Vision RT makes no comment on, and is not liable for, suitability or otherwise usage of bolus for Breast or any other procedure;
- Purchasers are responsible for making their own choices as to the bolus selected by them.

Item	Description
489-601	Brass Mesh Bolus - Off White, 50 x 50cm

### • Improved to prevent entanglement

Brass Mesh Bolus can be used for post-mastectomy chest walls using 4 MV and 6 MV photons.

When placing Brass Mesh over the breasts and there is a gap between the breasts, use a piece of double stick tape between the breasts to secure the brass mesh bolus down. Using the smooth side of the brass mesh bolus towards the patient will provide a better surface for the tape to adhere to and will be more comfortable for the patient.

When wrapping the Brass Mesh Bolus around the side of a chest wall, use a product such as Spandage (Items 674-308 through 674-312), gauze or clear plastic wrap (Item 119-750) to hold the Brass Mesh Bolus against the skin which will prevent hanging gaps.

## BRASS MESH BOLUS



- **Improved to prevent entanglement**

Brass Mesh Bolus can be used for post-mastectomy chest walls using 4 MV and 6 MV photons.

When placing Brass Mesh over the breasts and a gap is between the breasts, use a piece of double stick tape on the patient between the breasts to secure the brass mesh down. Using the smooth side of the brass mesh bolus towards the patient will provide a better surface for the tape to adhere to and will be more comfortable for the patient.

When wrapping the Brass Mesh Bolus around the side of a chest wall, use a product such as Spandage (Items 674-308 through 674-312), gauze or clear plastic wrap (Item 119-750) to hold the Brass Mesh Bolus against the skin which will prevent hanging gaps.

If you are using a 15MV or higher energy beam, there might be neutron activation which may increase the skin dose and/or give dose to the hands of the therapist who handles the bolus. Some patients have had skin reactions. See papers "Skin dose effects of post mastectomy chest wall radiation therapy using brass mesh as an alternative to tissue equivalent bolus" and "Dosimetric assessment of brass mesh bolus for postmastectomy photon radiotherapy".

The Brass Mesh Bolus can be cut with an Aviation Snips (Item 878-738). It can be cleaned with soap and water.

### Specifications

**Material:** Brass

**Size:** 50 cm x 50 cm

**Thickness:** 1.5 mm (.060") with hollow centers

**Tissue Equivalent Thickness:** 2.0 mm to 3.0 mm

**Note: This product is not compatible with Vision RT System.** Brass is subject to tarnish and may darken over time.

**Limited Warranty Product:** Radiation Products Design's Brass Mesh Bolus should be handled with care due to its delicate structure. RPD carefully inspects and interleaves each sheet with tissue paper to ensure product is fully functional. Tissue paper will prevent links from entanglement. If material does become entangled, use caution to carefully unhook entangled links. Do not tear apart as links will be removed creating a hole in material

Item	Super Stuff Bolus Material
489-600	Brass Mesh Bolus 50 cm x 50 cm

B

# BOLUS, BEAM SPOILERS & COMPENSATORS, CONTOURING

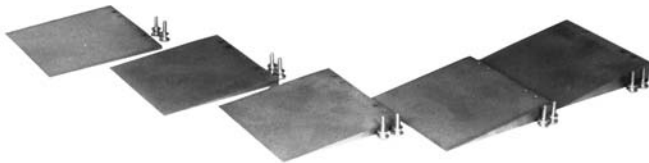
## SIEMENS WEDGE CODING PLUGS FOR .DECIMAL® BRASS COMPENSATORS



Item	Description	Quantity
1884-10-11R	Siemens 3 3/8" Wedge Coding Plug with Threaded Holes for Block Tray Slot, Specify code 1 to 18	Single
1884-10-11R-32771-01	Siemens Wedge Coding Plug S2N01 for Brass Compensator	Single
1884-10-11R-32771-02	Siemens Wedge Coding Plug S2N02 for Brass Compensator	Single
1884-10-11R-32771	Siemens Wedge Coding Plugs for Brass Compensators	Set of 18

Other Codes Available, Specify Code

## CUSTOM BRASS COMPENSATOR WEDGES



The Brass Compensator Wedges are custom made for Varian, Siemens, AECL, Philips, Toshiba, ATC, Mitsubishi, and ADAC accelerators.

### Specifications

**Density:** 8.515 g/cm<sup>3</sup>

**Composition:** 61.5% Copper, 35.5% Zinc, 3.0% Lead

Item	Custom Brass Compensator Wedges
243-415	15° x W x L x H
243-420	20° x W x L x H
243-430	30° x W x L x H
243-440	40° x W x L x H
243-445	45° x W x L x H
243-450	50° x W x L x H
243-460	60° x W x L x H

Extra Charge for Compensator Trays



## STORAGE CART FOR VARIAN BRASS COMPENSATORS



The Storage Cart for Varian brass compensators stores up to 88 compensators on Varian wedge trays from 9.75" wide to 10.75" wide (25 to 27.5 cm). The depth of the cart allows for the placement of two trays in each slot. The front of each rail has a mechanical stop that prevents the trays from sliding out.

The cart comes complete with sturdy handle, four corner bumpers, and four 5" (12.75 cm) lockable swivel casters.

### Specifications

**Overall Dimensions:** 48.75" W x 50.4" H x 24" D  
(124.25 x 128.5 x 61 cm)

**Weight:** 230 lb (105 kg)

Item	Description
880-9896	Storage Cart for Varian Brass Compensators

## STORAGE CART FOR SIEMENS BRASS COMPENSATORS



The Storage Cart for Siemens brass compensators stores up to 88 compensators on Siemens wedge trays 8.75" (22.3 cm) wide. The depth of the cart allows for the placement of two trays in each slot. The front of each rail has a mechanical stop that prevents the trays from sliding out.

The cart comes complete with sturdy handle, four corner bumpers, two 5" (12.75 cm) lockable swivel casters, and two fixed casters.

### Specifications

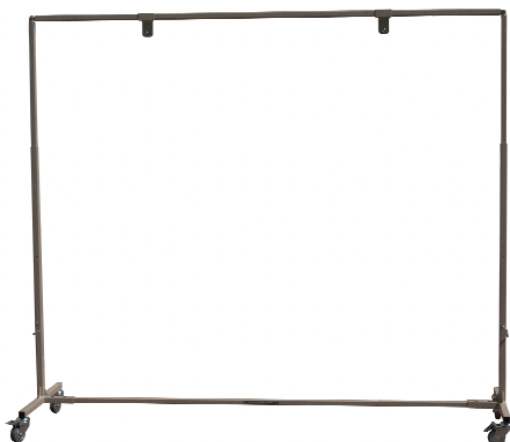
**Overall Dimensions:** 39.25" W x 50.5" H x 24" D  
(100 x 129 x 61 cm)

**Weight:** 250 lb (114 kg)

Item	Description
880-9897	Storage Cart for Siemens Brass Compensators

**B**

## BEAM SPOILER FRAME AND BEAM SPOILERS



The optional Beam Spoiler is available in acrylic or polycarbonate in 0.375" (0.95 cm) or 0.50" (1.27 cm) thickness. The beam spoiler has two key holes on both the 60" (152 cm) side and on the 84" (213.4 cm) side to allow for positioning on the frame in either direction. The key holes can also be used to hang the beam spoiler from wall hooks for storage.

### Specifications

#### Item 495-004 Beam Spoiler Frame for TBI

**Overall Size:** 91.5" L x 24" W x 80.375" or 93.375" H  
(232.4 x 61 x 204.2 or 237.2 cm)

**Finish:** Durable tan textured polyurethane enamel paint

### Beam Spoilers

**Size:** 60" x 84" (152.4 x 213.4 cm)

**Acrylic Density:** 1.185 g/cc

**Polycarbonate Density:** 1.2 g/cc

Item	Description
495-004	Beam Spoiler Frame for TBI

Item	Beam Spoiler	Thickness	Weight
495-005	Polycarbonate	0.375" (0.95 cm)	77 lb (35 kg)
495-006	Polycarbonate	0.50" (1.27 cm)	103 lb (47 kg)
495-007	Acrylic	0.375" (0.95 cm)	77 lb (35 kg)
495-008	Acrylic	0.50" (1.27 cm)	103 lb (47 kg)

The Beam Spoiler Frame holds a beam spoiler for Total Body Irradiation. The frame is made of 1" (2.54 cm) square and 1.25" (3.18 cm) square steel tubing. The vertical legs are telescoping to allow a 13" (33 cm) vertical range of movement. Two hangers welded on the top horizontal bar are positioned to hold a beam spoiler in either the vertical or horizontal direction. The frame can support 1" (2.54 cm) thick (2 plates for Photons) weight up to 250 pounds (114 kg). Four 3" (7.62 cm) diameter swivel locking casters allow for easy movement of the Beam Spoiler. The frame can be dismantled for storage.

## SELF HOLDING BEAM SPOILER WITH FLEXIBLE ARM



### Specifications

**Acrylic Density:** 1.185 g/cm<sup>3</sup>

Item	Description
495-053-20	Siemens Flexible 18" Beam Spoiler
495-053-32	Varian Flexible 18" Beam Spoiler
495-053-50	Philips Flexible 18" Beam Spoiler
495-054-20	Siemens Flexible 24" Beam Spoiler
495-054-32	Varian Flexible 24" Beam Spoiler
495-054-50	Philips Flexible 24" Beam Spoiler

The Self Holding Beam Spoiler has a flexible 18" (45.7 cm) or 24" (61 cm) arm that manually adjusts for easy use. The acrylic plate has an arm rotation lock that secures the acrylic plate to the desired position. The acrylic plate is 30 cm square x 0.25" (0.64 cm) or 0.375" (0.95 cm) thick and is mounted at the end of the flexible arm. The whole assembly attaches to the table rail with a rail clamp.

**Customer to Specify Acrylic Thickness**

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BRASS BUILD-UP CAP FOR PTW 60018 DOSIMETRY DIODE SRS



### Specifications

**Overall size:** 13.0 mm diameter x 23.0 mm L

**Cavity Size:** 7.0 mm diameter x 20.0 mm L

**Wall thickness:** 3mm

**Material:** Brass

Includes thumb screw

Item	Description
662-60018-3-3	Brass Build-Up Cap, PTW 60018 SRS Diode, 3 mm

C

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## PROBE HOLDER



NASA Space Shuttle engineering assures smooth and effortless operation. Performs like a robot arm in zero gravity. Fingertip control raises, lowers, and pivots (360°) the perfectly balanced holder wherever desired. Moves in all directions and the arm articulates at three points. Weighted die-cast metal base and spring counterbalance permit fluid movement with superior stability.

### Item 666-010 Probe Holder Includes

- 21" (53.34 cm) Metal Arm
- 8" (20.32 cm) Diameter Metal Base
- Probe Holder

### Specifications

**Metal Arm:** 21" (53.34 cm)

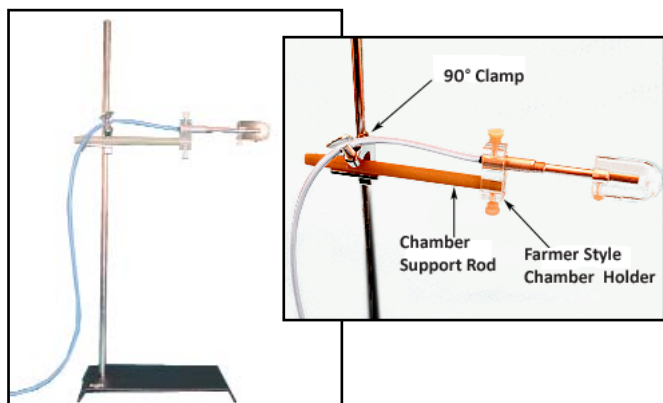
**Metal Base:** 8" (20.32 cm) Diameter

**Diameter:** 10 mm and 14 mm

**Weight:** 6 lb (2.8 kg)

Item	Description
666-010	Probe Holder

## CHAMBER SUPPORT STAND



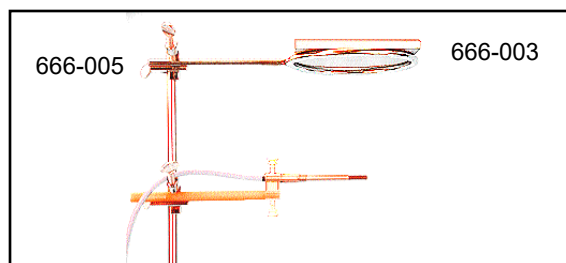
The steel chamber support stand will hold an ion chamber for "in air" measurements. The base of the stand is 6" x 9" (15.24 x 22.86 cm) and the vertical post is 24" (61 cm). The support stand includes a 90° clamp which holds a 15 cm chamber support rod. A farmer style chamber holder is also included and attaches to the 15 cm chamber support rod.

### Item 666-000 Chamber Support Stand Includes

- Support Base and Post
- 90° Clamp, Adjustable
- Chamber Support Rod
- Farmer Style Chamber Holder

Item	Description
666-000	Chamber Support Stand

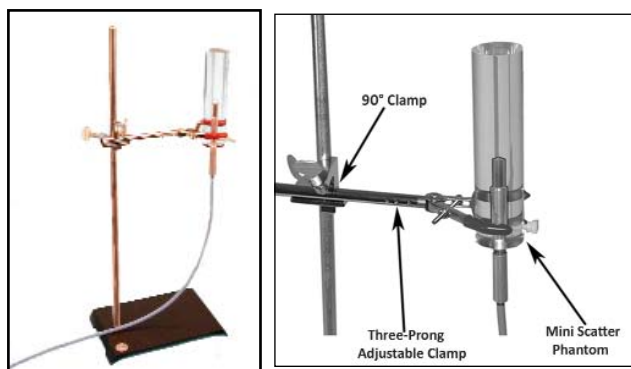
## EXTENSION RINGS FOR CHAMBER SUPPORT STAND



The steel extension rings have a 6" (15.24 cm) or 4" (10.16cm) inside diameter and an overall length of 13.75" (35 cm). It attaches to the support stand using a 90° clamp.

Item	Description
666-003	Extension Ring, 6" (15.24 cm) ID
666-0034	Extension Ring, 4" (10.16 cm) ID
666-005	90° Clamp, Adjustable

## SUPPORT STAND FOR MINI SCATTER PHANTOMS



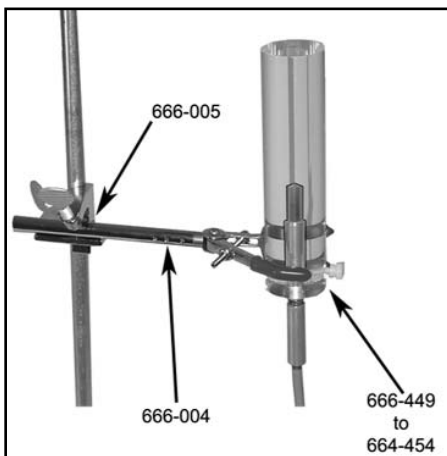
The steel Cylindrical Scatter Phantom Support Stand will hold a Cylindrical Scatter Phantom vertically. The base of the stand is 6" x 9" (15.24 x 22.86 cm) and the vertical post is 24" (61 cm). The support stand includes a three-prong adjustable clamp that attaches to the vertical post using a 90° clamp.

### Item 664-448 Support Stand for Mini Scatter Phantoms Includes

- Support Base and Post
- 90° Clamp, Adjustable
- Three-Prong Adjustable Clamp

Item	Description
664-448	Support Stand for Mini Scatter Phantoms

## MINIPHANTOMS FOR IN-AIR OUTPUT RATIO( $S_C$ ) OR SCATTER



The MiniPhantom is used vertically to check the In-Air Ratio Output ( $S_C$ ) or collimator scatter.

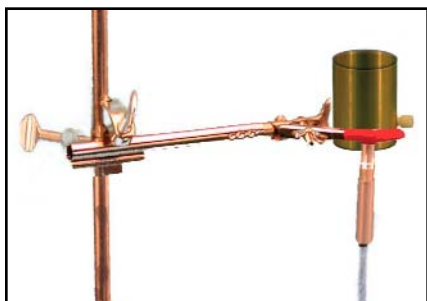
Item	Miniphantom	Material
664-449	for PTW 31002 / 31010	Acrylic
664-450	for PTW Farmer Chamber	Acrylic
664-450-31010	for PTW 31010 Chamber	Acrylic
664-450-A26	for Exradin A-26 Chamber	Acrylic
664-450-Farmer	for PTW Farmer Chamber	Acrylic
664-451	for Exradin A-12 Chamber	Polystyrene
664-451-A12	for Exradin A-12 Chamber	Polystyrene
664-451-A14	for Exradin A-14 Chamber	Polystyrene
664-451-A2	for Exradin A-2 Chamber	Polystyrene
664-451-A26	for Exradin A-26 Chamber	Polystyrene
664-452	for Exradin A-2 Chamber	Polystyrene
664-454	for Exradin A-14 Chamber	Polystyrene
664-455	for Exradin A-26 Chamber	TBD

Items are Custom Made and Nonreturnable

C

## $S_C$ BRASS MINI PHANTOM

### $S_C$ for Multivoltage Photon Beams



Task Group 74

In-Air output ratio ( $S_C$ ) is defined as the ratio of primary collision water kerma in free-space,  $K_p$ , per monitor unit between an arbitrary collimator setting and the reference collimator setting at the same location. Mini phantoms with sufficient lateral and longitudinal thickness to eliminate electron contamination and maintain transient electron equilibrium are recommended for the measurement of  $S_C$ . Mini phantoms made of high-Z material are used to measure  $S_C$  for small fields (e.g. IMRT or stereotactic radiosurgery).

Reference: Report of AAPM Therapy Physics Committee Task Group 74: In-air output ratio,  $S_C$ , for megavoltage photon beams - Timothy C Zhu<sup>1)</sup> - University of Pennsylvania, Philadelphia, PA; Andres Ahnesjö - Uppsala University, 751 85 Uppsala, Sweden and Nucletron AB, Box 1704, 751 47 Uppsala, Sweden; Kwok Leung Lam - University Michigan, Ann Arbor, MI 48109; X. Allen Li - Medical College of Wisconsin, Milwaukee, WI 53226; Chang-Ming Charlie Ma - Fox Chase Cancer Center, Philadelphia, PA 19111; Jatinder R. Palta - University of Florida, Gainesville, FL 32610; Michael B. Sharpe - Princess Margret Hospital, Toronto, ON M5G 2M9, Canada; Bruce Thomadsen - University of Wisconsin, Madison, WI 53705; Ramesh C. Tailor - RPD, UT MD Anderson Cancer Center, Houston, TX 77030 - Med. Phys. 36 (11), November 2009.

Item	Description
664-475-xxx	Sc Brass Mini Phantom

Specify Chamber and Dimensions

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BUILD-UP CAPS FOR 'IN AIR' MEASUREMENTS

Custom Caps Available



Build-up Caps for the **Capintec PR-06C or G, 0.6cm<sup>3</sup> Farmer Style Chamber** with a 0.28 mm wall thickness of air equivalent plastic and a density of 1.785 g/cm<sup>3</sup>.

These build-up caps **fit over the Cobalt 60 polystyrene** (density 1.04 g/cm<sup>3</sup>) build-up cap that has a wall thickness of 5.2 mm and a **17.5 mm outside diameter**.

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	660-104	4.30 mm	660-404	1.87 mm	660-604	4.85 mm	660-704	0.60 mm
15 mm	6MV	660-106	7.7 mm	660-406	3.40 mm	660-606	8.74 mm	660-706	1.07 mm
24 mm	10MV	660-110	15.3 mm	660-410	6.70 mm	660-610	17.4 mm	660-710	2.12 mm
27 mm	15MV	660-115	17.8 mm	660-415	7.80 mm	660-615	20.28 mm	660-715	2.48 mm
30 mm	18MV	660-118	20.3 mm	660-418	8.90 mm	660-618	23.17 mm	660-718	2.83 mm
35 mm	20MV	660-120	24.6 mm	660-420	10.70 mm	660-620	27.97 mm	660-720	3.42 mm

D-Max In Water	Nominal Energy	Lead Density 11.35 g/cm <sup>3</sup>		Copper Density 8.90 g/cm <sup>3</sup>		Plastic Water Density 1.02 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	660-1404	0.45 mm	660-1504	0.57 mm	660-1704	4.99 mm
15 mm	6MV	660-1406	0.80 mm	660-1506	1.02 mm	660-1706	8.91 mm
24 mm	10MV	660-1410	1.59 mm	660-1510	2.03 mm	660-1710	17.74 mm
27 mm	15MV	660-1415	1.86 mm	660-1515	2.37 mm	660-1715	20.68 mm
30 mm	18MV	660-1418	2.12 mm	660-1518	2.71 mm	660-1718	23.62 mm
35 mm	20MV	660-1420	2.56 mm	660-1520	3.27 mm	660-1720	28.52 mm

These build-up caps fit over the **Cobalt 60 acrylic** build-up cap with a 16.4 mm outside diameter.

Build-up caps for the following 0.6 cm<sup>3</sup> Farmer Style Chambers:  
**PTW 23333 / 233633, PTW 30001 / 30010, PTW 30002 / 30011, PTW 30004 / 30012, PTW 30006 / 30013, NEL 2505/3 (A or B), Victoreen 580-006 or Victoreen 0.6 cm<sup>3</sup> Farmer Style Chamber With 0.5 mm Acrylic Wall**

D-Max In Water	Nominal Energy	Acrylic Density 1.85 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	660-004	4.2 mm	660-304	1.8 mm	660-804	0.6 mm	660-904	4.8 mm
15 mm	6MV	660-006	7.6 mm	660-306	3.3 mm	660-806	1.1 mm	660-906	8.6 mm
20 mm	8MV	660-008	11.8 mm	660-308	5.2 mm	660-808	1.7 mm	660-908	13.4 mm
24 mm	10MV	660-010	15.2 mm	660-310	6.6 mm	660-810	2.1 mm	660-910	17.2 mm
27 mm	15MV	660-015	17.7 mm	660-315	7.7 mm	660-815	2.5 mm	660-915	20.0 mm
30 mm	18MV	660-018	20.3 mm	660-318	8.8 mm	660-818	2.8 mm	660-918	22.9 mm
35 mm	20MV	660-020	24.5 mm	660-320	10.7 mm	660-820	3.4 mm	660-920	27.6 mm
40 mm	24MV	660-024	28.7 mm	660-324	12.5 mm	660-824	4.0 mm	660-924	32.4 mm
50 mm	26MV	660-026	37.1 mm	660-326	16.2 mm	660-826	5.2 mm	660-926	41.9 mm

**Notes:**

- At energies above 10 MV metal Build-Up Caps may become slightly activated, please check and take appropriate precautions.
- The build-up caps are designed to have an equal amount of build-up from the front and rear of the active area.

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BUILD-UP CAPS FOR 'IN AIR' MEASUREMENTS

The Following Build-Up Caps fit over the 0.6 cm<sup>3</sup> Farmer Style Chambers *Without Build-up Cap*:  
 PTW 23333 / 233633 / 30001 / 30010, PTW 30002 / 30011, PTW 30004 / 30012, PTW 30006 / 30013, NEL 2505/3 (A or B),  
 NE 2571 (A), NE 2581 (A), Exradin A-19, RMI 448, Nuclear Associates 30-351, Capintec PR06-G, Victoreen 580-006  
 There is no compensation for chamber wall thickness.

D-Max In Water	Nominal Energy	Copper Density 8.9 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	661-004	1.2 mm	661-104	4.0 mm	661-204	1.3 mm	661-304	1.0 mm
15 mm	6MV	661-006	1.7 mm	661-106	5.5 mm	661-206	1.8 mm	661-306	1.3 mm
20 mm	8MV	661-008	2.3 mm	661-108	7.4 mm	661-208	2.3 mm	661-308	1.8 mm
24 mm	10MV	661-010	2.7 mm	661-110	8.8 mm	661-210	2.8 mm	661-310	2.1 mm
27 mm	15MV	661-015	3.0 mm	661-115	9.9 mm	661-215	3.2 mm	661-315	2.4 mm
30 mm	18MV	661-018	3.4 mm	661-118	11.0 mm	661-218	3.5 mm	661-318	2.6 mm
35 mm	20MV	661-020	3.9 mm	661-120	12.9 mm	661-220	4.1 mm	661-320	3.1 mm
40 mm	24MV	661-024	4.5 mm	661-124	14.7 mm	661-224	4.7 mm	661-324	3.5 mm
50 mm	26MV	661-026	5.6 mm	661-126	18.4 mm	661-226	5.9 mm	661-326	4.4 mm

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Solid Water Density 1.03 g/cm <sup>3</sup>		Plastic Water Density 1.02 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	661-404	9.3 mm	661-504	10.78 mm	661-604	10.84 mm	661-704	10.8 mm
15 mm	6MV	661-406	12.7 mm	661-506	14.71 mm	661-606	14.78 mm	661-706	14.7 mm
20 mm	8MV	661-408	16.9 mm	661-508	19.61 mm	661-608	19.70 mm	661-708	19.6 mm
24 mm	10MV	661-410	20.3 mm	661-510	23.53 mm	661-610	23.65 mm	661-710	23.5 mm
27 mm	15MV	661-415	22.8 mm	661-515	26.47 mm	661-615	26.60 mm	661-715	26.5 mm
30 mm	18MV	661-418	25.3 mm	661-518	29.41 mm	661-618	29.56 mm	661-718	29.4 mm
35 mm	20MV	661-420	29.5 mm	661-520	34.31 mm	661-620	34.48 mm	661-720	34.3 mm
40 mm	24MV	661-424	33.8 mm	661-524	29.22 mm	661-624	39.41 mm	661-724	39.2 mm
50 mm	26MV	661-426	42.2 mm	661-526	49.02 mm	661-626	49.26 mm	661-726	49.0 mm

The Following Build-Up Caps fit over a 0.015cc Pinpoint Chamber PTW 31006 / 31014

D-Max In Water	Nominal Energy	Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	662-31006-04-2	3.80 mm	662-31006-04-3	1.21 mm	662-31006-04-4	0.91 mm
15 mm	6MV	662-31006-06-2	5.27 mm	662-31006-06-3	1.68 mm	662-31006-06-4	1.26 mm
24 mm	10MV	662-31006-10-2	8.59 mm	662-31006-10-3	2.74 mm	662-31006-10-4	2.06 mm
27 mm	15MV	662-31006-15-2	9.69 mm	662-31006-15-3	3.09 mm	662-31006-15-4	2.32 mm
30 mm	18MV	662-31006-18-2	10.79 mm	662-31006-18-3	3.45 mm	662-31006-18-4	2.58 mm
35 mm	20MV	662-31006-20-2	12.63 mm	662-31006-20-3	4.03 mm	662-31006-20-4	3.03 mm

The Following Build-Up Caps fit over a 0.016cc Pinpoint Chamber PTW 31016

D-Max In Water	Nominal Energy	Brass Density 8.515 g/cm <sup>3</sup>	
		Item #	Wall Thickness
11 mm	4MV	662-31016-04-3	
15 mm	6MV	662-31016-06-3	1.66 mm
20 mm	8MV	662-31016-08-3	
24 mm	10MV	662-31016-10-3	
27 mm	15MV	662-31016-15-3	
30 mm	18MV	662-31016-18-3	3.42 mm

**Notes:**  
 1. At energies above 10 MV metal Build-Up Caps may become slightly activated, please check and take appropriate precautions.  
 2. The build-up caps are designed to have an equal amount of build-up from the front and rear of the active area.

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BUILD-UP CAPS FOR 'IN AIR' MEASUREMENTS

The following build-up caps fit over the **0.3 cm<sup>3</sup> semiflex chamber** with an acrylic wall thickness of 0.75 mm.  
Caps fit on the following chambers: **PTW 23332 / 233641 / 31003 / 31013, Nuclear Associates 30-316 and 30-317**

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Solid Water Density g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
5.0 mm	1.25MV Co-60	662-001	3.5 mm	662-101		662-201		662-301					
11 mm	4MV	662-004	8.5 mm	662-104	3.72 mm	662-204	1.19 mm	662-304	0.89 mm	662-604	9.63 mm	662-804	
15 mm	6MV	662-006	11.9 mm	662-106	5.19 mm	662-206	1.66 mm	662-306	1.21 mm	662-606	13.44 mm	662-806	
20 mm	8MV	662-008	16.1 mm	662-108	7.03 mm	662-208	2.24 mm	662-308	1.68 mm	662-608	18.20 mm	662-808	
24 mm	10MV	662-010	19.5 mm	662-110	8.50 mm	662-210	2.71 mm	662-310	2.04 mm	662-610	22.01 mm	662-810	
27 mm	15MV	662-015	22.0 mm	662-115	9.61 mm	662-215	3.07 mm	662-315	2.30 mm	662-615	24.87 mm	662-815	
30 mm	18MV	662-018	24.6 mm	662-118	10.71 mm	662-218	3.42 mm	662-318	2.56 mm	662-618	27.72 mm	662-818	
35 mm	20MV	662-020	28.8 mm	662-120	12.55 mm	662-220	4.01 mm	662-320	3.01 mm	662-620	32.49 mm	662-820	
40 mm	24MV	662-024	33.0 mm	662-124	14.39 mm	662-224	4.59 mm	662-324	3.45 mm	662-624	37.25 mm	662-824	

The following build-up caps fit over the **0.125 cm<sup>3</sup> semiflex chamber** with a wall thickness of 0.75 mm and short stem.  
Caps fit on the following chambers: **PTW 233642 / 31002 / 31010, PTW 233643 / 31005 / 31011**

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	662-2004	8.53 mm	662-2104	3.72 mm	662-2204	1.19 mm	662-2404	0.89 mm
15 mm	6MV	662-2006	11.91 mm	662-2106	5.19 mm	662-2206	1.66 mm	662-2406	1.24 mm
24 mm	10MV	662-2010	19.50 mm	662-2110	8.50 mm	662-2210	2.71 mm	662-2410	2.04 mm
30 mm	18MV	662-2018	24.57 mm	662-2118	10.71 mm	662-2218	3.42 mm	662-2418	2.56 mm
35 mm	20MV	662-2020	28.79 mm	662-2120	12.55 mm	662-2220	4.01 mm	662-2420	3.01 mm
40 mm	24MV	662-2024	33.01 mm	662-2124	14.39 mm	662-2224	4.59 mm	662-2424	3.45 mm

D-Max In Water	Nominal Energy	Copper Density 8.90 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Plastic Water Density 1.02 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	662-2504	1.14 mm	662-2604	9.63 mm	662-2804	9.91 mm
15 mm	6MV	662-2506	1.59 mm	662-2606	13.44 mm	662-2806	13.83 mm
24 mm	10MV	662-2510	2.60 mm	662-2610	22.01 mm	662-2810	22.66 mm
27 mm	15MV	662-2515	2.93 mm	662-2615	24.87 mm	662-2815	25.60 mm
30 mm	18MV	662-2518	3.27 mm	662-2618	27.72 mm	662-2818	28.54 mm
35 mm	20MV	662-2520	3.83 mm	662-2620	32.49 mm	662-2820	33.44 mm

## MARKUS CHAMBER BUILD-UP DISK

The Markus Chamber (PTW 23343) Build-up Disk is made of acrylic and available in 2 styles.

**Item 664-320** is a Cobalt 60 Disk that is placed over the chamber's acrylic screw on cap. The disk has a 2.99 cm diameter and is 3.2 mm thick.

**Item 664-401** is a Cobalt 60 disk with a shoulder placed over the chamber's mylar window. It has a 3.2 cm diameter and is 4 mm thick.



664-320



664-401

Item #	Description	Thickness
664-320	Cobalt 60 Disk	3.2 mm
664-401	Cobalt 60 w/Shoulder	4.01 mm

### Notes:

- At energies above 10 MV metal Build-Up Caps may become slightly activated, please check and take appropriate precautions.
- The build-up caps are designed to have an equal amount of build-up from the front and rear of the active area.



# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BUILD-UP CAPS FOR "IN AIR" MEASUREMENTS

The following build-up caps fit on the **Exradin Model A2 0.5cm<sup>3</sup> Spokas Thimble Chamber** with a wall thickness of 1.0 mm.

**Material:** Shonka air equivalent plastic C552. **Density:** 1.76 g/cm<sup>3</sup>

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	659-2-04-1	7.80 mm	659-2-04-6	8.80 mm	659-2-04-2	3.40 mm	659-2-04-3	1.09 mm
15 mm	6MV	659-2-06-1	11.17 mm	659-2-06-6	12.61 mm	659-2-06-2	4.87 mm	659-2-06-3	1.55 mm
20 mm	8MV	659-2-08-1	15.39 mm	659-2-08-6	17.37 mm	659-2-08-2	6.71 mm	659-2-08-3	2.14 mm
24 mm	10MV	659-2-10-1	18.77 mm	659-2-10-6	21.18 mm	659-2-10-2	8.18 mm	659-2-10-3	2.61 mm
27 mm	15MV	659-2-15-1	21.30 mm	659-2-15-6	24.04 mm	659-2-15-2	9.29 mm	659-2-15-3	2.96 mm
30 mm	18MV	659-2-18-1	23.83 mm	659-2-18-6	26.90 mm	659-2-18-2	10.39 mm	659-2-18-3	3.32 mm
35 mm	20MV	659-2-20-1	28.05 mm	659-2-20-6	31.66 mm	659-2-20-2	12.23 mm	659-2-20-3	3.90 mm
40 mm	24MV	659-2-24-1	32.27 mm	659-2-24-6	36.42 mm	659-2-24-2	14.07 mm	659-2-24-3	4.49 mm
50 mm	26MV	659-2-26-1	40.71 mm	659-2-26-6	45.94 mm	659-2-26-2	17.75 mm	659-2-26-3	5.67 mm

The following build-up caps fit over the **Exradin Model A12 Farmer type chamber** with a wall thickness of 0.5 mm.

**Material:** Shonka Air-Equivalent Plastic C552 **Density:** 1.76 g/cm<sup>3</sup>

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	659-12-04-1	8.54 mm	659-12-04-6	9.64 mm	659-12-04-2	3.72 mm
15 mm	6MV	659-12-06-1	11.92 mm	659-12-06-6	13.45 mm	659-12-06-2	5.19 mm
20 mm	8MV	659-12-08-1	16.14 mm	659-12-08-6	18.21 mm	659-12-08-2	7.03 mm
24 mm	10MV	659-12-10-1	19.51 mm	659-12-10-6	22.02 mm	659-12-10-2	8.51 mm
27 mm	15MV	659-12-15-1	22.04 mm	659-12-15-6	24.88 mm	659-12-15-2	9.61 mm
30 mm	18MV	659-12-18-1	24.57 mm	659-12-18-6	27.73 mm	659-12-18-2	10.71 mm
35 mm	20MV	659-12-20-1	28.79 mm	659-12-20-6	32.50 mm	659-12-20-2	12.55 mm
40 mm	24MV	659-12-24-1	33.01 mm	659-12-24-6	37.26 mm	659-12-24-2	14.39 mm
50 mm	26MV	659-12-26-1	41.45 mm	659-12-26-6	46.78 mm	659-12-26-2	18.07 mm

D-Max In Water	Nominal Energy	Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	659-12-04-3	1.19 mm	659-12-04-4	1.14 mm
15 mm	6MV	659-12-06-3	1.66 mm	659-12-06-4	1.59 mm
20 mm	8MV	659-12-08-3	2.25 mm	659-12-08-4	2.15 mm
24 mm	10MV	659-12-10-3	2.72 mm	659-12-10-4	2.60 mm
27 mm	15MV	659-12-15-3	3.07 mm	659-12-15-4	2.93 mm
30 mm	18MV	659-12-18-3	3.42 mm	659-12-18-4	3.27 mm
35 mm	20MV	659-12-20-3	4.01 mm	659-12-20-4	3.83 mm
40 mm	24MV	659-12-24-3	4.59 mm	659-12-24-4	4.40 mm
50 mm	26MV	659-12-26-3	5.77 mm	659-12-26-4	5.52 mm

**We Manufacture Build-Up Caps for All Ionization Chambers - Please Call for More Information**

**Notes:**

1. At energies above 10 MV metal Build-Up Caps may become slightly activated, please check and take appropriate precautions.
2. The build-up caps are designed to have an equal amount of build-up from the front and rear of the active area.

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BUILD-UP CAPS FOR "IN AIR" MEASUREMENTS

Build-up caps for the NE 2571, 0.6cm<sup>3</sup> Farmer Style Chamber with a 0.36 mm graphite (density 1.857 g/cm<sup>3</sup>) wall thickness.

These build-up caps fit over the Cobalt 60 delrin (density 1.415 g/cm<sup>3</sup>) build-up cap that has a wall thickness of 4.13 mm and an outside diameter of 15.14 mm.

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	660-204	4.08 mm	660-504	1.78 mm	660-5304	0.57 mm	660-5404	0.43 mm
15 mm	6MV	660-206	7.2 mm	660-506	3.1 mm	660-5306	1.04 mm	660-5406	0.78 mm
24 mm	10MV	660-210	14.8 mm	660-510	6.4 mm	660-5310	2.09 mm	660-5410	1.57 mm
27 mm	15MV	660-215	17.3 mm	660-515	7.5 mm	660-5315	2.45 mm	660-5415	1.84 mm
30 mm	18MV	660-218	19.8 mm	660-518	8.6 mm	660-5318	2.80 mm	660-5418	2.10 mm

D-Max In Water	Nominal Energy	Copper Density 8.90 g/cm <sup>3</sup>		Polystyrene Density 1.05 g/cm <sup>3</sup>		Plastic Water Density 1.02 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	660-5504	0.54 mm	660-5604	4.60 mm	660-5704	4.74 mm
15 mm	6MV	660-5506	0.99 mm	660-5606	8.41 mm	660-5706	8.66 mm
20 mm	8MV	660-5508	1.55 mm	660-5608	13.17 mm	660-5708	13.56 mm
24 mm	10MV	660-5510	2.00 mm	660-5610	16.98 mm	660-5710	17.48 mm
27 mm	15MV	660-5515	2.34 mm	660-5615	19.84 mm	660-5715	20.42 mm
30 mm	18MV	660-5518	2.68 mm	660-5618	22.70 mm	660-5718	23.37 mm
35 mm	20MV	660-5520	3.24 mm	660-5620	27.46 mm	660-5720	28.27 mm
40 mm	24MV	660-5524	3.80 mm	660-5624	32.22 mm	660-5724	33.17 mm

The following build-up caps fit on the IBA (Scanditronix/Wellhofer) CC13, IC-15, and IC-10 Chamber

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	663-901-04	8.69 mm	663-902-04	3.79 mm	663-903-04	1.21 mm
15 mm	6MV	663-901-06	12.07 mm	663-902-06	5.26 mm	663-903-06	1.68 mm
20 mm	8MV	663-901-08	16.29 mm	663-902-08	7.10 mm	663-903-08	2.27 mm
24 mm	10MV	663-901-10	19.66 mm	663-902-10	8.57 mm	663-903-10	2.74 mm
27 mm	15MV	663-901-15	22.19 mm	663-902-15	9.68 mm	663-903-15	3.09 mm
30 mm	18MV	663-901-18	24.73 mm	663-902-18	10.78 mm	663-903-18	3.44 mm
35 mm	20MV	663-901-20	28.95 mm	663-902-20	12.62 mm	663-903-20	4.03 mm
40 mm	24MV	663-901-24	33.16 mm	663-902-24	14.46 mm	663-903-24	4.62 mm
50 mm	26MV	663-901-26	41.60 mm	663-902-26	18.14 mm	663-903-26	5.79 mm

D-Max In Water	Nominal Energy	Polystyrene Density 1.05 g/cm <sup>3</sup>	
		Item #	Wall Thickness
11 mm	4MV	663-906-04	9.81 mm
15 mm	6MV	663-906-06	13.62 mm
20 mm	8MV	663-906-08	18.38 mm
24 mm	10MV	663-906-10	22.19 mm
27 mm	15MV	663-906-15	25.05 mm
30 mm	18MV	663-906-18	27.90 mm
35 mm	20MV	663-906-20	32.67 mm
40 mm	24MV	663-906-24	37.43 mm
50 mm	26MV	663-906-26	46.95 mm

**Notes:**  
 1. At energies above 10 MV metal Build-Up Caps may become slightly activated, please check and take appropriate precautions.  
 2. The build-up caps are designed to have an equal amount of build-up from the front and rear of the active area.

# BUILD-UP CAPS, SCATTER & MINI PHANTOMS

## BUILD-UP CAPS FOR “IN AIR” MEASUREMENTS

The following build-up caps fit on the **Exradin A16**

D-Max In Water	Nominal Energy	Aluminum Density 2.718 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	659-A16-04-2	3.72 mm	659-A16-04-4	0.89 mm
15 mm	6MV	659-A16-06-2	5.19 mm	659-A16-06-4	1.24 mm
20 mm	8MV	659-A16-08-2	7.03 mm	659-A16-08-4	1.68 mm
24 mm	10MV	659-A16-10-2	8.51 mm	659-A16-10-4	2.04 mm
27 mm	15MV	659-A16-15-2	9.61 mm	659-A16-15-4	2.30 mm
30 mm	18MV	659-A16-18-2	10.71 mm	659-A16-18-4	2.57 mm
35 mm	20MV	659-A16-20-2	12.55 mm	659-A16-20-4	3.01 mm
40 mm	24MV	659-A16-24-2	14.39 mm	659-A16-24-4	3.45 mm
50 mm	26MV	659-A16-26-2	18.07 mm	659-A16-26-4	4.33 mm

The following build-up caps fit on the **Exradin A14**

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm <sup>3</sup>		Aluminum Density 2.718 g/cm <sup>3</sup>		Brass Density 8.515 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	659-A14-04-1	7.80 mm	659-A14-04-2	3.40 mm	659-A14-04-3	1.09 mm
15 mm	6MV	659-A14-06-1	11.17 mm	659-A14-06-2	4.87 mm	659-A14-06-3	1.55 mm
20 mm	8MV	659-A14-08-1	15.39 mm	659-A14-08-2	6.71 mm	659-A14-08-3	2.14 mm
24 mm	10MV	659-A14-10-1	18.77 mm	659-A14-10-2	8.18 mm	659-A14-10-3	2.61 mm
27 mm	15MV	659-A14-15-1	21.30 mm	659-A14-15-2	9.29 mm	659-A14-15-3	2.96 mm
30 mm	18MV	659-A14-18-1	23.83 mm	659-A14-18-2	10.39 mm	659-A14-18-3	3.32 mm
35 mm	20MV	659-A14-20-1	28.05 mm	659-A14-20-2	12.23 mm	659-A14-20-3	3.90 mm
40 mm	24MV	659-A14-24-1	32.27 mm	659-A14-24-2	14.07 mm	659-A14-24-3	4.49 mm

The following build-up caps fit on the **Exradin A14SL**

D-Max In Water	Nominal Energy	Brass Density 8.515 g/cm <sup>3</sup>		Lead Density 11.35 g/cm <sup>3</sup>	
		Item #	Wall Thickness	Item #	Wall Thickness
11 mm	4MV	659-A14SL-04-3	1.06 mm	659-A14SL-04-4	0.80 mm
15 mm	6MV	659-A14SL-06-3	1.53 mm	659-A14SL-06-4	1.15 mm
20 mm	8MV	659-A14SL-08-3	2.12 mm	659-A14SL-08-4	1.59 mm
24 mm	10MV	659-A14SL-10-3	2.59 mm	659-A14SL-10-4	1.94 mm
27 mm	15MV	659-A14SL-15-3	2.94 mm	659-A14SL-15-4	2.21 mm
30 mm	18MV	659-A14SL-18-3	3.30 mm	659-A14SL-18-4	2.47 mm
35 mm	20MV	659-A14SL-20-3	3.88 mm	659-A14SL-20-4	2.91 mm
40 mm	24MV	659-A14SL-24-3	4.47 mm	659-A14SL-24-4	3.35 mm

### Notes:

- At energies above 10 MV metal Build-Up Caps may become slightly activated, please check and take appropriate precautions.
- The build-up caps are designed to have an equal amount of build-up from the front and rear of the active area.

# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

All Block Cabinets are made of 3/4" thick plywood covered with beige plastic laminate on the outside.

## BLOCK TRANSPORT CARTS



**Mechanical Tray Stops Prevent Tray From Sliding Out  
Dual Handles**

**Base Frame:** Steel angle iron frame has four 5" dia. swivel w/lock, rubber covered casters for quiet movement in corridors

**Shipping Weight:** 150 lbs

Item #	Description	Cabinet Size	Tray Size	Holds	Spacing
880-989	Transport Cart	40 1/8" W x 52 1/2" H x 20" D	11 3/4" to 12 1/4"	28 Trays	4"
880-9891	Transport Cart	41 5/8" W x 52 1/2" H x 20" D	12 1/4" to 12 3/4"	28 Trays	4"
880-9892	Transport Cart	43 1/8" W x 52 1/2" H x 20" D	12 3/4" to 13 1/4"	28 Trays	4"

Custom Cabinets Available

## MOBILE STORAGE CABINETS



Items 880-950 to 880-952



Items 880-963 to 880-970

**Base Frame:** Steel angle iron frame has four 6" dia. heavy duty casters (two fixed and two swivel with locks)

**Optional:** Stainless steel handle is available at no extra charge  
**Shipping Weight:** 400 lbs

**Note:** Please specify which side for handle and swivel caster placement

Item #	Description	Cabinet Size	Lower Storage Areas	Tray Size	Holds	Spacing
880-950	Mobile Cabinet	45 1/4" W x 58" H x 20" D	43 3/4" W x 18 1/2" H x 19 1/4" D	9 3/4" to 10 1/4"	28 Trays	4"
880-952	Mobile Cabinet	53 1/4" W x 58" H x 20" D	51 3/4" W x 18 1/2" H x 19 1/4" D	11 3/4" to 12 1/4"	28 Trays	4"

Item #	Description	Cabinet Size	Upper Storage Areas	Tray Size	Holds	Spacing
880-963	Mobile Cabinet	45 1/4" W x 73" H x 20" D	43 3/4" W x 12" H x 19 1/4" D	9 3/4" to 10 1/4"	36 Trays	5 3/8"
880-964	Mobile Cabinet	46 1/4" W x 73" H x 20" D	44 3/4" W x 12" H x 19 1/4" D	10" to 10 1/2"	36 Trays	5 3/8"
880-965	Mobile Cabinet	53 1/4" W x 73" H x 20" D	51 3/4" W x 12" H x 19 1/4" D	11 3/4" to 12 1/4"	36 Trays	5 3/8"
880-966	Mobile Cabinet	45 1/4" W x 73" H x 20" D	43 3/4" W x 12" H x 19 1/4" D	9 3/4" to 10 1/4"	44 Trays	4 3/8"
880-967	Mobile Cabinet	53 1/4" W x 73" H x 20" D	51 3/4" W x 12" H x 19 1/4" D	11 3/4" to 12 1/4"	44 Trays	4 3/8"
880-9671	Mobile Cabinet	55 1/4" W x 73" H x 20" D	53 3/4" W x 12" H x 19 1/4" D	12 1/4" to 12 3/4"	44 Trays	4 3/8"
880-9672	Mobile Cabinet	56 3/4" W x 73" H x 20" D	55 1/4" W x 12" H x 19 1/4" D	12 5/8" to 13 1/8"	44 Trays	4 3/8"
880-968	Mobile Cabinet	45 1/4" W x 73" H x 20" D	43 3/4" W x 12" H x 19 1/4" D	9 3/4" to 10 1/4"	48 Trays	4 3/64"
880-969	Mobile Cabinet	53 1/4" W x 73" H x 20" D	51 3/4" W x 12" H x 19 1/4" D	11 3/4" to 12 1/4"	48 Trays	4 3/64"
880-970	Mobile Cabinet	55 1/4" W x 73" H x 20" D	53 3/4" W x 12" H x 19 1/4" D	12 1/4" to 12 3/4"	48 Trays	4 3/64"

Custom Cabinets Available

# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

## DOUBLE-SIDED MOBILE STORAGE CABINETS

Front Side



Drawer View



Rear Side



**Tray Size:** 11 1/2" to 12 1/4"  
**Overall Size:** 40 1/8" W x 73 1/2" H x 29" D  
**Base Frame:** Steel angle iron frame has four 6" dia. heavy duty casters (two fixed and two swivel with locks)

### REAR SIDE

**Holds 33 Trays**  
**Tray Height Spacing:** 4"  
**Inside Depth:** 14"  
**Lower Storage:** 38 5/8" W x 16" H x 14" D  
 (Holds three Electron Cones)  
**Optional:** Stainless steel handle is available at no extra charge  
**Shipping Weight:** 450 lbs

**Note:** Please specify which side for handle and swivel caster placement

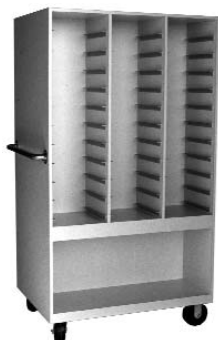
Item #	Description
880-832	Double-Sided Mobile Storage Cabinet

### FRONT SIDE

**Holds 30 Trays**  
**Tray Height Spacing:** 4"  
**Inside Depth:** 14"  
**Large Drawer:** Holds 10 - 20/25 cm cone electron blocks  
**Medium Drawer:** Holds 10 - 10/15 cm cone electron blocks  
**Small Drawer:** Holds 10 - 6/10 cm cone electron blocks  
**Lower Storage:** 25.5" W x 16" H x 14" D  
 (Holds 2 Electron Cones)

**Storage on both sides - front and back sides are the same.**  
**Base Frame:** Steel angle iron frame has four 6" dia. heavy duty casters (two fixed and two swivel w/locks)  
**Optional:** Stainless steel handle is available at no extra charge  
**Item 880-904 to 880-914:** Have lower storage areas on both sides. Holds three electron cones  
**Shipping Weight:** 400 lbs

**Note:** Please specify which side for handle and swivel caster placement



Item 880 904 thru 880-914



Item 880 920 thru 880-928

Item #	Description	Cabinet Size	Lower Storage Area	Tray Size	Holds	Spacing
880-904	Double-Sided Mobile Cabinet	34 1/8" W x 73 1/2" H x 29" D	32 5/8" W x 16" H x 14" D	9 3/4" to 10 1/4"	66 Trays	4"
880-906	Double-Sided Mobile Cabinet	34 7/8" W x 73 1/2" H x 29" D	33 3/8" W x 16" H x 14" D	10" to 10 1/2"	66 Trays	4"
880-908	Double-Sided Mobile Cabinet	40 1/8" W x 73 1/2" H x 29" D	38 5/8" W x 16" H x 14" D	11 3/4" to 12 1/4"	66 Trays	4"
880-912	Double-Sided Mobile Cabinet	34 1/8" W x 73 1/2" H x 29" D	32 5/8" W x 16" H x 14" D	9 3/4" to 10 1/4"	60 Trays	4 3/8"
880-914	Double-Sided Mobile Cabinet	40 1/8" W x 73 1/2" H x 29" D	38 5/8" W x 16" H x 14" D	11 3/4" to 12 1/4"	60 Trays	4 3/8"

### Custom Cabinets Available

Item #	Description	Cabinet Size	Inside Depth	Tray Size	Holds	Spacing
880-920	Double-Sided Mobile Cabinet	34 1/8" W x 71 3/4" H x 29" D	14"	9 3/4" to 10 1/4"	84 Trays	4 9/32"
880-924	Double-Sided Mobile Cabinet	40 1/8" W x 71 3/4" H x 29" D	14"	11 3/4" to 12 1/4"	84 Trays	4 9/32"
880-926	Double-Sided Mobile Cabinet	41 5/8" W x 71 3/4" H x 29" D	14"	12 1/4" to 12 3/4"	84 Trays	4 9/32"
880-928	Double-Sided Mobile Cabinet	42 3/8" W x 71 3/4" H x 29" D	14"	12 1/2" to 13"	84 Trays	4 9/32"

### Custom Cabinets Available

# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

## DOUBLE DEEP MOBILE STORAGE CABINET



**Each slot holds two trays**

**Base Frame:** Steel angle iron frame has four 6" dia. heavy duty casters (two fixed and two swivel with locks)

**Optional:** Stainless steel handle is available at no extra charge

**Shipping Weight:** 400 lbs

**Note:** Please specify which side for handle and swivel caster placement

Item #	Description	Cabinet Size	Lower Storage Area	Tray Size	Holds	Spacing
880-940	Double Deep Cabinet	34 1/8" W x 61 3/4" H x 28 3/4" D	32 5/8" W x 16" H x 28" D	9 3/4" to 10 1/4"	48 Trays	4"
880-942	Double Deep Cabinet	40 1/8" W x 61 3/4" H x 28 3/4" D	38 5/8" W x 16" H x 28" D	11 3/4" to 12 1/4"	48 Trays	4"

## BLOCK STORAGE CABINET



**Tray Supports:** 1" Wide Plastic

**Backing:** 1/4" Thick beige masonite board

**Optional:** Stainless steel handle is available at no extra charge

**Items 880-440 thru 880-846:** Top of cabinet has a 3" lip on 3 sides, providing additional storage area

Item 880-340 thru 880-346

Item 880-440 thru 880-446

Item 880-680 thru 880-686

Item #	Description	Cabinet Size	Inside Size	Tray Size	Holds	Spacing	Weight
880-340	Block Cabinet	23" W x 72 3/4" H x 14 1/4" D	10 3/8" W x 14" D	9 3/4" to 10 1/4"	34 Trays	4"	120 lbs.
880-342	Block Cabinet	27" W x 72 3/4" H x 14 1/4" D	12 3/8" W x 14" D	11 3/4" to 12 1/4"	34 Trays	4"	120 lbs.
880-346	Block Cabinet	28 1/2" W x 72 3/4" H x 14 1/4" D	13 1/8" W x 14" D	12 1/2" to 13"	34 Trays	4"	120 lbs.
880-440	Block Cabinet	45 1/4" W x 51" H x 14 1/4" D	10 3/8" W x 14" D	9 3/4" to 10 1/4"	44 Trays	4"	220 lbs.
880-442	Block Cabinet	53 1/4" W x 51" H x 14 1/4" D	12 3/8" W x 14" D	11 3/4" to 12 1/4"	44 Trays	4"	220 lbs.
880-446	Block Cabinet	56 1/4" W x 51" H x 14 1/4" D	13 1/8" W x 14" D	12 1/2" to 13"	44 Trays	4"	220 lbs.
880-680	Block Cabinet	45 1/4" W x 72 3/4" H x 14 1/4" D	10 3/8" W x 14" D	9 3/4" to 10 1/4"	68 Trays	4"	250 lbs.
880-682	Block Cabinet	53 1/4" W x 72 3/4" H x 14 1/4" D	12 3/8" W x 14" D	11 3/4" to 12 1/4"	68 Trays	4"	250 lbs.
880-686	Block Cabinet	56 1/4" W x 72 3/4" H x 14 1/4" D	13 1/8" W x 14" D	12 1/2" to 13"	68 Trays	4"	250 lbs.

## MOBILE STORAGE CABINET WITH DOORS



**Size:** 42 1/2" W x 73" H x 20 3/4" D

**Base Frame:** Steel angle iron frame has four 6" dia. heavy duty casters (two fixed and two swivel with locks)

**Eight Compartments:** Each 20" W x 15 1/4" H x 19 1/4" D

**Shelves:** Center shelf is fixed, top and bottom shelves are adjustable

**Shipping Weight:** 405 lbs

**Note:** Please specify which side for swivel caster placement

Item #	Description
880-975	Mobile Storage Cabinet with Doors

# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

## ELECTRON CONE AND BLOCK STORAGE CABINET



**Size:** 45" W x 73 5/8" H x 20" D

**Base Frame:** Steel angle iron frame has four 6" dia. heavy duty casters (two fixed and two swivel with locks)

**Five or six compartments for electron cones:**  
14" W x 17 3/4" H x 19 1/4" D

**One compartment for 6 Wedges (only w/ 5 cones )** Please specify wedges used

**One compartment w/42 pockets for electron block inserts**

### Two Top Storage Compartments:

21 3/8" x 13" H x 19 1/4" D

**Optional:** Stainless steel handle is available at no extra charge

**Shipping Weight:** 510 lbs

**Note:** Please specify which side for handle and swivel caster placement

Item #	Description
880-9730	Storage Cabinet for Varian Type II- 5 Cones / 6 Wedges
880-9731	Storage Cabinet for Varian Type II - 6 Cones
880-9732	Storage Cabinet for Varian Type III - 5 Cone / 6 Wedges
880-9733	Storage Cabinet for Varian Type III - 6 Cones
880-9734	Storage Cabinet for Siemens - 5 Cones / 6 Wedges
880-9735	Storage Cabinet for Siemens - 6 Cones
880-9738	Storage Cabinet for Elekta

**Custom Cabinets Available**

## WEDGE BOX

The Wedge Box can be made for any manufacturer's wedges.

### Specifications

#### 4 Rubber Feet

**Material:** 3/4" T plywood w/vinyl covering outside.

**Color:** Beige



Item #	Description
880-990	Varian Type II Wedge Box for 6 Wedges Box Size: 13 5/8" W x 17 9/16" H x 12 3/4" D
880-991	Varian Type III Standard Wedge Box for 8 Wedges Wedge Tray Size: 10 5/8" W x 1/8" T Box Size: 13 9/16" W x 22" H x 12 1/4" D
880-992	Varian Type III Lower Wedge Box for 6 Wedges Wedge Tray Size: 12 1/2" W x 14" L x 1/4" T Box Size: 15 7/16" W x 14 1/2" H x 15" D
880-996	Varian Type III Upper Wedge Box for 6 Wedges Wedge Tray Size: 10 5/8" Sq. x 1/8" T Box Size: 13 5/8" W x 17 5/8" H x 12 13/16" D
880-995	Siemens Wedge Box for 6 Wedges Box Size: 11 1/4" W x 14 1/4" H x 10 7/16" D

## ELECTRON BLOCK STORAGE CABINET



**Size:** 43 1/4" W x 13 3/8" H x 11 3/4" D

**Pocket Quantity:** 42

**Pocket Size:** 0.9" W x 11 7/8" H x 11" D

Item #	Description
880-993	Electron Block Storage Cabinet



**Size:** 43 3/8" W x 14 3/4" H x 11 3/4" D

**Pocket Quantity:** 42

**Pocket Size:** 18 - 1 3/8" W x 11 7/8" H x 11" D

12 - 1 1/3" W x 7 1/16" H x 7" D

12 - 1 1/3" W x 5 1/4" H x 7" D

Item #	Description
880-997	Electron Block Storage Cabinet

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# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

## ELECTRON CONE WALL SHELF



1830-25 or 1830-35



1830-26 Shown with Varian Type II Cones



1830-36 Shown with Siemens Digital Cones

This unit must be secured to the wall with six screws. Included with the unit are brackets, screws and a bottom support board.

### Specifications

**Material:** 3/4" thick plywood covered with plastic laminate

**Color:** Beige

**Items 1830-25 thru 1830-36**

**Size:** 45" W x 38" H x 14 1/4" D

**Item 1830-40**

**Size:** 24 1/2" W x 41 3/4" H x 16 1/4" D

Item #	Description
1830-25	Holds 5 Varian Type II or III Electron Cones
1830-26	Holds 6 Varian Type II or III Electron Cones
1830-35	Holds 5 Siemens Mevatron Electron Cones
1830-36	Holds 6 Siemens Mevatron Electron Cones
1830-40	Holds 4 Philips Electron Cones

Custom Made For Other Manufacturers Electron Cones

## STORAGE CART FOR VARIAN BRASS COMPENSATORS



The Storage Cart for Varian brass compensators stores up to 88 compensators on Varian wedge trays from 9.75" wide to 10.75" wide (25 to 27.5 cm). The depth of the cart allows for the placement of two trays in each slot. The front of each rail has a mechanical stop that prevents the trays from sliding out.

The cart comes complete with sturdy handle, four corner bumpers, and four 5" (12.75 cm) lockable swivel casters.

### Specifications

**Overall Dimensions:** 48.75" W x 50.4" H x 24" D  
(124.25 x 128.5 x 61 cm)

**Weight:** 230 lb (105 kg)

**Density:** 1.20 gm/cm<sup>3</sup>

Item	Description
880-9896	Storage Cart for Varian Brass Compensators

## STORAGE CART FOR SIEMENS BRASS COMPENSATORS



The Storage Cart for Siemens brass compensators stores up to 88 compensators on Siemens wedge trays 8.75" (22.3 cm) wide. The depth of the cart allows for the placement of two trays in each slot. The front of each rail has a mechanical stop that prevents the trays from sliding out.

The cart comes complete with sturdy handle, four corner bumpers, two 5" (12.75 cm) lockable swivel casters, and two fixed casters.

### Specifications

**Overall Dimensions:** 39.25" W x 50.5" H x 24" D  
(100 x 129 x 61 cm)

**Weight:** 250 lb (114 kg)

Item	Description
880-9897	Storage Cart for Siemens Brass Compensators



# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

## STAINLESS STEEL UTILITY CART

- Edges on 3 shelf sides keep objects from sliding off
- U-shaped, all-welded stainless steel construction provides reliable support



### Specifications

**Capacity:** 700 lb (317.5 kg)  
**Shelf Size:** 18" W x 27" L (45.7 x 68.6 cm)  
**Overall Size:** 19 3/8" W x 32 5/8" L x 34.5" H (49.2 x 82.9 x 87.6 cm)  
**Material:** Stainless Steel  
**Clearance Between Shelves:** 10" (25.5 cm)  
**Shelves:** 18 ga. Stainless Steel  
**Legs/Frame:** 1" x 1" x 0.120" (2.5 x 2.5 x 0.3 cm) angle Stainless Steel  
**Two Swivel Casters:** 5" dia. (12.75 cm)  
**Two Fixed Casters:** 8" dia. (20.4 cm)  
**Standard Bumper Equipment:** Legs and handle  
**Shipping Weight:** 63 lb (29 kg)

Item	Description
9722-000	Stainless Steel Utility Cart

## PLASTIC UTILITY CART



### Specifications

**Capacity:** 300 lb (136 kg)  
**Shelf Size:** 16" W x 24" L (45.7 x 68.6 cm)  
**Overall Size:** 17 1/8" W x 32.5" L x 34 7/8" H (43.7 x 82.8 x 88.9 cm)  
**Material:** Impact-resistant Polyethylene  
**Clearance Between Shelves:** 12 1/8" (31 cm)  
**Legs:** ABS Plastic  
**Shelves:** High Density Polyethylene  
**Four Swivel Casters:** 4" dia. (10.2 cm)  
**Color:** Beige  
**Shipping Weight:** 32 lb (15 kg)

Item	Description
9722-020	Plastic Utility Cart

## PLASTIC UTILITY TUB CART



The Utility Tub Cart has molded plastic shelves and legs which will not stain, scratch, dent or rust. This cart has three (3) 2.75" (6.9 cm) deep tub shelves and a push handle is molded into top shelf.

### Specifications

**Maximum Weight Capacity:** 400 lb (181.8 kg)  
**Size:** 32" W x 24" D x 38.25" H includes handle (81.2 x 60.9 x 97.2 cm)  
**Material:** Thermoplastic Resin  
**Clearance Between Shelves:** 10.75" (27.3 cm)  
**Casters:** 4" dia. (10.2 cm) heavy duty casters, two with locking brakes  
**Color:** Black  
**Shipping Weight:** 48 lb (21.8 kg)

Item	Description
9722-025	Plastic Utility Tub Cart

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# CABINETS FOR TRAYS/CONES, CARTS, STANDS, STEP STOOL

## RIGID STEP STOOL WITH HANDRAIL



**Height:** 9" (23 cm)  
**Frame:** X-design and all welded steel  
**Steel Top:** 11.25" W x 14.5" L (28.68 x 37 cm)  
**Step Tread:** Skid resistant black rubber mat  
**Legs:** 1" (2.5 cm) O.D., 18 ga. steel tube and rubber tips  
**Leg Spread:** Occupies 14.25" x 18" (36.3 x 45.9 cm) floor area  
**Hand Rail:** 7/8" (2.23 cm) O.D., 18 ga. steel tube and bolts securely to stool, 35" (89.2 cm) height from floor  
**Weight Tested:** Up to 350 lb (159 kg)  
**Finish:** Bright chrome plating  
**Shipping Weight:** 12 lb (5.5 kg)

Item	Description
9800-140	Rigid Step Stool with Hand Rail

## MOBILE INSTRUMENT STAND



**Adjustable:** 27.5" to 48" (70 to 122 cm) positive action thumbscrew  
**Roll Rim Stainless Steel Tray:** 12 5/8" W x 19 1/8" L x 0.75" T (32.2 x 48.75 x 1.9 cm)  
**Tray Ring:** Round edge flat wire  
**Height Extension Post:** 7/8" (2.23 cm) O.D. and 18 ga. steel tube  
**Base Post:** 1" (2.5 cm) O.D. and 18 ga. steel tube  
**Heavy Bar Steel Base:** Low sling for stability, 22" dia. x 1.75" x 5/16" (56.1 x 4.5 x 0.8 cm)  
**Five Swivel Casters:** 2" dia. (5 cm)  
**Finish:** Durable bright chrome plating (except S.S. tray)  
**Shipping Weight:** 17 lb (7.75 kg)

Item	Description
9803-465	Mobile Instrument Stand

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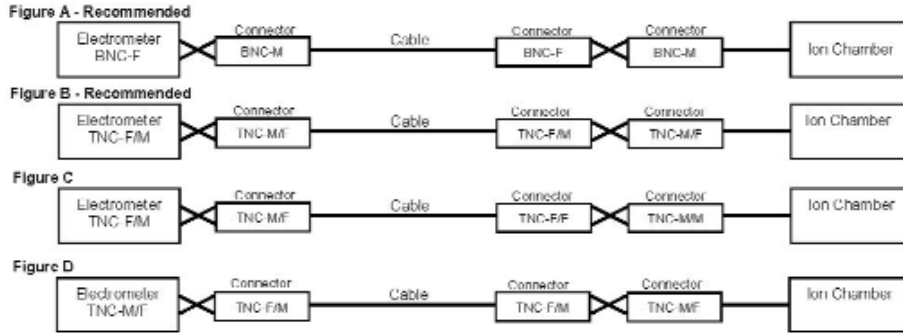
# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## REFERENCE GUIDE FOR ELECTROMETER - CABLE - CHAMBER CONNECTIONS

Capintec Electrometer uses TNC-F/M or BNC-F . . . . . (Figure A or C)  
 Capintec Triax Cable uses TNC-M/F and TNC-F/F . . . . . (Figure C)  
 Capintec Chamber uses TNC-M/M or BNC-M . . . . . (Figure A or C)  
 Wellhofer Electrometer uses TNC-F/M . . . . . (Figure C)  
 Wellhofer Triax Cable uses TNC-M/F and TNC-F/F . . . . . (Figure C)  
 Wellhofer Chamber uses TNC-M/M . . . . . (Figure C)  
 N.E. Electrometer uses TNC-F/M . . . . . (Figure B)  
 N.E. Chambers w/Triax Cable uses TNC-M/F or BNC-M . (Figure B)  
 Victoreen Electrometer uses TNC-M/F . . . . . (Figure D)

Victoreen Chamber with Triax Cable uses TNC-M/F . . . . . (Figure D)  
 Keithley Electrometer uses BNC-F . . . . . (Figure A)  
 Keithley Chamber with Triax Cable uses BNC-M . . . . . (Figure A)  
 PTW Chamber with 1 Meter Triax Cable uses BNC-M . . . (Figure A or B)  
 PTW Chamber with 10 Meters Triax Cable uses BNC-M . (Figure A)  
 PTW Extensions Triax Cable uses BNC-M and BNC-F . . (Figure A)  
 PTW Electrometer uses M, TNC-F/M or BNC-F . . . . . (Figure A)  
 Standard Imaging Electrometer uses BNC-F . . . . . (Figure A)  
 CNMC Electrometer uses BNC-F . . . . . (Figure A)

### DIAGRAM FOR REFERENCE GUIDE CONNECTIONS



### CONNECTIONS ADAPTERS



**Item 323-320** is able to modify the BNC-F Keithley Electrometer to the TNC M/F Capintec, Wellhofer or Nuclear Enterprises Triax Cable.

**Item 323-323** is able to modify the BNC-F Triax Cable to the TNC-F/M Wellhofer, Capintec and Nuclear Enterprises Electrometer.

**Item 323-324** is able to modify the BNC-M Chamber to the TNC-F/M Wellhofer, Capintec and Nuclear Enterprises Electrometer.

Item	Triax Adapters
323-320	Triax BNC-M to Triax TNC-F/M Connectors
323-323	Triax BNC-M to Triax TNC-F/F Connectors w/Cable
323-324	Triax BNC-F to Triax TNC-M/F Connectors
323-328	Triax BNC-F to Triax BNC-F Connectors
323-329	Triax BNC-M to Triax BNC-M Connectors
323-334	Triax BNC-M to Triax BNC-F Connectors w/Cable
323-336	Triax BNC-M to PTW M-Type F Connector w/Cable

NOTE: Standard cable length is 1 meter.  
 Cable length can be from 6" (15.2cm) to 1 m (100cm).  
 Must specify cable length for length shorter than 1 meter

Item	Coax to Triax Adapters
323-339	Coax BNC-M and Triax BNC-F Connectors with 1 Meter Cable
323-340	Coax BNC-F and Triax BNC-M Connector Diode to Electrometer Connector

Item	Coax Adapters
323-341	Coax BNC-F and BNC-F Connectors
323-342	Coax BNC-F and BNC-F Panel Mount Connectors
323-343	Coax BNC-M and BNC-M Connectors

Item	Custom Connector Adapter
323-350	Custom Adapter - Specify Connectors 1 Meter Cable between connectors is Standard - Specify Length if another length is needed Cable Adapters are MTO, no exchanges or refunds

See Connector Example Page

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# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## CABLE CONNECTOR REFERENCE



A. Triax BNC Plug  
(M/F) [2-Lug]



B. Triax BNC Jack  
(F/M) [2-Lug]



C. Triax TNC Plug  
(M/F)



D. Triax TNC Jack  
(F/M)



E. Triax TNC Jack  
(M/M)



F. Triax TNC Plug  
(F/F)



G. Coax BNC Plug  
(M/F) [2-Lug]



H. Coax BNC Jack  
(F/M) [2-Lug]



I. Coax SHV Plug  
(F/F) [2-Lug]



J. Coax MHV Plug  
(M/F) [2-Lug]



K. Triax Type M  
(M/M)



L. Triax Type M  
(F/F)



M. Triax BNC Plug  
(M/F) [3-Lug]



N. Banana Plug



O. Banana Jack



P. Triax LEMO Plug  
(F/M)



Q. Triax LEMO Plug  
(M/F)

Naming Standard: Connector Type (Center Pin Gender / Outer Housing Gender).  
Letters are for reference only.

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## CONNECTOR DUST CAPS



The Dust Caps with chains prevent dirt and dust from accumulating in the connectors. Dust and dirt accumulations will cause high leakage currents.

Item	Description
323-360	Male Dust Cap for BNC-F and Female Center Pin
323-361	Female Dust Cap for BNC-M and Male Center Pin
323-362	Male Dust Cap for TNC-F/M or TNC-M/M Connectors
323-363	Female Dust Cap for TNC-M/F or TNC-F/F Connector

## TRIAIX EXTENSION CABLES

The triaxial cable assemblies are made of Microdot flexible white, 3 mm diameter, shielded, low-noise, high impedance, radiation resistant cable, designed to carry the extremely small currents generated by ion chambers without signal degradation.

A standard extension cable has a male connector on one end to mate with the electrometer and a female connector on the other end to mate with the output connector of the ion chamber.

See reference guide and cable connector reference pages to determine correct connectors for triax cables.



For Keithly or PTW

Item	BNC Triax Cable with Dust Caps	Length
323-1303	BNC-F and BNC-M Connectors	33' (10 Meters)
323-1304	BNC-F and BNC-M Connectors	40' (12 Meters)
323-1305	BNC-F and BNC-M Connectors	50' (15 Meters)
323-1306	BNC-F and BNC-M Connectors	59' (18 Meters)



For NE America (Nuclear Enterprise)

Item	TNC Triax Cable	Length
323-1313	TNC-M/F and TNC-F/M Connector	33' (10 Meters)
323-1314	TNC-M/F and TNC-F/M Connector	40' (12 Meters)
323-1315	TNC-M/F and TNC-F/M Connector	50' (15 Meters)
323-1316	TNC-M/F and TNC-F/M Connector	59' (18 Meters)

Dust Caps Must Be Purchased Separately



For Capintec or Wellhofer

Item	TNC Triax Cable	Length
323-1323	TNC-M/F and TNC-F/F Connector	33' (10 Meters)
323-1324	TNC-M/F and TNC-F/F Connector	40' (12 Meters)
323-1325	TNC-M/F and TNC-F/F Connector	50' (15 Meters)
323-1326	TNC-M/F and TNC-F/F Connector	59' (18 Meters)

Dust Caps Must Be Purchased Separately

## CUSTOM TRIAX EXTENSION CABLES

These cables are made to order, no exchanges or refunds are available. When ordering, please specify the following:

- Connection 1 and Connection 2
- Length of the Cable in Meters
- Cable Type - 3mm Diameter White (Standard) or 5.3mm Diameter Suhner Swiss Gray (Heavy Duty)
- Cable on Reel - if Yes, Specify the Connection at the Hub

Item	Description
323-1300	Custom Cable

## COAX EXTENSION CABLES



Item	Description
322-891	32' (10M) Coax Cable, Diode, BNC-F to BNC-M
322-892	49' (15M) Coax Cable, Diode, BNC-F to BNC-M
322-893	65' (20M) Coax Cable, Diode, BNC-F to BNC-M

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## TRIAx EXTENSION CABLE ON SMALL REEL

Extended End (Ion Chamber Connection)



Hub End (Electrometer Connection)  
Normally connected to Electrometer  
outside of treatment room.

Cable reel assemblies offer a great convenience in winding and storage of extension cables. A cable reel will extend the life of a cable significantly by eliminating kinks and providing protection during storage. Reel out only as much cable as needed. The extended end is where the cable reels out. The hub end has 18" (45.7 cm) of fixed triax cable. Connector type and location is determined by where the reel will be used, inside or outside of room.

The reel can be purchased without a cable. The small reel can be used with cables 50' (15 meters) or less in length. This reel can not be used for cable lengths greater than 50' (15 meters).

**See reference guide and cable connector reference pages to determine correct connectors for triax cable on reel.**

Item	Description
323-2400	Small Cable Reel without Cable

For Keithly or PTW  
Connector Ends WILL Mate

Item	BNC Triax Cable Reel w/Dust Caps	Length
323-2402	Hub End - BNC-F Connector Extended End - BNC-M Connector	40' (12 Meters)
323-2403	Hub End - BNC-F Connector Extended End - BNC-M Connector	50' (15 Meters)
323-2412	Hub End - BNC-M Connector Extended End - BNC-F Connector	40' (12 Meters)
323-2413	Hub End - BNC-M Connector Extended End - BNC-F Connector	50' (15 Meters)

For NE America (Nuclear Enterprise) and (New) Wellhofer  
Connector Ends WILL Mate

Item	TNC Triax Cable Reel	Length
323-2424	Hub End - TNC-M/F Connector Extended End - TNC-F/M Connector	40' (12 Meters)
323-2423	Hub End - TNC-M/F Connector Extended End - TNC-F/M Connector	50' (15 Meters)
323-2432	Hub End - TNC-F/M Connector Extended End - TNC-M/F Connector	40' (12 Meters)
323-2433	Hub End - TNC-F/M Connector Extended End - TNC-M/F Connector	50' (15 Meters)

**Dust Caps Must Be Purchased Separately**

For Capintec and (Old) Wellhofer  
Connector Ends WILL NOT Mate

Item	TNC Triax Cable Reel	Length
323-2444	Hub End - TNC-M/F Connector Extended End - TNC-F/F Connector	40' (12 Meters)
323-2443	Hub End - TNC-M/F Connector Extended End - TNC-F/F Connector	50' (15 Meters)
323-2454	Hub End - TNC-F/F Connector Extended End - TNC-M/F Connector	40' (12 Meters)
323-2453	Hub End - TNC-F/F Connector Extended End - TNC-M/F Connector	50' (15 Meters)

**Dust Caps Must Be Purchased Separately**

## WALL PLATES FOR TRIAX CABLE CONNECTOR



These wall plates grip a standard BNC or TNC triax cable connector. The wall plates are made to replace a standard single or double electrical wall plate. There is an adjustable collar in the opening that can be tightened to the connector to prevent movement. An allen wrench for the collar adjustment is included with each wall plate.

Item 323-3802 will replace a standard single wall plate and has two (2) openings to hold two (2) cable connectors. The openings are one on top and one on bottom.

### Specifications

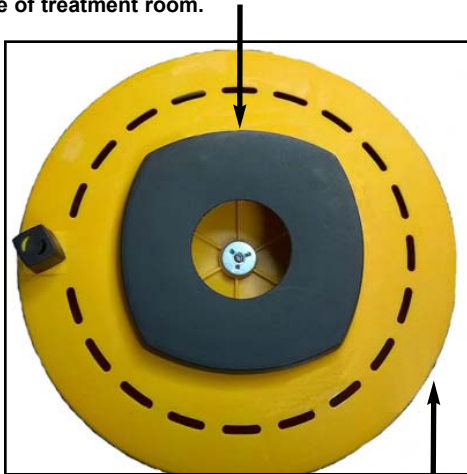
**Material:** Stainless Steel

Item	Description
323-380	Wall Plate, Single for Triax Cable Connector
323-381	Wall Plate, Double for Triax Cable Connector
323-3802	Wall Plate, Single for 2 Triax Cable Connectors

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## TRIAx EXTENSION CABLE ON LARGE REEL

**Hub End (Electrometer Connection)**  
Normally connected to Electrometer outside of treatment room.



**Extended End (Ion Chamber Connection)**

Cable reel assemblies offer a great convenience in winding and storage of extension cables. A cable reel will extend the life of a cable significantly by eliminating kinks and providing protection during storage. Reel out only as much cable as needed. The extended end is where the cable reels out. The hub end has 18" (45.7 cm) of fixed triax cable. Connector type and location is determined by where the reel will be used, inside or outside of room.

The reel can be purchased without a cable. The large reel can be used with any cable length but must be used on all cable lengths over 15 meters.

See reference guide and cable connector reference pages to determine correct connectors for triax cable on reel.

Item	Description
323-2401	Large Cable Reel without Cable

### For Keithly or PTW Connector Ends WILL Mate

Item	BNC Triax Cable Reel w/Dust Caps	Length
323-2404	Hub End - BNC-F Connector Extended End - BNC-M Connector	40' (12 Meters)
323-2405	Hub End - BNC-F Connector Extended End - BNC-M Connector	50' (15 Meters)
323-2406	Hub End - BNC-F Connector Extended End - BNC-M Connector	65' (20 Meters)
323-2414	Hub End - BNC-M Connector Extended End - BNC-F Connector	40' (12 Meters)
323-2415	Hub End - BNC-M Connector Extended End - BNC-F Connector	50' (15 Meters)
323-2416	Hub End - BNC-M Connector Extended End - BNC-F Connector	65' (20 Meters)

### For NE America (Nuclear Enterprise) and (New) Wellhofer Connector Ends WILL Mate

Item	TNC Triax Cable Reel	Length
323-2422	Hub End - TNC-M/F Connector Extended End - TNC-F/M Connector	40' (12 Meters)
323-2425	Hub End - TNC-M/F Connector Extended End - TNC-F/M Connector	50' (15 Meters)
323-2426	Hub End - TNC-M/F Connector Extended End - TNC-F/M Connector	65' (20 Meters)
323-2434	Hub End - TNC-F/M Connector Extended End - TNC-M/F Connector	40' (12 Meters)
323-2435	Hub End - TNC-F/M Connector Extended End - TNC-M/F Connector	50' (15 Meters)
323-2436	Hub End - TNC-F/M Connector Extended End - TNC-M/F Connector	65' (20 Meters)

**Dust Caps Must Be Purchased Separately**

### For Capintec and (Old) Wellhofer Connector Ends WILL NOT Mate

Item	TNC Triax Cable Reel	Length
323-2442	Hub End - TNC-M/F Connector Extended End - TNC-F/F Connector	40' (12 Meters)
323-2445	Hub End - TNC-M/F Connector Extended End - TNC-F/F Connector	50' (15 Meters)
323-2446	Hub End - TNC-M/F Connector Extended End - TNC-F/F Connector	65' (20 Meters)
323-2452	Hub End - TNC-F/F Connector Extended End - TNC-M/F Connector	40' (12 Meters)
323-2455	Hub End - TNC-F/F Connector Extended End - TNC-M/F Connector	50' (15 Meters)
323-2456	Hub End - TNC-F/F Connector Extended End - TNC-M/F Connector	65' (20 Meters)

**Dust Caps Must Be Purchased Separately**



## PTW FARMER® IONIZATION CHAMBERS

Thimble chambers for measuring high-energy photon, electron and proton beams



- Fully guarded chamber
- Sensitive volumes of 0.6 cm<sup>3</sup>, vented to air
- Flat energy response
- Correction factors needed to determine absorbed dose to water or air kerma are published in the pertinent dosimetry protocols
- The chambers are designed for the use in solid state phantoms and are not waterproof

The 0.6 cm<sup>3</sup> PTW Farmer chambers are designed for absolute dosimetry in high-energy photon, electron and proton beams.

**Item 300-640:** The 30010 is a Classical therapy chamber, it is a wide spread ionization chamber for absolute dose measurements in radiation therapy. The acrylic chamber wall ensures the ruggedness of the chamber. The wall material is graphite with a protective acrylic cover, and the electrode is made of Al. The nominal photon energy range is from 30 kV to 50 MV.

- Acrylic wall, graphited
- Aluminum central electrode

**Item 300-645:** The 30011 is a pure graphite therapy chamber. The 30011 all graphite Farmer chamber is used for absolute dose measurements in radiation therapy in cases where a minimum of different materials in the radiation field is desired. Due to the sole use of graphite the energy response of the chamber at energies below <sup>60</sup>Co varies stronger than that of chambers with an aluminum electrode. The 30011 is used for therapy dosimetry, where a completely graphite-built chamber is required. The nominal photon energy range is from 140 kV to 50 MV.

**Item 300-650:** The 30012 Farmer chamber with graphite wall is intended for absolute dose measurements in radiation therapy. The graphite wall makes the chamber almost water-equivalent, the aluminum central electrode improves the energy response at energies below <sup>60</sup>Co. The 30012 is used where a chamber with graphite wall and Al electrode is required. The nominal photon energy range is from 60 kV to 50 MV.

The electron energy range of all chambers is from 10 MeV to 45 MeV. The chambers type 30011 and 30012 with their graphite caps are of delicate construction and should be handled with extreme care. The guard rings of all chamber types are designed up to the measuring volume an acrylic build-up cap for in-air measurement in <sup>60</sup>Co beams is included with each chamber, as well as a calibration certificate.

Item	Description
300-640	PTW 30010, 0.6cc Farmer® Chamber
300-645	PTW 30011, 0.6cc Graphite Farmer® Chamber
300-650	PTW 30012, 0.6cc C/A1 Farmer® Chamber

Specify Connection

## WATERPROOF PTW FARMER® IONIZATION CHAMBER

Waterproof therapy chamber for absolute dosimetry in high-energy photon, electron and proton beams



- Waterproof, fully guarded chamber
- Sensitive volumes of 0.6 cm<sup>3</sup>, vented to air
- Flat energy response
- Acrylic wall, graphited
- Aluminum central electrode
- Correction factors needed to determine absorbed dose to water or air kerma are published in the pertinent dosimetry protocols

- The chamber is waterproof and can be used in water or solid state phantoms
- The acrylic chamber wall ensures the ruggedness of the chamber

**Item 300-655** has a nominal photon energy range from 30 kV to 50 MV, the electron energy range is from 10 MeV to 45 MeV. This chamber type is of rugged construction, since the wall material is graphite with a protective acrylic cover and the electrode is made of aluminum. The guard ring is designed up to the measuring volume. A calibration certificate for calibration in absorbed dose to water or air kerma is included with each chamber. Air density correction is required for each measurement

Item	Description
300-655	PTW 30013, 0.6cc Waterproof Farmer® Chamber

Specify Connection

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## PTW FARMER® IONIZATION CHAMBERS

Specifications	Item 300-640	Item 300-645	Item 300-650	Item 300-655 (Waterproof)
PTW Model	30010	30011	30012	30013
Type of Product	vented cylindrical ionization chamber acc. IEC 60731	vented cylindrical ionization chamber acc. IEC 60731	vented cylindrical ionization chamber acc. IEC 60731	vented cylindrical ionization chamber acc. IEC 60731
Application	absolute dosimetry in radiotherapy beams	absolute therapy dosimetry in solid state phantoms and air	absolute therapy dosimetry in solid state phantoms and air	absolute therapy dosimetry in water, solid state phantoms and air
Measuring Quantities	absorbed dose to water, air kerma, exposure	absorbed dose to water, air kerma, exposure	absorbed dose to water, air kerma, exposure	absorbed dose to water, air kerma, exposure
Reference Radiation Quality	<sup>60</sup> Co	<sup>60</sup> Co	<sup>60</sup> Co	<sup>60</sup> Co
Nominal Sensitive Volume	0.6 cm <sup>3</sup>	0.6 cm <sup>3</sup>	0.6 cm <sup>3</sup>	0.6 cm <sup>3</sup>
Design	NOT waterproof, vented fully guarded	NOT waterproof, vented fully guarded	NOT waterproof, vented fully guarded	Waterproof, vented fully guarded
Reference Point	on chamber axis, 13mm from tip	on chamber axis, 13mm from tip	on chamber axis, 13mm from tip	on chamber axis, 13mm from tip
Direction of Incidence	radial	radial	radial	radial
Nominal Response	20 nC/Gy	20 nC/Gy	20 nC/Gy	20 nC/Gy
Long-term Stability	≤ 0.5 % per year	≤ 0.5 % per year	≤ 0.5 % per year	≤ 0.5 % per year
Chamber Voltage	400 V nominal ± 500 V maximal	400 V nominal ± 500 V maximal	400 V nominal ± 500 V maximal	400 V nominal ± 500 V maximal
Polarity Effect at <sup>60</sup> Co	< 0.5%	< 0.5%	< 0.5%	< 0.5%
Photon Energy Response	± 2% (70 kV to 280 kV) ± 4% (200 kV to <sup>60</sup> Co)	± 2% (70 kV to 280 kV) ± 4% (200 kV to <sup>60</sup> Co)	± 2% (70 kV to 280 kV) ± 4% (200 kV to <sup>60</sup> Co)	± 2% (70 kV to 280 kV) ± 4% (200 kV to <sup>60</sup> Co)
Directional Response in Solid State Phantom	± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 5°	± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 5°	± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 5°	± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 5°
Directional Response in Water				± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 5°
Leakage Current	≤ ± 4 fA	≤ ± 4 fA	≤ ± 4 fA	≤ ± 4 fA
Cable Leakage	≤ 1 pC/(Gy·cm)	≤ 1 pC/(Gy·cm)	≤ 1 pC/(Gy·cm)	≤ 1 pC/(Gy·cm)
<b>Materials and Measures</b>				
Wall of Sensitive Volume	0.335 mm PMMA, 1.19 g/cm <sup>3</sup> 0.09 mm graphite, 1.85 g/cm <sup>3</sup>	0.425 mm graphite, 1.85 g/cm <sup>3</sup>	0.425 mm graphite, 1.85 g/cm <sup>3</sup>	0.335 mm PMMA, 1.19 g/cm <sup>3</sup> 0.09 mm graphite, 1.85 g/cm <sup>3</sup>
Total Wall Area Density	56.5 mg/cm <sup>2</sup>	79 mg/cm <sup>2</sup>	79 mg/cm <sup>2</sup>	56.5 mg/cm <sup>2</sup>
Dimension of Sensitive Volume	radius 3.05 mm length 23.0 mm	radius 3.05 mm length 23.0 mm	radius 3.05 mm length 23.0 mm	radius 3.05 mm length 23.0 mm
Central Electrode	Al 99.98, diameter 1.15 mm	Graphite, diameter 1.0 mm	Al 99.98, diameter 1.15 mm	Al 99.98, diameter 1.15 mm
Build-up Cap	PMMA, thickness 4.55 mm	PMMA, thickness 4.55 mm	PMMA, thickness 4.55 mm	PMMA, thickness 4.55 mm
<b>Ion Collection Efficiency at Nominal Voltage</b>				
Ion collection time	140µs	140µs	140µs	140µs
Max. dose rate for ≥ 99.5 % saturation	5 Gy/s	5 Gy/s	5 Gy/s	5 Gy/s
> 99.0 % saturation	10 Gy/s	10 Gy/s	10 Gy/s	10 Gy/s
Max. dose per pulse for ≥ 99.5 % saturation	0.46mGy		0.46mGy	0.46mGy
> 99.0 % saturation	0.91mGy		0.91mGy	0.91mGy
<b>Useful Ranges</b>				
Chamber voltage	± 100 to 400 V	± 100 to 400 V	± 100 to 400 V	± 100 to 400 V
Radiation quality	30 kV to 50 MV photons (10 to 45) MeV electrons (50 to 270) MeV protons	140 kV to 50 MV photons (10 to 45) MeV electrons (50 to 270) MeV protons	80 kV to 50 MV photons (10 to 45) MeV electrons (50 to 270) MeV protons	30 kV to 50 MV photons (10 to 45) MeV electrons (50 to 270) MeV protons
Field size	(5 x 5) cm <sup>2</sup> to (40 x 40) cm <sup>2</sup>	(5 x 5) cm <sup>2</sup> to (40 x 40) cm <sup>2</sup>	(5 x 5) cm <sup>2</sup> to (40 x 40) cm <sup>2</sup>	(5 x 5) cm <sup>2</sup> to (40 x 40) cm <sup>2</sup>
Temperature	50°-104°F (10°-40°C)	50°-104°F (10°-40°C)	50°-104°F (10°-40°C)	50°-104°F (10°-40°C)
Humidity	10 - 80%, max 20 g/m <sup>3</sup>	10 - 80%, max 20 g/m <sup>3</sup>	10 - 80%, max 20 g/m <sup>3</sup>	10 - 80%, max 20 g/m <sup>3</sup>
Air pressure	700 - 1060 hPa	700 - 1060 hPa	700 - 1060 hPa	700 - 1060 hPa

## PTW SEMIFLEX® IONIZATION CHAMBERS

Waterproof thimble chambers for measuring high-energy photon and electron radiation



- **Waterproof, semiflexible design for easy mounting in scanning water phantoms**
- **Sensitive volumes of 0.125 cm<sup>3</sup> and 0.3 cm<sup>3</sup>, vented to air**
- **Suitable for use in water phantoms**
- **Flat energy response within a wide energy range**

The semiflex chambers are designed for therapy dosimetry, mainly for dose distribution measurements in motorized water phantoms. They have a short stem for mounting and a flexible connection cable. The nominal useful energy range is from 140 kV to 50 MV photons and 10 MeV to 50 MeV electrons. The wall material is graphite with a protective acrylic cover. The guard rings are designed up to the measuring volume. An acrylic build-up cap for in air measurement in <sup>60</sup>Co beams is included with each chamber, as well as a calibration certificate for calibration in absorbed dose to water or in air kerma. Air density correction is required for each measurement. Both chambers are shaped cylindrically with an inner diameter of 5.5 mm; they differ only in the length of the measuring volume.

### Item 300-660

- **Minimized directional response**

The 31010 semiflexible chamber is the ideal compromise between small size for reasonable spatial resolution and large sensitive volume for precise dose measurements. This makes the 31010 chamber to one of the most commonly used chambers in scanning water phantom systems. The chamber volume of 0.125 cm<sup>3</sup> gives enough signal to use the chamber also for high precision absolute dose measurements. The sensitive volume is approximately spherical resulting in a flat angular response and a uniform spatial resolution along all three axes of a water phantom.

### Item 300-662

- **Increased sensitive volume for low level measurements**

The 31013 semiflexible chamber is ideal for precise dose measurements and for the measurement of dose distributions in scanning water phantom systems. The chamber is used as an alternative for the 31010 chamber in cases where increased signal levels are required and spatial resolution along the axis of the chamber can be compromised.

Item	Description
300-660	PTW 31010, 0.125cc Semiflex® Chamber
300-662	PTW 31013, 0.3cc Semiflex® Chamber

Specify Connection

E

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

Specifications	Item 300-660	Item 300-662
PTW Model	31010	31013
Type of Product	vented cylindrical ionization chamber	vented cylindrical ionization chamber
Application	absolute dosimetry in radiotherapy beams	absolute dosimetry in radiotherapy beams
Measuring Quantities	absorbed dose to water, air kerma, exposure	absorbed dose to water, air kerma, exposure
Reference Radiation Quality	<sup>60</sup> Co	<sup>60</sup> Co
Nominal Sensitive Volume	0.125 cm <sup>3</sup>	0.3 cm <sup>3</sup>
Design	Waterproof, vented fully guarded	Waterproof, vented fully guarded
Reference Point	on chamber axis, 4.5mm from chamber tip	on chamber axis, 9.5mm from chamber tip
Direction of Incidence	radial	radial
Nominal Response	3.3 nC/Gy	10 nC/Gy
Long-term Stability	≤ 1% per year	≤ 1% per year
Chamber Voltage	400 V nominal ± 500 V maximal	400 V nominal ± 500 V maximal
Polarity Effect at <sup>60</sup> Co	< 2%	< 1%
Photon Energy Response	≤ ± 2% (140 kV to 280 kV) ≤ ± 4% (140 kV to <sup>60</sup> Co) ≤ ± 5% (50 kV to 150 kV)	≤ ± 2% (140 kV to 280 kV) ≤ ± 4% (100 kV to <sup>60</sup> Co)
Directional Response in Water	≤ ± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 10°	≤ ± 0.5% for rotation around the chamber axis and for tilting of the axis up to ± 10°
Leakage Current	≤ ± 4 fA	≤ ± 4 fA
Cable Leakage	≤ 1 pC/(Gy·cm)	≤ 1 pC/(Gy·cm)
<b>Materials and Measures</b>		
Wall of Sensitive Volume	0.55 mm PMMA, 1.19 g/cm <sup>3</sup> 0.15 mm graphite, 0.82 g/cm <sup>3</sup>	0.55 mm PMMA, 1.19 g/cm <sup>3</sup> 0.15 mm graphite, 0.82 g/cm <sup>3</sup>
Total Wall Area Density	78 mg/cm <sup>2</sup>	78 mg/cm <sup>2</sup>
Dimension of Sensitive Volume	radius 2.75 mm length 6.5 mm	radius 2.75 mm length 16.25 mm
Central Electrode	Al 99.98, diameter 1.1 mm	Al 99.98, diameter 0.9 mm
Build-up Cap	PMMA, thickness 3mm	PMMA, thickness 3mm
<b>Ion Collection Efficiency at Nominal Voltage</b>		
Ion collection time	121 μs	121 μs
Max. dose rate for ≥ 99.5 % saturation	6 Gy/s	14 Gy/s
> 99.0 % saturation	12 Gy/s	28 Gy/s
Max. dose per pulse for ≥ 99.5 % saturation	0.5 mGy	0.8 mGy
> 99.0 % saturation	1.0 mGy	1.5 mGy
<b>Useful ranges</b>		
Chamber voltage	± 100 to 400 V	± 100 to 400 V
Radiation quality	140 kV to 50 MV photons (10 to 45) MeV electrons (50 to 270) MeV protons	100 kV to 50 MV photons (10 to 45) MeV electrons (50 to 270) MeV protons
Field size	(3 x 3) cm <sup>2</sup> to (40 x 40) cm <sup>2</sup>	(4 x 4) cm <sup>2</sup> to (40 x 40) cm <sup>2</sup>
Temperature	50°-104°F (10°-40°C)	50°-104°F (10°-40°C)
Humidity	10 - 80%, max 20 g/m <sup>3</sup>	10 - 80%, max 20 g/m <sup>3</sup>
Air pressure	700 - 1060 hPa	700 - 1060 hPa

## PTW PINPOINT® IONIZATION CHAMBERS

### PTW 31015, 0.03 cc WATERPROOF PINPOINT CHAMBER Small-sized therapy chambers for dosimetry in high-energy photon beams



- Small-sized sensitive volume of only 0.03 cm<sup>3</sup> and 2.9 mm in diameter, vented to air
- Very high spatial resolution when used for scans perpendicular to the chamber axis
- Aluminum central electrode

The 31015 PinPoint chamber is ideal for dose measurements in small fields as encountered e.g. in IORT, IMRT and stereotactic beams. Relative dose distributions can be measured with very high spatial resolution when the chamber is moved perpendicular to the chamber axis.

The waterproof, fully guarded chamber can be used in air, solid state phantoms and in water.

Item	Description
300-673	PTW 31015, 0.03 cc Waterproof PinPoint Chamber

Specify Connection

### PTW 31022, 0.016 cc PINPOINT® 3D CHAMBER

Ultra small-sized therapy chamber with 3D characteristics for dosimetry in high-energy photon beams



- Small-sized cylindrical ion chamber with vented sensitive volume of only 0.016 cm<sup>3</sup>
- Small polarity effect
- Minimal cable irradiation effect
- Minimal directional response
- Short ion collection time, low pre irradiation dose
- Suitable for field sizes from 2 cm x 2 cm to 40 cm x 40 cm

The 31022 3D PinPoint 3D chamber is ideal for dose measurements in small fields as encountered e.g. in IORT, IMRT and stereotactic beams but can also be used for measurements in large fields. Designed for radial beam orientation, the small-sized chamber shows excellent 3D characteristics. Relative dose distributions can be measured with high spatial resolution in any direction.

The waterproof, fully guarded chamber can be used in air, solid state phantoms and in water.

Item	Description
300-676	PTW 31022, 0.016 cc PinPoint 3D Chamber, Waterproof

Specify Connection

### PTW 31023, 0.015 cc PINPOINT CHAMBER

Ultra small-sized therapy chamber for dosimetry in high-energy photon beams



- Small-sized cylindrical ion chamber with sensitive volume of only 0.015 cm<sup>3</sup> and 2 mm in diameter, vented to air
- Very high spatial resolution when used for scans perpendicular to the chamber axis
- Small polarity effect
- Minimal cable irradiation effect

The 31023 PinPoint chamber is ideal for dose measurements in small fields as encountered e.g. in IMRT and stereotactic beams as well as for FFF. Relative dose distributions can be measured with very high spatial resolution when the chamber is moved perpendicular to the chamber axis.

The waterproof, fully guarded chamber can be used in air, solid state phantoms and in water.

Item	Description
300-677	PTW 31023, 0.015 cc PinPoint Chamber

Specify Connection

E

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

Specifications	Item 300-673	Item 300-676	Item 300-677
PTW Model	31015	31022	31023
Type of Product	vented cylindrical ionization chamber	vented cylindrical ionization chamber	vented cylindrical ionization chamber
Application	dosimetry in high-energy photon beams with high spatial resolution	dosimetry in photon beams	dosimetry in high-energy photon beams with high spatial resolution
Measuring Quantities	absorbed dose to water, air kerma, exposure	absorbed dose to water, air kerma, exposure	absorbed dose to water, air kerma, exposure
Reference Radiation Quality	$^{60}\text{Co}$	$^{60}\text{Co}$	$^{60}\text{Co}$
Nominal Sensitive Volume	0.03 cm <sup>3</sup>	0.016 cm <sup>3</sup>	0.015 cm <sup>3</sup>
Design	Waterproof, vented, fully guarded	Waterproof, vented, guarded	Waterproof, vented, fully guarded
Reference Point	on chamber axis, 3.4mm from chamber tip	on chamber axis, 2.4mm from chamber tip	on chamber axis, 3.4mm from chamber tip
Direction of Incidence	radial	radial	radial, axial
Pre-Irradiation Dose	2 Gy	1 Gy	1 Gy
Nominal Response	800 pC/Gy	400 pC/Gy	400 pC/Gy
Long-term Stability	≤ 1% per year	≤ 0.5 % per year	≤ 1% per year
Chamber Voltage	400 V nominal ± 500 V maximal	300 V nominal ± 500 V maximal	300 V nominal ± 500 V maximal
Polarity Effect at $^{60}\text{Co}$	≤ ± 2%	≤ ± 0.8 %	≤ ± 1%
Directional Response in Water	≤ ± 0.5% for rotation around the chamber axis, ≤ ± 1% for tilting of the axis up to ± 20° (radial incidence) ± 15° (axial incidence)	≤ ± 0.5% for rotation around the chamber axis, ≤ ± 1% for tilting of the axis up to ± 10°	≤ ± 0.5% for rotation around the chamber axis, ≤ ± 1% for tilting of the axis up to ± 10°
Leakage Current	≤ ± 4 fA	≤ ± 4 fA	≤ ± 4 fA
Cable Leakage	≤ 1 pC/(Gy·cm)	≤ 100 fC/(Gy·cm)	≤ 100 fC/(Gy·cm)

## Materials and Measures

Wall of Sensitive Volume	0.57 mm PMMA, 1.19 g/cm <sup>3</sup> 0.09 mm graphite, 1.85 g/cm <sup>3</sup>	0.57 mm PMMA, 1.19 g/cm <sup>3</sup> 0.09 mm graphite, 1.85 g/cm <sup>3</sup>	0.57 mm PMMA, 1.19 g/cm <sup>3</sup> 0.09 mm graphite, 1.85 g/cm <sup>3</sup>
Total Wall Area Density	85 mg/cm <sup>2</sup>	84 mg/cm <sup>2</sup>	85 mg/cm <sup>2</sup>
Dimension of Sensitive Volume	radius 1.45 mm length 5 mm	radius 1.45 mm length 2.9 mm	radius 1 mm length 5 mm
Central Electrode	Al 99.98, diameter 0.3 mm	Al 99.98, diameter 0.6 mm	Al 99.98, diameter 0.6 mm
Build-up Cap	PMMA, thickness 3mm	PMMA, thickness 3mm	PMMA, thickness 3mm

## Ion Collection Efficiency at Nominal Voltage

Ion collection time	50 μs	45 μs	13 μs
Max. dose rate for ≥ 99.5 % saturation	29 Gy/s	46 Gy/s	557 Gy/s
≥ 99.0 % saturation	55 Gy/s	91 Gy/s	1.1 kGy/s
Max. dose per pulse for ≥ 99.5 % saturation	1.2 mGy	0.8 mGy	4.8 mGy
≥ 99.0 % saturation	2.3 mGy	2.2 mGy	9.6 mGy

## Useful ranges

Chamber voltage	± 100 to 400 V	± 100 to 400 V	± 100 to 400 V
Radiation quality	$^{60}\text{Co}$ - 50 MV photons	$^{60}\text{Co}$ - 25 MV photons	$^{60}\text{Co}$ - 25 MV photons
Field size	2x2 cm <sup>2</sup> to 30x30 cm <sup>2</sup>	2x2 cm <sup>2</sup> to 40x40 cm <sup>2</sup>	2x2 cm <sup>2</sup> to 40x40 cm <sup>2</sup>
Temperature	50°-104°F (10°-40°C)	50°-104°F (10°-40°C)	50°-104°F ( 10°-40°C)
Humidity	10 - 80%, max 20 g/m <sup>3</sup>	10 - 80%, max 20 g/m <sup>3</sup>	10 - 80%, max 20 g/m <sup>3</sup>
Air pressure	700 - 1060 hPa	700 - 1060 hPa	700 - 1060 hPa

## PTW 23343 MARKUS® ELECTRON CHAMBER

Classic plane parallel chamber for absolute dosimetry in high-energy electron beams



- Thin entrance window and waterproof protection cap
- Small-sized for high spatial resolution
- Sensitive volume 0.055 cm<sup>3</sup>, vented to air

The 23343 Markus chamber is manufactured in the original famous Markus design. Absorbed dose to water can be measured by applying correction factors for perturbation effects as published in pertinent dosimetry protocols. The thin entrance window allows measurements in solid state phantoms up to the surface. The protection cap makes the chamber waterproof for measurements in water phantoms.

Item	Description
300-625	PTW 23343 - Markus (0.055cc) Chamber
664-401	Co-60 Build-Up Cap, 4.0 mm Acrylic

Specify Connection

## PTW 34045 ADVANCED MARKUS® ELECTRON CHAMBER

Perturbation-free version of the famous classic Markus chamber for absolute dosimetry in high-energy electron beams



- Perturbation-free electron chamber
- Thin entrance window and waterproof protection cap
- Small-sized for high spatial resolution
- Sensitive volume 0.02 cm<sup>3</sup>, vented to air
- Suitable for relative and absolute electron dosimetry

The Advanced Markus chamber features a wide guard ring design to avoid perturbation effects by reducing the influence of scattered radiation from the housing. Since the outer shape is identical with the

Markus chamber, all existing Markus chamber phantom plates and adapters can be used with the Advanced Markus chamber. The small sensitive volume makes the chamber ideal for dose distribution measurements in a water phantom, giving a good spatial resolution. The chamber features a flat energy response within the nominal energy range from 2 MeV to 45 MeV. With the very thin membrane of only 0.03 mm polyethylene, the chamber is suitable for use in solid state phantoms. The chamber comes with a protective acrylic cover of 0.87 mm thickness (1 mm water equivalence) for use in water. A calibration certificate with a <sup>60</sup>Co calibration factor given in absorbed dose to water is included. Air density correction is required for each measurement. The chamber cable length is 1.05 m.

Item	Description
300-626	PTW 34045 - Advanced Markus Electron Chamber
664-401	Co-60 Build-Up Cap, 4.0 mm Acrylic

Specify Connection

## PTW 34001 ROOS® ELECTRON CHAMBER

Waterproof plane parallel chamber for absolute dosimetry in high energy electron and proton beams



- Perturbation-free, minimized polarity effect
- Reference chamber for precise absolute electron dosimetry
- Waterproof, wide guard ring design
- Sensitive volume 0.35 cm<sup>3</sup>, vented to air
- Suitable for use in water and in solid state phantoms

The 34001 Roos chamber is the golden standard for absolute dose measurements in high-energy electron beams. Modern dosimetry protocols refer to the chamber's design and provide dosimetric correction factors. Its waterproof design allows the chamber to be used in water or in solid state phantoms. The Roos chamber is also well suited for the measurement of high-energy photon depth dose curves. The chamber can be used for dose measurements of proton beams.

The Roos electron chamber<sup>1</sup> is used as a reference electron chamber. It is recommended by the IAEA<sup>2</sup> for high precision electron dosimetry in radiation therapy. The chamber has a 4 mm wide guard ring to exclude any perturbation effect even at low electron energies. The polarity effect is negligible (< 0.5 % at 10 MeV). The energy response is only influenced by the stopping power ratios water / air. The chamber is waterproof for absolute dose and depth dose measurements in a water phantom. The coated acrylic entrance window has a thickness of 1.1 mm. The nominal useful energy range is from 2 MeV to 45 MeV. A calibration certificate with a <sup>60</sup>Co calibration factor given in absorbed dose to water is included. Air density correction is required for each measurement. The chamber cable length is 1.08 m.

<sup>1</sup> The Roos electron chamber was developed in cooperation with Dr. Roos, PTB-Braunschweig, German Federal Institute of Physics and Metrology (National Laboratory of Germany)

<sup>2</sup> Technical Report No. TRS-381. The Use of Plane Parallel Ionization Chambers in High Energy Electron and Photon Beams, IAEA (International Atomic Energy Agency), Vienna 1997

Item	Description
300-675	PTW 34001 - Roos Ion Chamber

Specify Connection

E

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

Specifications	Item 300-625	Item 300-626	Item 300-675
PTW Model	23343 Markus	34045 Advanced Markus	34001 Roos
Type of Product	vented plane parallel ionization chamber		vented plane parallel ionization chamber acc IEC 60731
Application	absolute dosimetry in high-energy electron beams		absolute dosimetry in high-energy electron and proton beams
Measuring Quantity	absorbed dose to water		
Reference Radiation Quality	$^{60}\text{Co}$		
Nominal Sensitive Volume	0.055cm <sup>3</sup>	0.02cm <sup>3</sup>	0.35cm <sup>3</sup>
Design	waterproof with protection cap, vented		waterproof, vented
Reference Point	in chamber center on entrance foil, or 1.3 mm below surface of protection cap		in chamber center, 1.12 mm below surface
Direction of Incidence	perpendicular to chamber plane		perpendicular to chamber plane, see label 'FOCUS'
Nominal Response	2 nC/Gy	0.67 nC/Gy	12 nC/Gy
Long-term Stability	< 1 % per year		< 0.5 % per year
Chamber Voltage	300 V nominal $\pm$ 400 V maximal		200 V nominal $\pm$ 400 V maximal
Polarity Effect	< 1 % for electrons > 9 MeV		< 0.5 %
Directional Response in Water	< $\pm$ 0.1 % for chamber tilting < $\pm$ 10°		
Leakage Current	< $\pm$ 4 fA		
Cable Leakage	< 3.5 pC/(Gy·cm)	< 1 pC/(Gy·cm)	
<b>Materials and Measures</b>			
Entrance Foil	0.03 mm PE (polyethylene CH <sub>2</sub> ), 2.76 mg/cm <sup>2</sup>		
Protection Cap	0.87 mm PMMA, 1.19 g/cm <sup>3</sup> , 0.4 mm air		
Entrance window			1.01 mm PMMA, 1.19 g/cm <sup>3</sup> 0.02 mm graphite, 0.82 g/cm <sup>3</sup> 0.1 mm varnish, 1.19 g/cm <sup>3</sup>
Total window area density	106 mg/cm <sup>2</sup> , 1.3 mm (protection cap included)		132 mg/cm <sup>2</sup>
Water-equivalent window thickness	1.06 mm (protection cap included)		1.3 mm
Sensitive Volume	radius 2.65 mm depth 2 mm	radius 2.5 mm depth 1 mm	radius 7.5 mm depth 2 mm
Guard ring width	< 0.2 mm	2 mm	4 mm
<b>Ion Collection Efficiency at Nominal Voltage</b>			
Ion collection time	90 $\mu$ s	22 $\mu$ s	125 $\mu$ s
Max. dose rate for $\geq$ 99.5 % saturation	12 Gy/s	187 Gy/s	5.2 Gy/s
$\geq$ 99.0 % saturation	24 Gy/s	375 Gy/s	10.4 Gy/s
Max. dose per pulse for $\geq$ 99.5 % saturation	0.7 mGy	2.78 mGy	0.46 mGy
$\geq$ 99.0 % saturation	1.4 mGy	5.56 mGy	0.93 mGy
<b>Useful ranges</b>			
Chamber voltage	$\pm$ 100 - 300 V	$\pm$ 50 - 300 V	$\pm$ 50 - 300 V
Radiation quality	2 - 45 MeV electrons 50 - 270 MeV protons		2 - 45 MeV electrons $^{60}\text{Co}$ - 25 MV photons 50 - 270 MeV protons
Field size	3 x 3 cm <sup>2</sup> to 40 x 40 cm <sup>2</sup>		4 x 4 cm <sup>2</sup> to 40 x 40 cm <sup>2</sup>
Temperature	50° to 104°F, 10° to 40°C		
Humidity	10 to 80 %, max 20 g/m <sup>3</sup>		
Air pressure	700 - 1060 hPa		



## PTW 30016 - 0.3 cm<sup>3</sup> Rigid Stem Chamber

Therapy chamber for absolute dosimetry in high-energy photon and electron beams



- Fully guarded chamber
- Sensitive volume 0.3 cm<sup>3</sup>, vented to air
- Acrylic wall, graphited
- Aluminum central electrode

The 30016 chamber is used for absolute dose measurements in radiation therapy in cases where the high volume of the 30015 chamber is not needed and a higher spatial resolution is needed. Correction factors needed to determine absorbed dose to water or air kerma are published in the pertinent dosimetry protocols. The acrylic chamber wall ensures the ruggedness of the chamber. The chamber is designed for the use in solid state phantoms and is therefore not waterproof.

Specifications	Item 300-615
PTW Model	30016
Type of Product	vented cylindrical ionization chamber
Application	absolute dosimetry in radiotherapy beams
Measuring Quantity	absorbed dose to water, air kerma, exposure
Reference Radiation Quality	<sup>60</sup> Co
Nominal Sensitive Volume	0.3 cm <sup>3</sup>
Design	not waterproof, vented, fully guarded
Reference Point	in chamber axis, 9.5 mm from chamber tip
Direction of Incidence	radial
Nominal Response	10.5 nC/Gy
Long-term Stability	≤ 1 % per year
Chamber Voltage	400 V nominal ± 600 V maximal
Polarity Effect	≤ 1%
Photon Energy Response	≤ ± 2 %, 70kV - 250 kV ≤ ± 4 %, 200kV - 60Co
Directional Response in Solid State Phantom	≤ ± 0.5 % for rotation around the chamber axis, ≤ ± 1 % for tilting of the axis up to ± 20°
Leakage Current	≤ ± 4 fA
Cable Leakage	≤ 1 pC/(Gy·cm)

Materials and Measures	
Wall of Sensitive Volume	0.35 mm PMMA, 1.19 g/cm <sup>3</sup> 0.135 mm graphite, 1.85 g/cm <sup>3</sup>
Total Window Area Density	67 mg/cm <sup>2</sup>
Dimension of Sensitive Volume	radius 2.5 mm length 18 mm
Central Electrode	Al 99.98, diameter 0.85 mm
Build-Up Cap	PMMA, thickness 3 mm

Ion Collection Efficiency at Nominal Voltage	
Ion collection time	84 μs
Max. dose rate for ≥ 99.5 % saturation	11.5 Gy/s
≥ 99.0 % saturation	23.1 Gy/s
Max. dose per pulse for ≥ 99.5 % saturation	0.69 mGy
≥ 99.0 % saturation	1.38 mGy

Useful ranges	
Chamber voltage	± 100 - 600 V
Radiation quality	70 kV - 50 MV Photons 6 - 25 MeV electrons
Field size	5 x 5 cm <sup>2</sup> to 40 x 40 cm <sup>2</sup>
Temperature	50° to 104°F, 10° to 40° C,
Humidity	20 to 80 %, max 20 g/m <sup>3</sup>
Air pressure	700 - 1060 hPa

Item	Description
300-615	PTW 30016 - 0.3 cm <sup>3</sup> Rigid Stem Ion Chamber

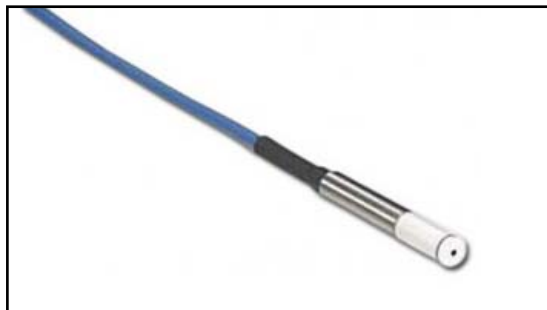
Specify Connection

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# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## PTW 60016 DOSIMETRY DIODE P - PHOTONS

Waterproof Silicon Detector for Dosimetry in High-Energy Photon Beams Up to Field Size 40cm x 40cm



- Waterproof, disk-shaped silicon diode detector with sensitive volume of only 0.03 mm<sup>3</sup>
- Useful for measurements in small and large photon fields
- Excellent spatial resolution
- Minimized energy response for field size independent measurements up to 40 cm x 40 cm

The Dosimetry Diode P has been designed for dose measurements in small photon fields as encountered in IORT, IMRT and stereotactic beams. The excellent spatial resolution allows for very precise beam profile measurements even in the penumbra region of small fields. Due to its superior energy response accurate percentage depth dose (PDD) measurements can be performed which are field size independent up to field sizes of 40 x 40 cm<sup>2</sup>.

The waterproof diode detector can be used in air, solid state phantoms and in water.

<b>Specifications</b>	<b>Item 300-681</b>
<b>PTW Model</b>	60016
<b>Type of Product</b>	p-type silicon diode
<b>Application</b>	dosimetry in radiotherapy beams
<b>Measuring Quantity</b>	absorbed dose to water
<b>Reference Radiation Quality</b>	<sup>60</sup> Co
<b>Nominal Sensitive Volume</b>	0.03 mm <sup>3</sup> , radius 0.6 mm, shielded
<b>Design</b>	waterproof, disk-shaped sensitive volume perpendicular to detector axis
<b>Reference Point</b>	on detector axis, 2.42 mm from detector tip
<b>Direction of Incidence</b>	axial
<b>Nominal Response</b>	9 nC/Gy
<b>Dose Stability</b>	≤ 0.5 %/kGy at 6 MV ≤ 1 %/kGy at 15 MV ≤ 0.5 %/kGy at 5 MeV ≤ 4 %/kGy at 21 MeV
<b>Temperature Response</b>	≤ 4 %/K
<b>Energy Response</b>	at higher depths than d <sub>max</sub> , the percentage depth dose curves match curves measured with ionization chambers within ± 0.5%
<b>Bias Voltage</b>	0 V
<b>Signal Polarity</b>	negative
<b>Directional Response in Solid State Phantom</b>	≤ ± 0.5 % for rotation around the chamber axis, ≤ ± 1 % for tilting ≤ ± 40 °
<b>Leakage Current</b>	≤ ± 50 fA
<b>Cable Leakage</b>	≤ 1 pC/(Gy cm)
<b>Materials and Measures</b>	
<b>Entrance Window</b>	1 mm RW3, 1.045 g/cm <sup>3</sup> 1 mm epoxy
<b>Total Window Area Density</b>	250 mg/cm <sup>2</sup>
<b>Water-equivalent window thickness</b>	2.42 mm
<b>Sensitive Volume</b>	1 mm <sup>2</sup> circular 30 μm thick
<b>Outer dimensions</b>	diameter 7 mm, length 47 mm
<b>Useful ranges</b>	
<b>Radiation quality</b>	<sup>60</sup> Co - 25 MV Photons
<b>Field size</b>	1 x 1 cm <sup>2</sup> to 40 x 40 cm <sup>2</sup>
<b>Temperature</b>	10° to 40°C, 50° to 104°F
<b>Humidity</b>	10 to 80 %, max 20 g/m <sup>3</sup>

Item	Description
300-681	PTW 60016 - Dosimetry Diode P - Photons

## PTW SOFT X-RAY IONIZATION CHAMBERS

Thin window plane parallel chamber for dose measurements in superficial radiation therapy

### PTW 23342 - 0.02 cm<sup>3</sup> Soft X-Ray Chamber



- Ultra thin entrance window
- For low-energy photons from 15 kV to 70 kV
- Sensitive volume 0.02 cm<sup>3</sup>, vented to air

The 23342 soft X-ray chamber is the golden standard for absolute dose measurements in low-energy photon beams as used in superficial radiation therapy. Correction factors needed for the determination of absorbed dose to water are available. The chamber is designed for the use in solid state phantoms.

Item #	Description
300-620	Small 0.02 cm <sup>3</sup> Soft X-Ray Chamber - PTW 23342

### PTW 23344 - 0.2 cm<sup>3</sup> Soft X-Ray Chamber



- Ultra thin entrance window
- For low-energy photons from 15 kV to 70 kV
- Sensitive volume 0.2 cm<sup>3</sup>, vented to air

The 23344 soft X-ray chamber is used for absolute dose measurements in low-energy photon beams as used in superficial radiation therapy. The sensitive volume is larger than that of the 23342 chamber, giving a higher signal at the cost of a lower spatial resolution. Correction factors needed for the determination of absorbed dose to water are available. The chamber is designed for the use in solid state phantoms.

Item #	Description
300-630	Big 0.2 cm <sup>3</sup> Soft X-Ray Chamber - PTW 23344

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# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

Specifications	Item 300-620	Item 300-630
PTW Model	23342	23344
Type of Product	vented plane parallel ionization chamber acc. IEC 60731	
Application	absolute dosimetry in low-energy photon beams	
Measuring Quantity	absorbed dose to water, air kerma, exposure	
Reference Radiation Quality	30 kV, HVL 0.37 mm Al (T30)	
Nominal Sensitive Volume	0.02 cm <sup>3</sup>	0.2 cm <sup>3</sup>
Design	not waterproof, vented	
Reference Point	in chamber center of entrance foil underside	
Direction of Incidence	perpendicular to chamber plane	
Nominal Response	1 nC/Gy	10 nC/Gy
Long-Term Stability	≤ 1 % per year	
Chamber Voltage	300 V nominal, ± 500 V maximal	
Directional Response	≤ ± 1 % for chamber tilting up to ± 20°	
Leakage Current	≤ ± 10 fA	
Cable Leakage	≤ 1 pC/(Gy·cm)	
<b>Materials and Measures</b>		
Entrance Foil	0.03 mm PE	
Total Window Area Density	2.76 mg/cm <sup>2</sup>	
Sensitive Volume	radius 1.5 mm depth 1 mm	radius 6.5 mm depth 1.5 mm
<b>Ion Collection Efficiency at Nominal Voltage</b>		
Ion collection time	30 μs	
Max. dose rate for ≥ 99.5 % saturation	175 Gy/s	60 Gy/s
≥ 99.0 % saturation	350 Gy/s	120 Gy/s
Max. dose per pulse for ≥ 99.5 % saturation	1.8 mGy	1.1 mGy
≥ 99.0 % saturation	4.5 mGy	2.7 mGy
<b>Useful Ranges</b>		
Chamber Voltage	± 100 - 400 V	
Radiation Quality	15 - 70 kV x rays	
Field Size	1 x 1 cm <sup>2</sup> to 40 x 40 cm <sup>2</sup>	2 x 2 cm <sup>2</sup> to 40 x 40 cm <sup>2</sup>
Temperature	10° to 40°C, 50° to 104°F	
Humidity	20 to 80 %, max 20 g/m <sup>3</sup>	
Air pressure	700 to 1060 hPa	

## EXRADIN ION CHAMBERS

### THE EXRADIN ADVANTAGE

#### Better Components

- Waterproof construction eliminates the need for sleeves or protective coatings.
- Robust materials are more durable than typical chambers (i.e. PMMA thimble tips), and therefore are more suitable for routine measurements.
- Excellent inherent conductivity negates the need for coatings found in other chambers, which can flake off and require careful handling.
- Collector, guard and shell are made of conductive material developed by Dr. Francis Shonka, the creator of A150 tissue-equivalent, C552 air-equivalent and D400 polystyrene-equivalent plastics

#### Superior Stability

- Advanced guard design creates a consistent collecting volume with uniform field lines, providing a stable, repeatable signal.
- Exradin detectors feature some of the quickest settling times of any manufacturer.
- Exceptionally wide guard rings on all parallel plate chambers eliminate perturbation volume effects.

#### Ideal Design for Improved Accuracy

- The Collecting volumes of Exradin Ion Chambers are defined by the guard, not an insulator, creating a significantly more stable signal than competing detectors.
- Axially symmetric design ensures a uniform isotropic response.
- Collection efficiencies of 99.9% or greater.
- Chamber vents through a flexible tube surrounding the triaxial cable; ideal for use in water or plastic phantoms.
- Homogeneous construction on most chambers.

#### Quick Response upon hookup

- Ionization currents can be read immediately after electrometer and extension cable transients subside because Exradin Ion Chambers do not exhibit voltage soakage or stem effect.
- Exradin chambers typically have  $\pm 10 \times 10^{-15}$  amp leakage.

## EXRADIN THIMBLE ION CHAMBERS

Strict manufacturing tolerances and waterproof construction makes these detectors ideal for dosimetry calibrations in water, air and other phantom materials.

- **Waterproof construction backed by five-year warranty.**
- **Rugged Shonka plastic provides years of reliable use and excellent conductivity.**
- **Lack of stem-effect and low leakage provides precise, consistent measurements.**
- **Proven guard design stabilizes measurements and reduces settling time.**
- **Homogeneous material throughout the chamber minimizes perturbation of the beam.**

**Exradin A1 Ion Chamber**  
0.053 cc Miniature Shonka



The Exradin A1 has the same internal dimensions and collecting volume as the A1SL, yet the larger diameter is ideal for use in solid phantoms. This chamber is characterized in TG-51 and TRS-398.

- Two separate stem pieces of 5.1 cm and 12.7 cm can be coupled together for versatility of operation and additional length when needed

Item #	Description
300-205-A1	Exradin A1, 0.053 cc Miniature Shonka
300-205-T1	Exradin T1, 0.053 cc Miniature Shonka

**Exradin A1SL Ion Chamber**  
0.053 cc Slimline Miniature Shonka



The A1SL, available in air or tissue equivalent plastic, provides a perfect balance between fast scanning and point-dose measurements within 1cm in water, air or phantom materials. This chamber is characterized for TG-51 and TRS-398 procedures.

- The Exradin A1SL Ion Chamber has a one-piece, non-removable 5.6 cm stem made of black anodized aluminum for use in plastic phantoms with small cavities or confined water tank mounting scenarios
- 6x7mm field size

Item	Description
300-205-A1SL	Exradin A1SL, 0.053 cc Slimline Miniature Shonka

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

**Exradin A2**  
0.53 cc Spokas



The A2 is ideal for precise measurement of exposure and air kerma in photon beams and absorbed dose in photon, electron, proton and other beams. This chamber is available in air, polystyrene and tissue equivalent plastic. It is also available in magnesium equivalent plastic.

- Two separate stem pieces of 5.1 cm and 12.7 cm can be coupled together for flexibility of operation and additional length when needed

Item	Description
300-210-A2	Exradin A2, 0.53 cc Spokas Chamber
300-210-P2	Exradin P2, 0.53 cc Spokas Chamber
300-210-T2	Exradin T2, 0.53 cc Spokas Chamber

**Exradin A12**  
0.64 Farmer-Type



Characterized in TG-51 and TRS-398, the A12 has fast settling time and a removable stem for superior absolute dosimetry calibrations in water, air or phantoms.

- Two separate stem pieces of 5.1 cm and 12.7 cm can be coupled together for flexibility of operation and additional length when needed
- Matching 2.8 mm thick Cobalt-60 build-up cap of C552 Shonka air-equivalent plastic included

Item	Description
300-240-A12	Exradin A12, 0.64 cc Farmer-Type Chamber

**Exradin A12S**  
0.24 cc Farmer - Type



The A12S is designed for absolute dosimetry calibrations in water, air or phantoms. The collector of the A12S is approximately one-third the size of the A12, confining collecting volume to the tip of the chamber.

- Two separate stem pieces of 5.1 cm and 12.7 cm can be coupled together for flexibility of operation and additional length when needed
- Matching 2.8 mm thick Cobalt-60 build-up cap of C552 Shonka air-equivalent plastic included

Item	Description
300-240-A12S	Exradin A12S, 0.24 cc Farmer-Type Chamber

**Exradin A19**  
0.62 cc Classic Farmer®



The A19 fits existing plastic phantom cavities and build-up caps, limiting perturbation and minimizing settling time in absolute dosimetry calibration. This chamber is characterized for TG-51 procedures.

- One-piece, non-removable 4.6 cm stem made of black anodized aluminum styled after traditional Farmer-type chambers
- Matching 2.8 mm thick Cobalt-60 build-up cap of C552 Shonka air-equivalent plastic included

®Farmer is a registered trademark of PTW Freiburg GmbH

Item	Description
300-240-A19	Exradin A19, 0.62 cc Classic Farmer® Chamber

**Exradin A28**  
0.125cc Scanning



The Model A28 Chamber features exceptional omni-directional spatial resolution for relative dosimetry scanning in water phantoms and use in minute field measurements.

Item	Description
300-255-A28	Exradin A28, 0.125 cc Scanning Chamber

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## SPECIFICATIONS FOR EXTRADIN THIMBLE ION CHAMBERS

Specifications	Item 300-205-A1 Item 300-205-T1	Item 300-205-A1SL	Item 300-210-A2 Item 300-210-P2 Item 300-210-T2	Item 300-240-A12	Item 300-240-A12S	Item 300-240-A19	Item 300-240-A28
Exradin Model	A1	A1SL	A2	A12	A12S	A19	A28
Collecting Volume	0.053 cm <sup>3</sup>	0.053 cm <sup>3</sup>	0.53 cm <sup>3</sup>	0.64 cm <sup>3</sup>	0.24 cm <sup>3</sup>	0.62 cm <sup>3</sup>	0.125 cm <sup>3</sup>
Centroid of Collecting Volume from exterior tip of shell	3.86 mm	4.06 mm	6.96 mm	12.9 mm	5.79 mm	13.0 mm	4.47 mm
Outside Diameter of Shell Collecting Volume	6.0 mm	6.35 mm	11.4 mm	7.1 mm	7.1 mm	7.1 mm	8.0 mm
Inside Diameter of Shell Collecting Volume	4.0 mm	4.0 mm	9.5 mm	6.1 mm	6.1 mm	6.1 mm	5.8 mm
Shell Wall Thickness	1.0 mm	1.1 mm	1.0 mm	0.5 mm	0.5 mm	0.5 mm	1.1 mm
Collector Diameter	1.0 mm	1.0 mm	4.6 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm
Collector Length	4.4 mm	4.4 mm	8.4 mm	21.6 mm	7.5 mm	21.6 mm	6.4 mm
Shell, Collector and Guard Material*	A, T	A	A, P, T	A	A	A	A
Nominal Air Kerma Calibration Factor†	5.4E+8 Gy/C	5.4E+8 Gy/C	5.4E+7 Gy/C	4.4E+7 Gy/C	1.2E+8 Gy/C	4.5E+7 Gy/C	2.3E+8 Gy/C
Recommended Polarizing Voltage	300 V						
Nominal Leakage	+ 10 x 10 <sup>-15</sup> amp						
Maximum Polarizing Voltage	1000 VDC						
Waterproof	YES						
Included Buildup Cap	None	None	None	<sup>60</sup> Co	<sup>60</sup> Co	<sup>60</sup> Co	<sup>60</sup> Co

\* Material: A – C552 Shonka air-equivalent plastic P – D400 polystyrene-equivalent plastic T – A150 Shonka tissue-equivalent plastic  
 † Nominal calibration factor for Co-60 at 22° C

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## EXRADIN MICRO ION CHAMBERS

Superior small-field dosimetry to assess pinpoint radiation in IMRT, stereotactic, orthovoltage, x-rays and superficial skin therapy

- Inherently waterproof construction eliminates the need for sleeves or protective coatings.
- Rugged conductive plastic provides years of reliable use.
- Lack of stem-effect and low leakage provides precise, reliable measurements.

**Exradin A14 Ion Chamber  
0.015 cc Microchamber**



**Exradin A14SL Ion Chamber  
0.015 cc Slimline Microchamber**



The Model A14 microchamber has the exact internal dimensions and collecting volume as the Model A14SL, yet a larger diameter is ideal for use in solid phantoms.

The Model A14SL is capable of measuring extremely small field sizes, allowing for exceptional spatial resolution and exact pinpoint beam profile characterization. This helps assess radiation fields during IMRT and stereotactic radiosurgery

Item	Description
300-250-A14	Exradin A14, 0.015 cc Microchamber

Item	Description
300-250-A14SL	Exradin A14SL, 0.015 cc Slimline Microchamber

**Exradin A16 Ion Chamber  
0.007 cc Micropoint**



The Model A16 microchamber measures extremely small field sizes (3.4 mm x 3.4 mm); allowing for exceptional spatial resolution and exact pinpoint beam profile characterization. These attributes make the A16 ideal for stereotactic radiosurgery and IMRT applications.

**Exradin A26 Ion Chamber  
0.015 cc Reference-Class Microchamber**



Experience the same measurement quality in a microchamber you have come to expect from your reference-class chamber.

- Rapid settling
- Stable, reproducible measurements
- Realistic and meaningful ion recombination corrections
- Minimal polarity dependence
- Minimal energy dependence
- **The only microchamber that was designed to meet reference class criteria**

Item	Description
300-253-A16	Exradin A16, 0.007 cc Micropoint

Item	Description
300-254-A26	Exradin A26, 0.015 cc Reference-Class Microchamber



# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## SPECIFICATIONS FOR EXRADIN THIMBLE ION CHAMBERS

Specifications	Item 300-250-A14	Item 300-250-A14SL	Item 300-253-A16	Item 300-253-A26
Exradin Model	A14	A14SL	A16	A26
Collecting Volume	0.015 cm <sup>3</sup>	0.015 cm <sup>3</sup>	0.007 cm <sup>3</sup>	0.015 cm <sup>3</sup>
Centroid of Collecting Volume from exterior tip of shell	2.21 mm	2.39 mm	1.65 mm	1.98 mm
Outside Diameter of Shell Collecting Volume	6.0 mm	6.35 mm	3.4 mm	4.3 mm
Inside Diameter of Shell Collecting Volume	4.0 mm	4.0 mm	2.4 mm	3.3 mm
Shell Wall Thickness	1.0 mm	1.1 mm	0.5 mm	0.5 mm
Collector Diameter	0.3 mm	0.3 mm	0.3 mm	0.75 mm
Collector Length	1.5 mm	1.5 mm	1.27 mm	1.78 mm
Shell Material*	A	A	A	A
Nominal Air Kerma Calibration Factor	1.9E+9 Gy/C	1.9E+9 Gy/C	4.1E+9 Gy/C	1.85E+9 Gy/C
Recommended Polarizing Voltage	300 V			
Nominal Leakage	+ 10 Fa			
Maximum Polarizing Voltage	1000 VDC			
Waterproof	YES			
Included Buildup Cap	None	None	<sup>60</sup> Co	<sup>60</sup> Co

\* Material: A – C552 Shonka air-equivalent plastic

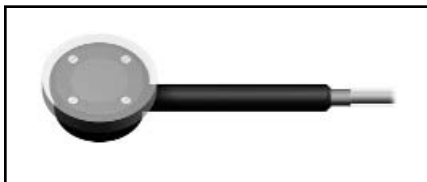
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## EXRADIN PARALLELE PLATE CHAMBERS

Exradin Parallel Plate Chambers ensure precision in depth-dose measurements by providing uniform field lines even at low energies

- Exceptionally wide guard rings exceed 3mm widths recommended in TG-39.
- Rigid stem allows accurate positioning of chamber.
- Chamber vents through a flexible tube sealed to the chamber body, ideal for use in water or plastic phantoms.

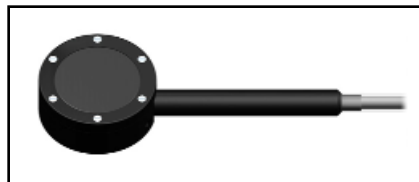
**Exradin A10**  
**0.050 cc Markus®-type Parallel Plate**



The A10 Markus-type chamber provides excellent spatial resolution for dose distribution measurements in a water phantom. An acrylic waterproof cap is included with this chamber for use in TG-51 electron beam protocols.

Item	Description
300-225-A10	Exradin A10, 0.050 cc Markus®-type Chamber

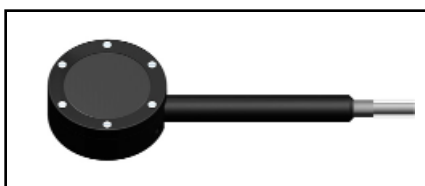
**Exradin A11**  
**0.62 cc Parallel Plate**



Waterproof A11 Roos-type chamber may be operated while fully submerged without any protective sheath; ideal for repeated TG-51/TRS-398 dose distribution measurements in a water phantom.

Item	Description
300-230-A11	Exradin A11, 0.62 Parallel Plate Chamber
300-230-P11	Exradin P11, 0.62 Parallel Plate Chamber
300-230-T11	Exradin T11, 0.62 Parallel Plate Chamber

**Exradin A11TW**  
**0.93 cc Thin Window Parallel Plate**



The 11TW is tailored for use in superficial therapy and low energy diagnostic beams. The thin-window design provides nearly constant response over the entire diagnostic energy range.

Item	Description
300-232-A11TW	Exradin A11TW, 0.93 Thin Window Parallel Plate Chamber
300-232-P11TW	Exradin P11TW, 0.93 Thin Window Parallel Plate Chamber
300-232-T11TW	Exradin T11TW, 0.93 Thin Window Parallel Plate Chamber

**Exradin A20**  
**0.074 Low Energy X-ray**



The A20 is a low-energy x-ray chamber for assessing and calibrating pinpoint radiation fields for x-rays, stereotactic and TG-61 compliant superficial skin therapy.

Item	Description
300-235-A20	Exradin A26, 0.015 cc Reference-Class Microchamber

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## SPECIFICATIONS FOR EXTRADIN PARALLEL PLATE ION CHAMBERS

Specifications	Item 300-225-A10	Item 300-230-A11 Item 300-230-P11 Item 300-230-T11	Item 300-232-A11TW Item 300-232-P11TW Item 300-232-T11TW	Item 300-254-A26
<b>Exradin Model</b>	A10	11	11TW	A20
<b>Collecting Volume</b>	0.050 cm <sup>3</sup>	0.62 cm <sup>3</sup>	0.93 cm <sup>3</sup>	0.074 cm <sup>3</sup>
<b>Centroid of Collecting Volume from exterior surface of window</b>	1.0 mm	2.0 mm	1.5 mm	1.8 mm
<b>Window Collector Gap</b>	2.0 mm	2.0 mm	1.5 mm	1.8 mm
<b>Collector Diameter</b>	5.4 mm	20.0 mm	20.0 mm	1.93 mm
<b>Guard Ring Width (Radial)</b>	4.3 mm	4.4 mm	4.4 mm	1.2 mm
<b>Window Material</b>	3.86 mg/cm <sup>2</sup> Kapton	1.0 mm A, P or T	3.86 mg/cm <sup>2</sup> Kapton	7.72 mg/cm <sup>2</sup> Kapton
<b>Window or Support Rings, Collector and Guard Material</b>	A	A, P, T	A, P, T	A
<b>Nominal Air Kerma Calibration Factor</b>	5.6E+8 Gy/C	4.6E+8 Gy/C	3.0E+7 Gy/C	3.85E+8 Gy/C
<b>Nominal Leakage</b>	+ 10 nA			
<b>Maximum Polarizing Voltage</b>	1000 VDC			
<b>Waterproof</b>	Yes, with included 1.0 mm PMMA Cap	Yes	Yes, with included 1.0 mm PMMA Cap	No
<b>Included Buildup Cap</b>	None			

\* **Material:** A – C552 Shonka air-equivalent plastic P – D400 polystyrene-equivalent plastic T – A150 Shonka tissue-equivalent plastic

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# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## IBA FARMER TYPE CHAMBERS

- Waterproof
- Air ionization chamber
- Vented through waterproof sleeve
- Fully guarded
- Includes Build-up Cap, with individual factory calibration certificate and user's guide

### Applications

All farmer type chambers are designed for measurements with high reproducibility in air, in solid or in water phantoms. They are suitable for absolute dosimetry of photon, electron and proton beams in radiotherapy.

### 300-720 FC65-P

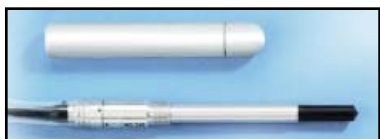


300-720, the FC65-P can be used for all routine applications.

- Robust plastic construction for daily beam check

Item #	Description
300-720	Farmer Type Chamber FC65-P

### 300-222 FC65-G



300-722, the FC65-G is the standard reference detector for reference dosimetry and scientific applications

Item #	Description
300-722	Farmer Type Chamber FC65-G

### 300-725 FC23-C



300-725, the FC23-C yields higher precision in measuring of isodose contours.

- Robust plastic construction for daily beam check
- Higher spatial resolution

Item #	Description
300-725	Farmer Type Chamber FC23-C

Specifications	Item 300-720	Item 300-722	Item 300-725
<b>IBA</b>	FC65-P	FC65-G	FC23-C
<b>Cavity Volume</b>	0.65 cm <sup>3</sup>	0.65 cm <sup>3</sup>	0.23 cm <sup>3</sup>
<b>Cavity Length</b>	23.1 mm	23.1 mm	8.8 mm
<b>Cavity Radius</b>	3.1 mm	3.1 mm	3.1 mm
<b>Wall Material</b>	POM <sup>1</sup>	Graphite	C552
<b>Wall Thickness</b>	0.057 g/cm <sup>2</sup>	0.073 g/cm <sup>2</sup>	0.070 g/cm <sup>2</sup>
<b>Central Electrode Material</b>	Aluminum	Aluminum	C552
<b>Connector</b>	BNC-M	BNC-M	BNC-M
<b>Cable</b>	1.4 m	1.4 m	1.4 m

<sup>1</sup> Poly Oxy Methylene (CH<sub>2</sub>O). A trade name is Delrin.

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## IBA PLANE PARALLEL CHAMBERS

### 300-735 PPC05

- Waterproof
- Vented through waterproof sleeve
- Fully guarded
- Supplied with individual factory calibration certificate and user's guide

#### Applications

All plane parallel chambers are designed for measurements with high reproducibility in air, in solid or in water phantoms.



PPC05 is suitable for absolute dosimetry of electron, photon and proton beams in radiotherapy.

- Higher spatial resolution (depth dose)
- Suitable for phantoms and holders designed for Markus chamber.

Item #	Description
300-735	Plane Parallel Chamber PPC05

### 300-740 PPC40



PPC40 is suitable for absolute dosimetry of electron, photon and proton beams in radiotherapy

- **Superior physics characteristics:**
  - stabilization time after polarity change approx. 30 s
  - polarity effect < 1% for all usable energies, field sizes and depths at linear accelerators

Item #	Description
300-740	Plane Parallel Chamber PPC40

### 300-745 NACP



The NACP is designed according to recommendations of the Nordic Association of Clinical Physicists (NACP), Acta Radiologica Oncology 19,55. The chamber is used for absolute dosimetry of electron beams 2-50 MeV. A thinner front wall minimizes contamination of the beam and allows measurements at shallow depth and high accuracy even at low electron energies is guaranteed

- Low polarity effect

Item #	Description
300-745	Plane Parallel Chamber NACP

Specifications	Item 300-735	Item 300-740	Item 300-745
IBA	PPC05	PPC40	NACP
Materials	Window and body C552; graphited (PEEK) electrode	PMMA	Mylar foile and graphite window; Body PMMA; electrode graphited
Window Thickness	176 mg/cm <sup>2</sup> 1 mm	118 mg/cm <sup>2</sup> 1 mm	104 mg/cm <sup>2</sup> 0.6 mm
Active Volume	0.05 cm <sup>3</sup>	0.4 cm <sup>3</sup>	0.16 cm <sup>3</sup>
Electrode Spacing	0.5 mm	2.0 mm	2.0mm
Collecting Electrode Diameter	10.0 mm	16.0 mm	10.0 mm
Guard Ring Width	3.5 mm	4.0 mm	3.0 mm
Connector	BNC-M	BNC-M	BNC-M
Cable	1.4 m	1.4 m	2.0 m

# CABLES, CONNECTORS, ION CHAMBERS, ACCESSORIES

## IBA COMPACT CHAMBERS

- Waterproof
- Vented through waterproof sleeve
- Fully guarded
- Supplied with individual factory calibration certificate and user's guide

### Applications

All compact chambers are designed for measurements with high reproducibility in air, in solid or in water phantoms. They are suitable for relative dosimetry of photon, electron and proton fields in radiotherapy.

### 300-751 RAZOR



### 300-755 CC04



The RAZOR and CC04 chambers are the conventional ionization chambers for measurements of small fields and of ranges with high dose gradients, e.g. stereotactic fields.

- High uniform spatial resolution

Item #	Description
300-751	RAZOR Chamber
300-755	Compact Chamber CC04

### 300-760 CC08



CC08 is used for customized applications during manufacturing and installation of linear accelerators (e.g. "Buddelship")

- Used for radial and axial beam incidence

Item #	Description
300-760	Compact Chamber CC08

### 300-765 CC13



CC13 is the standard chamber for clinical use in water phantoms and for output factor measurements.

- Used for radial and axial beam incidence

Item #	Description
300-765	Compact Chamber CC13

### 300-767 CC13-S



The CC13-S is replacement for RK chamber used in RFA phantoms. Parameters of the CC13-S are similar to CC13.

- Used for radial and axial beam incidence

Item #	Description
300-767	Compact Chamber CC13-S
300-768	CC13-S Holder for RFA Phantoms

### 300-770 CC25



CC25 is mainly used for quality assurance in air and for low dose measurements in water phantoms.

Item #	Description
300-770	Compact Chamber CC25

Specifications	Item 300-751	Item 300-755	Item 300-760	Item 300-765	Item 300-767	Item 300-770
IBA	RAZOR	CC004	CC08	CC13	CC13-S	CC25
Cavity Volume	0.01 cm <sup>3</sup>	0.04 cm <sup>3</sup>	0.08 cm <sup>3</sup>	0.13 cm <sup>3</sup>	0.13 cm <sup>3</sup>	0.25 cm <sup>3</sup>
Cavity Length	3.6 mm	3.6 mm	4.0 mm	5.8 mm	5.8 mm	10.0 mm
Cavity Radius	1.0 mm	2.0 mm	3.0 mm	3.0 mm	3.0 mm	3.0 mm
Wall Material	C552	C552	C552	C552	PEEK/C552	C552
Wall Thickness	0.088 gm/cm <sup>2</sup>	0.070 gm/cm <sup>2</sup>	0.070 gm/cm <sup>2</sup>	0.070 gm/cm <sup>2</sup>	0.154 gm/cm <sup>2</sup>	0.070 gm/cm <sup>2</sup>
Central Electrode Material	Graphite	C552	C552	C552	C552	C552
Connector	BNC-M	BNC-M	BNC-M	BNC-Banana Plug	BNC-M	BNC-M
Cable	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m

## IBA DOSIMETRY DIODE DETECTORS



322-600



322-605



322-610

- **Waterproof**
- **Have a proven dose rate and energy independence**
- **Have a high uniform spatial resolution in the beam plane and precise definition of the measurement depth (accurately shaped penumbras in the whole beam plane using the same detector orientation)**
- **Independent of bias, pressure and moisture, very robust, always reliable, no "warm-up" time**
- **High durability: 3 year warranty - low lifetime costs**

### Applications

The IBA Dosimetry Diode Detectors are designed for depth dose and profile measurements in water and in air and for output factor measurements in small photon beams.

The IBA Dosimetry Diode Detectors are an excellent choice in relative field analysis as well as output factor measurements. They are based on the 3rd generation of  $p$ Si semiconductors. The high doped  $p$ -type silicon detector chips, specifically designed for radiation therapy applications, have been the natural choice for measurements where high spatial resolution is required. The accuracy and lifetime of the diode detectors is unsurpassed in the field of radiation therapy today.

Item 300-605 EFD<sup>3G</sup> Electron Diode provides direct electron depth dose, no need for ionization to dose conversion.

Diode	Item 322-600	Item 322-605	Item 322-610
IBA	PFD	EFD	RFD
Effective Measurement Point	< 0.9 mm	< 0.9 mm	NA
Chip Size (Side / Thickness)	2.5 / 0.5 mm	2.5 / 0.5 mm	2.5 / 0.5 mm
Geometric Form of Active Area	Circled	Circled	Circled
Diameter of Active Area	2 mm	2 mm	2 mm
Thickness of Active Volume	0.06 mm	0.06 mm	0.06 mm

Item #	Description
322-600	PFD <sup>3G</sup> Photon Diode Detector
322-605	EFD <sup>3G</sup> Electron Diode Detector
322-610	RFD <sup>3G</sup> Reference Diode Detector

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## IBA DOSIMETRY RAZOR DETECTOR



**High Performance Diode Detector for Small Field Dosimetry**  
The RAZOR Diode Detector is designed for Relative Dosimetry of Photon and Electron Beams in Radiotherapy

- Depth dose and profile measurements "in air" (i.e. inside a solid phantom) and in a water phantom
- Output factor measurements in small to medium sized photon beams
- Verified performances in the range of photon beam qualities  $^{60}\text{Co}$ , 6-15 MV and 6-15 MeV
- Rigid and long-lasting semiconductor
- Based on p-type silicon diode chip

### Specifications

**Stem Material:** Stainless steel  
**Enclosure Material:** ABS plastic and epoxy  
**Position of Measurement Point:** Indicated by a cross-hair at the top of the detector  
**Effective Measurement Point:**  $0.8 \pm 0.2$  mm from surface  
**Chip Size:**  $0.95 \times 0.95 \times 0.4$  mm  
**Active Detector Diameter:** 0.6 mm  
**Active Detector Thickness:** 0.02 mm  
**Head Diameter:** 4.0 mm  
**Head Length:** 15 mm  
**Stem Diameter:** 4.0 mm  
**Total Length:** 60 mm  
**Cable length:** 2 m  
**Cable:** Low-noise coaxial  
**Connector:** Triaxial<sup>1</sup> BNC (with 2 lugs) or TNC  
 (1 On the TNC connector the inner and outer screens are connected)

### Dosimetric Performance

Parameter	Value		Conditions	Notes
	Typ.	Max.		
<b>Sensitivity</b>	4.1 nC/Gy		$^{60}\text{Co}$	
<b>Dose Linearity</b>	<0.2%	0.5%	0.02– 40 Gy, $^{60}\text{Co}$	Absolute deviation from endpoint fit
<b>Dose per pulse dependence</b>	$\pm 0.5\%$	$\pm 1\%$	$D_p = 0.1\text{--}2.3$ mGy	Normalization at 0.4 mGy
<b> dS/dD </b>	1% / kGy	2% / kGy	$^{60}\text{Co}$	Very worst case: real time sensitivity measurement during irradiation, no annealing ~1month between irradiation and measurement
	1% / kGy	4% / kGy	6 MV	
	2% / kGy	4% / kGy	15 MV	
	0.1% / kGy	0.2% / kGy	10 MeV electrons	
<b>PRF Dependency</b>		0.5%	12– 400 Hz $D_p = 0.1\text{--}2.3$ mGy	Absolute sensitivity change
<b>Energy Dependence</b>	0.5%	1%	$5 \times 5$ cm <sup>2</sup> , 6 MV, 30 cm depth	Absolute deviation between PDDs measured with the Razor and CC08 chambers
<b>Lifetime</b>	$\geq 200$ kGy		10 MeV electrons	
<b>Temperature Dependence</b>	0.05% / °C		15– 40°C	

Item #	Description
322-620	Razor Detector, BNC connector
322-622	Razor Detector, TNC connector



## WATER PHANTOM MOTOR DRIVE SYSTEM



For safety the maximum power supply to the motor is 24 volts D.C. All components of the motor control box and motor drive unit are UL approved.

### Water Phantom

The water phantom has 1/4" (0.635 cm) thick clear acrylic sides, a 3/8" (0.953 cm) thick white acrylic bottom, and a clear acrylic support rim at the top of the phantom. The white bottom allows for easy viewing of the chamber and cross hair shadows. The water phantom has a tank plug and a drain valve assembly. A 5' (1.5 m) drain hose is also included. Two sides of the water phantom have  $\pm 16$  cm scales with millimeter markings. The water phantom is available in two sizes: large and small.

A 46 cm aluminum depth scale with millimeter markings is included with the water phantom. The depth scale has a half-round cutout at the base which allows positioning on the active area of a RPD waterproofing tip (Item 691-030 and 691-032) for a Farmer style chamber. When using the 46 cm aluminum depth scale on the active chamber area of a **waterproof** Farmer style chamber (all manufacturers) to measure water depth, **subtract 1 mm** from depth reading.

### Items 691-010 Small Water Phantom and 691-015 Large Water Phantom Includes

- Motor control box
- 50' (15.25 m) cable
- Motor drive unit
- 46 cm aluminum depth scale (Item 692-000-50)
- Chamber support rod w/scribing, 1/2" (1.27 cm) diameter delrin (Item 691-036 or Item 691-037)
- Acrylic holder for a Farmer Style Chamber (Item 691-034)
- Drain valve assembly (Item 691-000-56)
- Pipe plug (Item 14-310)
- 5' (1.5 m) drain hose with hose connection (Item 691-090)

### Specifications

#### Motor Drive System

**Power:** 115 Vac, 50/60 Hz

**Optional Power:** 230 Vac, 50/60 Hz

**Display:** 5 Digit LCD

**Accuracy:** 0.01 mm

**Travel:** 30 cm

**Cable:** 50' (15.25 m) Fully shielded

**Motor:** Variable speed, reversible, 24 VDC

#### Item 691-010 Small Water Phantom

**Inside Dimensions:** 35 cm x 40 cm x 38 cm D

**Gallons:** 13

**Weight:** 15 lb (6.8 kg)

**Weight When Full:** Approximately 104 lb (47.3 kg)

#### Item 691-015 Large Water Phantom

**Inside Dimensions:** 40 cm x 45 cm x 38 cm D

**Gallons:** 16.5

**Weight:** 16.5 lb (7.5 kg)

**Weight When Full:** Approximately 132 lb (60 kg)

Item	Description
691-010	Small Water Phantom with Motor Drive System
691-015	Large Water Phantom with Motor Drive System
691-080	Cable, Fully Shielded, 50' (15.25 m)
692-000-50	46 cm Depth Scale

- Rugged construction
- Precision ground shaft
- Variable speed control
- All metal motor drive
- No lost counts of travel
- No jitter counting
- Quadrature X1 counting mode
- Two sizes of water tanks are available
- Meets AAPM-51 and IAEA TRS-398 dosimetry protocol requirements

### Motor Drive System

The main feature of this motor drive system is that no travel movement counts are lost if jogging up or down when setting the chamber depth position. This is due to an output shaft encoder producing 100 counts per millimeter in travel and a quadrature X 1 counting mode. This mode requires two identical square wave signals with one of the (QUAD) shifted 90° relative to other (COUNT). These two signals are processed by a dual counter. Counter accuracy becomes 0.01 mm with no lost counts.

The all metal motor drive system adds convenience and saves time by allowing the user to set the ion chamber position from outside of the treatment room.

The motor control box has a 5 digit 1/2" (1.27 cm) LCD (liquid crystal display) which reads to 0.01 mm resolution, and has a reset button below the display. A downward chamber movement is indicated by a (-) on the LCD. A knob for the motor speed control sets the speed of travel based on the % of maximum motor speed. When pushed, the drive thumb switch gives continuous motion in the up (p / +) or down (q / -) direction of travel. A lighted power switch indicates when the unit is on. The motor control box is fused through a 6' (1.8 m) long hospital grade cord that attaches to the motor control box through an isolation transformer. A fuse holder is located on the back of the motor control box for easy service and accessibility.

A 50' (15.25 m) fully shielded cable connects the motor control box to the motor drive unit. Individual cables (Item 691-080) can be installed in each treatment room.

The motor drive unit sits on the side of the water phantom and is manually positioned in the X or Y axis using the scales on the side of the phantom. The motor drive unit is held in place using the two tightening screws. The momentary toggle switch on the side of the motor drive unit also controls the up/down direction of travel. The speed of travel is set at the motor control box. The vertical position is displayed in millimeters at the motor control box or can be read on the 30 cm scale attached to the motor drive unit. The maximum vertical travel is 30 cm.

## WATER PHANTOM MANUAL DRIVE SYSTEM



- Rugged construction
- Precision ground shaft
- Quadrature X1 counting mode
- Two sizes of water tanks are available
- Meets AAPM-51 and IAEA TRS-398 dosimetry protocol requirements

### Manual Drive Unit

When using the manual drive unit the chamber is manually positioned in the X or Y axis using the scale on the side of the water phantom. The manual drive unit is held in place by two tightening screws. The chamber is adjusted on the Z axis using the manual drive. The maximum vertical travel is 30 cm. A precision 2:1 gear box allows for quick vertical motion. The large handwheel provides ease of motion and a 0.1 mm mechanical increment counter provides an accurate readout of the vertical position of the chamber. One turn of the handwheel is equal to 3.0 mm of travel. The mechanical counter can be reset to zero at any position by turning the reset knob (located on the side of the counter) counter clockwise.

### Water Phantom

The water phantom has 1/4" (0.635 cm) thick clear acrylic sides, a 3/8" (0.953 cm) thick white acrylic bottom, and a clear acrylic support rim at the top of the phantom. The white bottom allows for easy viewing of the chamber and cross hair shadows. The water phantom has a tank plug and a drain valve assembly. A 5' (1.5 m)

drain hose is also included. Two sides of the water phantom have  $\pm 16$  cm scales with millimeter markings. The water phantom is available in two sizes: large and small.

A 46 cm aluminum depth scale with millimeter markings is included with the water phantom. The depth scale has a half-round cutout at the base which allows positioning on the active area of a RPD waterproofing tip (Item 691-030 and 691-032) for a Farmer style chamber. When using the 46 cm aluminum depth scale on the active chamber area of a **waterproof** Farmer style chamber (all manufacturers) to measure water depth, **subtract 1 mm** from depth reading.

### Items 691-001 Small Water Phantom and 691-005 Large Water Phantom Includes

- 46 cm aluminum depth scale (Item 692-000-50)
- Chamber support rod w/scribing, 1/2" (1.27 cm) diameter delrin (Item 691-036 or Item 691-037)
- Acrylic holder for a Farmer Style Chamber (Item 691-034)
- Drain valve assembly (Item 691-000-56)
- Pipe plug (Item 14-310)
- 5' (1.5 m) drain hose with hose connection (Item 691-090)

### Specifications

#### Manual Drive Unit

**Counter:** Mechanical

**Accuracy:** 0.1 mm

**Travel:** 30 cm

#### Item 691-001 Small Water Phantom

**Inside Dimensions:** 35 cm x 40 cm x 38 cm D

**Gallons:** 13

**Weight:** 15 lb (6.8 kg)

**Weight When Full:** Approximately 104 lb (47.3 kg)

#### Item 691-005 Large Water Phantom

**Inside Dimensions:** 40 cm x 45 cm x 38 cm D

**Gallons:** 16.5

**Weight:** 16.5 lb (7.5 kg)

**Weight When Full:** Approximately 132 lb (60 kg)

Item	Description
691-001	Small Water Phantom with Manual Drive Unit
691-005	Large Water Phantom with Manual Drive Unit

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# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## CHAMBER HOLDERS FOR WATER PHANTOM



Items 691-034 and 691-036 or 691-037 are included with water tank



691-034



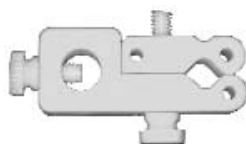
691-041, 691-042 or 691-043



691-036



691-040



691-050

The Markus (Item 691-041) or Roos (Item 691-042) chamber holders will hold the chamber parallel with the water surface. A thumb screw secures the chamber in place.

Item	Description
691-034	Farmer Style Chamber Holder, Additional or Replacement
691-036	Chamber Support Rod for Small Water Phantom
691-037	Chamber Support Rod for Large Water Phantom
691-040	Chamber Holder for PTW 0.1cc, 0.125cc, and 0.3cc Chambers
691-041	Chamber Holder - Acrylic for PTW Markus/Exradin A10/Wellhoffer NACP/PPC05
691-042	Chamber Holder - Acrylic for PTW Roos/Wellhoffer PPC40/PPC035
691-043	Chamber Holder - Acrylic for Exradin Model 11
691-050	Universal Chamber Holder Sizes 5.8mm to 17.7mm Dia.

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## CHAMBER WATERPROOFING ACCESSORIES



691-030



691-030 Shown with a Farmer Style Chamber Holder



691-033

A Farmer Style Chamber can be housed in a watertight tip made of polystyrene (Item 693-030) or acrylic (Item 693-032) with a tip wall thickness of 1 mm. A 60 cm long rubber sheath is connected to the tip with an O-Ring. The sheath is long enough to extend out of the water phantom. Atmospheric air pressure is provided through the rubber sheath to the chamber tip.

Item	Description
691-030	Waterproof Poly Farmer Style Chamber Tip with Tubing
691-032	Waterproof Acrylic Farmer Style Chamber Tip with Tubing
691-033	Kit - Sheath and O-ring

**Will NOT Fit Exradin A12 Chamber**

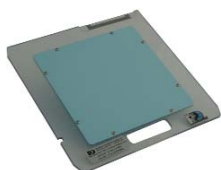
## LEAD FOIL FOR TG-51



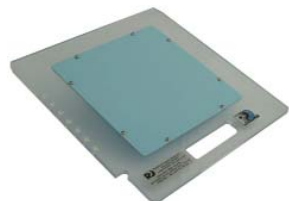
691-175



691-176



691-177



691-190



691-200

Shown in PTW holder T4316-U563  
(holder not included)

Items 691-175 through 691-190: The lead foil thickness is 1 mm  $\pm$ 10% and 25 cm square. The lead is sandwiched between two 0.025" PVC sheets. The lead foil is also available mounted to a tray.

Item 691-200: The lead foil thickness is 1 mm  $\pm$ 10% and 10.4 cm in diameter. The lead is sandwiched between two 0.025" PVC sheets and fits in the PTW chamber holder T4316-U563.

Item #	Description
691-175	Lead Foil for TG-51
691-176	Lead Foil, Varian III Wedge Slot Tray
691-177	Lead Foil, Varian II or III Block Tray
691-178	Lead Foil, Varian II Wedge Slot-Coding By-Pass
691-180	Lead Foil, Siemens Screw Coding, Block Tray
691-184	Lead Foil, Siemens, Block Tray w/ By-Pass Coding
691-185	Lead Foil, Siemens, Block Tray w/Coding Plug Pocket
691-190	Lead Foil, Elekta, Acrylic, Block Tray
691-200	Lead Foil Insert for PTW T4316-U563 Holder

\* Coding Plug is extra, use Item 1884-10-5

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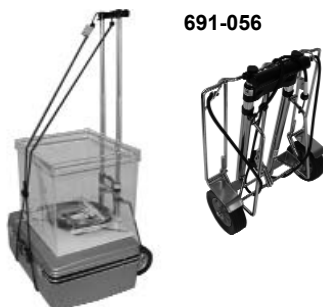
# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## CASE & TRANSPORT CART FOR WATER PHANTOM

691-055



691-056



An optional foam lined storage case (Item 691-055) for the motor drive provides safe transport/storage. Also available is a collapsible transport cart (Item 691-056) with bungee straps that will hold the storage case, water phantom and accessories to provide easy transport.

Item #	Optional Waterproofing Accessories
691-055	Case for Motor Drive and Control
691-056	Foldable Transport Cart

## SHIPPING CASES FOR WATER PHANTOMS

### Item 691-058

This case holds the Water Tank. The top lifts off exposing the complete tank which can be lifted and placed on a cart. Sturdy foam on the bottom of the case holds the tank in place. Foam is secured to all four (4) sides and the top and bottom of the case.

**Inside Dimensions:** 33" W x 33" D x 29.5" H

### Item 691-0581

This case holds the water Phantom Cart. Wood guides inside the case are used to guide the cart inside. One side of the case is hinged and used as a ramp. Four (4) 4" swivel casters allow for easy rolling and two (2) of the casters are locking. The case is lined with foam on three (3) sides and the top. One (1) loose piece of foam is used on the ramp side when the ramp is closed.

**Inside Dimensions:** 29.75" W x 37" D x 33.5" H

### Item 691-0582

This case will hold a dosimeter, chambers, cables, levels, tools and manuals.

### Item 691-0583

This pail is used to hold a water pump.



691-058



691-0581



691-0582



691-0583

Item	Description
691-058	Tank Case, Inside: 33" W x 33" Deep x 29.5" High
691-0581	Cart Ramp Case, Inside: 29.75" W x 37" D x 33.5" H
691-0582	Transport Case, Inside: 43" W x 29" D x 19" H w/Foam
691-0583	Pail Case, Inside: 5 Gallon (for water pump)

**Specify Manufacturer Model and Contact Person**

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# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## PTW WATER TANK CHAMBER HOLDERS FOR EXRADIN ION CHAMBERS



696-018



696-020

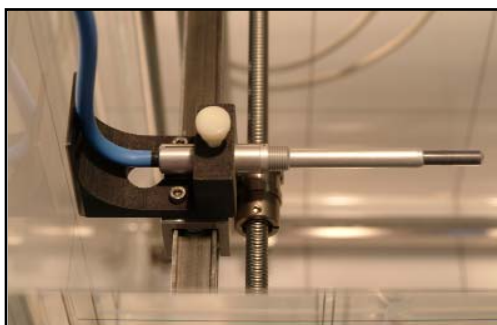
Holders for holding Ion Chamber in horizontal position.

Item	PTW Water Tank Chamber Holder
696-018	For Exradin A14SL and A16
696-019	For Exradin Models 1, 2, 12 and 14 (Exradin A1, A2, A12, A12S, A14, A14P, M1, M2, P2, T1, T2, T14 and T14P)
696-020	For Exradin A10
696-021	For PTW T31002 (0.125cc Semifliex)

Holders for holding Ion Chamber in vertical position.

Item	PTW Water Tank Chamber Holder
696-022	For Exradin A10
696-024	For Exradin 11 and 13 (Exradin A11, A11TW, A13, P11, P11TW, P13, T11 and T11TW)

## FARMER CHAMBER HOLDER FOR PTW MP3-XS 3D WATER PHANTOM



This chamber holder will hold any 1/2. (12.7mm) diameter waterproof Farmer chamber horizontal in the PTW MP3-XS 3D Water Phantom.

This chamber holder allows the triax cable to be guided vertically and smoothly over the top of the tank. There is no side wall pressure against the triax cable. A plastic "C" channel stop is provided to prevent crashing of the chamber against the side wall.

Item	PTW Water Tank Chamber Holder
696-025	Holder for 1/2" (12.7mm) Dia Waterproof Farmer Chamber

## CHAMBER HOLDERS FOR PTW MP1 AND MP3 WATER TANKS



696-050



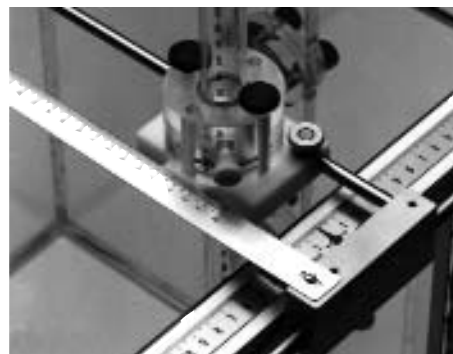
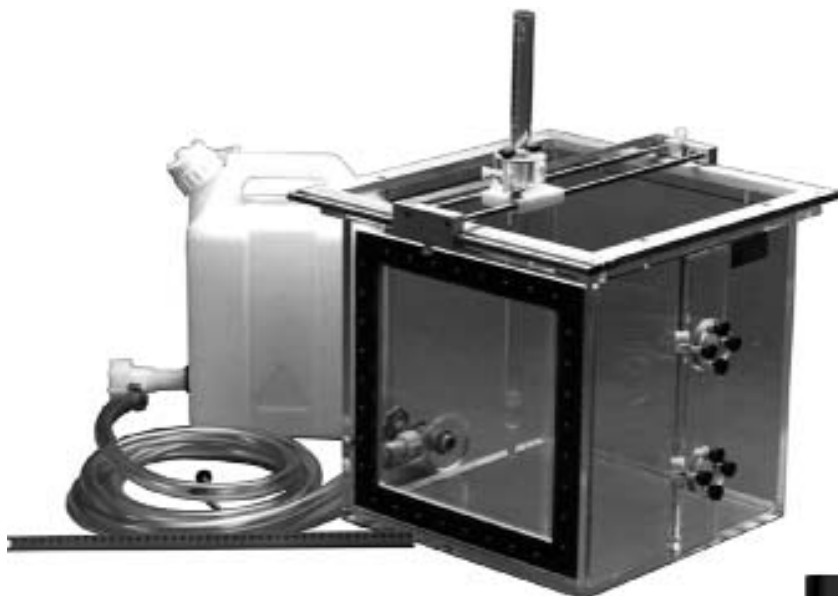
696-060

These chamber holders will hold any ion chamber, with diameters as specified, horizontal in the PTW MP1 and MP3 Water Tanks.

Item	PTW MP1 and MP# Water Tank Chamber Holders
696-030	7.0 mm Diameter
696-040	13.0 mm Diameter
696-050	30.1 mm Diameter
696-060	45.1 mm Diameter

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## MYLAR WINDOW WATER PHANTOM



692-000-60



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### Mylar Window

The window is made of 0.010" thick Mylar. It is mounted in an 27 cm square aluminum frame. The outside of the water phantom is 18.7 cm from the bottom to the center of the mylar window.

### Two Water-Tight Side Openings

The side openings for the chamber holder are located 10 cm and 25 cm from the bottom of the phantom. The chamber holder has a single axis of motion.

### Drain

The Water Phantom drain valve can be connected with a vinyl hose to a 2 1/2" gallon reservoir tank with valve. Place the reservoir tank above the water phantom and open the valves to raise the water level. Place the reservoir tank below the water phantom to lower the water level.

### Depth Scale

A 46 cm aluminum depth scale with millimeter markings is included with the water phantom. The depth scale has a half-round cutout at the base which allows positioning on the active area of a RPD waterproofing tip (Item 691-030 and 691-032) for a Farmer style chamber.

When using the 46 cm aluminum depth scale on the active chamber area of a **waterproof** Farmer style chamber (all manufacturers) to measure water depth, **subtract 1 mm** from depth reading.

### Chamber Holder

The chamber holder comes with an 18" L x 7/8" or 5/8" diameter acrylic tube with a polystyrene or acrylic tip that has a 1 mm thick wall for a Farmer Style Chambers (Figure B). A millimeter scale is silk screened on the outside of the 7/8" diameter tube only. Optional chamber holders are also available.

### Chamber Carriage

A welded aluminum frame is secured to the phantom. It can be rotated 90°. X-axis delrin bearings slide on a stainless steel rod with two scales and locks. A Y-axis delrin chamber holder slides on stainless steel rods with a lock and is adjustable (Figure A). An adjustable scale allows for accurate setting of the chamber tip to the mylar window distance. A Z-axis acrylic chamber holder slides on o-rings with a lock.

### Service

Lubricate o-rings with vaseline so the acrylic chamber tube slides easily.

### Specifications

**Size:** 35 cm x 37 cm H

**Weight (empty):** 42 lbs

**Weight with Water:** 94 lbs. (35 cm<sup>3</sup>)

**Material:** Acrylic reinforced top and corners (sides measure 1/4" thick and bottom measures 3/8" thick)

**Shipping Weight:** 42 lbs.

### Included with Mylar Window Water Phantom:

- Hose w/drain connection
- 2 1/2 gallon reservoir tank
- 46 cm depth scale
- 3 cm calibrator from Farmer Chamber tube
- 1 chamber holder of your choice

Item #	Description
692-000	Mylar Window Water Phantom
<b>Replacement Accessories</b>	
692-000-50	46 cm Depth Scale
692-000-60	Farmer Chamber Tube 3 cm Calibrator
692-011	Hose with Drain Connection

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## CHAMBER HOLDERS FOR MYLAR WINDOW PHANTOM



- Waterproof
- Included o-ring assembly
- Scaled acrylic tube

The chamber holders are watertight acrylic tubes that have a 1 mm thick polystyrene or acrylic tip for Farmer-style Ion Chambers. A 50 cm scale is printed on the tube. No further waterproofing is necessary.

**Item 692-600 and 692-610 Options A and B**  
Fit Capintec PR-06C or G with TNC connector.

**Item 692-620 and 692-630 Options C and D**  
Fit all Farmer-style chambers except Capintec PR-06C or G with TNC connector.

Item #	Chamber Holder	Tube Diameter	Tip Material
692-600	Option A	0.875" (2.22 cm)	Polystyrene
692-610	Option B	0.875" (2.22 cm)	Acrylic
692-620	Option C	0.625" (1.59 cm)	Polystyrene
692-630	Option D	0.625" (1.59 cm)	Acrylic
692-635	Exradin A12	0.875" (2.22 cm)	Polystyrene

### OPTION "N" COMBINATION CHAMBER HOLDER



The Option "N" Chamber Holder has a 5/8" (1.59 cm) O.D. tube and is a combination holder. It can be used for the Markus chamber, and the 0.3 cm<sup>3</sup> or 0.1 cm<sup>3</sup> chambers. This holder can be used both horizontally or vertically.

Item	Description
692-652	Option "N" Combination Chamber Holder

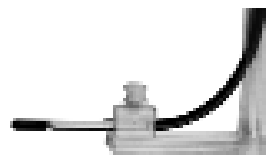
### OPTION "H" CHAMBER HOLDER



The Option "H" Chamber Holder is a 5/8 O.D. acrylic tube used with the PTW 23332/233641/31003/31013 waterproof chamber.

Item	Description
692-640	Option "H" Chamber Holder

### OPTION "L" CHAMBER HOLDER



The Option "L" Chamber Holder has a 5/8" O.D. acrylic tube and holds a PTW 23332/233641/31003/31013 chamber parallel to the water surface.

Item	Description
692-641	Option "L" Chamber Holder

### OPTION "M", "O", & "Q" HOLDERS



The Option "M", "O", and "Q" Chamber Holders have a 7/8" O.D. Tube and are used to hold a Markus (PTW 23343), Roos (PTW 34001) or Exradin Model 11 Chamber parallel to the water surface.

Item	Description
692-651	Option "M" Chamber Holder
692-653	Option "O" Roos Chamber Holder
692-655	Option "Q" Exradin Model 11 Chamber Holder

### OPTION "K", "P", "R" & "S" HOLDERS



The Option "K", "P", "R" and "S" Chamber Holders are used to hold a Markus (PTW 23343), Roos (PTW 34001), Exradin Model 11 or Exradin Model 10 Chamber parallel to the mylar window.

Item	Description
692-650	Option "K" Markus Chamber Holder
692-654	Option "P" Roos Chamber Holder
692-656	Option "R" Exradin Model 11 Chamber Holder
692-658	Option "S" Exradin Model A10 Chamber Holder



## HYDRAULIC-SCISSORS LIFT TABLE



The Hydraulic-Scissors Lift Table is ideally suited to hold a water phantom. A white platform top allows for easy viewing of the crosshairs through a water phantom with a clear bottom.

The lift table has three holes drilled in the platform to accommodate the corresponding leveling plate (see below).

The Hydraulic-Scissors Lift Table utilizes a jack pedal to raise the platform. A mechanical height lock will hold the platform at the desired height. To lower the platform use the lowering lever.

Use the parking brake to hold the hydraulic-scissors lift table in place. Four heavy duty leveling legs are used to make sure the platform is level when being used. For more precise leveling, use the leveling plate which is compatible with lift table. The hydraulic-scissors lift table is easily moved by the four 5" diameter casters. Item 693-037 accommodates a large Wellhofer water tank.

### Specifications

**Platform Height Adjustment:** 11.8" to 36.6"

**Handle Height:** 37.8",

**Front Casters:** 5" diameter rigid rubber

**Rear Casters:** 5" diameter, swivel rigid rubber

**Capacity:** 1,100 lbs.

**Finish:** White platform - blue enamel frame

**Shipping Weight:** 265 lbs. - 300 lbs.

Item	Description	Table Top Size
693-036	Hydraulic-Scissors Lift Table	23.75" x 36" (60.54 x 91.76 cm)
693-037	Hydraulic-Scissors Lift Table	27.75" x 36" (70.73 x 91.76 cm)

## LEVELING PLATE

### For Hydraulic-Scissors Lift Table



The aluminum leveling plate utilizes three point leveling. Three location pads fit into the pre-drilled holes on the platform of the hydraulic-scissors lift table. The three hand adjustable threaded leveling legs go through the holes in the leveling plate and rest inside the location pads.

For added stabilization a pair of rubber feet are included. These feet will go through the tapped holes on either side of the third leg of the leveling plate.

### Specifications

**Height Adjustment:** 1/2" to 3 3/4"

**Plate Size:** 35 7/8" L x 1/2" T

**Finish:** White polyurethane enamel

Item	Description	Use With Hydraulic-Scissors Lift Table	Weight
693-3624	Leveling Plate - 24" (61.18 cm) W	Item 693-036	50 lb (22.73 kg)
693-3627	Leveling Plate - 27" (68.82 cm) W	Item 693-037	60 lb (27.27 kg)

## ELECTRIC LIFT TABLE



- Large Platform size accommodates all Water Tanks on the market
- Instantaneous start and stop movement - no drift
- Removable handle with cord wrap hooks
- Hanger on all four (4) sides for control pendant

The Electric Lift Table is ideally suited to hold any water tank currently on the market. A white platform top allows for easy viewing of the crosshairs through a water phantom with a clear bottom.

The table platform has a vertical travel distance of 15.75" (40.0 cm). In the lowest position the top of the platform is 24.75" (62.8 cm) from the floor. In the highest position the top of the platform is at 40.5" (102.8 cm) from the floor. The telescoping pillar provides a smooth up and down movement of the platform. The control pendant has push buttons for up and down movement with instantaneous starting and stopping without any drift. The table platform has a 0.25" (0.64 cm) high raised lip on all four sides to prevent a water tank or an adjustable base from sliding off the platform.

For user convenience there is a control pendant hanger on each of the four sides of the platform. The handle of the lift table has cord wrap hooks for easy storage of the power cord. The handle is also removable with a quick release pin on each side of the handle.

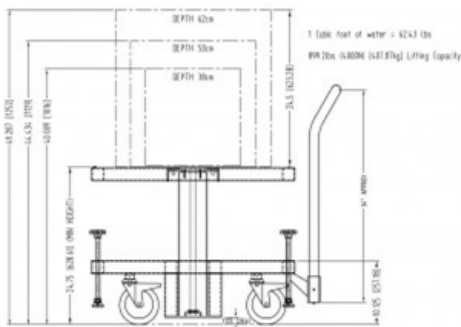
The electric lift table has four (4) 6" (15.2 cm) diameter swivel locking casters for ease of moving and locking in position. Four (4) heavy duty screw leveling legs are used to make sure the platform is level when being used.

### Specifications

- Capacity:** 900 lb (408 kg)
- Platform Size:** 31.75" x 31.75" (80.65 x 80.65 cm)
- Platform Lowered Height:** 24.75" (62.8 cm)
- Platform Raised Height:** 40.5" (102.8 cm)
- Vertical Travel:** 15.75" (40.0 cm)
- Handle Height:** 34" (86.3 cm)
- Casters:** Four (4) - 6" (15.2 cm) swivel locking, rubber
- Material:** Steel and Aluminum
- Platform Color:** Bright White
- Frame Color:** Precision Tan
- Power:** 120 VAC, 50/60 Hz or 220VAC, 50/60 Hz

Item	Description
693-040	Electric Lift Table - 120VAC, 50/60 Hz
693-042	Electric Lift Table - 220VAC, 50/60 Hz.

## TABLE LARGE ELECTRIC LIFT



The Electric Lift Table is ideally suited to hold any water phantom currently on the market. A white platform top allows for easy viewing of the crosshairs through a water phantom with a clear bottom.

- Large Platform size accommodates all Water Phantoms on the market
- Instantaneous start and stop movement - no drift
- Removable handle with cord wrap hooks
- Hanger on all four (4) sides for control pendant
- Raised Lip around top edge of table

The table platform has a vertical travel distance of 15.75" (40.0 cm). In the lowest position the top of the platform is 24.75" (62.8 cm) from the floor. In the highest position the top of the platform is at 40.5" (102.8 cm) from the floor. The telescoping pillar provides a smooth up and down movement of the platform. The control pendant has push buttons for up and down movement with instantaneous starting and stopping without any drift. The table platform has a 0.25" (0.64 cm) high raised lip on all four sides to prevent a water tank or an adjustable base from sliding off the platform.

For user convenience there is a control pendant hanger on each of the four sides of the platform. The handle of the lift table has cord wrap hooks for easy storage of the power cord. The handle is also removable with a quick release pin on each side of the handle.

The electric lift table has four (4) 6" (15.2 cm) diameter swivel locking casters for ease of moving and locking in position. Four (4) heavy duty screw leveling legs are used to make sure the platform is level when being used.

### Specifications Item 693-046

- Capacity:** 900 lb (408 kg)
- Platform Size:** 31.75" x 31.75" (80.65 x 80.65 cm)
- Platform Lowered Height:** 24.75" (62.8 cm)
- Platform Raised Height:** 40.5" (102.8 cm)
- Vertical Travel:** 15.75" (40.0 cm)
- Handle Height:** 34" (86.3 cm)
- Base Size:** 32" x 58"
- Castors:** Four (4) - 6" (15.2 cm) swivel locking, rubber
- Material:** Steel and Aluminum
- Platform Color:** Bright White
- Frame Color:** Precision Tan
- Power:**
  - Item 693-046:** 120 VAC, 156 Watts, 50/60 Hz CEE7
  - Item 693-048:** 220 VAC, 156 Watts, 50/60 Hz CEE7

Item	Description
693-046	Table Lg Electric Lift - 120VAC/156 Watts/50/60 Hz
693-048	Table Lg, Electric Lift 220VAC/156Watts/50/60Hz CEE7

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## THREE POINT LEVELING PLATE

For Water Phantom Tank



The Three Point Leveling Plate is used with the Water Phantoms (Items 691-001, 691-005, 691-010, 691-011, 691-015, 691-016 or 692-000). The aluminum plate is 18" x 24" x 0.5" (45.7 x 60.9 x 0.13 cm). A wood support panel on the bottom is 0.75" (1.9 cm) thick.

Item	Description
693-080	Three Point Leveling Plate for Water Phantom

## LEVELING PLATE

For Water Phantoms on Treatment Table

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### Specifications

**Material:** Aluminum

**Finish:** White polyurethane enamel

**Feet:** Anti-skid

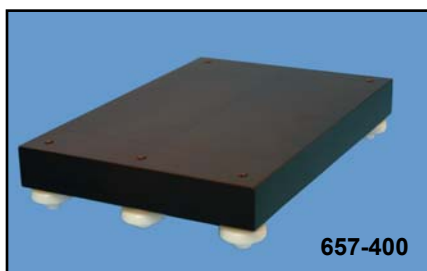
The three hand adjustable threaded leveling legs go through the holes in the leveling plate and secured to anti-skid feet.

For added stabilization a pair of rubber feet are included. These feet will go through the tapped holes on either side of the third leg of the leveling plate.

Item #	Description
693-083	Leveling Plate with 3 Anti-Skid Feet Size: 18" W x 24" L x 1/2" T
693-085	Leveling Plate with 3 Anti-Skid Feet Size: 24" W x 35 7/8" x 1/2" T

## LEVELING PLATFORMS

For Slab Phantoms



657-400



657-401

These Leveling Platforms can be used for slab phantoms. Both leveling platforms feature three (3) leveling legs and two (2) stabilizer legs with five (5) threaded nylon leveling feet.

### Specifications

**Item 657-400**

**Capacity:** 60 lbs

**Dimensions:** 30 cm x 44 cm x 5 cm thick

**Item 657-401**

**Capacity:** 40 lbs

**Dimensions:** 30 cm x 50 cm x 2 cm thick

Item	Description
657-400	Leveling Platform, for Slab Phantoms, ABS 5x30x44cm
657-401	Leveling Platform, 3/4" Acrylic, 30 cm X 50 cm

## WATER TRANSFER TANK AND PUMP



The removable top is made of 1/2" thick (1.27 cm) polyethylene with two holes. A copper pipe inserted through the stand-off hole touches the bottom of tank. This pipe is attached to one end of a 45 gallon/8 minute pump and the other end is attached to 10' (3 m) of clear vinyl tubing. The tubing is put into the Water Transfer Tank from the top for filling. To pump the water from the water phantom back into the Water Transfer Tank, simply reverse the water connections on the pump. A faucet adapter is included for initial filling of the transfer tank, using the vinyl tubing.

### Specifications

#### Item 695-000 Water Transfer Tank with Pump

**Tank Dimension:** 24" x 24" x 24" (61 x 61 x 61 cm)

**Overall Dimension:** 26" x 26" x 43" (66 x 66 x 109 cm)

**Pump:** 115V VAC, 1.6 Amps, thermal protection

**Shipping Weight:** 83 lb (38 kg)

#### Item 695-020 Pump Repair Kit

**Includes:** Impeller and cover gasket

Item #	Description
695-000	Water Transfer Tank with Pump
695-010	Water Transfer Tank Only, NO PUMP
695-015	Pump, HI/LOW Temp, 115 VAC
695-020	Impeller Repair Kit for 695-015 Pump

The 60 gallon Water Transfer Tank is molded of polyethylene in one piece to eliminate seams and stress areas. The 1/4" (0.64 cm) wall thickness will bow slightly when filled with water. The water level will show through the tank wall. A mark can be made on the outside of the tank for the fill capacity of your Water Phantom. A steel frame supports the transfer tank with four 5" (12.7 cm) diameter swivel casters to allow easy movement.

## 15-GALLON WATER TANK WITH HAND PUMP OR MOTORIZED PUMP



695-100



695-200

- Easy to Use
- Lightweight
- Mobile

The Water Tank is a 15 gallon drum constructed of one piece of low density polyethylene. It has a removable slide lever lock lid and two bung openings. For mobility the water tank sits on a polyethylene dollie with four swivel casters.

#### Item 695-100 Water Tank w/ Hand Pump

The Hand Pump is a reversible crank style and will pump 6 gallons of water with 50 revolutions. Turning the crank clockwise will pump water into a water phantom and turning counter clockwise will pump water out of the water phantom. A 5 foot hose is attached to the pump.

#### Item 695-200 Water Tank w/ Motorized Pump

The electric pump is 115V VAC, 1.6 Amps, with thermal protection. The pump the water from the water phantom back into the tank, simply reverse the water connections on the pump.

### Specifications:

**Drum Size:** 16" Dia. X 22 3/4" H

**Dollie Size:** 17" Dia. X 7" H (includes casters)

**Shipping Weight:** Approximately 20 lbs.

Item #	Description
695-100	Water Tank with Reversible Hand Pump- 15 Gallon
695-200	Water Tank with Motorized Pump- 15 Gallon
695-020	Pump Repair Kit

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## 15 CM PLASTIC WATER CUBE CONSTANCY PHANTOMS



- Photon measurements at 5 and 10 cm depth
- Electron measurements at 1 cm or 1.5 cm depth
- Compact and economical

The constancy phantoms are solid 15 cm cubes. The photon hole is placed 5 cm from one side and therefore is 10 cm from the other side. Three sides of the cube contain black corner and crosshair markings which define a 10 cm<sup>2</sup> field

**The phantom cubes can be custom drilled to meet customers specifications.** Please provide name and phone number of contact person.

### Specifications

**Plastic Water Density:** 1.02g/cm<sup>3</sup>

Item #	Chamber	Compatible Chamber Model #'s	Photon Chamber Hole	Electron Chamber Hole
665-510	0.6 cc Farmer Style Chamber	PTW 0.6cc Farmer Chambers, NE2505/3	With Build-up Cap	1.0 cm Depth, No Build-up Cap
665-512	0.6 cc Farmer Style Chamber	PTW 0.6cc Farmer Chambers, NE2505/3	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-513	0.6 cc Farmer Style Chamber	<b>ALL</b> - PTW / Nuclear Associates / Fluke / Bicron NE / Capintec / RMI / Exradin A19 / Scanditronix-Wellhofer FC65-G	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-514	0.6 cc Farmer Style Chamber	<b>ALL</b> - PTW / Nuclear Associates / Fluke / Bicron NE / Capintec / RMI / Exradin A19 / Scanditronix-Wellhofer FC65-G	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-518	0.64 cc Farmer Type Chamber	Exradin A12	No Build-up Cap	1.5 cm Depth, No Build-up Cap

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# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## 15 CM ACRYLIC CUBE CONSTANCY PHANTOMS



- Photon measurements at 5 and 10 cm depth
- Electron measurements at 1 cm or 1.5 cm depth
- Compact and economical

The constancy phantoms are solid 15 cm cubes. The photon hole is placed 5 cm from one side and therefore is 10 cm from the other side. Three sides of the cube contain black corner and crosshair markings which define a 10 cm<sup>2</sup> field

**The phantom cubes can be custom drilled to meet customers specifications.** Please provide name and phone number of contact person.

### Specifications

Acrylic Density: 1.185g/cm<sup>3</sup>

Item #	Chamber	Compatible Chamber Model #'s	Photon Chamber Hole	Electron Chamber Hole
665-601	0.6 cc Farmer Style Chamber	PTW 0.6cc Farmer Chambers, NE2505/3	With Build-up Cap	1.0 cm Depth, No Build-up Cap
665-6015	0.6 cc Farmer Style Chamber	PTW 0.6cc Farmer Chambers, NE2505/3	With Build-up Cap	1.5 cm Depth, No Build-up Cap
665-602	0.3 cc Waterproof Chamber	PTW 23332 / 233641 / 31003 / 31013, Nuclear Associates 30-316, 30-317	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-6025	0.3 cc Waterproof Chamber	PTW 23332 / 233641 / 31003 / 31013, Nuclear Associates 30-316, 30-317	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-603	0.6 cc Farmer Style Chamber	NE2581	With Build-up Cap	1.5 cm Depth, No Build-up Cap
665-605	0.125 cc Chamber	PTW 233642 / 31002 / 31010, Nuclear Associates 30-344	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-622	0.6 cc Farmer Style Chamber	Capintec PR-06C, PR-06G	With Build-up Cap	1.5 cm Depth, No Build-up Cap
665-642	0.1 cc Chamber	PTW N23323 and Nuclear Associates 30-350	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-702	0.6 cc Farmer Style Chamber	PTW 0.6cc Farmer Chambers, NE 2505/3, Nuclear Associates 30-351, 30-352	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-704	0.6 cc Farmer Style Chamber	PTW 0.6cc Farmer Chambers, NE 2505/3, Nuclear Associates 30-351, 30-352	With Build-up Cap	1.5 cm Depth, No Build-up Cap
665-705	0.125 cc Chamber	PTW: 233642 / 31002 / 31010, Nuclear Associates 30-344	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-712	0.6 cc Farmer Style Chamber	NE2571	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-722	0.6 cc Farmer Style Chamber	Capintec PR-06C and PR-06G	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-732	0.6 cc Farmer Style Chamber	NE 2581	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-742	0.6 cc Farmer Style Chamber	MDH/Radcal 10x5-0.6, 20x5-0.6	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-750	0.64 cc Farmer Style Chamber	Exradin Model A-12	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-751	0.64 cc Farmer Style Chamber	Exradin Model A-12	With Build-up Cap	1.5 cm Depth, With Build-up Cap
665-752	0.053 cc Slimline MiniShonka Chamber	Exradin Model A1SL	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-7521	0.053 cc Slimline MiniShonka Chamber	Exradin Model A1SL	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-753	0.007 cc Farmer Style Chamber	Exradin Model A-16	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-7531	0.007 cc Farmer Style Chamber	Exradin Model A-16	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-760	0.6 cc Farmer Style Chamber	<b>ALL</b> - PTW / Nuclear Associates / FLUKE / Bicon NE / Capintec / RMI / Exradin A19 / Scanditronix-Wellhofer FC65-G	No Build-up Cap	1.5 cm Depth, No Build-up Cap
665-761	0.6 cc Farmer Style Chamber	<b>ALL</b> - PTW / Nuclear Associates / FLUKE / Bicon NE / Capintec / RMI / Exradin A19 / Scanditronix-Wellhofer FC65-G	No Build-up Cap	1.0 cm Depth, No Build-up Cap
665-770	0.62 cc Farmer Style Chamber	Exradin A19	With Build-up Cap	1.0 cm Depth, No Build-up Cap
665-771	0.62 cc Farmer Style Chamber	Exradin A19	With Build-up Cap	1.5 cm Depth, With Build-up Cap

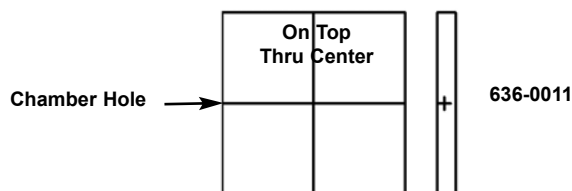
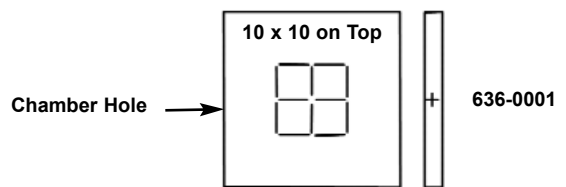
### PLUG INSERT

Item #	Chamber	Compatible Chamber Model #'s	Photon Chamber Hole	Electron Chamber Hole
665-6011	0.6 cc Farmer Style Chamber	Acrylic Plug Insert for PTW N23333	With Build-up Cap	

F

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## SCRIBING ON CHAMBER PHANTOMS



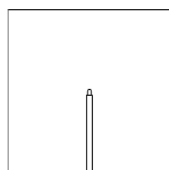
Item #	Scribing
636-0000	10 x 10 cm on Top
636-0001	10 cm x 10 cm on Top, + 1 Side
636-0002	10 cm x 10 cm on Top, + 2 Sides
636-0003	10 cm x 10 cm on Top, + 3 Sides
636-0004	10 cm x 10 cm on Top, + 4 Sides
636-0005	10 cm x 10 cm on Top and Bottom
636-0006	10 cm x 10 cm on Top and Bottom + 1 Side
636-0007	10 cm x 10 cm on Top and Bottom + 2 Sides
636-0008	10 cm x 10 cm on Top and Bottom + 3 Sides
636-0009	10 cm x 10 cm on Top and Bottom + 4 Sides
636-0010	Top Thru Center
636-0011	Top Thru Center, + 1 Side
636-0012	Top Thru Center, + 2 Sides
636-0013	Top Thru Center, + 3 Sides
636-0014	Top Thru Center, + 4 Sides

- 1 side: + scribe is opposite chamber hole.  
 2 sides: + scribes are on sides perpendicular to the chamber.  
 3 sides: + scribes are on the sides without chamber hole.  
 4 sides: + scribes are on all four sides.

## PHANTOMS FOR SCANDITRONIX / WELLHOFFER IONIZATION CHAMBERS

### SCANDATRONIX/WELLHOFFER IC 15, CC13

0.13 cm<sup>3</sup> Chamber without Build-Up Cap

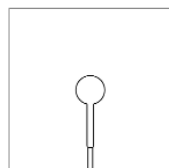


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-736	Polystyrene	25 cm sq. x 2.5 cm T
636-737	Acrylic	25 cm sq. x 2.5 cm T

### WELLHOFFER PPC 035 AND PPC40

0.05 cm<sup>3</sup> Chamber



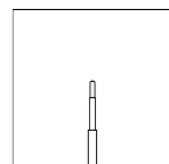
**Chamber is flush with surface.**

Item #	Phantom Material	Size
636-731	Polystyrene	25 cm sq. x 2.5 cm T
636-732	Acrylic	25 cm sq. x 2.5 cm T

## PHANTOMS FOR PTW IONIZATION CHAMBERS

PTW 23333, 30001, 30002, 30004, 30006, 30010, 30011, 30012, 30013

0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap



Most Common

**Chamber Hole Depth:**  
1 cm from top to center of hole.

Item #	Phantom Material	Size
636-001	Polystyrene	25 cm sq. x 2.5 cm T
636-002	Acrylic	25 cm sq. x 2.5 cm T

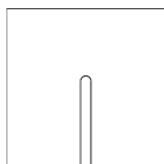


# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## PHANTOMS FOR PTW IONIZATION CHAMBERS

PTW 23333, 30001, 30002, 30004, 30006, 30010, 30011, 30012, 30013

0.6 cm<sup>3</sup> Farmer Style Chamber with Build-Up Cap

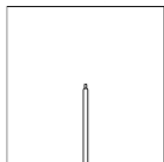


**Chamber Hole Depth:**  
1.2 cm from top to center of hole,  
and has a diameter of 1.65 cm.

Item #	Phantom Material	Size
636-101	Polystyrene	25 cm sq. x 2.5 cm T
636-102	Acrylic	25 cm sq. x 2.5 cm T
636-104	Plastic Water	30 cm sq. x 3 cm T

PTW 31006, 31014, 31015, 31016

0.015 cm<sup>3</sup> Pin Point Chamber without Build-Up Cap

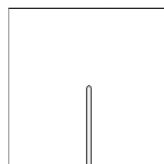


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-526	Polystyrene	25 cm sq. x 2.5 cm T
636-527	Acrylic	25 cm sq. x 2.5 cm T

PTW 233642, 31002, 31010, 233643, 31005, 31011

0.125 cm<sup>3</sup> Chamber without Build-Up Cap

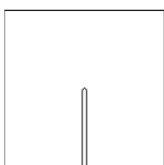


**Chamber Hole Depth:**  
1 cm from top to center of hole.

Item #	Phantom Material	Size
636-511	Polystyrene	25 cm sq. x 2.5 cm T
636-512	Acrylic	25 cm sq. x 2.5 cm T

PTW 23332, 233641, 31003, 31013

0.3 cm<sup>3</sup> Chamber without Build-Up Cap



**Chamber Hole Depth:**  
0.7 cm from top to center of hole.

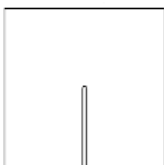
Item #	Phantom Material	Size
636-301	Polystyrene	25 cm sq. x 2.5 cm T
636-302	Acrylic	25 cm sq. x 2.5 cm T

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-311	Polystyrene	25 cm sq. x 2.5 cm T
636-312	Acrylic	25 cm sq. x 2.5 cm T

PTW 23323, 2332

0.1 cm<sup>3</sup> Chamber without Build-Up Cap



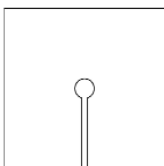
**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-501	Polystyrene	25 cm sq. x 2.5 cm T
636-502	Acrylic	25 cm sq. x 2.5 cm T

## PHANTOMS FOR PTW IONIZATION CHAMBERS

PTW 23343, 34045

0.055 cm<sup>3</sup> Markus and 0.02 cm<sup>3</sup> Advanced Markus Chamber



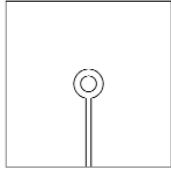
**Chamber is flush with surface.**

Item #	Phantom Material	Size
636-701	Polystyrene with Cable Cover	25 cm sq. x 2.5 cm T
636-702	Acrylic with Cable Cover	25 cm sq. x 2.5 cm T
636-704-2	Plastic Water Cable Cover	

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## PTW 34001

### 0.35 cm<sup>3</sup> Roos Chamber

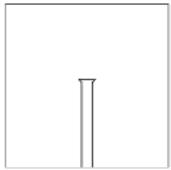


Chamber is flush with surface.

Item #	Phantom Material	Size
636-721	Polystyrene	25 cm sq. x 2.5 cm T
636-722	Acrylic	25 cm sq. x 2.5 cm T

## PTW 23342

### 0.02 cm<sup>3</sup> Small Soft X-ray Chamber



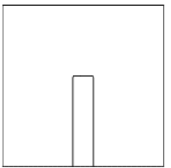
The chamber hole has special curved sides.

Chamber is flush with surface.

Item #	Phantom Material	Size
636-915	Polystyrene	25 cm sq. x 2.5 cm T
636-915-2	Polystyrene Chamber Plug	
636-916	Acrylic	25 cm sq. x 2.5 cm T
636-916-2	Acrylic Chamber Plug	

## PTW 23344

### .02 cm<sup>3</sup> Big Soft X-ray Chamber

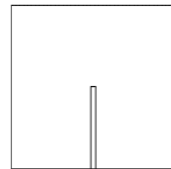


Chamber is flush with surface.

Item #	Phantom Material	Size
636-911	Polystyrene	25 cm sq. x 2.5 cm T
636-912	Acrylic	25 cm sq. x 2.5 cm T

## PTW T60003

### Riga Diamond Detector Chamber without Build-Up Cap

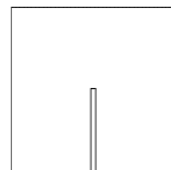


Chamber Hole Depth:  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-521	Polystyrene	25 cm sq. x 2.5 cm T
636-522	Acrylic	25 cm sq. x 2.5 cm T

## PTW 60019

### microDiamond Detector

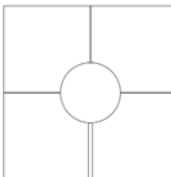


Chamber Hole Depth:  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-542	Acrylic	25 cm sq. x 2.5 cm T

## PTW 34070

### Bragg Peak Chamber



Chamber is flush with surface.

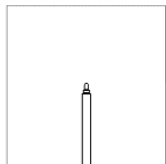
Item #	Phantom Material	Size
636-752	Acrylic	30 cm sq. x 2 cm T

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## PHANTOMS FOR EXTRADIN IONIZATION CHAMBERS

### EXRADIN MODEL A1

0.056 cm<sup>3</sup> Chamber without Build-Up Cap

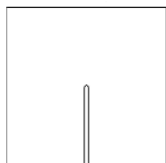


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-211	Polystyrene	25 cm sq. x 2.5 cm T
636-212	Acrylic	25 cm sq. x 2.5 cm T
636-214	Solid Water	30 cm sq. x 2 cm T

### EXRADIN MODEL A1SL

0.056 cm<sup>3</sup> Chamber without Build-Up Cap

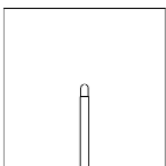


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-206	Polystyrene	25 cm sq. x 2.5 cm T
636-207	Acrylic	25 cm sq. x 2.5 cm T

### EXRADIN MODEL A2

0.5 cm<sup>3</sup> Chamber without Build-Up Cap

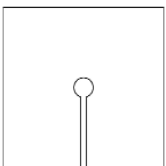


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-201	Polystyrene	25 cm sq. x 2.5 cm T
636-202	Acrylic	25 cm sq. x 2.5 cm T
636-203	Aluminum Stem Spacer	

### 0.051 cm<sup>3</sup> EXTRADIN A10

0.051 cm<sup>3</sup> Chamber

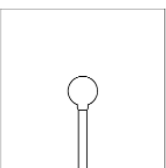


**Chamber is flush with surface.**

Item #	Phantom Material	Size
636-701	Polystyrene with Cable Cover	25 cm sq. x 2.5 cm T
636-702	Acrylic with Cable Cover	25 cm sq. x 2.5 cm T
636-704-2	Plastic Water Cable Cover	

### EXRADIN MODEL A11

0.62 cm<sup>3</sup> Chamber

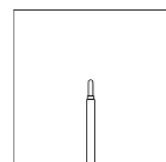


**Chamber is flush with surface.**

Item #	Phantom Material	Size
636-223	Polystyrene	25 cm sq. x 2.5 cm T
636-224	Acrylic	25 cm sq. x 2.5 cm T

### EXRADIN MODEL A12

0.65 cm<sup>3</sup> Chamber without Build-Up Cap



**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-215	Polystyrene	25 cm sq. x 2.5 cm T
636-216	Acrylic	25 cm sq. x 2.5 cm T

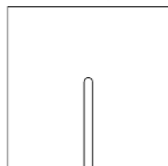
F

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## PHANTOMS FOR EXTRADIN IONIZATION CHAMBERS

### EXRADIN MODEL A12

0.65 cm<sup>3</sup> Chamber with Build-Up Cap



**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-219	Polystyrene	25 cm sq. x 2.5 cm T
636-220	Acrylic	25 cm sq. x 2.5 cm T

### EXRADIN MODEL A12S

0.25 cm<sup>3</sup> Chamber without Build-Up Cap

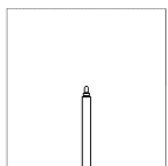


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-240	Polystyrene	25 cm sq. x 2.5 cm T
636-241	Acrylic	25 cm sq. x 2.5 cm T

### EXRADIN MODEL 14

0.009 cm<sup>3</sup> Chamber without Build-Up Cap

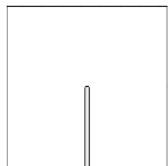


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-230	Polystyrene	25 cm sq. x 2.5 cm T
636-231	Acrylic	25 cm sq. x 2.5 cm T

### EXRADIN MODEL A14SL

0.009 cm<sup>3</sup> Chamber without Build-Up Cap

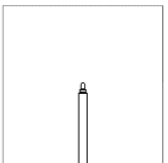


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-236	Polystyrene	25 cm sq. x 2.5 cm T
636-237	Acrylic	25 cm sq. x 2.5 cm T

### EXRADIN MODEL A16

0.007 cm<sup>3</sup> Chamber without Build-Up Cap

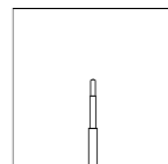


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-400	Polystyrene	25 cm sq. x 2.5 cm T
636-401	Acrylic	25 cm sq. x 2.5 cm T
636-4011	Acrylic Chamber Plug	

### EXRADIN A19

0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap



Most  
Common

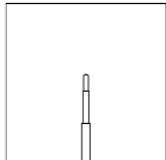
**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-001	Polystyrene	25 cm sq. x 2.5 cm T
636-002	Acrylic	25 cm sq. x 2.5 cm T

## PHANTOMS FOR CAPINTEC IONIZATION CHAMBERS

### CAPINTEC PR-06G

0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap



Most  
Common

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-001	Polystyrene	25 cm sq. x 2.5 cm T
636-002	Acrylic	25 cm sq. x 2.5 cm T

### CAPINTEC PR-06C OR G

0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap



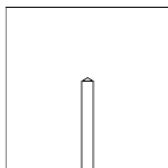
A large outer chamber hole accommodates the TNC or BNC style connector.

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-011	Polystyrene	25 cm sq. x 2.5 cm T
636-012	Acrylic	25 cm sq. x 2.5 cm T

### CAPINTEC PR-06C OR G

0.6 cm<sup>3</sup> Farmer Style Chamber with Build-Up Cap

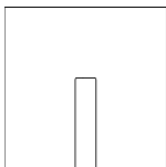


The chamber hole accommodates the TNC or BNC style connector.

**Chamber Hole Depth:**  
1.2 cm from top to center of hole.

Item #	Phantom Material	Size
636-017	Polystyrene	25 cm sq. x 2.5 cm T
636-018	Acrylic	25 cm sq. x 2.5 cm T

### CAPINTEC PS-033



**Chamber is flush with surface.**

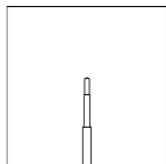
Item #	Phantom Material	Size
636-711	Polystyrene	25 cm sq. x 2.5 cm T
636-712	Acrylic	25 cm sq. x 2.5 cm T
636-714	Solid Water	30 cm sq. x 2 cm T

F

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## PHANTOMS FOR BICRON / NE AND THERMO SCIENTIFIC IONIZATION CHAMBERS

### BICRON / NE 2571, 2581, 2505/3 A OR B 0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap



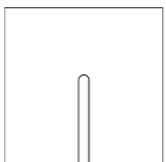
Most  
Common

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-001	Polystyrene	25 cm sq. x 2.5 cm T
636-002	Acrylic	25 cm sq. x 2.5 cm T

### BICRON / NE 2505/3

#### 0.6 cm<sup>3</sup> Farmer Style Chamber with Build-Up Cap

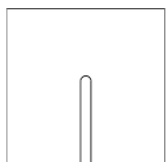


**Chamber Hole Depth:**  
1.2 cm from top to center of hole  
and has a diameter of 1.65 cm.

Item #	Phantom Material	Size
636-101	Polystyrene	25 cm sq. x 2.5 cm T
636-102	Acrylic	25 cm sq. x 2.5 cm T
636-104	Plastic Water	30 cm sq. x 3 cm T

### BICRON / NE 2571

#### 0.6 cm<sup>3</sup> Farmer Style Chamber with Delrin Build-Up Cap

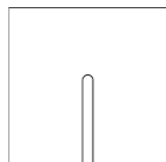


**Chamber Hole Depth:**  
1.0 cm from top to center of hole  
and has a diameter of 1.53 cm.

Item #	Phantom Material	Size
636-121	Polystyrene	25 cm sq. x 2.5 cm T
636-122	Acrylic	25 cm sq. x 2.5 cm T

### BICRON / NE 2581

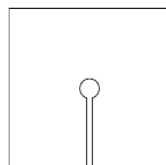
#### 0.6 cm<sup>3</sup> Farmer Style Chamber with Polystyrene Build-Up Cap



**Chamber Hole Depth:**  
1.0 cm from top to center of hole  
and has a diameter of 1.86 cm.

Item #	Phantom Material	Size
636-131	Polystyrene	25 cm sq. x 2.5 cm T
636-132	Acrylic	25 cm sq. x 2.5 cm T

### THERMO SCIENTIFIC 2534



**Chamber is flush with surface.**

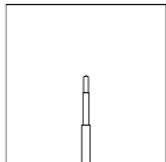
Item #	Phantom Material	Size
636-701	Polystyrene with Cable Cover	25 cm sq. x 2.5 cm T
636-702	Acrylic with Cable Cover	25 cm sq. x 2.5 cm T
636-704-2	Plastic Water Chamber Plug	

F

## PHANTOMS FOR NUCLEAR ASSOCIATES IONIZATION CHAMBERS

### NUCLEAR ASSOCIATES 30-351

0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap



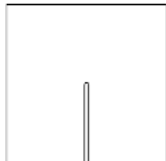
Most  
Common

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-001	Polystyrene	25 cm sq. x 2.5 cm T
636-002	Acrylic	25 cm sq. x 2.5 cm T

### NUCLEAR ASSOCIATES 30-350

0.1 cm<sup>3</sup> Chamber without Build-Up Cap

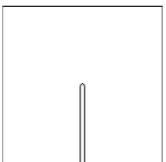


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-501	Polystyrene	25 cm sq. x 2.5 cm T
636-502	Acrylic	25 cm sq. x 2.5 cm T

### NUCLEAR ASSOCIATES 30-344

0.125 cm<sup>3</sup> Chamber without Build-Up Cap

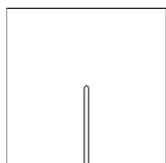


**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-511	Polystyrene	25 cm sq. x 2.5 cm T
636-512	Acrylic	25 cm sq. x 2.5 cm T

### NUCLEAR ASSOCIATES 30-361 AND 30-317

0.3 cm<sup>3</sup> Chamber without Build-Up Cap



**Chamber Hole Depth:**  
0.7 cm from top to center of hole.

Item #	Phantom Material	Size
636-301	Polystyrene	25 cm sq. x 2.5 cm T
636-302	Acrylic	25 cm sq. x 2.5 cm T

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-311	Polystyrene	25 cm sq. x 2.5 cm T
636-312	Acrylic	25 cm sq. x 2.5 cm T

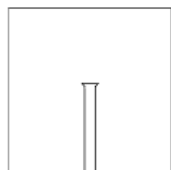
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# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## PHANTOMS FOR NUCLEAR ASSOCIATES IONIZATION CHAMBERS

### NUCLEAR ASSOCIATES 30-334

#### 0.02 cm<sup>3</sup> Small Soft X-ray Chamber



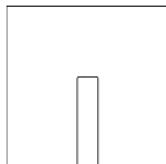
The chamber hole has special curved sides.

**Chamber is flush with surface.**

Item #	Phantom Material	Size
636-915	Polystyrene	25 cm sq. x 2.5 cm T
636-915-2	Polystyrene Chamber Plug	
636-916	Acrylic	25 cm sq. x 2.5 cm T
636-916-2	Acrylic Chamber Plug	

### NUCLEAR ASSOCIATES 30-330

#### 0.2 cm<sup>3</sup> Big Soft X-ray Chamber



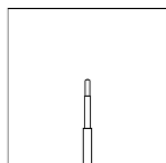
**Chamber is flush with surface.**

Item #	Phantom Material	Size
636-911	Polystyrene	25 cm sq. x 2.5 cm T
636-912	Acrylic	25 cm sq. x 2.5 cm T

## PHANTOMS FOR VICTOREEN AND RMI IONIZATION CHAMBERS

### VICTOREEN 580-006 AND RMI 448

#### 0.6 cm<sup>3</sup> Farmer Style Chamber without Build-Up Cap

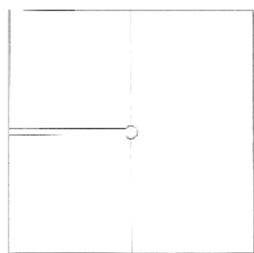


Most Common

**Chamber Hole Depth:**  
1.0 cm from top to center of hole.

Item #	Phantom Material	Size
636-001	Polystyrene	25 cm sq. x 2.5 cm T
636-002	Acrylic	25 cm sq. x 2.5 cm T

## EQUIDOSE II DIODE PHANTOM



### Specifications

**Material:** Polystyrene

**Size:** 9.8" x 9.8" x 1" (25 x 25 x 2.54 cm)

This phantom is also available in other materials. Call RPDinc for more information.

Item #	Description
638-000	Equidose II Diode Phantom



# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## ACRYLIC PHANTOM



The standard chamber hole will fit the following chambers:

- Capintec - PR-06G
- PTW - 23333 / 233633 / 30001 / 30010 / 30002 / 30011 / 30004, 30012, 30006 / 30013
- Bicron - NE2571, 2505/3 A or B
- Nuclear Associates - 30-351, 30-352 and 30-361

Chamber holes other than the standard are available upon request. **Please specify chamber to be used in phantom.** To accommodate a 2nd chamber, one of the 1" plates can be machined to fit the chamber.

### Markings

All of the Acrylic Sheets are marked "ACRYLIC" and state the material thickness with a special black ink that is etched into the acrylic.

### Specifications

- Material:** Clear acrylic
- Density:** 1.17 to 1.20 g/cm<sup>3</sup>
- Size:** 25 cm sq x approx. 25 cm T

The Acrylic Phantom consists of:

- (1) 1/32" (0.80 mm) x 25 cm sq acrylic sheet
- (1) 1/16" (1.57 mm) x 25 cm sq acrylic sheet
- (1) 1/8" (3.43 mm) x 25 cm sq acrylic sheet
- (1) 1/4" (6.30 mm) x 25 cm sq acrylic sheet
- (1) 1/2" (12.7 mm) x 25 cm sq acrylic sheet
- (8) 1" (25 mm) x 25 cm sq acrylic sheet
- (1) 1" (25 mm) x 25 cm sq with farmer chamber hole

Item #	Description
602-0000	Acrylic Phantom
600-0010	Machining Extra Standard Chamber Hole

## POLYSTYRENE AND ACRYLIC SHEETS



Polystyrene



Acrylic

All of the Sheets are marked "POLYSTYRENE" or "ACRYLIC" and state the material thickness with a special black ink that is etched into the material.

The thickness of the sheets is not exact and varies within the tolerance of industry standards. If a precise thickness is needed please state the thickness desired when placing your order.

All 1" and 2" Polystyrene Sheets are machined flat on the top and the bottom. This reduces air gaps when stacking the sheets.

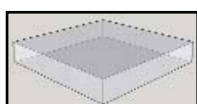
### Specifications

- Polystyrene Density:** 1.05 g/cm<sup>3</sup>
- Size:** 25 cm sq.
- Acrylic Density:** 1.185 g/cm<sup>3</sup>
- Size:** 25 cm sq.

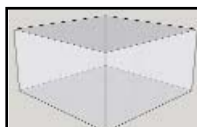
Item #	Description	Approximate Thickness
601-0020	Polystyrene Sheet - Color: Clear	1/51" (0.50 mm)
601-0032	Polystyrene Sheet - Color: White	1/32" (0.80 mm)
601-0062	Polystyrene Sheet - Color: White	1/16" (1.57 mm)
601-0125	Polystyrene Sheet - Color: White	1/8" (3.18 mm)
601-0187	Polystyrene Sheet - Color: White	3/16" (4.75 mm)
601-0250	Polystyrene Sheet - Color: White	1/4" (6.35 mm)
601-0500	Polystyrene Sheet - Color: White	1/2" (12.7 mm)
601-1000	Polystyrene Sheet - Color: White	1" (25 mm)
601-2000	Polystyrene Sheet - Color: White	2" (50 mm)

Item #	Description	Approximate Thickness
602-0032	Acrylic Sheet - Color: Clear	1/32" (0.80 mm)
602-0062	Acrylic Sheet - Color: Clear	1/16" (1.57 mm)
602-0125	Acrylic Sheet - Color: Clear	1/8" (3.18 mm)
602-0250	Acrylic Sheet - Color: Clear	1/4" (6.30 mm)
602-0500	Acrylic Sheet - Color: Clear	1/2" (12.7 mm)
602-1000	Acrylic Sheet - Color: Clear	1" (25 mm)
602-2000	Acrylic Sheet - Color: Clear	2" (50 mm)

## ACRYLIC / PMMA PHANTOM



602-2030



602-6030

Item #	Phantom Material	Size
602-2030	Acrylic/PMMA	30cm sq x 5 cm T
602-6030	Acrylic/PMMA	30cm sq x 15 cm T

## SOLID WATER® HE

Density: 1.032 g/cm<sup>3</sup>



Solid Water® HE (High Equivalency) is the next generation of water mimicking material. Solid Water® HE uses new patent-pending technology that more accurately mimics true water within 0.5% for therapeutic and diagnostic energies. Finally - no more compromises between therapy, imaging, quality, and convenience.

Exceptional uniformity is achieved through a patent-pending manufacturing process using nanosphere technology, and quality control testing of each slab on a CT machine before shipment.

### Leading Uniformity

- Improved uniformity and reduced variation compared to other water mimicking formulations
- No streaks or stripes for more consistent and accurate results in imaging and therapeutic QA tests

### Leading Durability

- Unique Nanosphere technology offers a combination of high strength and water equivalence
- Increased strength and durability allows manufacturing of slabs as thin as 1.0 mm
- Longer lifespan from increased durability and resistance to scratches and chipping

### Leading Versatility

- Designed for both diagnostic and therapeutic energy ranges
- No need for different stacks of water mimicking materials rated at different energy ranges

### Enhanced Water Equivalency

- Improves the linear response of the slab across a spectrum of energies

### Specifications

#### Depth ionization relative-to-water

Photons: 1.000 ± 0.005

Electrons: 1.000 ± 0.005

Mass Density (g/cm<sup>3</sup>): 1.032 ± 0.005

Electron Density (e-/cm<sup>3</sup> NA): 0.557 ± 0.001

**Solid Water HE / Water Electron Density Ratio: 1.000 ± 0.005**

Thickness	Item #	Size	Item #	Size	Item #	Size
0.1 cm	604-501	20 cm sq.	604-601	30 cm sq.	Not Available	
0.2 cm	604-502	20 cm sq.	604-602	30 cm sq.	604-702	40 cm sq.
0.3 cm	604-503	20 cm sq.	604-603	30 cm sq.	604-703	40 cm sq.
0.4 cm	Not Available		604-604	30 cm sq.	Not Available	
0.5 cm	604-505	20 cm sq.	604-605	30 cm sq.	604-705	40 cm sq.
1.0 cm	604-510	20 cm sq.	604-610	30 cm sq.	604-710	40 cm sq.
1.5 cm	604-515	20 cm sq.	604-615	30 cm sq.	604-715	40 cm sq.
2.0 cm	604-520	20 cm sq.	604-620	30 cm sq.	604-720	40 cm sq.
2.0 cm with Cavity	604-572	20 cm sq.	604-672	30 cm sq.	604-772	40 cm sq.
2.5 cm	Not Available		Not Available		604-725	40 cm sq.
3.0 cm	604-530	20 cm sq.	604-630	30 cm sq.	604-730	40 cm sq.
3.0 cm with Cavity	604-573	20 cm sq.	604-673	30 cm sq.	604-773	40 cm sq.
4.0 cm	604-540	20 cm sq.	604-640	30 cm sq.	604-740	40 cm sq.
4.0 cm with Cavity	604-574	20 cm sq.	604-674	30 cm sq.	604-774	40 cm sq.
5.0 cm	604-550	20 cm sq.	604-650	30 cm sq.	604-750	40 cm sq.
5.0 cm with Cavity	604-575	20 cm sq.	604-675	30 cm sq.	604-775	40 cm sq.
6.0 cm	604-560	20 cm sq.	604-660	30 cm sq.	Not Available	
6.0 cm with Cavity	604-576	20 cm sq.	604-676	30 cm sq.	Not Available	

## PLASTIC WATER®

Density 1.02 g/cm<sup>3</sup>



Thickness	30 x 30 cm	40 x 40 cm
0.1 cm	603-301	603-401
0.2 cm	603-302	603-402
0.3 cm	603-303	603-403
0.5 cm	603-305	603-405
1.0 cm	603-310	603-410
2.0 cm	603-320	603-420
3.0 cm	603-330	603-430
4.0 cm	603-340	603-440
5.0 cm	603-350	603-450
6.0 cm	603-360	603-460
7.0 cm	603-370	603-470

### Plastic Water® - 150 keV - 100 MeV

- Agrees with true water within 0.5% above 7 MeV
- Easy to machine
- Custom cavities are available to accommodate any ion chamber
- Un-breakable
- Includes a 5-Year Warranty

Plastic Water® is flexible and will not break under impact and is the only calibration material available in 1 mm thicknesses. Plastic Water® is the only material which agrees with true water within 0.5% above 7 MeV.

### Specifications

**Material:** Epoxy resins and powders to control density and radiation properties

**Density:** 1.02 g/cm<sup>3</sup>

Item #	Plastic Water®
603-325	30 x 30 x 2 cm Thick with Cavity for Ion Chamber
603-326	Plug for Chamber Cavity in 30 x 30 cm Phantom
603-425	40 x 40 x 2 cm Thick with Cavity for Ion Chamber
603-426	Plug for Chamber Cavity in 40 x 40 cm Phantom
603-500	Drilling Chamber Cavity at Custom Location

F

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## VIRTUAL WATER™



Virtual Water™ is designed for photon and electron beam calibrations. It eliminates the inconvenience of transporting, setting-up, and filling water tanks. Virtual Water™ is free of air and other imperfections and is not affected by humidity or temperature changes.

Virtual Water™ scatters and attenuates diagnostic and radiotherapy range x-rays the same way as water without the charge storage problems. It can be used for both photon and electron beam calibrations, including relative ionization, depth dose measurements, and absolute calibrations without the need for correction and scaling factors. Ionization readings obtained in Virtual Water™ are practically the same as those in liquid water for the same depth and exposure duration.

Each batch of Virtual Water™ is tested at an independent calibration lab and verified to be within 0.5% of water at photon energies.

Custom cavities are available to accommodate various types of ion chambers in any size section and in thicknesses of 2cm or more. Customer must specify ion chamber.

No positive (plug) is supplied with the chamber cavity. Plugs can be ordered separately.

### Specifications

**Material:** Epoxy resins and powders to control density and radiation properties

**Density:** 1.04g/cm<sup>3</sup>

**Flatness:** 0.2mm (0.008 in)

**Length and Width Tolerance:** ± 0.02" (0.5 mm)

**Thickness Tolerance:** ± 0.006" (0.15 mm)

**Batch Consistency:** ± 0.02% (measured)

Thickness	20 x 20 cm	30 x 30 cm	40 x 40 cm
0.1 cm	605-201	605-301	Not Available
0.2 cm	605-202	605-302	605-402
0.3 cm	605-203	605-303	605-403
0.5 cm	605-205	605-305	605-405
1.0 cm	605-210	605-310	605-410
2.0 cm	605-220	605-320	605-420
3.0 cm	605-230	605-330	605-430
4.0 cm	605-240	605-340	605-440
5.0 cm	605-250	605-350	605-450
6.0 cm	605-260	605-360	Not Available

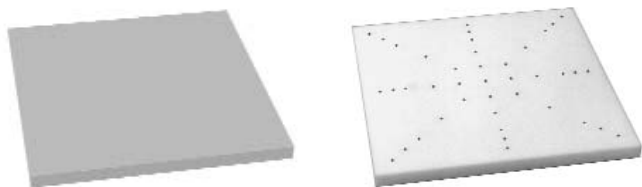
Virtual Water™ is a trademark of Med-Cal, Inc.



605-520

Item #	Virtual Water™
605-500	DRILLING for Chamber
605-505	MILLING for Chamber
605-510	Fly-Cut A-10 & A-11
605-520	Scribe 10" x 10" and Crosshairs (per Face)
605-521	Scribe + on 3 Sides
605-503	Plug for Drilled Chamber Hole
605-508	Plug for Milled Chamber Hole
605-515	Custom Plug

## FLATNESS PHANTOM PLATE



Item	Material	cm <sup>2</sup>	Thickness
657-005	Acrylic	45	0.5"
657-010	Acrylic	45	1.0"
657-012	Acrylic	40	0.5"
657-013	Acrylic	40	1.0"
657-014	Acrylic	50	1.0"
657-303	Polystyrene	30	1.0"
657-304	Polystyrene	40	1.0"
657-305	Polystyrene	50	1.0"

**Tungsten Pins can be Customized Drilled in Phantom  
Custom Made Items are Nonreturnable**

## METAL SHEETING

### Specifications

#### Half-Hard Brass Sheets

**Type 260:** 70% Copper, 30% Zinc

**Density:** 8.515 g/cm<sup>3</sup>

**Size:** 6" sq.

#### Copper Sheets

**Type C110:** 99.9% Copper

**Density:** 8.9 g/cm<sup>3</sup>

**Size:** 6" sq.

#### Aluminum Sheets

**Density:** 2.718 g/cm<sup>3</sup>

**Size:** 6" sq.

Item	Material	Thickness
650-0020	Brass	0.020" (0.50 mm)
650-0032	Brass	0.032" (0.80 mm)
650-0064	Brass	0.064" (1.65 mm)
650-0125	Brass	0.125" (3.10 mm)
650-0190	Brass	0.187" (4.76 mm)
650-0250	Brass	0.250" (6.35 mm)
650-0500	Brass	0.500" (12.7 mm)
650-1000	Brass	1.000" (25.4 mm)
651-0020	1100 Aluminum	0.020" (0.50 mm)
651-0040	1100 Aluminum	0.040" (1.02 mm)
651-0080	1100 Aluminum	0.080" (2.03 mm)

Item	Material	Thickness
651-0250	6061 Aluminum	0.250" (6.35 mm)
651-0375	6061 Aluminum	0.375" (9.52 mm)
651-0500	6061 Aluminum	0.500" (12.7 mm)
651-1000	6061 Aluminum	1.000" (25.4 mm)
652-0011	Copper	0.010" (0.25 mm)
652-0021	Copper	0.021" (0.55 mm)
652-0032	Copper	0.032" (0.84 mm)
652-0064	Copper	0.064" (1.64 mm)
652-0125	Copper	0.125" (3.18 mm)
652-0187	Copper	0.187" (4.76 mm)

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## GAMMA KNIFE PHANTOMS

### Specifications

#### Item 638-100 Phantom Plate

**Material:** Black ABS or Customer Supplied Material

**Density:** 1.04 gm/cm<sup>3</sup>

**Size:** 6.3" L x 5.12" W x 0.39" T (16 x 13 x 1 cm)

#### Item 638-200 Phantom Cylinder

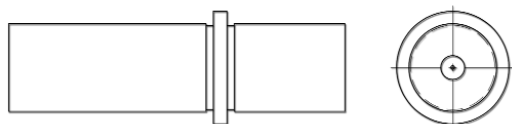
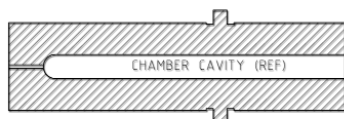
**Material:** Solid Water or Customer Supplied Material

**Density:** 1.03 gm/cm<sup>3</sup>

**Size:** 0.9 / 1.2" diameter x 3.6" L (2.4 / 3.1 x 9.2 cm)



Phantom Plate

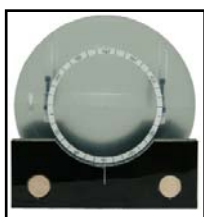


Phantom Cylinder

Item	Leksell Gamma Knife Phantom
638-100	Phantom Plate
638-102	Drilling Phantom Plate for Capintec PR05P
638-103	Drilling Phantom Plate for PTW 0.125 cc Semiflex
638-104	Drilling Phantom Plate for PTW 0.015 cc PinPoint
638-105	Drilling Phantom Plate for Exradin A16
638-106	Drilling Phantom Plate for Exradin A14SL
638-107	Drilling Phantom Plate for PTW 31021
638-200	Phantom Cylinder
638-201	Drilling Phantom Cylinder for Exradin A14SL
638-202	Drilling Phantom Cylinder for Exradin A1SL
638-203	Drilling Phantom Cylinder for PTW 0.015 cc PinPoint
638-204	Drilling Phantom Cylinder for PTW 0.125 cc Semiflex

**Customer Can Provide Phantom Plate or Cylinder for Drilling  
Custom Drilling is Available**

## QA PHANTOM FOR ARC THERAPY AND FIELD ABUTMENT VERIFICATION



The ends of the stand are acrylic plates that have a scribed line for alignment of the phantom. Two wood dowels between the stand ends provide the phantom support which allows for rotation of the phantom and also gives minimal radiation obstruction. A rubber pad on the bottom of the acrylic end plates prevents the stand from moving.

This item can be customized or a chamber cavity can be added. Contact RPDinc for customization or for a chamber cavity.

### Item 622-305 Includes

Phantom, Stand, Hex Driver and Carrying Case

### Specifications

#### Phantom

**Overall Size:** 20 cm Diameter x 25 cm Long (7.87" x 9.84")

**Material:** Acrylic and Aluminum Screws

#### Stand

**Overall Size:** 20.4 W x 35.8 cm L (8.03" x 14.1")

**Material:** Acrylic and Wood

Item	Description
622-305	QA Phantom for ArcTherapy and Field Abutment Verification

The 622-305 Phantom was designed to provide a means of verification for abutting fields and gaps using film.

Item 622-305 is an acrylic phantom that is split in half to accommodate an 8 x10 or 10 x 12 film. There are four aluminum screws that are tightened after film placement to keep the film from moving and keep the phantom halves aligned. The phantom has springs loaded into the screw holes which cause the phantom halves to separate when the screws are loosened. One end of the phantom has a scale for rotation on each half of the phantom. One scale goes from 0° to 180° with 30°, 60°, 90°, 120° and 150° numbered and with markings at every 10°. The other scale goes from 180° to 360° and also has the 10° markings with numbers at 210°, 240°, 270°, 300° and 330°. The scales can be used to position the phantom to match the gantry angle.

## ALUMINUM FILM COMPRESSOR



The Aluminum Film Compressor is used to compress polystyrene, acrylic, plastic water, or solid water phantom pieces together with a Ready Pack Film placed in the center.

### Specification

**For:** 25 cm sq., 30 cm sq. and 35 cm sq.

**Size:** 15.65" W x 9.5" L

**Inside Width:** 30 cm

**Plates:** 1/2" T. Aluminum

Item #	Description
622-302	Aluminum Film Compressor

## FILM DOSIMETRY CASSETTES



Light Hole

The two piece, Film Dosimetry Cassette keeps the edge of the film at the surface of the cassette. A light hole at the bottom marks the film orientation.

To insert film loosen screws 1/2 turn and slide film in. The film will stop at the stoppers between the two pieces. The edge of the film should be flush with top edge of the cassette. Tighten the screws. To remove film, loosen screws, turn the cassette over and the film will slide out.

The Film Dosimetry Cassette is light sealed with rubber tubing on 3 sides. The film entry side must be covered with black tape to prevent light exposure.

The Film Dosimetry Cassette can be used in any plane: parallel, perpendicular or angled.

Scribing is available upon request. Custom thicknesses are available upon request.

### BLACK ACRYLIC FILM DOSIMETRY CASSETTE

Density: 1.17 to 1.20 g/cm<sup>3</sup>

Item #	Size	Sides	Film Size
623-025	25cm W x 30cm L x 3.6cm T	1.8cm & 1.8cm	8" x 10"
623-030	30cm W x 30cm L x 2.4cm T	1.2cm & 1.2cm	8" x 10"
623-035	30cm W x 40cm L x 5cm T	2.5cm & 2.5cm	10" x 12"

### BLACK ABS\* FILM DOSIMETRY CASSETTE

\*(ACRYLONITRILE-BUTADINE STYRENE) Density: 1.04 g/cm<sup>3</sup>

Item #	Size	Sides	Film Size
623-128	30cm W x 30cm L x 4cm T	2.0cm & 2.0cm	8" x 10"
623-135	30cm W x 40cm L x 5cm T	2.5cm & 2.5cm	10" x 12"

### SOLID WATER 457-CTG FILM DOSIMETRY CASSETTE

Density: 1.015 g/cm<sup>3</sup>

Item #	Size	Sides	Film Size
623-230	30cm W x 30cm L x 3cm T	1cm & 2cm	8" x 10"
623-235	30cm W x 40cm L x 5cm T	2cm & 3cm	10" x 12"

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## EDR2 FILM

### Extended Dose Range (EDR) Ready-Pack Film for Monitoring and Evaluation of Exposures at Therapy Energies

EDR2 film is designed specifically for oncology applications. Compared to most x-ray films, it is relatively insensitive to x-ray energies and, hence, has a response which extends to very high exposures. Intended for direct exposure applications, it is not suitable for portal imaging radiographs.



#### EDR2 FEATURES

- Large area
- Low cost, widely available
- Excellent for relative dosimetry (e.g., field uniformity, equipment characterization: field shapes, port openings, MLCs)
- With appropriate calibration, film may be applicable to absolute dosimetry (e.g., high-dose treatment strategies such as IMRT)

#### FEATURES OF EDR2 DIRECT EXPOSURE APPLICATIONS

- Wide response range
- Approximately linear
- Robust processing

#### DOSE RESPONSE FOR EVALUATION

Exact dose responses are a function of facility dependent factors including processing conditions (processing time, processing temperature, processing equipment, processing chemistry), the density sampling (digitizer equipment and calibration), and exposure monitoring equipment. The exact response relationship should be measured and verified for the local conditions. The films should be processed using recommendations found in Kodak Service Bulletin #30 (refer to EC film guidelines).

#### MEASUREMENT TECHNIQUE

The dose response of a film should be measured using appropriate amounts of build-up and backscatter material. Many references have discussed methodology for measuring the response of a film.

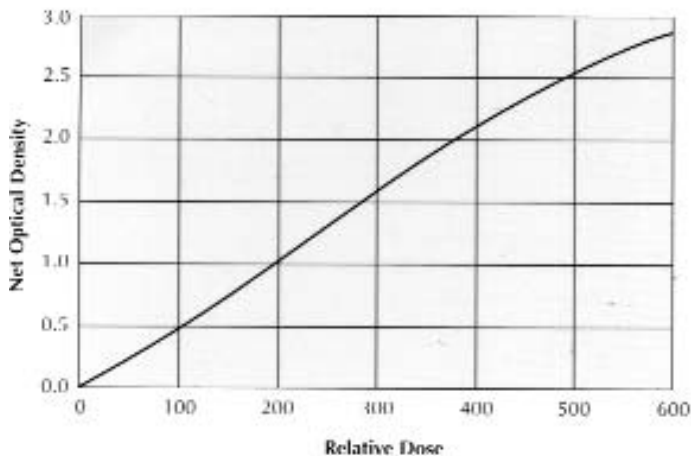
#### REFERENCES

- M.D.C. Evans and L.J. Schreiner, "A simple technique for film dosimetry," *Radiotherapy. Oncol.* Vol 23, pages 265-267, 1992.
- J. I. Hale, A. T. Kerr, and P. C. Shragge, "Calibration of film for accurate mega voltage photon dosimetry," *Med. Dosimetry* Vol 19, pages 43-46, 1994.
- Inhwan J. Yeo, C-K Chris Wang, and Sandra E. Burch, "A filtration method for improving film dosimetry in photon radiation therapy," *Medical Physics* Vol 24, pages 1943-1953, December 1997.
- J. L. Robar and B. G. Clark, "The use of radiographic film for linear accelerator stereotactic radiosurgical dosimetry," *Medical Physics* Vol 26, pages 2144-2150, 1999.



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KODAK Extended Dose Range Film (EDR2)

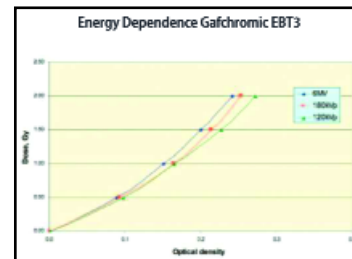
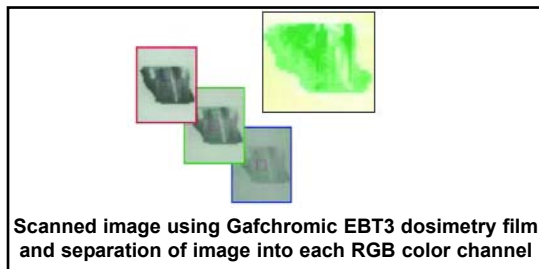


The curve above shows the approximate relative dose response for EDR2 film. The curve is representative only - - the exact results will depend on the exposing, processing, and scanning conditions at each facility. EDR2 film will saturate in direct exposure at ~ 700 cGy

Item	Description
624-100	EDR2 Film - 10" x 12" (50/box, 4 box min order)
624-105	EDR2 Film - 14" x 17" (50/box, 2 box min order)



## GAFCHROMIC® EBT3 DOSIMETRY FILM



Gafchromic EBT3 dosimetry film has been designed specifically as a time and cost-saving tool that addresses the needs of medical physicists and dosimetrists working in radiotherapy environments and supports the processor-less environment of the modern hospital.

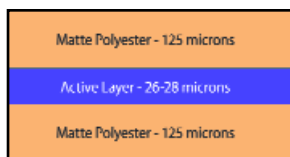
### Benefits of Gafchromic EBT3 dosimetry films

- Superior resolution over array devices that meets the demand of increasing conformity requirements for new therapy modalities
- Wide dose range: 1 cGy to 40 Gy
- Response independent of radiation incident angle allowing film to measure the dose just as the patient would receive it
- Energy-independent dose response
- Near tissue-equivalent
- Uniformity better than  $\pm 2\%$  in dose
- Can be handled in room light – no need for a darkroom
- Water-resistant, water-immersible and usable with water phantoms
- Lowest starting expense and comparable continuing operating cost among all QA systems
- Saves time and money with improved accuracy and outstanding convenience
- Cut and shape the film to your needs

### Configurations and structures of Gafchromic EBT3 dosimetry film

Gafchromic EBT3 dosimetry film is made by laminating an active layer between two polyester layers. The polyester surface makes an exceptionally robust product and allows water immersion.

The polyester lamination for EBT3 is symmetrical providing greater confidence that neither side of the film is affected differently by exposure or scanning. The polyester surface also has anti Newton Ring coating so repeat scanning is kept to a minimum.



Structure of Gafchromic EBT3 dosimetry film  
(actual thicknesses may vary slightly)

### Optimizing the sensitometric response of Gafchromic EBT3 dosimetry film

The sensitometric responses of Gafchromic EBT3 dosimetry films are identical as they have the same type and amount of active component.

Gafchromic EBT3 dosimetry film is engineered with Ashland Specialty Ingredients technology including a special marker dye in the active layer that enables proprietary multi-channel dosimetry analysis built in to FilmQA Pro software.

### Versatile Performance

Gafchromic™ EBT3 dosimetry film can also be read with a film scanner or digitizer. As with densitometers, the response of the film can be enhanced if the spectral response of the scanner is matched to the absorbance of the film.

The Epson® 11000XL PHOTO flatbed color scanner, which is designed to digitize film up to 12.5" x 16" in size, is the preferred and recommended scanner for use with Gafchromic EBT3 dosimetry film.

The main advantages of using a flat bed color scanner is to fully utilize the properties inherent to Gafchromic EBT3 dosimetry film. The multiple sets of the color data obtained from a single scan can be used with FilmQA Pro software. FilmQA Pro software allows automatic correction so it reduces the effects of film non-uniformity, scanner and other artifacts and provides the most accurate dosimetric results. Furthermore, the difference in color channel response allows the extended dynamic range of the film from 1 cGy to 10 Gy.

### Energy independence of Gafchromic EBT3 dosimetry film

Gafchromic EBT3 dosimetry film has been designed to measure absorbed dose from high-energy radiation used in RT. The response of photons has been found to be highly energy-independent in the MeV range and measurements at lower energies show that the response changes by only ten percent, even down to keV range.

### Energy Dependence of Gafchromic EBT3 dosimetry film

### Dose fractionation

Gafchromic EBT3 dosimetry film exposed to a single fraction yields the equivalent amount of response as the film given fractionated exposure thus establishing Gafchromic EBT3 dosimetry film as an effective dose integrator.

### Post-exposure density growth

Gafchromic EBT3 dosimetry film self develops in real time. The time interval between the exposure and the scan should be kept approximately the same for all films in an analysis. The effect of the post-exposure density growth can be mitigated effectively using our OneScan Protocol.

### Storage and handling

Gafchromic EBT3 dosimetry film is designed to be handled in interior room light, however it is recommended that the film be kept in darkness when not in use. Exposure to sunlight should be avoided. The film may be stored at room temperature (20° - 25°C), but the best practice is to store the film at refrigerator temperature. It can tolerate brief exposures (e.g. < 1 min.) to temperatures up to 70°C, or more prolonged exposure (e.g. < 1 day) at temperatures of 50°C. However, it is recommended that the film be handled, exposed and measured at room ambient temperature (20° - 25°C).

Gafchromic EBT3 dosimetry film can be easily formatted with simple cutting to be used with the FilmQA™ Pro software and the OneScan protocol.

Item #	Gafchromic® EBT3 Film	Sheets
115-016	8" x 10" (20.3 x 25.4 cm)	25
115-019	13" x 17" (33.0 x 43.2 cm)	10

Item #	Gafchromic® EBT3P Film	Sheets
115-011	8" x 10" (20.3 x 25.4 cm), for QuiCk Phantom	25

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## GAFCHROMIC® EBT2, EBT3 AND EBT3+ FILM



- No processing required
- Wide exposure range
- Exceptional image resolution
- Large measurement area
- Less sensitive to indoor lighting
- Built-in uniformity indicator

### ADDITIONAL FEATURES OF EBT3

- Symmetrical
- Anti-newton coated

**F** GAFCHROMIC® EBT2 and EBT3 dosimetry film has been designed specifically as a time-and-cost-saving tool that addresses the needs of medical physicists and dosimetrists working in radiotherapy environments. It is targeted toward applications in external beam radiotherapy and supports the processor-less environment of the modern hospital.

### TECHNICAL BENEFITS

- Supports all major RT technologies
- Large measurement area
- Develops in real time with no processing (eliminates processing discrepancies)
- Density changes stabilize rapidly
- Energy-independent dose response
- Reduces scattered radiation
- Near tissue-equivalent
- Uniformity better than  $\pm 3\%$  in dose
- High spatial resolution
- Can be handled in room light
- Eliminates the need for a darkroom
- Water resistant, water immersible
- Usable with water phantoms
- Withstands temperatures up to 70°C

### EBT2 SPECIFIC TECHNICAL BENEFITS

- Wide dose range, 1 cGy to 40 Gy
- Special uniformity indicator
- Improved indoor lighting resistance

### EBT3 SPECIFIC TECHNICAL BENEFITS

- Wide dose range, 1 cGy to > 40 Gy
- Symmetrical
- Helps avoid Newton's rings

EBT3+ is an enhanced version of GafChromic EBT3 film that has been conveniently formatted for application of the "One-Scan" protocol recently published in the Journal of Medical Physics<sup>1</sup>. By combining measurement with calibration and eliminating many inter-scan variables, the "One-Scan" protocol improves dose measurement accuracy to better than 1%. Moreover, this protocol allows the user to obtain dose measurements within a few minutes of exposure. No more waiting overnight for results.

All these advantages, plus the inherent advantages of radiochromic film - high spatial resolution, water/tissue equivalence, minimal energy dependence and no angular dependence - make GafChromic EBT3+ film the ideal choice for patient-specific QA of treatment plans for IMRT, VMAT, SRS, etc.

1. "An efficient protocol for radiochromic film dosimetry combining calibration and measurement in a single scan," D. Lewis, A. Micke, X. Yu and M. F. Chan, Medical Physics 39(10) p6339-50, October 2012

### ECONOMIC BENEFITS

- Eliminates the expense of a processor
- Eliminates the costs and dangers of photo chemical wastes
- Convenient to handle and easy to cut
- Easily noted on with marker pen (notes easily erased if necessary)
- Cut and shape the film to your needs
- Economical and competitive pricing
- Use with professional flatbed scanner
- Saves time and money, with improved accuracy and outstanding convenience
- Available in two sheet sizes

### CONFIGURATION AND STRUCTURE

GAFCHROMIC® EBT2 and EBT3 is made by laminating an active layer between two polyester layers. The polyester surface makes an exceptionally robust product and allows water immersion.

### OPTIMIZING THE SENSITOMETRIC RESPONSE

Since the absorbance spectra of the active component of GAFCHROMIC® EBT2 and EBT3 peaks at 636 nm, the sensitivity is maximized by measurement with red light. Transmission densitometers that are commonly used to measure visual density with conventional films are suitable for use with EBT2 or EBT3 film. Better results can be obtained from the red color channel with a color densitometer. Further improvement of results can be obtained by using a narrow band pass filter with central wavelength at about 636 nm and 10 nm bandwidth while making measurements.

### EBT2 FEATURES

#### A PRECISION 5-LAYER LAMINATED COMPOSITION

A clear polyester . . . . .	50 microns
B adhesive layer . . . . .	25 microns
C top coat . . . . .	5 microns
D active substrate layer . . . . .	30 microns
E clear polyester . . . . .	175 microns

Approximate thicknesses, actual values may vary slightly.

### EBT3 AND EBT3+ FEATURES

#### A PRECISION 3-LAYER LAMINATED COMPOSITION

A clear polyester . . . . .	125 microns
B active substrate layer . . . . .	30 microns
C clear polyester . . . . .	125 microns

Approximate thicknesses, actual values may vary slightly.

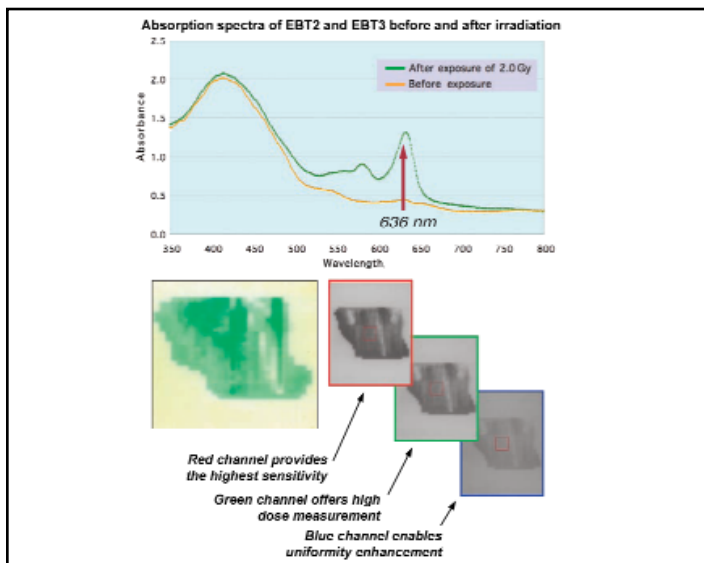
### VERSATILE PERFORMANCE

GAFCHROMIC® EBT2 and EBT3 dosimetry film can also be read with a film scanner or digitizer. As with densitometers, the response of the film can be enhanced if the spectral response of the scanner is matched to the absorbance of the film.

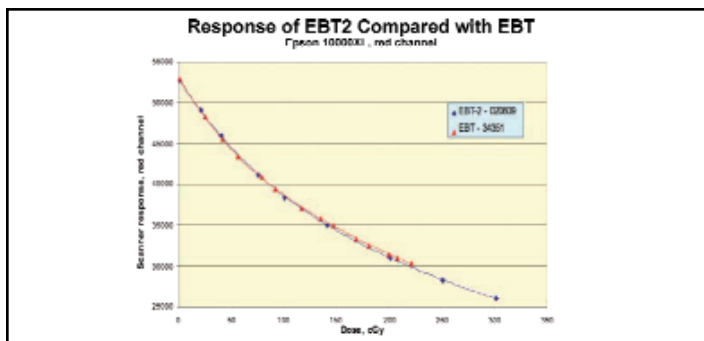
Many high-quality scanners are available to digitize colored films. The Epson® 10000XL PHOTO flatbed color scanner, which is designed to digitize film 8" x 10" in size, and even as large as 12" x 16" in size, is recommended to scan EBT2 and EBT3 film. For doses up to 8 Gy, the Epson® 10000XL provides the most sensitive response for EBT2 and EBT3 film from the red color channel. The green channel can be used to measure doses between 8 Gy and 40 Gy for EBT2 and between 8 Gy and > 40Gy for EBT3. The blue channel provides a response signal for automatic film uniformity enhancement via a special marker dye in the active layer of EBT2 and EBT3 film. The recommended scan orientation for the film is landscape.

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

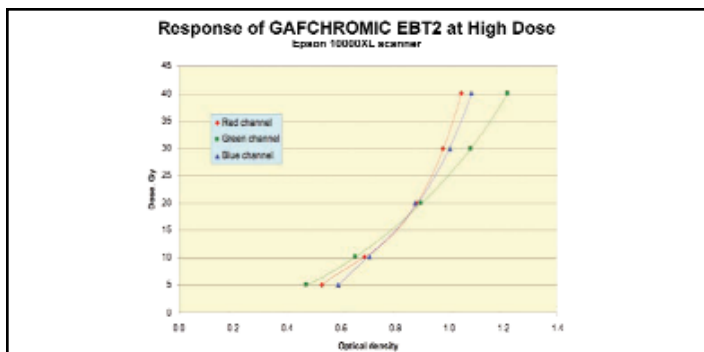
## EPSON 10000XL PHOTO FLATBED COLOR SCANNER PERFORMANCE



NOTE: The response of GAFCHROMIC® EBT2 and EBT3 dosimetry film is dependent upon factors specific to the facility such as the energy spectrum of the radiation source, the characteristics of the densitometer, film scanner or other means of measurement and the elapsed time between exposure and measurement etc. Therefore, the user should determine the dose-density response under the conditions pertaining to the user's facility and measurement protocol. Since the absolute response of GAFCHROMIC® EBT2 and EBT3 dosimetry film may vary from lot to lot, the user should re-measure response when changing to a new lot number.



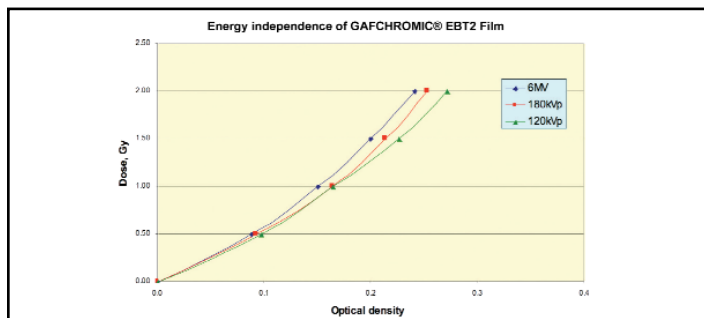
Responses of GAFCHROMIC® EBT2 and EBT to dose up to 3Gy



Response of GAFCHROMIC® EBT2 to doses between 5Gy and 40 Gy, with the Epson® XL10000 PHOTO flatbed color scanner

## ENERGY INDEPENDENCE

GAFCHROMIC® EBT2 radiochromic film has been designed to measure absorbed dose from high-energy radiation used in RT. The response to photons has been found to be highly energy-independent in the MeV range and measurements at lower energies show that the response changes by only ten percent, even down to keV range.



## DOSE FRACTIONATION

EBT2 film exposed to a single fraction yields the equivalent amount of response as the film given fractionated exposure and establishes EBT2 film as an effective dose integrator.

## POST-EXPOSURE DENSITY GROWTH

GAFCHROMIC® EBT2 film self-develops in real time. The time interval between the exposure and the scan should be kept approximately the same for all films in an analysis.

## STORAGE AND HANDLING

GAFCHROMIC® EBT2 film is designed to be handled in interior room light, however it is recommended that the film be kept in darkness when not in use. Exposure to sunlight should be avoided. The film may be stored at room temperature (20°- 25°C), but the best practice is to store the film at refrigerator temperature. The film's shelf-life is two years when stored at room ambient temperature. It can tolerate brief exposures (e.g. <1 min.) to temperatures up to 70°C, or more prolonged exposure (e.g. <1 day) at temperatures of 50°C. However, it is recommended that the film be handled, exposed and measured at room ambient temperature (20°- 25°C).

## NOTES

1. GAFCHROMIC® EBT3 8" x 10" is available with or without holes. These holes are fiducial markers used as guides for the end user.
2. GAFCHROMIC® EBT3+ film contains 20 8" x 11" films paired for separation into 8" x 9.5" sheets and matched 8" x 1.5" strips, plus an additional 10 8" x 1.5" films for use as calibration or reference strips.

Item #	Gafchromic® EBT2 Film	Sheets
115-015	8" x 10" (20.3 x 25.4 cm)	25
115-017	13" x 17" (33.0 x 43.2 cm)	10

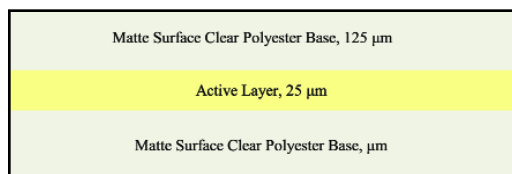
Item #	Gafchromic® EBT3 Film	Sheets
115-016	8" x 10" (20.3 x 25.4 cm)	25
115-018	8" x 10" (20.3 x 25.4 cm) w/Fiducial Markings	25
115-019	13" x 17" (33.0 x 43.2 cm)	10

Item #	Gafchromic® EBT3+ Film	Sheets
115-014	8" x 11" (20.3 x 27.9 cm), 20 Films and 10 Strips/Box	

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## GAFCHROMIC™ EBT-XD DOSIMETRY FILM

GAFCHROMIC™ EBT-XD is designed for the measurement of absorbed doses of ionizing radiation particularly suited for high-energy photons. The dynamic range of this film is specifically designed for best performance in the dose range from 0.4 to 40 Gy which makes it best suited for applications such as SRS and SBRT. The structure of GafChromic™ EBT-XD radiochromic film is comprised of an active layer, nominally 15µm thick, containing the active component, marker dye, stabilizers and other components giving the film its near energy-independent response. The thickness of the active layer may vary slightly from batch-to-batch. The active layer is sandwiched between two 125 µm matte polyester substrates.



Structure of the GafChromic™ EBT-XD Dosimetry Film

### Key technical features of GafChromic EBT-XD include

- Dynamic dose range: 0.1 Gy to 200 Gy
- Optimum dose range: 0.4 Gy to 40 Gy, best suited for applications such as SRS and SBRT
- Develops in real time without post-exposure treatment;
- Energy-dependence: minimal response difference from 100keV into the MV range
- Near tissue equivalent;
- High spatial resolution – can resolve features to at least 5µm
- Proprietary new technology incorporating a marker dye in the active layer
- Enables non-uniformity correction by using multichannel dosimetry
- Decreases UV/light sensitivity
- Excellent uniformity
- Stable at temperatures up to 60°C (140°F)

The incorporation of a yellow marker dye, when used in conjunction with an RGB film scanner and FilmQAPro™ software<sup>1,2,3</sup>, the EBT-XD film enables all the benefits of multi-channel dosimetry.

### Performance Data and Practical User Guidelines

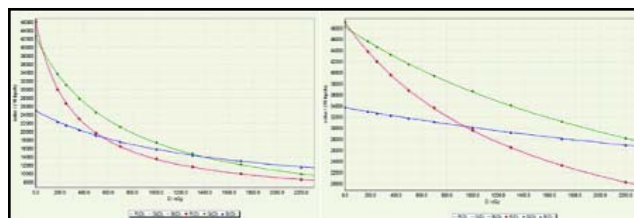
Like all other Gafchromic™ films, EBT-XD dosimetry film can be handled in normal room light for at least several hours without noticeable effects. However, it is suggested that the film should not be left exposed to room light indefinitely, but rather should be kept in the dark when it is not being handled. When the active component in GafChromic™ EBT-XD film is exposed to radiation, it reacts to form a blue colored polymer with absorption maxima at approximately 633 nm.

Gafchromic™ EBT-XD radiochromic dosimetry film is recommended to be digitized to obtain two-dimensional information in speedy fashion using 48 bit color depth flatbed color scanners. The commonly available professional photo scanners such as EPSON Expression 11000XL, V750, V700 and 1680 flatbed color scanners can be used. These scanners are color scanners and measure the red, green and blue color components of the film at a color depth of 16 bit per channel. EPSON Expression 11000XL is particularly recommended due to its large scanning area that allows the least amount of lateral effect.

### Performance Comparison between EBT3 and EBT-XD film

As mentioned earlier, Gafchromic™ EBT-XD is specifically designed to obtain optimum results for the applications of SRS and SBRT. The high dose associated with these applications poses many challenges when EBT3 films<sup>4,5</sup> are used. The two main problems are the increased uncertainty at high dose and potentially unacceptable lateral scan effect.

Due to the chromatic nature of Gafchromic™ film, it does not have clear color saturation points. This is especially important when FilmQA Pro software is used for the analysis, since it takes advantage of all available color channels that effectively extend the dynamic range of the film. However, a shallow slope for the dose response curve can cause increased dosimetric error for high dose region. As seen below, for the dose range between 10 and 20 Gy, EBT-XD film provides a more desirable calibration than EBT3.



Comparison of Calibration Curves of GAFCHROMIC™ EBT3 (left) and EBT-XD (right) Films

As noted by many users, flatbed scanners used for film measurement exhibit a lateral scan effect, i.e., the color value measured can vary depending upon the location of the film placement relative to the center of the scanner. Typically, film scanned away from the center location will have lower color pixel values which result in higher calculated doses. The variation (lateral effect) increases with color density of the film as results of the increased dose<sup>6,7</sup>.

The active particles in EBT-XD film are significantly smaller than those in EBT3 film. The smaller particle size reduces light scattering and polarization and, in combination with lower color density when compared to EBT3 films exposed to the same dose, is believed to reduce the lateral effect.

### REFERENCES

1. Micke, A., Lewis, D.F., Yu, X. "Multichannel film dosimetry with non-uniformity correction," Med Phys, 38(5), 2523-2534 (2011).
2. Lewis D., Micke A., Yu X, Chan M.: "An Efficient Protocol for Radiochromic Film Dosimetry combining Calibration and Measurement in a Single Scan", Medical Physics, 39 (10) 6339(2012)
3. An Efficient Calibration Protocol for Radiochromic Film, April 2011 available at www.filmqapro.com
4. Gafchromic™ EBT2 film specifications, Available at www.gafchromic.com
5. Gafchromic™ EBT3 film specifications, Available at www.gafchromic.com
6. Mathot M, et al., "Gafchromic film dosimetry: Four years experience using FilmQA Pro software and Epson flatbed scanners", Physica Medica (2014)
7. Schoenfeld A, et al, "The artefacts of radiochromic film dosimetry with flatbed scanners and their causation by light scattering from radiation-induced polymers", Phys. Med. Biol. 59 (2014) 3575

### Specifications

**Configuration:** Active layer (25 µm) sandwiched between on 5 mil (125 µm) matte surface clear clear polyester substrate

**Size:** 8" x 10"

**Dynamic Dose Range:** 0.1 to 200 Gy

**Energy Dependency:** <5% difference in net optical density when exposed at 100 keV and 18 MeV

**Dose Fractionation Response:** <5% difference in net optical density for a single 25 Gy dose and five cumulative 5 Gy doses at 30 minute intervals

**Dose Rate Response:** <5% difference in net optical density for 10 Gy exposures at rates of 3.4 Gy/min. and 0.034 Gy/min.

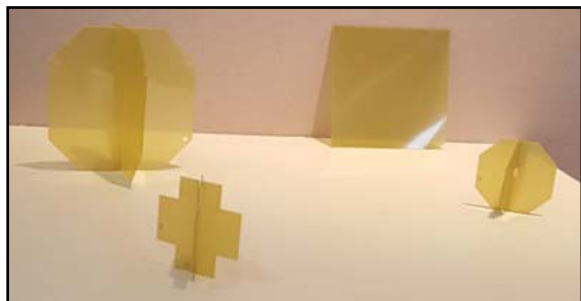
**Stability in Light:** <5x10<sup>-3</sup> change in optical density per 1000 lux-day

**Stability in Dark (Pre-exposure):** <5x10<sup>-4</sup> optical density change/day at 23°C (73.4°F) and <2x10<sup>-4</sup> density change/day refrigerated

**Uniformity:** Better than 3% in sensitometric response from mean











Item #	Gafchromic®	Sheets
115-013	EBT-XD, 8" x 10" (20.3 x 25.4 cm)	25

## GAFCHROMIC® CYBERKNIFE FILMS



CyberKnife® quality assurance films are now available in both the Gafchromic EBT3 and Gafchromic EBT-XD films. GafChromic specific laser precision cutting guarantees an ideal fit for your phantom. EBT-XD films allow for a higher dose range to better simulate actual patient treatment while using a phantom. Additionally, these films are used for daily, weekly and monthly quality assurance testing as required for the CyberKnife system.

©CyberKnife is a registered trademarks of Accuray Incorporated in the United States and other countries.

Item #	Gafchromic® Film	Size	Quantity	Graphic
115-050	Ballcube I -- EBT3	2.5" x 2.5"	20 (10 Pairs)	
115-070	Ballcube I -- EBT-XD	2.5" x 2.5"	20 (10 Pairs)	
115-052	Ballcube II-- EBT3	2.5" x 2.5"	20 (10 Pairs)	
115-072	Ballcube II-- EBT-XD	2.5" x 2.5"	20 (10 Pairs)	
115-054	AQA-- EBT3	2.5" x 2.5"	100	
115-074	AQA -- EBT-XD	2.5" x 2.5"	100	
115-056	Mini Ballcube -- EBT3	1.25" x 1.25"	20 (10 Pairs)	
115-076	Mini Ballcube -- EBT-XD	1.25" x 1.25"	20 (10 Pairs)	
115-058	XLT -- EBT3	1.25" x 1.25"	20 (10 Pairs)	
115-078	XLT -- EBT-XD	1.25" x 1.25"	20 (10 Pairs)	

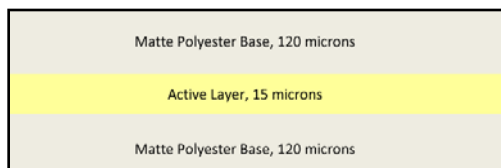
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# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## GAFCHROMIC® MD-V3 DOSIMETRY MEDIA

The GAFCHROMIC MD-V3 radiochromic dosimetry film is designed for the measurement of absorbed dose of ionizing radiation particularly suited for high-energy photons.

The structure of GAFCHROMIC MD-V3 radiochromic dosimetry film is comprised of an active layer, nominally 15µm thick, containing the active component, marker dye, stabilizers and other components giving the film its near energy-independent response. The thickness of the active layer may vary slightly from batch-to-batch. The active layer is sandwiched between two 120µm matte polyester substrates.



Structure of the GAFCHROMIC MD-V3 Dosimetry Media

### Key technical features of GAFCHROMIC MD-V3 include

- Dynamic Dose range: 1 Gy to 100 Gy
- Develops in real time without post-exposure treatment;
- Energy-dependence: minimal response difference from 100keV into the MV range;
- Near tissue equivalent;
- High spatial resolution - can resolve features to at least 5µm;
- Can be handled in room light - eliminates the need for a darkroom;
- Active coating exposed for detection of low energy photon and electron

### New and improved features over the previous generation (GAFCHROMIC MD-V2-55)

- Proprietary new technology incorporating a marker dye in active layer to enable use of multichannel dosimetry<sup>1</sup> with FilmQA Pro 3.0 software<sup>2</sup> corrects scanner and film artifacts including uniformity
- Mitigates lateral response dependence
- Enables channel-to-channel consistency measurement as an integrity check
- Decreases UV/light sensitivity;
- New matte film base to eliminate Newton's Rings artifact associated with scanning of the film
- Improved uniformity of response
- Stable at temperatures up to 140°F (60°C)

The most exciting new feature of GAFCHROMIC® MD-V3 over the previous generation of GAFCHROMIC® HD810 dosimetry film is the incorporation of a yellow marker dye. Used in conjunction with an rgb film scanner and FilmQAPro™ software, the marker dye in MD-V3 film enables all the benefits of multi-channel dosimetry. Using the marker dye feature is not mandatory. You can continue to perform dosimetry using only the red color channel, but you give up all the advantages of the multi-channel method that will make your film dosimetry better.

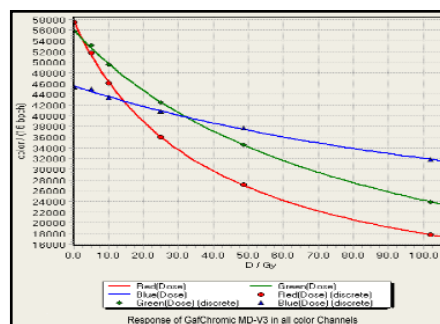
### Performance Data and Practical User Guidelines

The GAFCHROMIC MD-V3 dosimetry film can be handled in normal room light for at least several hours without noticeable effects. However, it is suggested that the film should not be left exposed to room light indefinitely, but rather should be kept in the

dark when it is not being handled. When the active component in GAFCHROMIC® MD-V3 film is exposed to radiation, it reacts to form a blue colored polymer with absorption maxima at approximately 633 nm.

GAFCHROMIC MD-V3 radiochromic dosimetry film may be measured with transmission densitometers, film scanners or spectrophotometers. The response of MD-V3 is enhanced by measurement with red light. In using a spectrophotometer the greatest response is obtained by scanning the film and using the peak absorbances. Most densitometers measure over a band of wavelengths and transmission densitometers for measuring colored films measure over various narrow color bands within the visible spectrum, e.g. visual, red, green and blue. Such densitometers are commonly and widely employed in the photographic industry.

To obtain two-dimensional information in speedy fashion, flatbed color scanners will work well with all GAFCHROMIC films including MD-V3 films. The commonly available professional photo scanners such as EPSON Expression 10000XL, V750, V700 and 1680 flatbed color scanners can be used. These scanners are color scanners and measure the red, green and blue color components of the film at a color depth of 16 bit per channel.



Response of GAFCHROMIC MD-V3 in all Color Channels

1. Micke, A., Lewis, D.F., Yu, X. "Multichannel film dosimetry with nonuniformity correction," *Med Phys*, 38(5), 2523-2534 (2011).
2. FilmQA Pro 3.0 software can be downloaded at [www.filmqapro.com](http://www.filmqapro.com)

### Specifications

**Configuration:** Active layer on 5 mil (120µ) matte polyester substrate

**Size:** 5" x 5"

**Dynamic Dose Range:** 1 to 100 Gray

**Energy Dependency:** <5% difference in net density when exposed at 1 MeV and 18 MeV

**Dose Fractionation Response:** <5% difference in net density for a single 100 Gy dose and five cumulative 20 Gy doses at 30 min. intervals

**Dose Rate Response:** <5% difference in net density for 10 Gy exposures at rates of 3.4 Gy/min. and 0.034 Gy/min.

**Stability in Light:** <0.005 change in density per 1000 lux-day

**Stability in Dark (Preexposure):** <5x10<sup>-4</sup> density change/day at 23 °C (73.4°F) and <2x10<sup>-4</sup> density change/day refrigerated

**Uniformity:** Better than 3% in sensitometric response from mean

Item	Gafchromic®
115-002	MD-V3, 5" x 5"

# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## GAFCHROMIC® HD-V2 DOSIMETRY FILM



GAFCHROMIC® HD-V2 is a radiochromic dosimetry film designed for the quantitative measurement of absorbed dose of high-energy photons. As a self-developing film, HD-V2 is a perfect fit for the processorless environment. Since radiochromic film requires no post-exposure processing, there are no chemicals to dispose of and the film can be handled and used without need of a darkroom.

### Key technical features of GAFCHROMIC® HD-V2 include

- Dynamic Dose range: 10 Gy to 1000 Gy
- Develops in real time without post-exposure treatment
- Energy-dependence: minimal response difference from 100keV into the MV range
- Near tissue equivalent;
- High spatial resolution - can resolve features to at least 5µm, or less
- Active coating exposed for detection of low energy photon and electron
- Proprietary new technology incorporating a marker dye in the active layer:
  - Enables non-uniformity correction by using triple-channel dosimetry
  - Decreases UV/light sensitivity;
- Stable at temperatures up to 60°C;

The most important feature of GAFCHROMIC® HD-V2 compared to the previous generation HD810 dosimetry film is the incorporation of a yellow marker dye. Used in conjunction with an rgb film scanner and FilmQAPro™ software<sup>1</sup>, the marker dye in HD-V2 film enables all the benefits of triple-channel dosimetry<sup>2</sup>. Using the marker dye feature is not mandatory as dosimetry can still be done using a single color channel (preferably the red channel), but you give up all the advantages of the triple-channel method that compensates for thickness differences of the film's active layer.

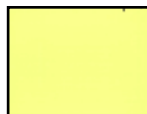
The structure of GAFCHROMIC® HD-V2 film is asymmetric. The film is comprised of an active layer, nominally 12µm thick, containing the active component, marker dye, stabilizers and other components giving the film its energy-independent response. The thickness of the active layer may vary slightly from batch-to-batch. The active layer is coated on a clear, 97 µm polyester substrate.



Configuration of GAFCHROMIC® HD-V2 Dosimetry Film

There have been indications that the response measurements made with a scanner or densitometer may be dependent on which side of the film is facing the light source. While the difference may be very small it is advised to be consistent with which side of the film faces the light source.

To help distinguish between the sides, sheets of GAFCHROMIC® HD-V2 film are marked with a small slit near one corner. When film is viewed in landscape orientation with the slit in the top right corner as shown below, the active layer is on the side facing the viewer.



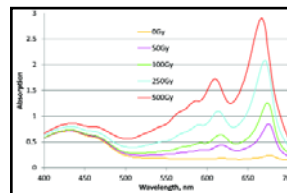
GAFCHROMIC® HD-V2 film in landscape view showing slit in top right corner.

### Specifications

- Configuration:** Active layer on 3.8 mil (97 µ) clear polyester substrate  
**Size:** 8" x 10"  
**Dynamic Dose Range:** 10 to 1000 Gray  
**Energy Dependence:** <5% difference in net density when exposed at 1 MeV and 18 MeV  
**Dose Fractionation Response:** <5% difference in net density<sup>a</sup> for a single 100 Gy dose and five cumulative 20 Gy doses at 30 minute intervals  
**Dose Rate Response:** <5% difference in net density<sup>a</sup> for 10 Gy exposures at rates of 3.4 Gy/min. and 0.034 Gy/min.  
**Stability in Light:** < 5x10<sup>-3</sup> change in density per 1000 lux-day  
**Stability in Dark (Pre-exposure):** <5x10<sup>-4</sup> density change/day at 23 °C and <2x10<sup>-4</sup> density change/day refrigerated  
**Uniformity:** Better than 3% in sensitometric response from mean; dose uniformity better than ±2% with FilmQAPro and triple-channel dosimetry

### PERFORMANCE DATA AND PRATICAL USER GUIDELINES

When the active component in GAFCHROMIC® HD-V2 film is exposed to radiation, it reacts to form a blue colored polymer with absorption maxima at approximately 670 nm as shown below. Note: The active component in HD-V2 is chemically the same as that in EBT3, EBT-XD and MD-V3, but the crystalline form is different. Hence the absorbance maximum is about 670 nm rather than 635 nm.

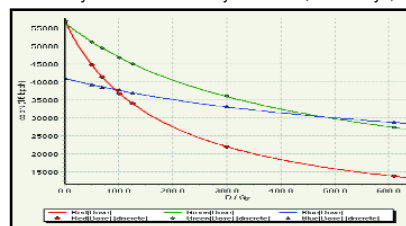


Spectra of GAFCHROMIC® HD-V2 as a function of adsorbed doses

GAFCHROMIC® HD-V2 radiochromic dosimetry film may be measured with transmission densitometers, film scanners or spectrophotometers. As can be inferred from the spectra above, the response of the film is enhanced when measured with red light. For spectrophotometer measurements, the greatest response is obtained at peak absorbance wavelengths. Most densitometers measure over a band of wavelengths. Black/white densitometers measure over the entire visual band while color densitometers measure over various narrower red, green and blue bands within the visible spectrum.

For two-dimensional measurement over a large film area the most efficient process is to use a 48-bit (16-bit per channel) flatbed color scanner. The EPSON Expression 11000XL Photo scanner and the now discontinued model 10000XL Photo scanner are the recommended models. These are color scanners and measure the red, green and blue color components of light transmitted by the film at a color depth of 16 bit per channel. These EPSON scanners are particularly recommended due to their large scanning area.

1. FilmQA Pro 3.0 software can be downloaded at [www.Filmqapro.com](http://www.Filmqapro.com) Micke, A., Lewis, D.F., Yu, X. "Multichannel film dosimetry with non- uniformity correction," Med Phys,38(5), 2523-2534 (2011).



Response of GAFCHROMIC® HD-V2 in all Color Channels

Item	Gafchromic®
115-006	HD-V2, 8" x 10"

## GAFCHROMIC® RTQA2 FILM



GAFCHROMIC® RTQA2 is a high performance processor-less film for quality assurance, exceptional accuracy with ease of use and featuring outstanding cost effectiveness. GAFCHROMIC® RTQA2 quality assurance film has been designed by leading radiochromic film scientists and provides state-of-the-art results in radiotherapy environments, while tapping all the exciting advantages of processor-less technology.

### TECHNICAL BENEFITS

- Developed specifically for
  - light field alignment
  - radiation field alignment
  - precision star shots
  - position verification for HDR
  - autoradiography of implantable seeds, plaques and other sources
- Dynamic range from 0.02 Gy to 8 Gy
- Large measurement area
- Self develops in real time and requires no processing
- Near tissue-equivalent
- High spatial resolution
- Can be handled in room light
- Water resistant, water immersible (usable with water phantoms)
- Withstands temperatures up to 70°C
- Now with improved indoor lighting resistance

### ECONOMIC BENEFITS

- No processor required - no darkroom
  - eliminates processing discrepancies
  - eliminates chemical waste
  - environmentally friendly
- Convenient to handle and easy to cut (cut and shape the film to your needs)
- Easily noted on with marker pen (notes easily erased if necessary)
- Economical and competitive pricing
- Available in three sizes

### OUTSTANDING PERFORMANCE

GAFCHROMIC® RTQA2 radiotherapy film is an excellent, hassle-free tool for the contemporary and processor-less environment. Just position and shoot. With real-time self-developing, your results are available in seconds! No darkroom or chemicals are needed. After exposure, if the light field is not aligned with the radiation field, the discrepancy is visible immediately. Simply

adjust the field accordingly and move on. In most cases, a second exposure is not required. Alignment can be achieved in an exceedingly short time. RTQA2 can even be observed through the monitor, and evaluated while it develops! Saves time and money as less film is used for each alignment, the film can be handled in room light and can be easily cut to the exact size called for. Excellent for autoradiography of implantable seeds, plaques and other sources.

### CONFIGURATION AND STRUCTURE

Gafchromic® RTQA2 is made by laminating an active layer between two polyester layers. The polyester surface makes an exceptionally robust product and allows water immersion.

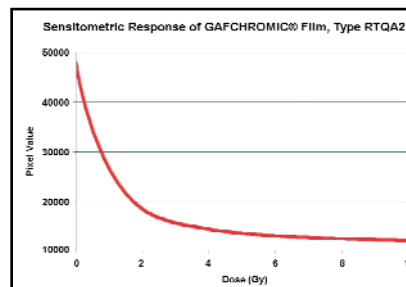
### PRECISION 4-LAYER LAMINATED COMPOSITION

- A yellow polyester . . . . . 97 microns
- B pressure sensitive adhesive . . . . . 20 microns
- C active layer . . . . . 17 microns
- E white polyester . . . . . 97 microns

Approximate thicknesses, actual values may vary slightly.

### HDR APPLICATIONS

GAFCHROMIC® RTQA2-111 strips are designed for HDR positioning verification. They are designed for use within a phantom, or taped directly under a catheter. RTQA2-111 strips provide excellent results when the catheter position is marked and then the autoradiographic image is checked against the marks. Key advantages of RTQA2-111 strips are their stability and alignment. They eliminate concerns about film movement inside a ready pack and thus increase the accuracy of measurement. With dwell times between 0.5 second to 2.0 seconds (depending on the source) RTQA2-111 film strips exhibit sharp images, and clearly show source positions.

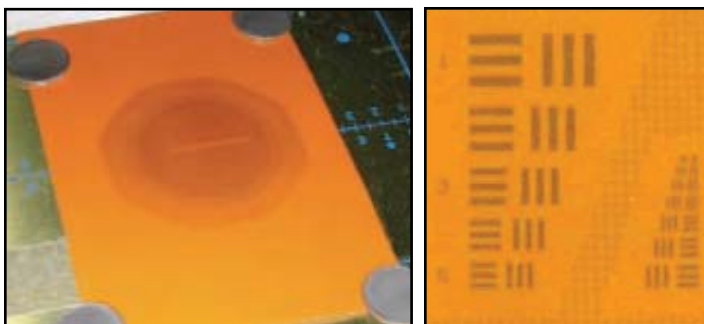


NOTE: The response of GAFCHROMIC® RTQA2 radiotherapy film is dependent upon factors specific to the facility such as the energy spectrum of the radiation source, the characteristics of the densitometer, film scanner or other means of measurement and the elapsed time between exposure and measurement etc. Therefore, the user should determine the dose-density response under the conditions pertaining to the user's facility and measurement protocol. Since the absolute response of GAFCHROMIC® RTQA2 film may vary from lot to lot, the user should re-measure response when changing to a new lot number.

Item #	Gafchromic®	Application	Size	Sheets/Box
115-020	RTQA2-1010	Light field alignment test	10" x 10" (25.4 x 25.4 cm)	25
115-024	RTQA2-111	Brachytherapy Source Positioning	1.25" x 11" (3.2 x 27.9 cm)	25
115-026	RTQA2-1417	Larger light-field alignment test	14" x 17" (35.6 x 43.2 cm)	10



## GAFCHROMIC® XR-QA2 FILM



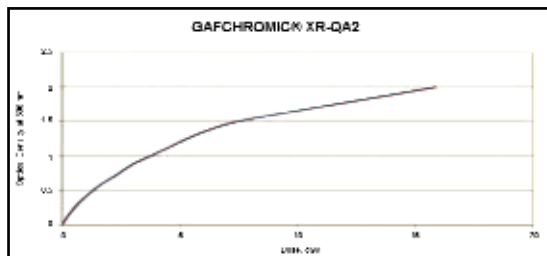
- No processor required
- Sensitive to dose range 0.1 cGy to 20 cGy
- Instant calibration results
- High data integrity
- Cost effective, easy to use
- Improved contrast
- Can be handled in room light

GAFCHROMIC® XR-QA2 film is designed specifically as a QA tool for radiology applications in a processor-less environment. Like all GAFCHROMIC® films, it can be cut and handled in room light. Energy range: ~20 KVp to 200 KVp.

### STRUCTURE

- A yellow polyester . . . . . 97 microns
- B pressure sensitive adhesive . . . . . 20 microns
- C active layer . . . . . 25 microns
- E white polyester . . . . . 97 microns

Actual film layer thicknesses may vary slightly



Sensitometric Response of GAFCHROMIC® XR-QA2 Film

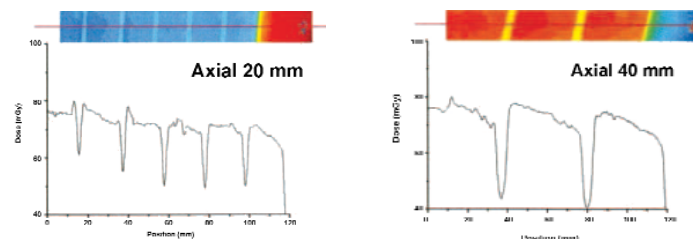
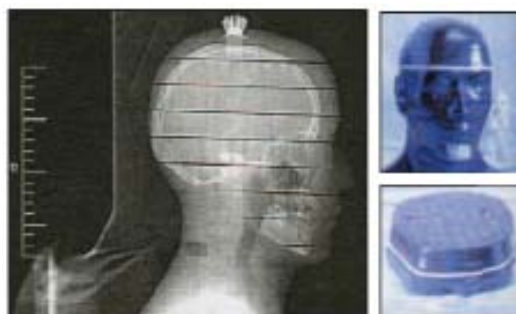
### Imaging detail with high resolution and contrast

Imaging detail with high resolution and contrast State-of-the-art quality production techniques for XR-QA2 assure consistent and reliable high contrast results, with imaging detail at greater than 5000 dpi. Results are easy to read; and data is easy to understand.

Item #	Gafchromic®	Sheets
115-034	XR-QA2, 10" x 12" (25.4 x 30.5 cm)	10
115-036	XR-QA2, 8" x 10" (20.3 x 25.4 cm)	10

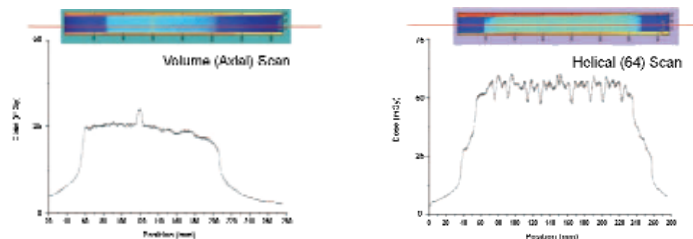
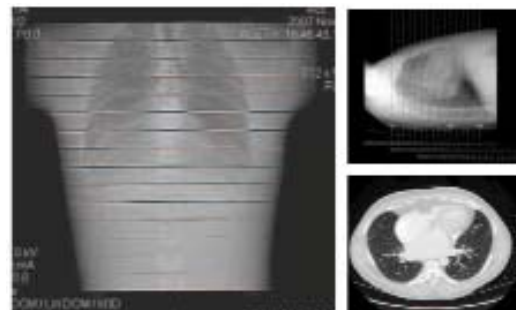
### HEAD PHANTOM DOSIMETRY APPLICATION

Typical head phantom radiation analysis XR-QA2 film is easy to use, cost effective, and compatible with a wide variety of phantoms.



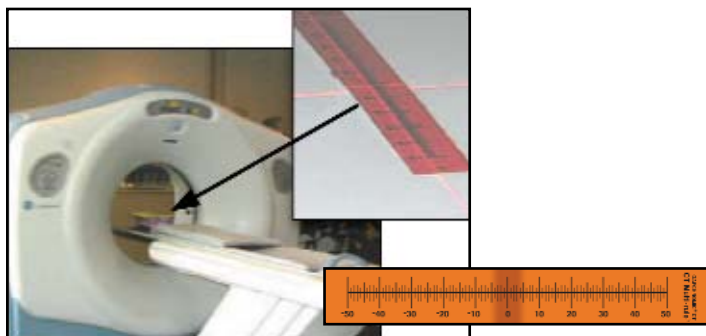
### CHEST PHANTOM DOSIMETRY APPLICATION

Typical chest radiation analysis, results taken from an in vivo study for a chest exam with 64 slices made with a CT scanner.



# CALIBRATION & WATER PHANTOMS, LIFT TABLES, CASES

## GAFCHROMIC® XR-CT2 FILM



- Excellent for CT QA
- Sensitive to dose range 0.1 cGy to 20 cGy
- High data integrity
- Instant calibration results
- Self-developing in real time
- Easy to use
- Improved contrast
- Cost effective

The GAFCHROMIC® XR-CT2 film is designed for measuring radiation beam slice width on CT scanners in real time. It calibrates the beam slice with high accuracy and superior data integrity, and self-develops in a processor-less environment.

A printed scale helps determine positions of light and radiation field, and beam slice width, with a single exposure.

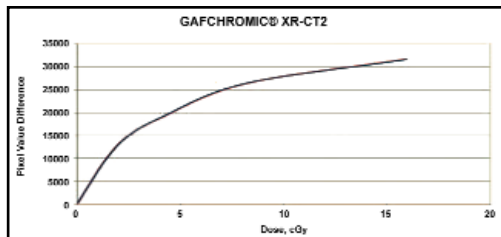
### Specifications

**Energy Range:** ~20 KVp to 200 KVp

**Size:** 1.9 x 10 cm

**Quantity:** 50 strips per package

Item #	Gafchromic®	Strips
115-032	XR-CT2, 1.9 x 10 cm	50



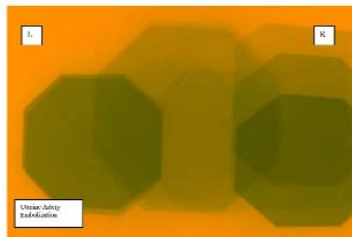
### STRUCTURE

- A yellow polyester . . . . . 97 microns
- B pressure sensitive adhesive . . . . 20 microns
- C active layer . . . . . 25 microns
- D white polyester . . . . . 97 microns

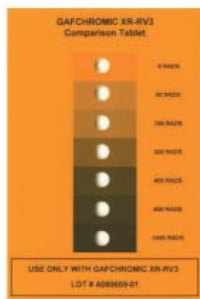
Actual film layer thicknesses may vary slightly

## GAFCHROMIC® XR-RV3 FILM

For Peak Skin Dose Measurement



An exposed film with patient's orientation with respect to the film



115-031 Comparator Strip

- An excellent tool for the processor-less environment
- Sensitive to wide dose range 0.05 Gy to 15 Gy
- An easy to use film with high data integrity
- Improved resistance to indoor lighting
- For use with FilmQA-XR™ quantitative analysis software or Comparator Strip
- Shelf life: 18 month at room ambient temperature

The GAFCHROMIC® XR-RV3 film is designed for surface-peak skin-dose measurement in interventional procedures guided by fluoroscopy. A comparator strip is also available for quick visual estimation of dosage at a point, requiring no digitizing. The comparator strip must be ordered with the film if not using the FilmQA-XR™ software.

Energy range: 30 keV to 30 MeV.

### Structure of GAFCHROMIC® film, type XR-RV3

- A yellow polyester . . . . . 97 microns
- B pressure sensitive adhesive . . . . 20 microns
- C active layer . . . . . 17 microns
- E white polyester . . . . . 97 microns

### Specifications

**Configuration:** 3-layer laminate (substrate-active layer-substrate)  
**Substrate:** White and yellow polyester

Item #	Gafchromic®	Sheets
115-030	XR-RV3, 13.8" x 17"	25
115-031	Comparator Strip for XR-RV3 Film	



## ALUMINUM HALF VALUE LAYER ATTENUATOR SET



Determining the Half Value Layer (HVL) of the x-ray beam is the standard method for specifying the quality of the x-ray beam. For a given kVp, a measurement of the HVL gives information on the total filtration in the x-ray beam. Too little filtration results in unnecessary radiation to the patient and too high of a HVL may require increased kVp and mAs, increasing tube loading and reducing tube life.

Half Value Layer Attenuator Set contains nine (9) sheets of 1100 Aluminum Alloy ranging in thicknesses from 0.1 to 2.0 mm. For your convenience these sheets come in a plastic storage case to help maintain flatness and for ease of storage and transportation.

### Specifications

**Construction:** 1100 Aluminum Alloy (99.0% Pure)

**Size:** 4" x 4" (10x10 cm)

**Weight:** 0.4 lb (0.2 kg)

**Nine (9) Individual Aluminum Sheets:** (3) 0.1 mm, (1) 0.2 mm, (2) 0.5 mm, (2) 1.0 mm and (1) 2.0 mm

Item	Description
115-500	Aluminum Half Value Layer Attenuator Set

- Easy to use and customize in thicknesses for specific tasks
- Easy to store
- Economical
- Compact

## COPPER HALF VALUE LAYER ATTENUATOR SET



Regulatory test protocols for fluoroscopic systems increasingly specify copper attenuators to simulate heavier patients. When doing these tests, it is often useful to apply additional copper to drive the systems to maximum output. Copper filters are still used for specifying the Half Value Layer (HVL) of x-ray beams generated between 140 and 400 kVp.

The Pure Copper Half Value Layer Attenuator Set is comprised of nine 10 x10 cm sheets ranging in thicknesses from 0.1 mm to 2.0 mm. A plastic storage case is provided to protect and to help maintain flatness of the filters.

### Specifications

**Construction:** Pure copper

**Size:** 4" x 4" (10x10 cm)

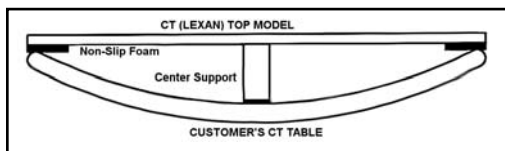
**Weight:** 1.1 lb (0.55 kg)

**Nine (9) Individual Copper Sheets:** (4) 0.1 mm, (1) 0.25 mm, (1) 0.5 mm, (2) 1.0 mm and (1) 2.0 mm

Item	Description
116-000	Copper Half Value Layer Attenuator Set

- Copper attenuators to simulate heavier patients
- Wide range of thicknesses for different testing conditions
- Satisfy regulatory requirements for fluoroscopic systems

## CT / PET TABLE INSERT For Radiation Therapy Treatment Planning



The ideal CT Image for radiation therapy treatment planning should have the patient on a flat table, magnification indicators, and density markers.

The RPDinc CT/PET Table Insert is made of 3/8" (0.97 cm) clear polycarbonate. The insert measures 84" (213.5 cm) long and the width is custom made to fit the CT or PET Table. A center support runs the length of the insert to prevent any sag.

The CT/PET Table Insert is made with foam rubber edges and will sit on top of the edges of the curved CT bed.

### Optional Magnification and Density Rods

The bottom of the CT/PET Table Insert has two 1/8" (3.31 mm) diameter aluminum rods, spaced 30 cm apart that run the length of the insert and are used for magnification measurements.

A 1" (2.54 cm) diameter polystyrene rod and a 1" (2.54 cm) diameter acrylic rod are placed on either side of the center support. Both these rods run 72" (183 cm) along the bottom of the insert. These rods provide a reference for density checks.

### Specifications

**Table Density:** Polycarbonate - 1.2 g/cm<sup>3</sup>

**Rod Density:** Acrylic - 1.185 g/cm<sup>3</sup> and Polystyrene - 1.05 g/cm<sup>3</sup>

**Size:** 84" L x 3/8" T (213.4 x 0.97 cm)

**Weight:** 55 lb (25 kg)

Item #	Table Manufacturer	Magnification and Density Rods
683-310	GE	Included
683-320	Siemens	Included
683-330	Philips	Included
683-410	GE	Not Included
683-420	Siemens	Not Included
683-430	Philips	Not Included

## GE LIGHTSPEED PHANTOM HOLDER FOR FLAT TABLE TOP 50 CM WIDE



The GE LightSpeed Phantom Holder attaches to a 50 cm wide flat top CT table. The GE LightSpeed Phantom Holder is an easy on, easy off unit for a flat top CT table. The bottom of the front mounting plate references the holder to the front edge of the CT table and the top is where the GE LightSpeed Phantom hooks on to the holder. A small thumb screw allows for leveling of the phantom. The two lock bars are spring loaded upward to be out of the way while securing to the CT table. The large adjustment range allows for different thicknesses of CT table tops. The phantom holder has a built-in handle for easy carrying.

### Specifications

**Material:** Black Anodized Aluminum

**Overall Size:** 20.8" W x 4.5" L x 6.5" H (52.8 x 11.4 x 16.5 cm)

**Mounting Plate Size:** 8.45" W x 4.67" H x 0.335" T  
(21.5 x 11.8 x 0.8 cm)

Item	Description
018-250	GE LightSpeed Phantom Holder f/FlatTable Top 50cm W

# CT PRODUCTS-SIMULATION, CHAMBERS, PHANTOMS, LASERS

## CT/MR SLESSINGER BOARD V2.0 FOR HDR BRACHYTHERAPY



- CT and/or MR Compatible
- Easy to Clean

The Slessinger Board is a padded sliding board that is CT and MR compatible. It is designed to facilitate HDR brachytherapy, specifically for pelvic treatments. The patient can be transferred onto the board from the operating room couch and remain on the board in recovery, during imaging for planning and until the HDR treatment is given. The intent is to minimize patient movement to ensure that the imaging for planning is not compromised by patient leg movement prior to treatment and thus delivering the treatment plan faithfully. The legs are slightly elevated, affording ready access to the perineum and preventing applicators from resting against anything. Leg elevation is maintained with the use of two (2) tightening knobs at the end of the elevation panels. Transfers on and off CT/MR/simulator couches are relatively easy due to the smooth plastic bottom surface and side handles. The board is also very useful when a patient is transferred via ambulance from the surgical facility to the treatment facility.

The CT/MR Slessinger Board V2.0 for HDR Brachytherapy has the additional benefit of having a hinged flexi-split to allow raising the head when on a stretcher. This version also includes heel cushions for additional patient comfort.

Image guided HDR brachytherapy is gaining in prominence. Prostate and gynecological applications are reliant on patient stability and comfort between the acquisition of imaging for planning and treatment. Although the Slessinger Board was devised to facilitate precise prostate HDR brachytherapy its application for image guided GYN HDR is also very significant with increasing reliance on DVH analyses. The concept of limiting rotation of a multichannel APBI balloon is yet another possible application, by avoiding the patient walking between imaging and treatment prior to each treatment fraction. The rationale and description of the Slessinger Board has also been described in the Brachytherapy Journal article by Slessinger, entitled "Practical considerations for prostate HDR brachytherapy", published early in 2010.

The Slessinger Board can be easily cleaned with non-caustic germicidal cloths or sprays. Patients may not be carried on the Slessinger Board, but rather are transferred directly from one support to another.

MR Safe

### Specifications

**Base Dimensions:** 21" W x 72" L x 0.75" T (53.3 x 183 x 1.9 cm)

**Base Material:** Corrugated polypropylene

**Pad Dimensions:** 20.5" W x 69" L x 1.5" T (52.3 x 175 x 3.8 cm)

**Pad Material:** Vinyl coated closed cell foam

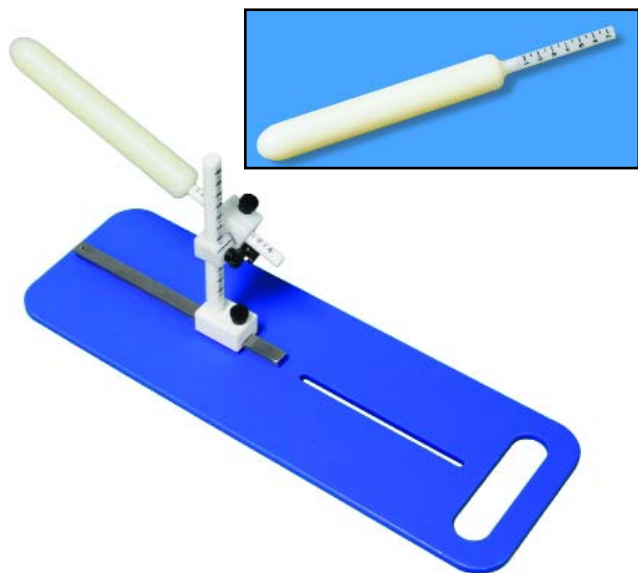
**Assembled Board Weight:** 26 lb (11.8kg)

**Weight Limit:** 350 lb (159 kg)



Item	Description
946-004	CT/MR Slessinger Board V2.0 for HDR Brachytherapy

## ADJUSTABLE HOLDER WITH SLESSINGER COMPATIBLE BOARD FOR DILATORS WITH STEM SCALE



This item is compatible with the Slessinger Board System (Item # 946-004).

Item 946-210 includes only the Holder and board.

### Specifications

#### Item 946-210

**Vertical Post Scale:** from 4.5 cm to 16 cm with black markings every 0.5 cm and whole numbers every centimeter starting at 5.0 cm

**Angle Scale:** Marked every 5° to 45°

**Material:** Ertalyte

**Clamp:** Dual clamps with thumb screws allow for vertical and anterior-posterior angle adjustment of the dilator

**Post Assembly Material:** Ertalyte

**Board Size:** 5.5" W x 16" L x 0.25" Thick (13.8 x 40.6 x 0.6cm)

**Handle Cutout:** 4" W x 1" L (10.1 x 2.5 cm)

**Board Material:** HDPE Blue Polyethylene Colorboard

**Sterilization:** Autoclave or gas

**CT/MR Conditional**

#### Items 946-220 to 946-235

**Material:** Nylon

**Overall Length:** 10" (25.4 cm)

**Dilator Length:** 6.5" (16.5 cm), not including stem

**CT/MRI Safe**

Item #	Description
946-210	Adjustable Holder & Slessinger Compatible Board for Dilators with Stem Scale
946-220	20 mm Dia. Nylon Dilator with Stem Scale
946-225	25 mm Dia. Nylon Dilator with Stem Scale
946-230	30 mm Dia. Nylon Dilator with Stem Scale
946-235	35 mm Dia. Nylon Dilator with Stem Scale

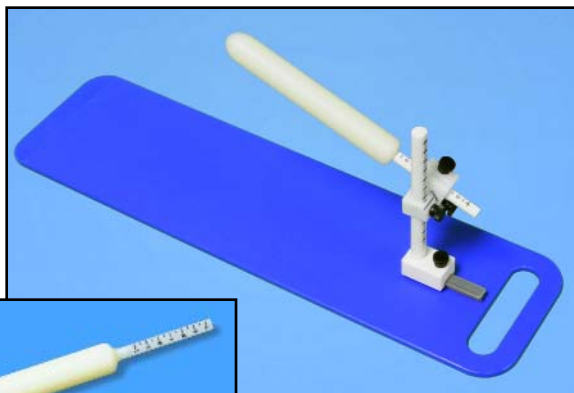
The Adjustable Holder with Slessinger Compatible Board for Dilators with Stem Scale was designed to be used when treating anal cancer in females with chemoradiation. The dilator is used to delineate and displace the vulva and lower vagina away from the primary tumor with the intention of decreasing dose to these areas.

The vertical post scale on the holder ranges from 4.5cm to 16cm and allows for reproducing from day to day the vertical position of the dilator. The dilator can also be angled up or down in the anterior - posterior position with a scale marked every 5° to 45° and a locking thumb screw. All dilators are 6.5" (16.5cm) long not including the stem. The dilators have a scale on the stem that ranges from 1cm to 7cm which is used for depth.

This holder board included is made from HDPE Blue Polyethylene Colorboard and has a 6" titanium rail. A rail block allows the dilator holder to slide forward and backward when positioning as well as being removable from the rail itself.

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## ADJUSTABLE HOLDER WITH BOARD FOR DILATORS AND DILATORS WITH STEM SCALE



The holder board included is made from HDPE Blue Polyethylene Colorboard and has a 3" titanium rail. A rail block allows the dilator holder to slide forward and backward when positioning as well as being removable from the rail itself.

Item 946-610 includes only the Holder and board.

### Specifications

#### Item 978-610

**Vertical Post Scale:** From 4.5 cm to 16 cm with black markings every 5 mm and whole numbers every centimeter starting at 3.0 cm

**Angle Scale:** Marked every 5° to 45°

**Clamp:** Dual clamps with thumb screws allow for vertical and anterior-posterior angle adjustment of the dilator

**Post Assembly Material:** Ertalyte

**Board Size:** 5.5" W x 20.5" L x 0.25" Thick (13.8 x 52.1 x 0.6 cm)

**Handle Cutout:** 4" W x 1" L (10.1 x 2.5 cm)

**Board Material:** HDPE Blue Polyethylene Colorboard

**Sterilization:** Autoclave or gas

**CT/MRI Conditional**

#### Items 946-220 to 946-235

**Material:** Nylon

**Overall Length:** 10" (25.4 cm)

**Dilator Length:** 6.5" (16.5 cm), not including stem

**CT/MRI Safe**

The Adjustable Holder with Board for Dilators with Stem Scale was designed to be used when treating anal cancer in females with chemoradiation. The dilator is used to delineate and displace the vulva and lower vagina away from the primary tumor with the intention of decreasing dose to these areas.

The vertical post scale on the holder ranges from 4.5cm to 16cm and allows for reproducing from day to day the vertical position of the dilator. The dilator can also be angled up or down in the anterior - posterior position with a scale marked every 5° to 45° and a locking thumb screw. All dilators are 6.5" (16.5cm) long, not including the stem. The dilators have a scale on the stem that ranges from 1cm to 7cm which is used for depth.

Item #	Nylon Dilator
978-610	Adjustable Holder with Board for Dilators with Stem Scale
946-220	20mm Dia. Nylon Dilator with Stem Scale
946-225	25mm Dia. Nylon Dilator with Stem Scale
946-230	30mm Dia. Nylon Dilator with Stem Scale
946-235	35mm Dia. Nylon Dilator with Stem Scale

# CT PRODUCTS-SIMULATION, CHAMBERS, PHANTOMS, LASERS

## VISIONMARK™



The Visionmark™ is the next generation in general use skin markers. These specially formulated NON-METALLIC markers perform consistently and accurately in a variety of applications. An excellent tool for distinguishing between nipple shadow and lesion, the Visionmark™ reduces the need for repeat examinations.

CE

Item	Visionmark™	Quantity
680-305	2.0 mm Ball	50
680-310	2.5 mm Ball	50
680-312	3.0 mm Ball	50
680-314	4.0 mm Ball	50
680-316	5.0 mm Ball	50

## CT Mark Wire and Dots



This specially formulated non-metallic material is the result of years of research and development, resulting in a virtually artifact-free opaque marker that is perfect for nearly all CT marking applications.

CE

Item	Description	Quantity
680-349	CT Mark Wire, 1.0 mm	330 cm
680-350	CT Mark Wire, 2.0 mm	300 cm
680-352	CT Mark, 2.3 mm	110
680-354	CT Mark, 4.0 mm	50

## INDICATOR® RADIOPAQUE MARKERS - CT AND X-RAY



- Creates precise reference points without artifacts
- Works for CT, X-Ray, fluoroscopy, angiography
- Disposable
- Flat design

Indicator® Radiopaque Markers can be used in a variety of imaging procedures to identify any point of interest, including: Masses, Scar tissue, Moles, Isocenter, Points of Pain

The markers provide a clear, accurate reference point that is free of spray artifacts. The flat design prevents tissue indentation and the clear adhesive backing aids in precise marker placement. In addition to enhancing accuracy, they promote procedural efficiency with double pulls tabs that permit easy application and removal.

NOT for use in MRI

CE

Item #	Indicator® Radiopaque Markers-CT/X-Ray	Quantity
680-401	Crosses, 10 mm	130
680-402	Crosses, 20 mm	130
680-403	Dots, 1.5 mm	115
680-404	Dots, 2.0 mm	115
680-405	Dots, 2.5 mm	115

Item #	Indicator® Radiopaque Markers-CT/X-Ray	Quantity
680-406	Dots, 3.0 mm	115
680-408	Dots, 4.0 mm	115
680-410	Line, 0.5 mm	69 Lines (138")
680-411	Line, 1.0 mm	66 Lines (132")
680-412	Line, 1.5 mm	62 Lines (125")



# CT PRODUCTS-SIMULATION, CHAMBERS, PHANTOMS, LASERS

## X-LINE™ PRECISION RADIOTHERAPY TAPE FOR CT SIMULATION



X-Line™ allows accurate contouring within distorted regions of the CT image, improving radiotherapy outcomes.

Obese patients must be imaged with the extended field of view (eFOV), often resulting in distorted body contours. X-Line™ provides a series of reliable dots within the distorted sections of the eFOV, allowing for easy identification of the true body contour. The radiopaque lines on X-Line™ show up as hyperdense in CT simulation. Connect underneath the dots to get an accurate body contour - it's that easy!

### Body contour distortion from large patients in the eFOV

- GE Discovery CT590 RT, Optima CT580 RT and LightSpeed RT have a scan FOV (sFOV) of 50cm and a 65cm extended FOV (eFOV) option
- Siemens Somatom models have a 50cm sFOV and eFOV up to 80cm
- Body regions within the eFOV is distorted and contains artifact, resulting in an inaccurate body contour
- Body contour inaccuracies can lead to incorrect SSD and dosage calculations

### X-Line™ General Instructions

- Apply X-Line™ to all body regions that might fall outside of the scan field of view
- Tear a strip length that fully encompasses the region of interest
- Expect to use 3-5 strips per patient, depending on their size

#### Step 1 - Peel

- Peel away the protective backing
- X-Line™ is kiss cut to make for easier removal

#### Step 2 - Apply

- Apply X-Line™ to the region of interest
- Orient the radiopaque lines perpendicular to the direction of the CT cross section
- Space the X-line™ strips approximately 1 inch apart
- Only apply each X-Line™ strip once

#### Step 3 - Scan

- Then, perform the CT scan as usual
- Remove and discard the X-Line™ strips after the scan

#### Step 4 - Connect

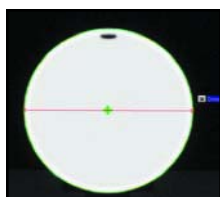
- Finally, connect just underneath the bright, hyperdense dots in the resulting CT images
- Connecting underneath the dots avoids including these hyperdense regions in the radiation dose planning

### Specifications

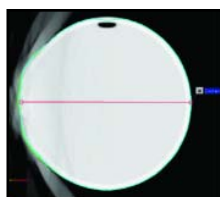
**Size:** 2" wide (5.08 cm) with three equally spaced radiopaque lines 1" apart (2.54 cm)

**Quantity:** Rolls are 50' long (15.24 m) with perforations spaced every 2" (5.08 cm).

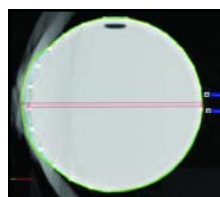
Item	Description
680-470	X-Line Tape, Full Adhesive
680-475	X-Line Tape, Partial Adhesive



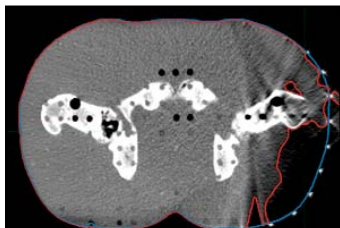
Clear scan within sFOV



Distorted image in 65cm eFOV



X-Line™ connect-the-dots body contour



Siemens HDFOV PRO Phantom

### A Solution to CT Simulation Image Distortion in Obese Patients

- More Accurate
- Fast and Simple
- Low-Cost
- Optimal Dosage
- Latex Free

## MULTI-MODALITY MARKERS



- No tissue indentation
- No artifacts
- Clear, accurate reference point identification
- Visible in all modalities
- Does not melt or leak
- Size and shape are ideal for small area
- Disposable

The Multi-Modality Markers provide a clear and accurate reference point on any type of scan. Made of a hydrogel component with a medical grade adhesive, they appear as a bright object on CT, MRI, nuclear medicine, PET and x-Ray scans and can be seen on all MRI sequences. These versatile markers attach securely and detach easily. Our Radiology/Radiation Therapy Marker has an inner center hole that permits hypodermic needle passage, while our Nuclear Med/PET Marker has a well-used for injecting a radionuclide with a conventional hypodermic needle.

**Item 462-029** Multi-Modality Markers, Radiation/Radiology have a 2 mm inner center hole for hypodermic needle passage.

**Item 462-030** MultiModality Markers for NucMed/PET have a Liquid-containing center well for injection of short-life radionuclide.

**Item 462-031** MultiModality Markers for MRI/CT are a 15mm disc shaped marker.

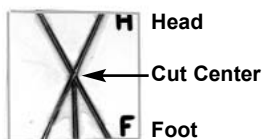
### Specifications

15mm outer diameter  
3.5mm thick  
50 markers per jar

Item #	Description	Quantity
462-029	Multi-Modality Markers, Radiation/Radiology	50
462-030	Multi-Modality Markers, Nuc Med/PET	50
462-031	Multi-Modality Markers, MRI/CT	50

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## CT MARKER



**Material:** Aluminum Wire  
**Size:** 1" (2.54 cm) Square

Item #	Description
680-125	CT Marker

## CT MARKING WIRE



Item	Description	Length
682-080	Aluminum Wire 0.080" (2.03 mm) Diameter	42' (12.8 m)
682-090	Aluminum Wire 0.040" (1.02 mm) Diameter	165' (50.3 m)
682-100	Aluminum Wire 0.064" (1.63 mm) Diameter	67' (20.4 m)

## PROBE COVER, STERILE and LATEX FREE



These high-quality rolled covers are sterile and latex free. All packs include elastic bands. Gel packet not included.

Item #	Description
460-007	Probe Cover, Sterile & Latex Free, 1" x 11.8", 24/pkg

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## CT RECTAL MARKER

### Rectal - Vaginal - External



The Rectal Marker can be used as a vaginal marker or an external marker.

#### Specifications

**Sterilization:** Gas

**Tubing:** 5/16" (8 mm) Dia. x 30 cm Flexible

**Balls:** 3/16" (5 mm) Dia. Spaced Every cm

**Anus Locator:** Adjustable Delrin

**Latex Cover:** 2.0 cm Dia. x 30 cm L

The **NON-METALLIC** CT Rectal Marker is a flexible tube packed with teflon balls spaced at 1 cm intervals from center to center.

The Rectal Marker is used to accurately obtain both the rectum position and magnification by counting the balls. This determines the rectum location relative to the radiation field.

An adjustable anus marker can be utilized during CT simulation.

Item #	Description
460-010	CT Rectal Marker with Anus Marker
460-007	Probe Cover, Sterile & Latex Free, 1" x 11.8", 24/pkg

## SHADOWFORM MARKERS



460-501



460-502



460-503

- T-Bar handle which can be removed for insertion of barium
- Disposable
- Rectal markers are available in two lengths and are marked at 1 cm intervals
- No cross contamination
- Outlines the soft tissue of the pelvic region
- Latex-free
- Markers are made from a soft, smooth, flexible plastic
- Used for Simulation and CT Planning
- Provides excellent localization of pelvic structures

CE

Item	Shadowform Markers	Quantity
460-501	18 cm Vaginal Marker	10
460-502	38 cm Rectal Marker	10
460-503	10 cm Rectal Marker	10

## CT VAGINAL DEPTH SCALE



The **NON-METALLIC** CT Vaginal Depth Scale is 1.6 cm in diameter and 26 cm long and has teflon balls which are spaced 1 cm apart and are 5 mm diameter. A delrin introitus marker is included with the 1.6 cm diameter vaginal scale (Item 707-145). A thumb screw holds the introitus marker in position.

The Vaginal Depth Scale Holder (Item 707-020) can be used in CT if the area to be scanned does not include the holder.

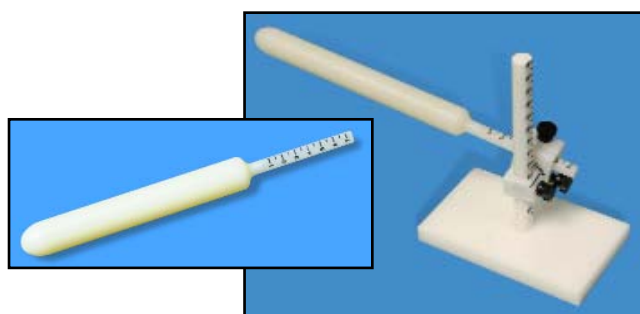
### Specifications

**Material:** Acrylic  
**Density:** 1.1859 g/cm<sup>3</sup>

**Material:** Teflon  
**Density:** 2.16 g/cm<sup>3</sup>

Item #	Description
707-145	CT Vaginal Depth Scale with Introitus Marker
707-020	Vaginal Depth Scale Holder
460-007	Probe Cover, Sterile & Latex Free, 1" x 11.8", 24/pkg

## ADJUSTABLE HOLDER WITH BASE FOR DILATOR WITH STEM SCALE



This CT/MR Safe Adjustable Holder with Base for Dilators with Stem Scale was designed to be used when treating anal cancer in females with chemoradiation. The use of a dilator is used to delineate and displace the vulva and lower vagina away from the primary tumor with the intention of decreasing dose to these areas.

The verticle post scale on the holder ranges from 2.5cm to 15cm and allows for reproducing from day to day the vertical position of the dilator. The dilator can also be angled up or down in the anterior - posterior position with a scale marked every 5° to 45° and a locking thumb screw. All dilators are 6.5" (16.5cm) long, not including stem. The dilators have a scale on the stem that ranges from 1cm to 7cm which is used for depth.

Because the base that this item includes is made entirely from ertalyte plastic, it is completely CT/MR safe. The base can be set into position in the vacuum cushion that is used for positioning the patient legs. This will give a reproducible base location on a daily basis.

Item 946-200 includes only the Holder and base.

### Specifications

**Item 946-200**  
**Base Size:** 3" x 5" x 0.5" Thick (7.6 x 12.7 x 1.27 cm)  
**Vertical Post Scale:** From 2.5 cm to 15 cm with black markings every 5 mm and whole numbers every centimeter starting at 3.0 cm  
**Angle Scale:** Marked every 5° to 45°  
**Clamp:** Dual clamps with thumb screws allow for vertical and anterior-posterior angle adjustment of the dilator  
**Post Assembly and Base Material:** Ertalyte  
**Sterilization:** Autoclave or gas  
**CT/MRI Conditional**

### Items 946-220 to 946-235

**Material:** Nylon  
**Overall Length:** 10" (25.4 cm)  
**Dilator Length:** 6.5" (16.5 cm), not including stem  
**CT/MRI Safe**

Item #	Description
946-200	Adjustable Holder w/Base for Dilator with Stem Scale
946-220	20mm Dia. Nylon Dilator with Stem Scale
946-225	25mm Dia. Nylon Dilator with Stem Scale
946-230	30mm Dia. Nylon Dilator with Stem Scale
946-235	35mm Dia. Nylon Dilator with Stem Scale

## EXRADIN A17 CT ION CHAMBER 1.91 cc SLICE THERAPY



Exradin A17 Schematic

- Fiducial markers identify the center and both ends of the collecting volume for easy setup in relation to the beam
- Air-equivalent conductive plastic eliminates fragility or flaking of painted conductive layers
- Proven guard design yields stable, precise measurements and minimizes settling time by creating uniform field lines
- Shell and guard are made of durable, long lasting Shonka conductive plastic
- Use of homogeneous material throughout the chamber minimizes perturbation of the beam due to the presence of the chamber and optimizes measurements
- Axially symmetric design of the chamber provides a uniform, isotropic response
- Inherent waterproof construction eliminates need for additional protective coverings
- The Model A17 Exradin Slice Therapy Chamber has an inherent <sup>60</sup>Co buildup cap built into its wall thickness for air calibrations and measurements
- Ionization collection efficiency is 99.9% or better
- Collecting volume is 1.91 cc

Exradin CT Chambers are durable detectors for performing the measurements necessary in the Computed Tomography Dose Index (CTDI) calculations described in TG-74.

The A17 is tailored for MV and tomotherapy applications such as weekly QA checks or patient dose verification with phantoms and water tanks. It has excellent response uniformity over the chamber length with variation less than ±1.5%.

### Fast, Precise Measurements

Its waterproof construction makes it ideal for checking the consistency of beams at various jaw widths. The chamber vents through a flexible tube that surrounds the triaxial cable, ensuring the collecting volume is in pressure equilibrium with the surroundings. The design assures there are no stem or voltage soakage effects, providing precise and reliable measurements.

### Durable Construction, Built to Last

The Model A17 Exradin Slice Therapy Chamber is constructed of rugged C552 Shonka air-equivalent plastic, providing excellent conductivity and years of reliable use.

### Specifications

- Active Collecting Volume:** 2.65 cc
- Active Collecting Volume Length:** 11.11 cm
- Nominal Volume:** 1.91 cm<sup>3</sup>
- Outside Diameter of Shell:** 12.7 mm
- Inside Diameter of Shell:** 6.0 mm
- Shell Wall Thickness:** 3.3 mm
- Collector Diameter:** 2.5 mm
- Collector Length:** 2.5 mm
- Overall Chamber Length:** 17.0 cm
- Nominal Length:** 80 mm
- Shell, Collector and Guard Material:** A, Shonka air-equivalent C552 plastic
- Nominal Air Kerma Calibration Factor:** 1.5E+7Gy/C
- Response Uniformity Over the Nominal Length:** ±1.5%
- Collector Material:** Carbon fiber
- Electrical Power Requirements:** Operates at ±300 VDC
- Nominal Collection Efficiency:** 100%
- Maximum Polarizing Potential:** 1000 V
- Nominal Inherent Leakage Currents:** 10<sup>-15</sup> A
- Low-Noise Triaxial Cable:** 1.5m long, 50 ohms, 29 pF/ft
- Connector:** Triaxial BNC plug (2-Lug, male pin) and protective cap connected by chain (standard); others available upon request
- Waterproof:** Yes
- Operating Parameters**
  - Humidity:** 20 to 80%, non-condensing
  - Temperature:** 50° to 104° F (10° to 40° C)
  - Pressure:** 680 to 770 mm Hg
- Integral <sup>60</sup>Co Buildup in Shell Wall**

**Product Standards:** CE<sub>0413</sub>, IEC 60601-1, IEC 61674



Item	Description
300-540	Exradin A17 CT Ion Chamber, 1.91cc Slice Therapy

## EXRADIN A101 CT ION CHAMBER, 4.54 cc



Exradin A101 Schematic

- Fiducial markers identify the center and both ends of the collecting volume for easy setup in relation to the beam
- Air-equivalent conductive plastic eliminates fragility or flaking of painted conductive layers
- Proven guard design yields stable, precise measurements and minimizes settling time by creating uniform field lines
- Shell and guard are made of durable, long lasting Shonka conductive plastic
- Use of homogeneous material throughout the chamber minimizes perturbation of the beam due to the presence of the chamber and optimizes measurements
- Axially symmetric design of the chamber provides a uniform, isotropic response
- Ionization collection efficiency is 99.9% or better
- Collecting volume is 4.54 cc

The Exradin Model A101 CT Ion Chamber performs the measurements necessary for calculating the CTDI (computed tomography dose index) as described in the AAPM TG 74. It has excellent response uniformity over the chamber length with variation less than  $\pm 3\%$ .

### Fast, Precise Measurements

Model A101 is ideal for checking the consistency of beams at various jaw widths. The chamber is vented to the ambient, ensuring the collecting volume is in pressure equilibrium with the surroundings. The design assures there are no stem or voltage soakage effects, providing precise and reliable measurements.

### Durable Construction, Built to Last

The Model A101 CT Chamber is constructed of rugged C552 Shonka air-equivalent plastic, providing excellent conductivity and years of reliable use.

### Specifications

- Active Collecting Volume:** 5.48 cc
- Active Collecting Volume Length:** 12.08 cm
- Nominal Volume:** 4.54 cm<sup>3</sup>
- Nominal Length:** 10.0 cm
- Collector Diameter:** 2.5 mm
- Outside Diameter of Shell:** 10.0 mm
- Inside Diameter of Shell:** 8.0 mm
- Shell Wall Thickness:** 1.0 mm
- Overall Chamber Length:** 164.3 mm
- Shell, Collector and Guard Material:** A, Shonka air-equivalent C552 plastic
- Nominal Air Kerma Calibration Factor:** 16.2E+6Gy/C
- Response Uniformity Over the Nominal Length:**  $\pm 3\%$
- Energy Response:** 80 kVp to 150 kVp  $\pm 4\%$
- Collector Material:** Carbon fiber
- Electrical Power Requirements:** Operates at  $\pm 300$  VDC
- Nominal Collection Efficiency:** 100%
- Maximum Polarizing Potential:** 1000 V
- Nominal Inherent Leakage Currents:**  $10^{-15}$  A
- Low-Noise Triaxial Cable:** 1.5 m long, 50 ohms, 29 pF/ft
- Included Adapter Sleeve:** PMMA sleeve to adapt chamber for 0.50" (12.7mm) phantom holes
- Connector:** Triaxial BNC plug (2-Lug, male pin) and protective cap connected by chain (standard); others available upon request
- Waterproof:** No
- Operating Parameters**
  - Humidity:** 20 to 80%, non-condensing
  - Temperature:** 50° to 104° F (10° to 40° C)
  - Pressure:** 680 to 770 mm Hg
- Product Standards:** CE<sub>0413</sub>, IEC 60601-1, IEC 61674



Item #	Description
300-550	Exradin A101 CT Ion Chamber, 4.54 cc



## PTW CT CHAMBERS

### PTW 30009 CT CHAMBER



#### Vented cylindrical pencil chamber for dose length product measurements in computed tomography

- Pencil type chamber for measurements within a CT head or body phantom or free in air
- Provides a sensitive measuring length of 10 cm
- Shows a homogeneous response over the whole chamber length

The CT chamber is a vented cylinder chamber designed for dose length product and dose length product rate measurements in computed tomography. The chamber allows the determination of the  $CTDI_{100}^1$ ,  $CTDI_W^2$  and  $CTDI_{Vol}^3$  according to IEC 61223-2-6 and IEC 61223-3-5.

<sup>1</sup> $CTDI_{100}$  = Computed Tomography Dose Index 100

<sup>2</sup> $CTDI_W$  = Weighted  $CTDI_{100}$

<sup>3</sup> $CTDI_{Vol}$  = Volume  $CTDI_W$

Item	Description
300-560	PTW 30009 CT Chamber, 3.14 cc

### PTW 30017 CT CHAMBER



#### Vented cylindrical pencil chamber for dose length product measurements in computed tomography

- Pencil type chamber for measurements free in air
- Provides a sensitive measuring length of 30 cm
- Shows a homogeneous response over the whole chamber length

The CT chamber is a vented cylinder chamber designed for dose length product and dose length product rate measurements in computed tomography according to the amendment to IEC 60601-2-44.

Item	Description
300-565	PTW 30017 CT Chamber, 9.3 cc

Specifications	Item 300-560	Item 300-565
PTW Model	30009	30017
Type of Product	Vented pencil type chamber	
Application	Dosimetry in computed tomography	
Measuring Quantity	Air kerma length product, exposure length product	
Reference Radiation Quality	120 kV, HVL 8.4 mm Al (RQT9)	
Nominal Sensitive Volume	3.14 cm <sup>3</sup>	9.3 cm <sup>3</sup>
Design	Not waterproof, vented, pencil type	
Reference Point	Chamber center	
Direction of Incidence	Radial	
Nominal Response	14 nC/(Gy cm)	13 nC/(Gy cm)
Chamber Voltage	-100 V nominal ± 500 V maximal high voltage to be connected only with active current-limiting device ( $I_{max} < 0.5$ mA)	
Energy Response	≤ ± 5% for 70 - 150 kV	≤ ± 5% for 50 - 150 kV
Leakage Current	≤ ± 10 fA	
Cable Leakage	≤ 1 pC/(Gy cm)	
<b>Materials and Measures</b>		
Wall Material	1 mm PMMA, graphite coated	
Wall Area Density	119 mg/cm <sup>2</sup>	
Dimension of Sensitive Volume	Radius 3.5 mm Length 100 mm	Radius 3.5 mm Length 300 mm
Electrode	Al tube, graphited outer diameter 3 mm	
<b>Ion Collection Efficiency at Nominal Voltage</b>		
Ion Collection Time	274 μs	
Max. Dose Rate for ≥ 95.0% saturation	12.4 Gy/s	
Max. Dose Per Pulse for ≥ 95.0% saturation	2.26 mGy	
<b>Useful Ranges</b>		
Chamber Voltage	± 100 - 400 V	
Radiation Quality	50 - 150 kV	
Temperature	10° to 40° C, 50° to 104° F	
Humidity	10 to 80%, max 20 g/m <sup>3</sup>	
Air Pressure	700 - 1060 hPa	

## MINI CT QC PHANTOM



- **Lightweight, compact and extremely portable, ideal for field service use**
- **Can be used with any CT scanner**
- **For measurement and analysis of all major CT scanner functions and radiation dose**
- **For making inhomogeneity corrections in radiation oncology**

The Mini CT QC Phantom, Item 682-300 is a highly-versatile phantom designed for routine monitoring of the consistency of all the major parameters of CT image quality and radiation dose. Its unique, compact design allows for unparalleled portability, easy setup and reliable parameter determinations. It is perfect for use by physicists, technologists and service engineers.

The disc section consists of a 1 in thick acrylic disc with a 6" diameter. Five of the six large holes are for the placement of inserts for the evaluation of CT number consistency. The sixth hole is for a high-contrast resolution insert or an optional low contrast resolution insert. The seven small holes are for inserting an ion chamber at differing locations within the phantom. Six acrylic inserts are provided to fill these holes, leaving one hole to accommodate an ion chamber during a given measurement.

The disc section is attached to a rectangular acrylic bar containing a thin copper wire embedded along a central groove. This section of the phantom is used to evaluate laser beam alignment and accuracy of the slice thickness, slice spacing, slice contiguity and pilot scan to transverse; or longitudinal scan correspondence. This is achieved by exposing a nonscreen film placed underneath the phantom and making several cuts while the phantom is advanced along the gantry in a pre-programmed manner.

Teflon® is a registered trademark of E.I. DuPont de Nemours & Co.

### The low-cost, all-in-one QC phantom accurately evaluates

- Laser beam alignment
- Slice thickness, spacing and contiguity
- Table movement
- CT numbers and noise level
- CT number uniformity
- Relative radiation dose
- Video monitor and image processing equipment
- Scout and axial scan correspondence
- High-contrast resolution
- Low-contrast resolution (optional insert)

### Optional Inserts

- Item 682-305: Low-contrast resolution insert
- Item 682-307: Teflon® insert
- Item 682-309: Lung insert
- Item 682-311: Teflon®-Bone 270° semi-ring for evaluation of beam hardening correction software

### Specifications

#### BODY

- Material:** acrylic (PMMA)
- Dimensions:** 6" dia. x 1" thick (15.25 cm dia. 2.54 cm thick)
- Holes:** six(6) - 1.125" dia. and seven(7)- 0.50" dia. through holes
- Weight:** 1.35 kg (3 lbs)

#### INSERTS

- Material:** One (1) - 1.125" dia. plug of each: Plastic Water™, nylon, bone-equivalent, polyethylene, polystyrene, polycarbonate, and acrylic.
- Six(6) - 0.50" dia. acrylic plugs, for chamber holes

#### BASE

- Material:** acrylic
- Construction:** copper wire approx. 0.02" dia., fixed into a 0.02" deep groove centered along base, disc is attached to the side of the body with 2 removable nylon slotted screws
- Dimensions:** 30.3 cm L x 4.6 cm W x 1.75 cm thick

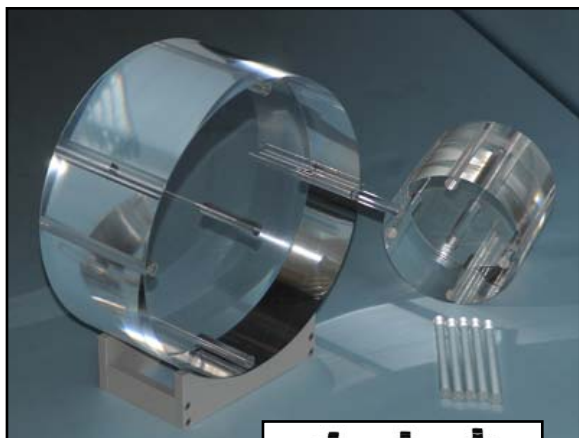
Item #	Description
682-300	Mini CT QC Phantom
682-305	Low-contrast resolution insert
682-307	Teflon® insert
682-309	Lung insert
682-311	Teflon®-Bone 270° semi-ring Insert

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## CT DOSE PHANTOM

### Acrylic and Carry Case



- Usable on all CT scanners
- Head and abdominal configurations included
- Made from acrylic with a density of 1.19 gm/cc
- Includes 10 PMMA plugs
- 1.31 cm inside hole dia. sized for standard CT Dose probes
- Rugged foam lined carrying case included

The CT Dose Phantom consists of two 15 cm thick Solid PMMA disks measuring 16 cm (head) and 32 cm (body) in diameter.

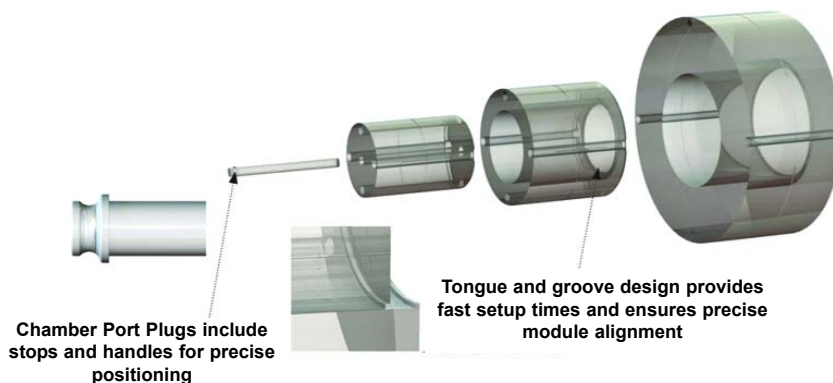
The disks have five through-holes with an inside diameter of 1.31 cm to accommodate standard CT dose probes and five acrylic rods to plug the holes not in use. One hole is at center and four are around the perimeter, 90° apart and 1 cm from hole center to the outside edge of the phantom.

The head and body phantoms along with the ten acrylic rod plugs are packaged in an extremely rugged foam lined carrying case.

Item	Description
682-005	CT Dose Phantom, Acrylic and Carry Case

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## CTDI PHANTOM



- Gain greater efficiency for a key part of your CT quality assurance program.
- Measure absorbed dose and monitor scanner output
- New, easy-to-use design available in two models
- Customized case with built-in wedges for use as a phantom holder

**Computed Tomography Dose Index (CTDI) is a key part of your CT Quality Control Program.**

The CTDI Phantom addresses specifications outlined by the FDA (FDA 21CFR 1020.33) and IEC (IEC 60601-2-44, IEC 61223-2-6 and IEC 61223-3-5/IEC 60601-2-44)..

The phantom is offered as a 2-piece (Item 682-040) or 3-piece (Item 862-045) telescopic configuration with each configuration consisting of nested modules, allowing the user to adapt the phantom to the desired size required by the protocol in use.

### Central & Periphery Measurements

Each module allows dose measurements on the central axis of the phantom or at periphery positions located every 90 degrees at 1.0-cm depth from the surface.

### TG-66 Compliance

CTDI Phantoms supports CT Dose Index measurements recommended by AAPM Task Group-66.

### User-Friendly

Smart design features like tips on chamber plugs and scribe lines support fast and accurate setup.

### Custom Wheeled Case

Included is a water-tight hard case that includes built-in wedges to hold and protect the phantom during transport.

### Specifications

**Material:** Polymethyl-Methacrylate (PMMA/Acrylic)

**Density:** 1.19 g/cm<sup>2</sup>

**Alignment Markings:** Etched lines centered at the transverse, coronal and sagittal planes

**Chamber Ports Diameter:** 1.31 cm

### Dimensions (OD X Length)

**Adult Body:** 32 cm x 14.5 cm

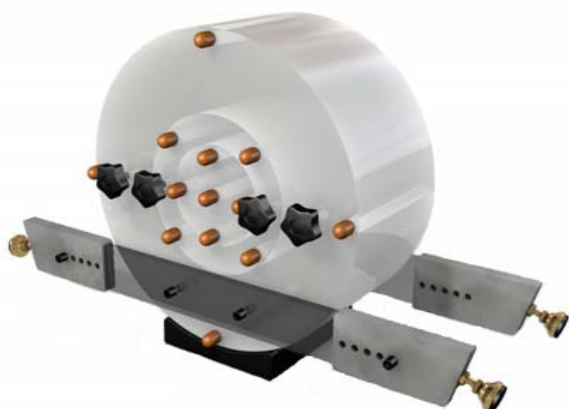
**Adult Head/Pediatric Body:** 16 cm x 14.5 cm

**Pediatric Head (Item 682-045 only):** 10 cm x 14.5 cm

**Weight:** 30.5 lb (19.9 kg)

Item #	Description
682-040	CTDI Phantom - Adult, 2 -Piece
682-045	CTDI Phantom - Adult & Pediatric, 3-Piece

## CT DOSE PHANTOM COMPLY WITH FDA PERFORMANCE STANDARD



682-008 shown with 682-009 Optional support bracket



682-007-14, 682-007-15 and 682-007-16

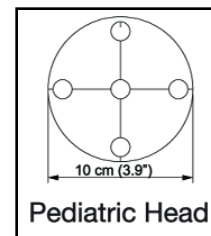
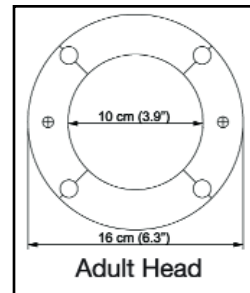
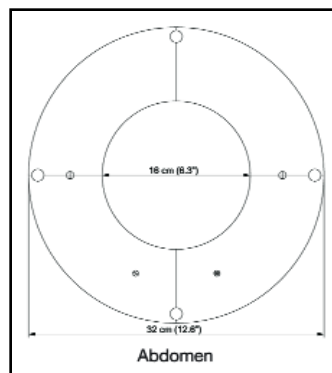
- Abdominal, Adult Head, Pediatric Head configurations
- PMMA disks and plugs with density of 1.19 g/cc
- 1.31 cm diameter holes sized for standard CT Dose probes
- Nesting PMMA disks minimize storage space
- Compatible with all CT scanners

For all computed tomography systems, the FDA recommends measuring the CT Dose Index (CTDI). With this in mind, each section of the CIRS CT Dose Phantom can provide separate dose information. The user can also measure maximum, minimum and mid-range values of the nominal tomographic section thickness when performing dose profile measurements.

The phantom consists of a set of nesting 15 cm thick solid PMMA disks measuring 16 cm (head) and 32 cm (body) in diameter. The adult head disk is also suitable for pediatric body measurements. Model 007A additionally includes a third nesting disk measuring 10 cm in diameter for pediatric head measurements. Handles on the body and head are provided for ease in handling and maneuverability.

Through holes measuring 1.31 cm in diameter will accommodate standard CT probes, and acrylic rods are provided to plug the holes when not in use. The acrylic rods are machined to receive 1 mm diameter TLD rods.

The Model 007A is manufactured to comply with the FDA's performance standard, 21 CFR 1020.33 that details measurement requirements.



**Item 682-009** is an optional Support Bracket can be used to suspend the CT Dose Phantom above the imaging couch and align it along the axis of X-ray tube rotation. This enables the phantom to be used to assess CT dose in helical mode or any mode that requires the extended travel of the imaging couch or a wide beam. This set-up might be used to address the dosimetry approach described in TG111. An additional application of the support bracket is to provide a body to simulate continuous scatter radiation from the patient during helical CT for dose safety measurements inside and outside the exam room.

Replacement acrylic rods are available in 14, 15 or 16 cm long.

### Item 682-007 CT Dose Phantom Includes

- (1) Abdominal Cylinder
- (1) Adult Head Cylinder
- (1) Pediatric Head Cylinder
- (13) Acrylic Rods
- (1) Foam Lined Carry Case
- (1) User Guide
- (1) 48 Month Warranty

### Specifications

**Overall Dimensions:** 12.6" x 12.6" x 5.9" (32 x 32 x 15 cm)

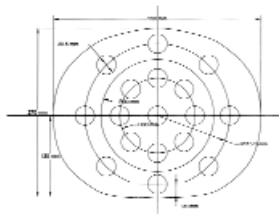
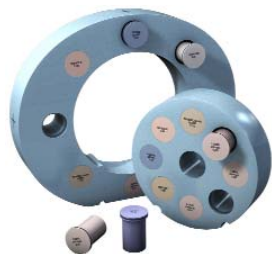
**Materials:** PMMA

**Weight:** 29 lb (13 kg)

Item #	Description
682-008	CT Dose Phantom
682-009	CT Dose Phantom Support Bracket, Optional
682-007-14	Acrylic Rod CT Probe, 1.31cm Dia. x 14cm Long
682-007-15	Acrylic Rod CT Probe, 1.31cm Dia. x 15cm Long
682-007-16	Acrylic Rod CT Probe, 1.31cm Dia. x 16cm Long

## ELECTRON DENSITY PHANTOM

### Correlate CT Number and Tissue Electron Density



The Electron Density Phantom consists of two nested disks made from Plastic Water®-LR. They can represent both head and abdomen configurations. Nine (9) different tissue equivalent electron density plugs can be positioned at 17 different locations within the scan field. Included is a water vial plug that can be filled with any fluid. Optional distance marker plugs enable quick assessment of the CT scanner's distance measurement accuracy

- Evaluate CT scan data
- Correct for inhomogeneities
- Document relationship between CT number and tissue electron density
- Simulate indicated tissue within the diagnostic energy range
- Quick assessment of distance registration

Because CT scans are used to correct for tissue inhomogeneities in radiotherapy treatment planning, it is important to obtain a precise relationship between CT number (in Hounsfield units) and electron densities. The Electron Density Phantom enables precise correlation of CT data to electron density of various tissues. The phantom is manufactured from CIRS Tissue Equivalent Materials.

#### Specifications

##### Overall Dimensions

**Electron Density Head Insert:** 7" Dia x 1.97" D (180 x 50 mm)

**Electron Density Body without Head Insert:**  
12" W x 10.7" H x 1.97" D (330 x 270 x 50 mm)

##### Weights

**Electron Density Head Insert:** approx 2 lb (0.950 kg)

**Electron Density Body without Head Insert:** approx 4.7 lb (2.1 kg)

**Materials:** Water and Tissue Equivalent Epoxy Materials

Item #	Description
682-062	Electron Density Phantom

#### ELECTRON DENSITY PHANTOM ITEM 682-062 INCLUDES

Qty	Description	*Physical Density, (g/cc)	Electron Density x 10 <sup>23</sup> Electrons/cc	RED (Relative to H <sub>2</sub> O)
1	Electron Density Head Insert	1.029	3.333	0.998
1	Electron Density Body without Head Insert	1.029	3.333	0.998
2	Lung (Inhale) Equivalent Electron Density Plug	0.205	0.668	0.200
2	Lung (Exhale) Equivalent Electron Density Plug	0.507	1.658	0.496
2	Breast (50% Gland / 50% Adipose) Equivalent Electron Density Plug	0.99	3.261	0.976
2	Solid Trabecular Bone (200 mg/cc HA) Equivalent Electron Density Plug	1.16	3.730	1.117
2	Liver Equivalent Electron Density Plug	1.07	3.516	1.052
2	Muscle Equivalent Electron Density Plug	1.06	3.483	1.043
2	Adipose Equivalent Electron Density Plug	0.96	3.171	0.949
2	Solid Dense Bone (800mg/cc HA) Equivalent Electron Density Plug	1.53	4.862	1.456
1	Solid Dense Bone (1250mg/cc HA) Equivalent Electron Density Plug	1.82	5.663	1.695
1	Water-fillable Electronic Density Plug (Real water data provided)	1.00	3.340	1.000
1	Set of 2 Feet for 682-062			
1	Soft Carry Case			
1	User Guide			
1	60 Month Warranty			

#### CUSTOMERS ARE ENCOURAGED TO COMPLETE THEIR ORDER WITH THE PURCHASE OF THE INSERT OPTION LISTED BELOW

Item	Description	*Physical Density, (g/cc)	Electron Density x 10 <sup>23</sup> Electrons/cc	RED (Relative to H <sub>2</sub> O)
682-214	†Water Equivalent Chamber Rod with Cavity for Ion Chamber	1.029	3.333	0.998

†Refer to Appendix A for the CIRS cavity and plug code list of available chamber cavities.  
If the ion chamber cavity is not specified by customer, phantom is supplied with cavity that accommodates a Farmer type ion chamber.

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# CT PRODUCTS-SIMULATION, CHAMBERS, PHANTOMS, LASERS

## ELCTRON DENSITY PHANTOM OPTIONAL ACCESSORIES

Item	Description	*Physical Density, (g/cc)	Electron Density x 10 <sup>23</sup> Electrons/cc	RED (Relative to H <sub>2</sub> O)
682-207	**800 mg/cc HA in Water Equivalent - Core Insert	1.53	4.862	1.456
682-212	**Titanium Rod Core Insert	4.51	12.475	3.735
682-213	Distance Marker Insert	1.029	3.333	0.998
682-216	Water Equivalent Insert	1.029	3.333	0.998
682-217	**1000 mg/cc HA in Water Equivalent - Core Insert	1.66	5.243	1.570
682-218	**1250 mg/cc HA in Water Equivalent - Core Insert	1.82	5.663	1.695
682-219	**ICRU Cortical Bone Equivalent Core Insert***	1.91	5.915	1.771
682-220	**1500 mg/cc HA in Water Equivalent - Core Insert	1.99	6.134	1.837
682-221	**1750 mg/cc HA in Water Equivalent - Core Insert	2.15	6.600	1.976
682-226	Solid Dense Bone (1000 mg/cc HA) Equivalent Electron Density Plug	1.66	5.243	1.570
682-228	Solid Dense Bone (1500 mg/cc HA) Equivalent Electron Density Plug	1.99	6.134	1.837
682-229	Solid Dense Bone (1750 mg/cc HA) Equivalent Electron Density Plug	2.15	6.600	1.976
682-230	Water Equivalent Material Surrounding 6.4mm Diameter Stainless Steel (Alloy 20) Rod Core Electron Density Plug	8.03	23.101	6.917
682-231	Water Equivalent Material Surrounding 6.4mm Diameter Aluminum Rod Core Electron Density Plug	2.70	8.008	2.398

\* Physical Density - The actual physical density of the insert can vary within  $\pm 1\%$  of the manufacturing target density.

Note: CIRS strongly recommends that the user inputs the electron density whenever prompted for material data by the TPS.

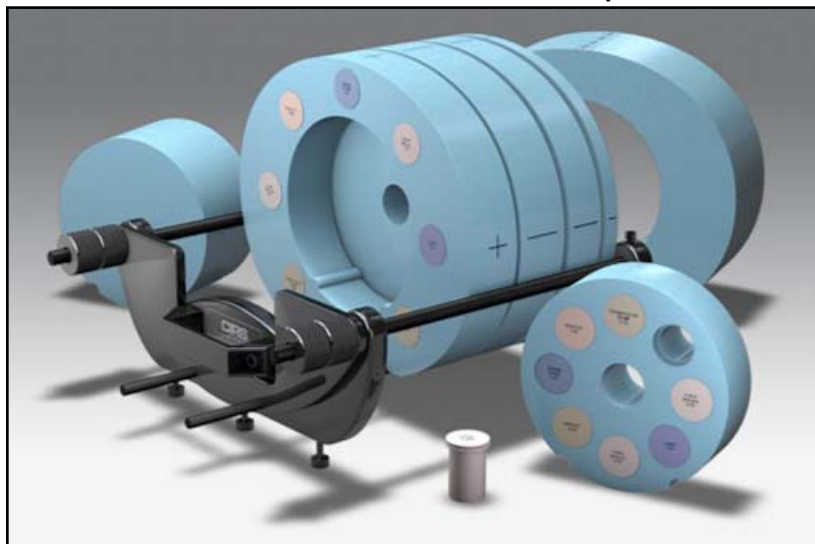
\*\* These inserts have a standard 30 mm diameter and contain a 10 mm diameter core of the indicated reference surrounded by H<sub>2</sub>O-equivalent background. Hydroxyapatite (unit mg/cc) in H<sub>2</sub>O background Plugs to accommodate chambers, TLD's and film available upon special request. The titanium reference has a unique diameter of 6.35 mm.

\*\*\* CIRS Cortical bone reference is based on ICRU Report No.44, and represents approximately 12.2% H<sub>2</sub>O, 24.6% protein, 58% mineral (assumed to be Calcium Hydroxyapatite (HA)), and 5.2% monosaccharides. CIRS further offers a series of mineral density references that mimic various HA concentrations in a pure water-equivalent epoxy background matrix.

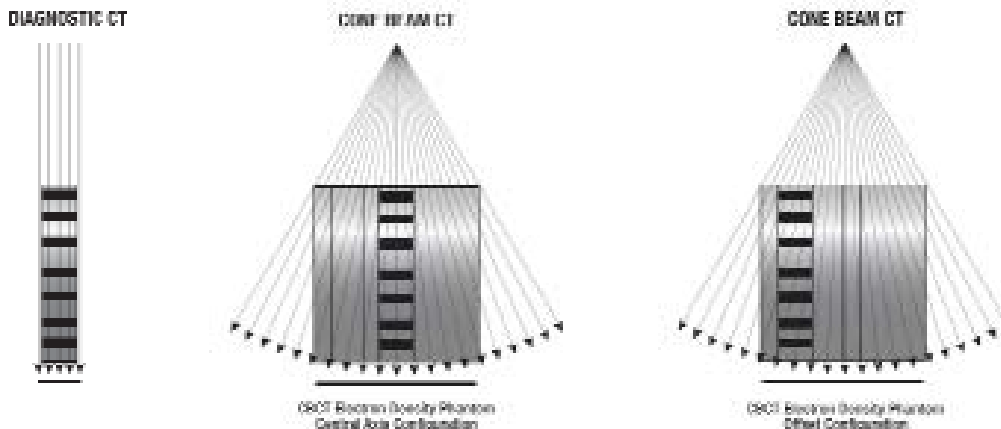
† Refer to Appendix A for the CIRS cavity and plug code list of available chamber cavities

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## CBCT ELCTRON DENSITY PHANTOM Increase HU Value Confidence for Adaptive RT



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A large number of HU readings can be obtained by placing the electron density plugs in different positions both in central axis and offset configurations. Using the equation of curve fitting for collected values, a CBCT to electron density calibration curve can be calculated.

- Evaluate CT scan data
- Correct for inhomogeneities
- Document relationship between CT number and tissue electron density
- Simulate indicated tissue within the diagnostic and therapeutic energy range
- Quick assessment of distance registration (optional)

The Cone Beam (CBCT) Electron Density Phantom is an extended version of Item 682-062 Electron Density Phantom specifically designed for Cone Beam CT Imaging systems. Preliminary data shows that there may be differences between the HU readings for Diagnostic CT and Cone Beam CT. The geometry of the Cone Beam CT requires additional material and suggests that off central axis measurements should be taken.

The phantom was designed in collaboration with Dr. Peter H. Cossmann, PhD to provide a reliable tool for CT number to electron density calibration in volumetric imaging. Reliable CT

calibration curves help enable treatment plan adaptation directly from Cone Beam CT data. Additionally, the phantom can accommodate any ion chamber for dose measurements and validation of heterogeneity correction based on the corrected CT calibration curve.

The CBCT Electron Density Phantom's size covers geometries for imagers with dimensions of up to 40 cm x 40 cm. It is made of Plastic Water®-LR and contains the same set of tissue equivalent electron density inserts as the standard Item 682-062. Additional interchangeable slabs allow for repositioning of the electron density section off axis.

### Specifications

**Overall Dimensions:** 13" W x 10.6" H x 9.8" D (33 x 27 x 5 cm)

**Weight:** 40 lb (18 kg)

**Materials:** Water and Tissue Equivalent Epoxy Resin

Item #	Description
682-200	CBCT Electron Density Phantom

# CT PRODUCTS-SIMULATION, CHAMBERS, PHANTOMS, LASERS

## CBCT ELECTRON DENSITY PHANTOM ITEM 682-200 INCLUDES

Qty	Description	Physical Density (g/cc)	Electron Density Per cc x 10 <sup>23</sup>	RED (Relative to H <sub>2</sub> O)
1	Electron Density Head Insert	1.029	3.333	0.998
1	Electron Density Body without Head Insert	1.029	3.333	0.998
2	Lung (Inhale) Equivalent Electron Density Plug	0.205	0.668	0.200
2	Lung (Exhale) Equivalent Electron Density Plug	0.507	1.658	0.496
2	Breast (50% Gland / 50% Adipose) Equivalent Electron Density Plug	0.99	3.261	0.976
2	Solid Trabecular Bone (200 mg/cc HA) Equivalent Electron Density Plug	1.16	3.730	1.117
2	Liver Equivalent Electron Density Plug	1.07	3.516	1.052
2	Muscle Equivalent Electron Density Plug	1.06	3.483	1.043
2	Adipose Equivalent Electron Density Plug	0.96	3.171	0.949
2	Solid Dense Bone (800 mg/cc HA) Equivalent Electron Density Plug	1.53	4.862	1.456
1	Solid Dense Bone (1250 mg/cc HA) Equivalent Electron Density Plug	1.82	5.663	1.695
1	Water-fillable Electronic Density Plug (Real water data provided)	1.00	3.34	1.00
1	Set of 2 Feet for 682-062			
1	Soft Carry Case for 680-062			
1	50 mm Thick Bolus Slab	1.029	3.333	0.998
2	100 mm L x 30 mm dia Background Equivalent Plug	1.029	3.333	0.998
1	12.5 mm Thick Bolus Slab	1.029	3.333	0.998
1	37.5 mm Thick Bolus Slab	1.029	3.333	0.998
1	CBCT Electron Density Phantom -Annulus (100 mm Thick)	1.029	3.333	0.998
1	CBCT Electron Density Phantom-Annulus Solid Insert (100 mm Thick)	1.029	3.333	0.998
1	Holder/Support set for 682-200 & Model 062MQA			
1	Soft Carry Case for 682-200			
1	User Guide			
1	48 Month Warranty			

## CUSTOMERS ARE ENCOURAGED TO COMPLETE THEIR ORDER WITH THE PURCHASE OF THE INSERT OPTION LISTED BELOW

Item	Description	*Physical Density, (g/cc)	Electron Density x 10 <sup>23</sup> Electrons/cc	RED (Relative to H <sub>2</sub> O)
682-214	†Water Equivalent Chamber Rod with Cavity for Ion Chamber	1.029	3.333	0.998

†Refer to Appendix A for the CIRS cavity and plug code list of available chamber cavities.  
If the ion chamber cavity is not specified by customer, phantom is supplied with cavity that accommodates a Farmer type ion chamber.

## CBCT ELECTRON DENSITY PHANTOM OPTIONAL ACCESSORIES

Item	Description	*Physical Density, (g/cc)	Electron Density x 10 <sup>23</sup> Electrons/cc	RED (Relative to H <sub>2</sub> O)
682-207	**800 mg/cc HA in Water Equivalent - Core Insert	1.53	4.862	1.456
682-212	**Titanium Rod Core Insert	4.51	12.475	3.735
682-213	Distance Marker Insert	1.029	3.333	0.998
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682-217	**1000 mg/cc HA in Water Equivalent - Core Insert	1.66	5.243	1.570
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682-219	**ICRU Cortical Bone Equivalent Core Insert***	1.91	5.915	1.771
682-220	**1500 mg/cc HA in Water Equivalent - Core Insert	1.99	6.134	1.837
682-221	**1750 mg/cc HA in Water Equivalent - Core Insert	2.15	6.600	1.976
682-226	Solid Dense Bone (1000 mg/cc HA) Equivalent Electron Density Plug	1.66	5.243	1.570
682-228	Solid Dense Bone (1500 mg/cc HA) Equivalent Electron Density Plug	1.99	6.134	1.837
682-229	Solid Dense Bone (1750 mg/cc HA) Equivalent Electron Density Plug	2.15	6.600	1.976
682-230	Water Equivalent Material Surrounding 6.4mm Diameter Stainless Steel (Alloy 20) Rod Core Electron Density Plug	8.03	23.101	6.917
682-231	Water Equivalent Material Surrounding 6.4mm Diameter Aluminum Rod Core Electron Density Plug	2.70	8.008	2.398

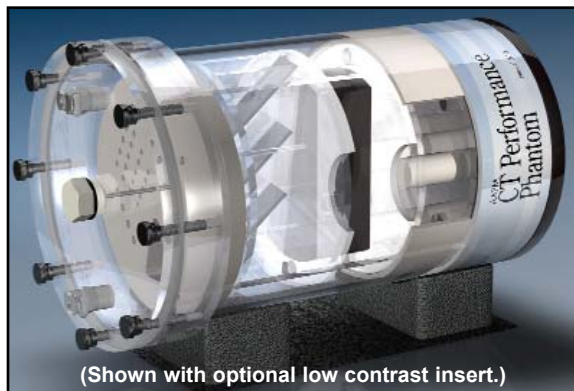
\* Physical Density - The actual physical density of the insert can vary within ±1% of the manufacturing target density.  
Note: CIRS strongly recommends that the user inputs the electron density whenever prompted for material data by the TPS.

\*\* These inserts have a standard 30 mm diameter and contain a 10 mm diameter core of the indicated reference surrounded by H<sub>2</sub>O-equivalent background. Hydroxyapatite (unit mg/cc) in H<sub>2</sub>O background Plugs to accommodate chambers, TLD's and film available upon special request. The titanium reference has a unique diameter of 6.35 mm.

\*\*\* CIRS Cortical bone reference is based on ICRU Report No.44, and represents approximately 12.2% H<sub>2</sub>O, 24.6% protein, 58% mineral (assumed to be Calcium Hydroxyapatite (HA)), and 5.2% monosaccharides. CIRS further offers a series of mineral density references that mimic various HA concentrations in a pure water-equivalent epoxy background matrix.

## AAPM CT PERFORMANCE PHANTOM

Meets guidelines in AAPM Report #1 "Performance Evaluation and Quality Assurance of CT Scanners"



(Shown with optional low contrast insert.)

### Measurement Capability

- Noise
- Sensitivity / Detectability
- Mechanical Alignment
- Beam Hardening
- Slice Thickness
- Size Independence
- Radiation Dose
- Spatial Uniformity
- HU Linearity
- Spatial Resolution & line spread function

The AAPM CT Performance Phantom offers the user a single test object that measures ten distinct CT performance parameters. The phantom design is based on the guidelines presented in Report #1 of the American Association of Physicists in Medicine Task Force on CT Scanner Phantoms. The goals of report #1 were to "(1) define 'performance' of a CT scanner and (2) describe methods of performance testing through utilization of particular phantoms."

A CT number linearity insert, high contrast resolution insert and slice width insert are housed in an 8.5" diameter (21.6 cm) PMMA water tank with quick disconnect valves for ease of filling and draining between use. Also included is a 0.25" (0.64 cm) bone equivalent ring that can be fit over the inserts to evaluate the effects of beam hardening.

A contrast test object is adhered to the bottom of the tank that includes two rows of cavities from 1 to 0.125" diameter (2.54 to 0.32 cm). The cavities can be filled with various solutions for contrast evaluation. An aluminum alignment insert is incorporated in the lid of the tank and can be interchangeable with a polystyrene TLD insert for dose measurements.

A user's manual, holding cradle, filling tubes and other accessories are included. Optional items: Low Contrast Insert, Whole Body Resolution and Noise Ring, TLD Insert, Low Contrast Insert - Spherical Targets or Carrying Case.

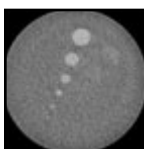
### Specifications

**Overall Dimensions:** 8.5" OD x 15.5" L (21.6 x 39.4 cm)

**Empty Weight:** 17.25 lb (7.9 kg)

**Materials:** PMMA cast tubing 8.5" OD, 8" ID x 12.75" L (21.6 OD, 20.3 ID x 32.4 cm) with removable lid

### Item 682-010 Includes



#### Contrast Test Object

(This option is only available with purchase of the phantom body)  
8.5" OD x 2.5" L (21.6 x 6.35 cm) solid acrylic equivalent disk block with 12 fillable cavities 2.25" deep (5.72 cm). Two of each cavity with diameters: 1, 0.75", 0.50", 0.375", 0.25", and 0.125" (2.54, 1.9, 1.27, 0.95, 0.64, 0.32 cm), spaced twice their diameter apart from a center line. Cavities can be easily filled from the outside with dextrose or sodium chloride solutions of various concentration.



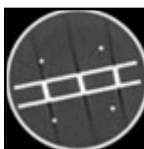
#### CT Number Linearity Insert

7.5" OD x 2.5" L (19.05 x 6.35 cm) includes 1" diameter (2.54 cm) rods of polyethylene, PMMA (acrylic), polycarbonate, polystyrene, and nylon. Density values (g/cc): polyethylene - 0.95, polystyrene - 1.05, nylon - 1.1, acrylic - 1.19, polycarbonate - 1.20.



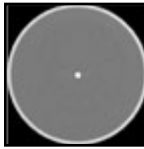
#### Resolution Insert

7.5" OD x 2.5" L (19.05 x 6.35 cm) with acrylic equivalent test object with 8 sets of air thru holes (five holes per set): Diameter of holes is 1.75, 1.5, 1.25, 1.00, 0.75, 0.61, 0.50, and 0.40 mm. Distance between each hole equal to hole diameter. Each row is 5 mm apart. Insert also contains a 0.009" (0.023 cm) stainless steel wire positioned longitudinally for calculation of line-spread function.



#### Slice Thickness Insert

7.5" OD x 3.5" L (19.05 x 8.89 cm) Contains three 0.02 x 1" (0.064 x 2.54 cm) aluminum strips angled at 45°, positioned on center and aligned vertically.



#### Alignment Pin

0.25" diameter x 3" L (0.64 x 7.62 cm) aluminum pin with threaded attachment to housing cover plate.



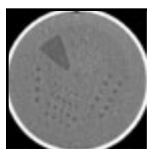
#### Bone Ring

7.65" ID x 0.2" wall thickness x 2.8" L (19.43 x 0.5 x 7.1 cm) cortical bone ring. Fits over linearity, resolution and slice thickness insert to harden the beam.

#### User Guide

48 month warranty

### Optional Accessories



#### Item 682-012 Low Contrast Insert

8" OD x 1.18" L (20.3 x 3 cm) proprietary epoxy with CT density 6-10 HU above water. The test object contains a series of water-filled holes from 2.5 to 7.5 mm in diameter, in 0.5 mm steps. For each target size the center-to-center distance between holes is twice the hole diameter.



#### Item 682-013 Whole Body Resolution and Noise Ring

12" OD x 8.5" ID x 2" L (30.5 x 21.6 x 5.1 cm) fits over phantom housing and contains the same test object as the Resolution Insert, at two locations 90° apart.



#### Item 682-014 TLD Insert

0.5" dia. x 3.5" L (1.3 x 8.9 cm) PMMA rod drilled 3" deep (7.6 cm) to accept TLD's. Can be swapped with Alignment pin in housing cover without removing the cover.



#### Item 682-015 Low Contrast Insert - Spherical Targets

8" OD x 1.18" L (20.3 x 3 cm) Plastic Water® LR equivalent background. The test object contains spheres 5, 10 & 20 CTU above background and 3 reference plugs for each material used as spheres.

#### Item 682-021 Carrying Case for 682-010

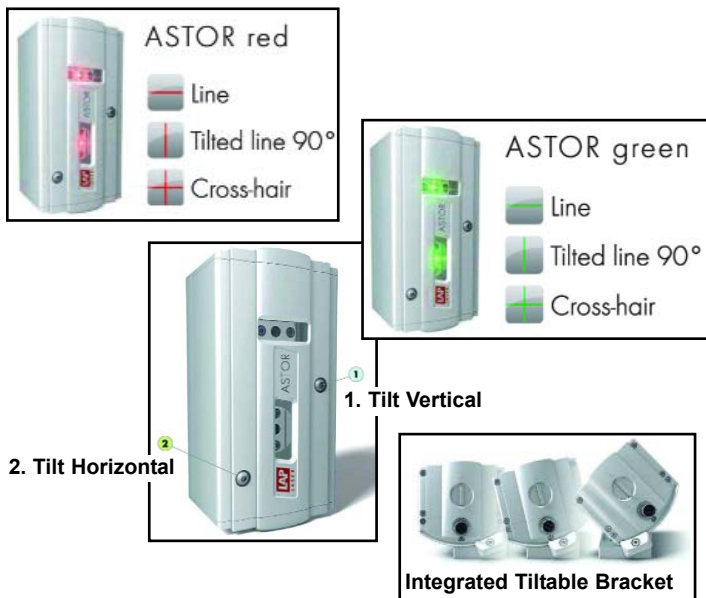
Custom carry case for easy storage and handling of complete Model 610.

Item #	Description
682-010	AAPM CT Performance Phantom
682-012	Low Contrast Insert
682-013	Whole Body Resolution & Noise Ring

Item #	Description
682-014	TLD Insert
682-015	Low Contrast Insert - Spherical Targets
682-021	Carrying Case



## LAP ASTOR LASERS Laser Systems for Patient Alignment



### Cost-conscious positioning precision

The ASTOR room lasers allow precisely reproducible positioning of the patient on the linear accelerator. The finest laser lines, with a max. 1 mm width, project the isocenter for highly precise patient positioning. Room lasers are also a fundamental element of phantom alignment for quality assurance.

The ASTOR system has three (optionally four) lasers for alignment with skin markings. You can choose laser color, design variant, and line or cross lasers, all individually adapted to your room situation and workflow. A fourth laser can be used to prevent potential shadowing from the gantry.

Ultra-precise laser lines in red or green are made possible by state-of-the-art precision mechanics and optics. ASTOR room lasers are reduced to the maximum, so even a modest budget can achieve the highest degree of precision.

### Precise

Even at a distance of 4 meters, the maximum laser line width is 1 mm. The line straightness within the line shows barely any deviations, even at a distance of 3 meters. You can always be sure of the precision of our lasers.

### Optimally visible

The optical room laser components are designed and manufactured with extreme accuracy. Plane parallel glass with anti-reflective coating prevents any interference with the red or green laser beam. The brightness distribution remains constant at all times. Benefit from optimal visibility for precise patient positioning.

### Robust

A high-quality aluminum housing reliably protects the fine mechanics and optical components inside. You don't need to fear damage even from gentle impacts. Highly shatterproof glass stands up to all the rigors of clinical daily life.

### Flexible

Adapt the room laser design to the circumstances of your space. Direct wall mounting or on a freestanding floor support are both possible. In addition, the room laser can be inclined up to 45°. This gives you flexibility even in tight spaces.

### Resistant to radiation

Scattered radiation occurs in environments surrounding linear accelerators. The components in our room lasers have been tested under extreme exposure conditions and optimized for these conditions. The many years of availability without compromising on quality is an exceptional track record that speaks for itself.

### Durable

The quality of our products is also reflected in their service life

The ASTOR laser's horizontal and vertical tilt can be easily adjust without removing the cover. Translation, rotation and focus are adjusted after removing the cover via the convenient quick lock mechanism.

- 1 Tilt vertical plane
- 2 Tilt horizontal plane

ASTOR lasers are equipped with adjustable tilting brackets allowing for rotation up to 45°. The ASTOR's compact design makes it an ideal solution for tight mounting locations.

### Specifications

#### Laser Colour (Typical Wave Length):

- Red: 638 nm
- Green: 520 nm,

#### Laser Class: 2

#### Focusable Range: 1 - 4 m

#### Line Width Up to 4 m Distance: < 1mm

#### Line Length at 3 m Distance: > 3 m

#### Max. Laser Output Power: < 1mW

#### External Power Supply: 100 - 240 VAC, 50-60 Hz

#### Internal Voltage: 24 V DC

#### Operating Temperature: 59°-86° F (15°-30°C)

#### Ambient conditions: 35 - 80 % rel. humidity, non-condensing

#### Dimensions: 7.2" H x 3.4" W x 3.5" D (182 x 86 x 90 mm)

#### Weight: 3.3 lb (1.4 kg)

#### Swivel Angle: 45°

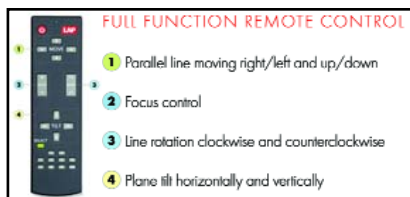
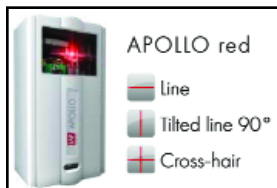
#### International Protection Rating: IP20



Item	LAP Lasers
711-001	ASTOR Red - Crosshair
711-002	ASTOR Red - Line
711-010	ASTOR Green - Crosshair
711-012	ASTOR Green - Line

## LAP APOLLO LASERS

### Advanced Laser Systems for Patient Alignment



**High precision, remotely adjustable room lasers for patient alignment at LINAC isocenter**

#### Highest precision you can rely on

APOLLO room lasers are used for precise and repeatable positioning of radiotherapy patients. After imaging-based planning via CT or MRI, the patient is positioned at the linear accelerator. The finest laser lines project the LINAC isocenter coordinates onto the patient's skin, allowing for precise alignment to millimeter accuracy with the CT/MRI. In addition, the room lasers are a fundamental component of quality assurance. They aid in the precise orientation of the phantom, to achieve measurement accuracy.

The APOLLO system has three (optionally four) lasers for the coronal, sagittal and transversal body planes. You can choose the laser color, line and/or cross laser, and mounting option, all adapted to your individual room situation. An optional fourth laser prevents possible shadowing from the LINAC gantry.

#### Precise

Even at a distance of 4 meters, the maximum laser line width is 1 mm. The line straightness within the line shows barely any deviations, even at a distance of 3 meters. You can always be sure of the precision of our lasers.

#### Optimally visible

The different red, green, and blue diode colors, the optical room laser components are designed and manufactured with extreme accuracy. Plane parallel glass with anti-reflective coating prevents any interference with the laser beam. The brightness distribution remains constant at all times. Benefit from optimal visibility for precise patient positioning.

#### Stable

A high-quality aluminum housing reliably protects the fine mechanics and optical components inside. You don't need to fear damage even from gentle impacts. Highly shatterproof glass stands up to all the rigors of clinical daily life.

#### Flexible

Adapt the room laser mounting according to your individual room situation. Direct wall mounting or mounting on a freestanding support are both possible. In addition, the room laser can be inclined up to 45°. This gives you flexibility even in small rooms.

#### Easily adjustable

Laser adjustment is convenient via remote control. The remote control offers 6 degrees of freedom. The remote control performs all laser positioning for the ultrafine lines including focus

#### Resistant to radiation

In environments surrounding linear accelerators, scattered radiation occurs. The components in our room lasers have been tested under extreme exposure conditions and optimized for these conditions. The many years of availability without compromising on quality is an exceptional track record that speaks for itself.

#### Specifications

##### Laser Colour (Typical Wave Length):

- Red: 638 nm
- Green: 520 nm
- Blue: 450 nm

##### Laser Class: 2

##### Focusable Range: 1 - 4 m

##### Line Width Up to 4 m Distance:

- Red/Green: < 1 mm
- Blue: < 0.5 mm

##### Line Length at 3 m Distance: > 3 m

##### Max. Laser Output Power: <1mW

##### External Power Supply : 100 - 240 VAC, 50 - 60 Hz

##### Internal Voltage: 24 V DC

##### Operating Temperature: 59°-86° F (15°-30°C )

##### Ambient conditions: 35 - 90 % rel. humidity, non-condensing

##### Dimensions: 8.7" H x 4.3" W x 3.9" D (221 x 110 x 100 mm)

##### Weight: 5.7 lb (2.6 kg)

##### Swivel Angle: 45°

##### International Protection Rating: IP20

#### Remote Control

##### Dimensions: 6.4" H x 2.5" W x 0.8" D (163 x 63 x 21 mm )

##### Weight: 0.28 lb (130 gm)

##### Power Supply: 6 V DC (4 batteries type AAA/LR 03/Micro, 1.5 V)

##### International Protection Rating: IP40



Item	LAP Lasers
711-015	APOLLO Red - Crosshair
711-017	APOLLO Red - Line
711-020	APOLLO Green - Crosshair
711-022	APOLLO Green - Line
711-027	APOLLO Blue - Crosshair
711-028	APOLLO Blue - Line

## INTERLOCKING LEAD RING SET

### 2" Thick Lead Rings



The 2" thick (5.08 cm) lead rings provide additional shielding around a dose calibrator chamber thereby giving maximum protection when working with 511 keV radionuclides.

The interlocking ring set consists of eight (8) interlocking lead rings that stack on top of a 2" thick (5.08 cm) lead base block which is surrounded by an interlocking ring.

The 2" thick (5.08 cm) lead rings offer three interlocks: two where the ring halves connect and another on top of the ring to fit into the bottom of the next ring.

#### Specifications

**Lead Shielding:** 2" thick (5.08 cm)

**Overall Height:** 18" (45.7 cm)

**Inside Height:** 16" (40.6 cm)

**Outer Diameter:** 11" Dia. (27.9 cm)

**Inner Diameter:** 7" (17.8 cm)

**Finish:** Precision tan smooth paint

**Weight:** 450 lb (205 kg)

**Ships via Truck**

Item #	Description
344-100	Interlocking Ring Set, 2" Thick for Well Chamber

H

## INTERLOCKING LEAD RING SET

### 2" Thick Lead Rings for Capintec CRC-15R Chamber



The 2" thick (5.08 cm) lead rings provide additional shielding around Capintec CRC-15R well chamber thereby giving maximum protection when working with radionuclides.

The interlocking ring set consists of eight (8) interlocking lead rings that stack on top of a 2" thick (5.08 cm) lead base block and a 3/4" thick ring for the top that has a flat top surface. There are three interlocks in each ring: two where the ring halves connect and another on top of each ring to fit into the into the bottom of the next ring. There is a 1" wide x 1.375" high slot for the well chamber cable in the bottom interlocking ring.

The set also includes an O-Ring that is used at the top to fill the space between the well chamber and lead rings. The O-Ring prevents any liquids from getting into the space between the well chamber and lead rings.

#### Specifications

**Lead Shielding:** 2" thick (5.08 cm)

**Overall Height:** 18.75" (47.7 cm)

**Inside Height:** 16.75" (42.6cm)

**Outer Diameter:** 11" Dia. (27.9 cm)

**Inner Diameter:** 7" (17.8 cm)

**Finish:** Smooth Tan Polyurethane

**Weight:** 445 lb (203 kg)

**Ships via Truck**

Item #	Description
344-101	Interlocking Ring Set, 2" Thick for Capintec CRC-15R Chamber

## INTERLOCKING RING SET

### 1" Thick Lead Rings

The 1" thick (2.5cm) Interlocking lead ring set provides additional shielding for the Capintec CRC-15R Well Chamber.

The interlocking ring set consists of a 1" high interlocking top ring, eight (8) 2" high interlocking lead rings that stack on top of a 1" thick (2.5 cm) lead base block which is surrounded by an interlocking ring.

The 1" thick (2.5 cm) lead rings offer three interlocks: two where the ring halves connect and another on top of the ring to fit into the bottom of the next ring.

The set also includes an O-Ring that is used at the top to fill the space between the well chamber and lead rings. The O-Ring prevents any liquids from getting into the space between the well chamber and lead rings.

### Specifications

**Lead Shielding:** 1" thick (2.5 cm)

**Overall Height:** 18" (45.7 cm)

**Inside Height:** 17" (43.2 cm)

**Outer Diameter:** 9" Dia. (22.8 cm)

**Inner Diameter:** 7" (17.8 cm)

**Finish:** Precision tan smooth paint

**Weight:** 180 lb (82 kg)

**Ships via Truck**

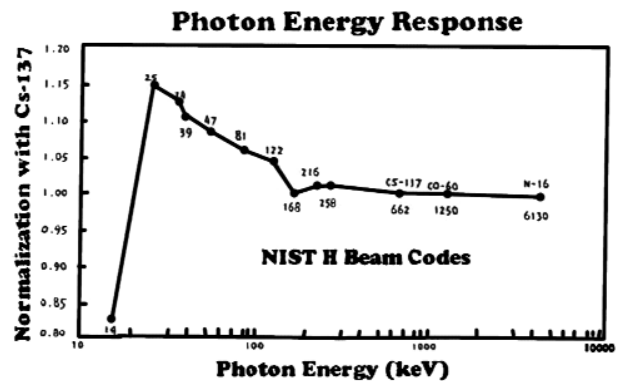
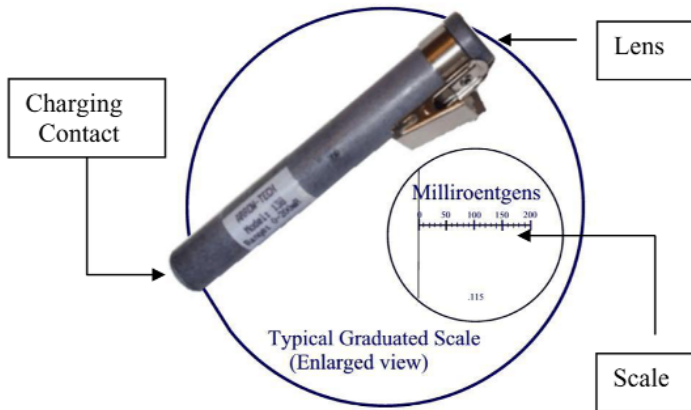


Item #	Description
344-120	Interlocking Ring Set, 1" Thick for Well Chamber

H

# DOSIMETERS AND RADIATION MONITORS & METERS

## DIRECT READING DOSIMETER



The Direct Reading Dosimeter is a pocket-size, carbon fiber electroscop with an ion chamber for detecting and indication of integrated exposure to gamma and x-ray radiation. It has a thin wall which permits the penetration and detection of radiation. A yearly calibration of the Direct Reading Dosimeter is recommended, and is generally consistent with good health physics practices. More frequent calibration may be necessary should the user's license require a shorter calibration interval.

The way to read a dosimeter is to point it at a light source so that you can look through it and see the scale. The conductive fiber moves across a very clear, well-marked scale that produces the reading. Because the dosimeter scale is linear, it is possible to determine the total amount of radiation exposure for any selected period of time by merely subtracting the reading taken at the end of the selected period. It is not necessary to recharge the dosimeter after each reading unless the instrument reads close to full scale.

These dosimeters use an extremely sensitive fiber electrometer type voltmeter and a small volume of air to measure the total amount of radiation to which the instrument has been exposed. A reading may be made at any time by looking at the light source through the eyepiece end of the instrument.

Dosimeters are extremely sensitive instruments. Although they are constructed for rugged use and have a protective sapphire window, they should receive the same care as a wristwatch. Since dosimeters are hermetically sealed at the factory, they cannot be repaired or adjusted in the field. Therefore, if the instrument malfunctions in any way it should be returned to the dealer.

Dosimeters may be maintained in operating condition simply by cleaning the eye piece lens and the charging switch insulator with water and a lint-free cloth that is free of grit.

**Do not use any alcohol-based products to clean the dosimeter.** Make sure the charging switch insulator is free of lint and moisture at all times.

**Caution: Do not insert any sharp objects into the charging switch recess or tamper with its parts in any way.**

### Specifications

- Radiation Detected:** Gamma and X-ray from 16 keV to 2 MeV
- Ranges:** 0-200 mR to 0-500 R
- Detector:** Fiber electrometer mounted in an electrically conductive plastic ion chamber
- Detector Housing:** Very low permeability plastics - hermetically sealed
- Accuracy:** Within  $\pm 10\%$  of true exposure
- Rate Response:** Dose rate independent for gamma and X-ray
- Electrical Leakage:** Less than 1% of full scale for 24 hours at 50°C
- Temperature Range:** -20°C to +50°C
- Relative Humidity:** Up to 90%
- Dimensions:** 0.6" Dia. x 4.5" (1.5 x 12.4 cm)
- Weight:** 1.0 oz (28.4 g)
- Finish:** Barrel and end caps are natural matte black with metal clips
- Shelf Life:** 20 years
- Warranty:** 2 year limited warranty
- Specifications:** ANSI N13.5 and ANSI N322-1997

Item	Description	Range
343-490	Direct Reading Dosimeter	0 - 200 mR
343-495	Direct Reading Dosimeter	0 - 2 mSv
343-500	Direct Reading Dosimeter	0 - 500 mR
343-505	Direct Reading Dosimeter	0 - 5 mSv
343-750	Battery Powered Dosimeter Charger	

# DOSIMETERS AND RADIATION MONITORS & METERS

## 909B DOSIMETER CHARGER



The charger's LED reading light reduces re-zeroing time and effort by eliminating the need to remove the dosimeter from the charger for reading. Simply view the scale while the dosimeter is resting lightly on the charger contact after re-zeroing. Reading in the same orientation as charging also minimizes the effect that gravitational induced fiber movement has on dosimeter accuracy and precision. The 909B Dosimeter Charger charging contact is spring-loaded and has a positive mechanical stop. This design feature makes it virtually impossible to damage dosimeters through excessive charging force.

The patented "kick" feature found on the 909B Dosimeter Charger automatically has the ability to remove all residual-static charge from dosimeters properly for improved accuracy. This prevents spurious upscale fiber movement.

- Capable of charging any direct-reading dosimeter
- Conforms to ANSI N42.6-1980
- Operates on two 1.5 V "AA" batteries
- Has the ability to "kick" or remove all residual charge from dosimeters properly, preventing spurious upscale fiber movement
- LED Reading light to allow for easy charging/viewing
- Residual static charge removed for improved accuracy

Easier charging, viewing, dosimeter protection and improved accuracy are the biggest reasons the battery operated 909B Dosimeter Charger is the best value on the market today.

### Specifications

**Weight:** 10.6 oz (302 g)  
**Size:** 4" L x 4" W x 3.5" H (10.2 x 10.2 x 8.9 cm)  
**Case:** ABS Plastic  
**Controls:** One turn potentiometer  
**Reading:** Spring-loaded push rod  
**Power:** 1.5V "AA" Batteries  
**Charging Voltage:** 40 V to 220 V  
**Operating Temperature:** 0° to 120°F (-18° to 49°C)  
**Lamp:** LED

Item #	Description
343-750	909B Dosimeter Charger

## PEN DOSIMETER CHARGER



The patented, handheld Dosimeter Charger works with a variety of direct-reading pen dosimeters by simply squeezing the lever of a generator. The Charger requires no batteries. By pulling a trigger, a dosimeter is easily placed in or removed from the clamping action that holds it snugly in the cradle. A discharge button above the clamp easily discharges any charge beyond zero on the meter of your Pen Dosimeter. All you need is a light source and a few seconds to zero your radiation dosimeters and get them back in the field.

### Specifications

**Power:** 15,000 volt piezoelectric generator.  
**Discharge Bulb:** Flashes to indicate the instrument is operational.  
**Clamping Mechanism:** Spring loaded, adjustable and self locking. All metal parts are stainless steel.  
**Temperature Range:** Operating: -20°C to +50°C (-4°F to +122°F).  
**Humidity Range:** 0 to 60% Relative Humidity.  
**Weight:** 8.6 oz (245 g)  
**Size:** 6" x 4.2" (at its widest point) x .87" (15.24 x 10.79 x 2.22 cm)

Item #	Description
343-760	Pen Dosimeter Charger

# DOSIMETERS AND RADIATION MONITORS & METERS

## DOSE-i ELECTRONIC PERSONAL DOSIMETERS



343-100



343-102



343-105

### Easily Track and Monitor Radiation Dose

- Small and Lightweight
- Easy to read display
- Simple Operation
- Excellent for healthcare diagnostic imaging where ionizing radiation is present, visual and audible dose and dose-rate alarms
- Ideal for x-ray and nuclear medicine environments
- Measures cumulative dose and dose rate of gamma radiation exposure
- Precision engineered for safety and reliability to the highest standard
- Measurement range: 0.001-999.9mSv (0.1-99.99mrem)
- Dose measurement: 0.001-999.9mSv/h (0.1-99.99mrem/h)
- Energy range: 35keV to 3MeV
- Dosimeters are nonreturnable
- Battery lasts for up to 720 hours (one CR2450 battery included)

### Specifications

**Radiation Measured:** Gamma (X) rays

**Detector:** Silicon semiconductor

#### Measurement Range:

0.001mSv to 999.9mSv (0.1mrem to 99.99mrem)  
0.001mSv/h to 999.9mSv/h (0.1mrem/h to 99.99mrem/h)  
for dose measurement

#### Display Range:

Accumulated Dose: 0.001mSv to 999.9mSv (0.1mrem to 99.99mrem)

Dose Rate\*: 0.001mSv/h to 999.9mSv/h (0.1mrem/h to 99.99mrem/h)

**Accuracy:**  $\pm 10\%$  (0.01mSv to 999.9mSv (1mrem to 99.99rem),  $^{137}\text{Cs}$ )

**Energy Range:** 35keV to 3MeV

**Energy Response:**  $\pm 20\%$  (60keV to 1.5MeV,  $^{137}\text{Cs}$  reference)

**Angular Response:**  $\leq \pm 20\%$  (Up to  $\pm 60$  degree vertical and horizontal,  $^{137}\text{Cs}$ )

**Dose Rate Linearity:**  $\leq \pm 10\%$  ( $^{137}\text{Cs}$ )

**Display:** 4-digit OLED (0.001 to 999.9)

**Indication Data:** Dose, Dose rate, Operating time, Alarm

**Alarm Volume:** 60dB (at 20cm)

**Data Storage:** Trend data (Up to 600 data)

**Power Supply:** Primary Battery (CR2450) x 1

**Battery Lifetime:** 720 hours or more (without alarm / communication)

**Communication:** Infrared communication (Option: communication cable and software)

**Operating Temperature:** 14°F to 104°F (-10° to 40° C)

**Operating Humidity:** Up to 90%RH

**Dimensions:** 1.2" W x 4.3" H x 0.5" D approx (3 x 11 x 1.2 cm approx.)

**Weight:** 0.13 lb approx (60g approx.)

\*Note: Dose-i indicates rough value for dose rate measurement in low radiation field such as less than 1mSv/h (100mrem/h), so it should be used just for reference.

### 343-105 Dose-i Reader /Configuration Software

- Personal Management
- Access Control
- RWP Management
- System Management
- PC and Infrared Communication Device

343-105 Dose-i Reader /Configuration Software Includes:

PC software (supplied as CD)

Infrared communication cable

Instruction manual

### Specifications

#### General:

(1) Basic functions:

- a. Reading out operation parameters and measurement data from dosimeters
- b. Displaying trend data as data table or graph on the screen and downloading as EXCEL sheet
- c. Writing operation parameters to dosimeters

(2) Communicate with Electronic Personal Dosimeter Dose-i

(3) Temperatures: 0 to 40°C

(4) Humidity: 30 to 85%

(5) Power supply: DC4.5 to 6.0 V (supplied from connected computer)

#### Required Environment

The following requirements are applied to (1) hardware and (2) software, respectively.

(1) Hardware - Personal Computer that meet the following specifications

- CPU: 2GHz, or more
- Memory: 1GB, or more
- Hard Drive: Free disc space of 20 MB, or more
- Display: Resolutions 800 x 600, or more
- Communications Interface: USB x 1ch
- Others: Mouse and keyboard

(2) Software - The PC mentioned in (1) should have the following software installed.

- Operating system: Windows® XP/7/8/8.1 operating system
- Others: Microsoft® Office (EXCEL)

\* Microsoft®, Windows®, Windows logo®, Windows Start logo® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Item	Description
343-100	Dose-i Electronic Personal Dosimeter, mrem
343-102	Dose-i Electronic Personal Dosimeter, mSv
343-105	Dose-i Reader/Configuration Software f/ 343-100 & 343-102

# DOSIMETERS AND RADIATION MONITORS & METERS

## ELECTRONIC PERSONAL DOSIMETER Model 23, mrem and Model 23-1, mSv



- Low Weight and Slim Design
- X-ray and Gamma Radiation Monitoring
- Audible Alarm
- 600 Record Data Logging Option Available

The Ludlum Model 23 mrem and Model 23-1 mSv Electronic Personal Dosimeter are compact and lightweight pen-type personal dosimeters. Both are ideal for the measurement and general monitoring of gamma and X-ray radiation in medical and laboratory environments, as well as any controlled or restricted area where personal radiation monitoring is required or desired. The units are sensitive to a wide range of energies from 35 keV to 3 MeV. Dose, Dose Equivalent Rate, and alarm values are easily seen on the four-digit LCD screen. An audible alarm is activated if the dose or dose rate exceeds the preset value of the dosimeter. The alarm set points are adjustable from the face of the unit.

For users with multiple EPD units the optional Reader/Software Kit can be used to quickly take data directly from the dosimeter via infrared communication to the user's PC. The software also allows the user to set or change alarm set points quickly.

**Warning:** this dosimeter may not measure pulsed radiation accurately

**Optional:** Item 343-210 the Model 23 Series Dosimeter Setting Device and Software Kit includes an infrared reader and software that connects to the Model 23 and Model 23-1 dosimeters to a PC in order to adjust the configuration and to transfer logged dose readings. The device uses an infrared communication interface to connect to the Model 23 dosimeters and the software allows the user to change the dosimeter configuration and to view the logged dose data points. Dose data is logged at user determined time intervals (e.g. every 10 minutes), and the device records the total accumulated dose and the dose accumulated during each time interval. Up to 600 data points can be stored in the dosimeter. Note that all collected data is erased when the dosimeter is turned off, so the data must be transferred before the dosimeter is turned off in order to be recorded.

### Specifications

- Radiation Detected:** gamma and X-ray (35 keV to 3 MeV)
- Detector:** silicon semiconductor
- Measurement Display Range:**  
Accumulated Dose: 0.1 mrem to 99.99 rem (0.001 mSv to 999.9 mSv)  
Dose Rate\*: 0.1 mrem/hr to 99.99 rem/hr (0.001 mSv/h to 999.9 mSv/h)
- Accumulated dose data is automatically deleted when the dosimeter is switched 'On'.
- Display:** 4-digit OLED with indicators for dose, dose rate, operating time, and alarm
- Accuracy:**  $\leq \pm 10\%$  (1.0 mrem to 99.99 rem ( 0.01 to 999.9 mSv) <sup>137</sup>Cs)
- Energy Response:**  $\leq \pm 20\%$  (60 keV to 1.5 MeV, <sup>137</sup>Cs)
- Angular Response:**  $\leq \pm 20\%$  (Up to  $\pm 60$  degree vertical and horizontal, <sup>137</sup>Cs)
- Dose Rate Linearity\*:**  $\leq \pm 10\%$  (<sup>137</sup>Cs)
- Alarm Volume:** approximately 60 dB (at 20 cm)
- Data Logging:** Up to 600 records (optional IR reader required for data transmission to PC)
- Environment:** 14 to 104 °F (-10 to 40 °C)  
 $\leq 90\%$  relative humidity (non-condensing)
- Power:** one each coin-type lithium battery (CR2450)
- Battery Life:** 720 hours (without alarm / communication)
- Size:** 1.8" W x 4.3" H x 0.5" D (3.0 x 11.0 x 1.2 cm) without clip
- Weight:** 2 oz (60 g)

\*Note: The instrument indicates rough value for dose rate measurements in low radiation fields, such as less than 1 mSv/h (100 mrem/h), so it should only be used for reference.

Item	Description
343-200	Electronic Personal Dosimeter, mrem - Model 23
343-205	Electronic Personal Dosimeter, mSv - Model 23-1
343-210	Dosimeter Setting Device and Software for 343-200 and 343-205



# DOSIMETERS AND RADIATION MONITORS & METERS

## DMC 3000 ELECTRONIC PERSONAL DOSIMETER X-ray & Gamma



- Loud alarm, 85 dB (A) typical, (> 90 dB (C) peak)
- Vibrating alarm
- Highly visible backlit display
- Optional beta, neutron or telemetry module
- Factory upgradeable firmware
- Simple 2-button navigation
- Extended dose rate alarms
- Dual ultrabright LED alarm
- Superior X-ray and gamma energy response
- Meets or exceeds applicable IEC and ANSI standards
- Designed for ruggedness and durability

The DMC 3000 Personal Electronic Dosimeter has a rugged, high impact polycarbonate-ABS case, is small, lightweight, and is a cost effective personal radiation monitoring device. They are designed to be worn on the body and keep a live record of both dose and dose rate. The DMC 3000 Personal Electronic Dosimeter is simple to use with 2 push buttons for an easy customized data and parameters display. The DMC 3000 has a LDC display with high-quality white backlighting.

The DMC 3000 covers a wide range of X-Ray and Gamma radiation detection field from 15keV to 7MeV and linear response to dose rate fields from natural background up to more than 10 Sv/h. The pass-by data exchange feature gives unequal operational flexibility. In-motion reading allows dose management by sub-zone as well as real-time location tracking of personnel.

The unique, high contrast and backlit LCD display provides a clear indication of wearer's dose and ambient dose rate for deep dose equivalent. More importantly, multiple methods (audible, visual, and tactile) are utilized to alert the wearer of alarm conditions.

### Specifications

#### Radiological Characteristics

Compliant with IEC 61526Ed. 3, ANSI 42.20(\*) (\*) isotropy 241Am and 137Cs with  $\pm 75^\circ$  angle

#### Measurement and display:

**X and gamma energy range:** 15keV to 7 MeV

**Energy response:** Better than  $\pm 20\%$  (typically  $\pm 10\%$ ) from 16keV to 7 MeV

**Accuracy Hp(10):**  $\leq \pm 10\%$  (137Cs, ~ 24 mSv/h);  $\leq \pm 15\%$ , (241Am, ~ 23 mSv/h);  $\leq \pm 19\%$ \*\* X-ray 16keV (\*including  $\pm 5\%$  extended uncertainty k=2); (\*\* including  $\pm 9\%$  extended uncertainty k=2)

**Display units:** mSv,  $\mu$ Sv or mrem

**Display dose:** 1  $\mu$ Sv to 10 Sv (0.1 mrem to 1000 rem)

**Display rate:** 10  $\mu$ Sv/h to 10 Sv/h (1 mrem/h to 1000 rem/h) or 1  $\mu$ Sv/h to 10 Sv/h (0.1 mrem/h to 1000 rem/h) extended option.

**Dose Rate Linearity:**  $< \pm 20\%$  up to 10 Sv/h (1000 rem/h) (Co and X H30 20 keV);  $< \pm 20\%$  up to 6 Sv/h (600 rem/h) (Pulsed X-rays 20 ms width, 1, 10 & 20 pps)

#### Electrical Characteristics

- Standard AAA (LR03) 1.5 V Alkaline battery
- 9 calendar month battery life (typical, 8 h per day, 5 days per week in run mode, without excessive alarms)\*
- 2500 h battery life in continuous run, without excessive alarm

#### Mechanical Characteristics

Rugged, high impact polycarbonate-ABS case

**Dimensions:** 3.4" x 2.2" x 0.8" (86 x 56 x 21 mm) without clip

**Weight with alkaline battery and clip:** < 88 g (3.1 oz)

Worn by a replaceable clips (2 different style back clips or one front-facing clip for DMC worn inside the pocket)

#### Environmental Characteristics

**Temperature Range:** 14°F to 122°F (-10°C to 50°C): deviation in response less than  $\pm 5\%$

**Relative Humidity:** < 90% at 108°F (42°C)

**Storage:** -4°F to 160°F (-20°C to 71°C)

Shock, vibration and drop resistant (1.5 meter on concrete)

**Waterproof IP67:** 39" (1m) during 1 hour

**EMC:** Complies and exceeds standards by a large margin (CE compliant, certificate number: 153720)

**MIL STD 461F RS103 (pulsed electric field):** Exceeds 200 V/m from 30 kHz to 5 GHz

**MIL STD 461F RS101 (magnetic field 30 Hz - 100 kHz)**

Factory calibration approved under ISO/IEC 17025, COFRAC accreditation Nber 2-1663

Item #	Description
343-300	Personal Electronic Dosimeter - DMC 3000

# DOSIMETERS AND RADIATION MONITORS & METERS

## LDM 320D DOSIMETER READER



- Dosimeter reader is compact and low-cost.
- Hands-free communication with dosimeters
- No directional alignment required
- 3 Indicator LEDs for operation and access control
- Manageable digital inputs/outputs
- DSP based digital process
- Compatible with the DMC 3000 dosimeter
- Compatible with software packages: DOSICARE, DOSIFAST, DMCUser and LDM 3000SW
- Wall-mounted or desk versions

The LDM 320D reader operates using software packages installed on computer (PC) and communicate with DMC 3000 dosimeter in hands-free data exchange mode.

When used with the DOSICARE, DOSIFAST, or compatible access control software, the LDM 320 reader is used as an interface to activate a dosimeter (to switch into counting mode) or to deactivate it (to switch into pause mode).

When used with the DMCUser software, it functions as an interface to read and write the internal data of the DMC 3000.

### Description

- Two-color electroluminescent diode used as ON/OFF and data exchange indication
- Two-color electroluminescent diode for READY/BUSY indication
- Two-color electroluminescent diode for ACCESS/ NO ACCESS indication
- 1 female connector, 2 x 13-pins, 1.27 mm pitch, for accessory options (4 digital inputs, 4 digital outputs, power supply)
- Upgradeable Firmware • Multi antennas (x3) for better (adaptive) communication with dosimeters
- Multi antennas (x3) for better (adaptive) communication with dosimeters

### Communication with Dosimeters

- Short range high frequency bidirectional data exchange at 125 kHz
- Nominal range: LDM 320D
  - DMC 3000: 1.9" (5 cm) maximum

### Specifications

**Operating Temperature:** 32°F to 122°F (0°C to +50°C)

**Storage Temperature:** +14°F to 140°F (-10°C to +60°C)

**Humidity:** 90% HR (without condensation)

**IP LDM 320D:** IP52

### Electrical Characteristics:

Self powered through USB port

EMC: complies with and exceeds standards

CE compliant (CE certificate: 151508)

**Dimensions:** 3.9" W x 4.3" L x 1.1" D (10.0 x 10.9 x 2.9 cm)

**Weight:** 5.3 oz (150 g)

Item #	Description
343-320	LDM 320D USB Dosimeter Reader

# DOSIMETERS AND RADIATION MONITORS & METERS

## RAD-60 PERSONAL ELECTRONIC DOSIMETER



The RAD-60 Personal Alarming Dosimeter is a precise radiation monitoring instrument for reliable detection and tracking of radiation exposure in order to ensure the personal safety of the user. It is suitable for a broad range of everyday radiation monitoring purposes in stand alone conditions.

- Individual Personal Alarming Dosimeter
- Enhanced EMI immunity
- Rugged Clip Fixing
- Improved wear-out and decontamination properties
- Increased buzzer volume
- Compact and lightweight
- Digital display for integrated dose or alternatively dose rate
- User selectable alarm levels for both dose and dose rate
- Detector system utilizes high quality energy compensated Si-diode and advanced mathematical dose rate linearization
- Splash-proof mechanical construction, high impact plastic with strong pocket clip

### Applications

- Civil Defence, Rescue Operations
- Customs Operations, Military Forces
- Industrial radiography, Nuclear Medicine

Item #	Description
343-600	RAD-60 Personal Electronic Dosimeter, Rem Display
343-602	RAD-60 Personal Electronic Dosimeter, Sievert Display

### Specifications

**Radiation Detected:** Gamma and X-rays

**Detectors:** Energy-Compensated Si-Diode

### Measurement Range

Dose: 1  $\mu\text{Sv}$  - 9.99 Sv or 0.1 mrem-999 rem

Dose Rate: 5  $\mu\text{Sv/h}$  - 3 Sv/h or 0.5 mrem/h - 300 rem/h

**Calibration Accuracy:** Better than  $\pm 5\%$  (Cs-137, 662 keV at 2 mSv/h), Hp(10)

**Energy Response:** Hp(10), 55 keV - 3 MeV, better than  $\pm 25\%$ , up to 6 MeV, better than  $\pm 35\%$

**Dose Rate Linearity:** Better than  $\pm 15\%$ , up to 3 Sv/h (300 rem/h)

**Alarm Thresholds:** Six preset values each for integrated dose and dose rate, manually selectable by push button.

### Font Panel Push-Button functions:

Toggle between dose and dose rate display

Switch ON/OFF

Chirp ON/OFF

Reset Integrated Dose

Change Alarm Thresholds

Activate Battery Test

**Audible Alarms:** Seven separate alarms, sound level typically better than 85 dBA at 30 cm

Integrated dose

Dose rate

Dose overflow

Dose rate overflow at 3 Sv/h or 300 rem/h

Low battery 1 and 2

Defect

**Power Supply:** One AAA alkaline cell, typical life is 1800 hrs in background field (dose mode)

**Reader Communication:** By infrared through bottom part; by using ADR-1 Reader Head in combination with RADOS PC Software

**Temperature Range:**  $-4^{\circ}$  -  $122^{\circ}$  F ( $-20$  to  $+50^{\circ}\text{C}$ ) operational, humidity up to 90% RH, non-condensed;

**Dimensions:** 3.07" x 2.63" x 0.86" (78 x 67 x 22 mm)

**Weight:** 2.82 oz (80 g) including battery

# DOSIMETERS AND RADIATION MONITORS & METERS

## ADR-1 READER FOR RAD-60 DOSIMETERS



### ADR-1 Dosimeter Reader Head

The ADR-1 Reader Head is designed to read and manage RAD-60 electronic dosimeters in modern PC environment. The ADR-1 Reader Head connects to any PC with a serial port using Windows 95™ or greater.

### Features

- Compatible with all RAD-60 electronic dosimeter
- Indicator LED for dosimeter communication
- Desktop and wall mounting as standard
- Compatible with ADR-1 Reader, RDC-1, ADR-1/50 software
- Delivered with Rs-232 cable and universal input voltage DC power adapter

The Configuration Window displays the configuration information of the dosimeter. You can change the configuration to meet the users requirements by choosing the options you want to include in the dosimeter. With the ADR-1 Configuration Kit, a user can:

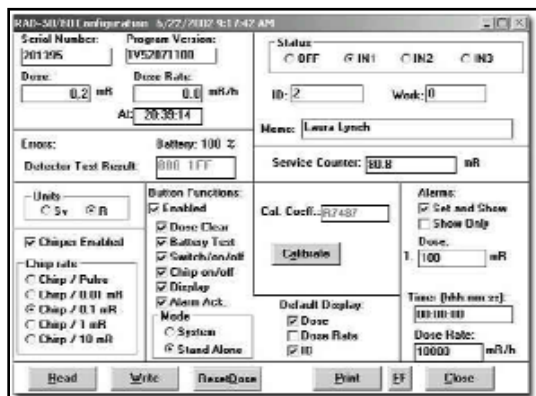
- Change Dosimeter Settings
- Perform Calibration (with Applicable source)
- Assign a User ID and Name

### ADR-1 Reader for RAD-60 Dosimeters Includes:

- ADR-1 Reader
- Configuration Software
- Manual

### Specifications

- Power Supply:** +12 VDC, max. 200mA, Complies CE standards
- Operating Temperature:** 32°F to 104°F (0°C to 40°C)
- Storage Temperature:** 14°F to 140°F (-10°C to 60°C)
- Operating Humidity:** 90% RH (non-condensing)
- Dimensions:** 11" W x 9" H x 4" D (29.7 x 23.5 x 9.7 cm)
- Weight:** 8 lb (3.7 kg)



Item #	Description
343-605	ADR-1 Reader for RAD-60 Dosimeters

# DOSIMETERS AND RADIATION MONITORS & METERS

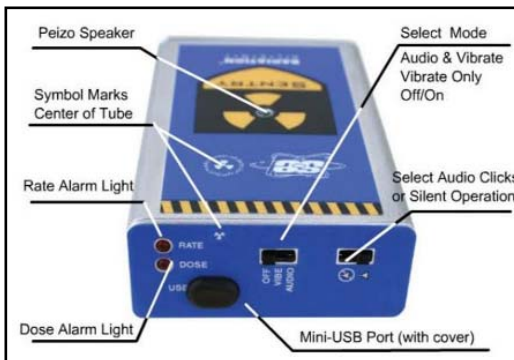
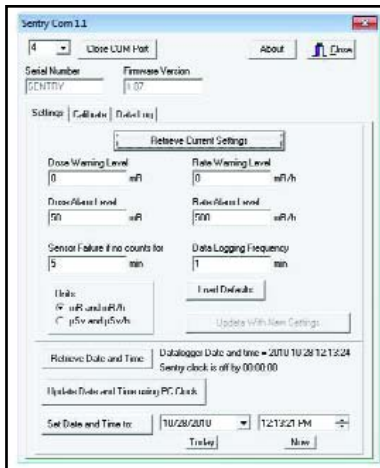
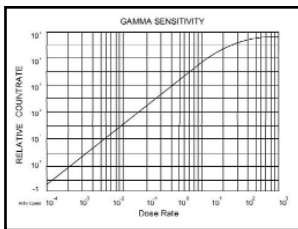
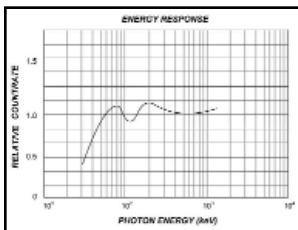
## RADIATION ALERT® SENTRY EC DOSIMETER AND RATE METER

The Radiation Alert® Sentry EC is a Personal Alarming Dosimeter and Rate Meter designed to ensure the safety of personnel that work in occupations with potential x-ray or gamma exposure.

The Sentry EC Dosimeter and Rate Meter measures gamma and X-ray radiation and provides dose rate monitoring in a small rugged package. It can work as a stand alone unit or in conjunction with the SentryCom Software. The Sentry EC employs two bright pulsating LEDs, an Audio Alert, and/or a Vibration Alert for the selectable alert levels. Coupled with the SentryCom Software, the Sentry EC can provide dose measurement, dose rate measurement, and dose history as well as enables you to easily set the alert to your desired levels for dose and rate.

The pocket sized unit has an energy compensated tube for a linear response to gamma and built in memory for recording data points for tracking accumulated exposure. The free SentryCom Software enables you to generate incident reconstruction for analysis. The software also permits you to easily set the vibrating and audio alert to your desired levels for dose (>1.0 mR/10 µSv) and dose rate (>1.0 mR/hr/10 µSv/hr).

Use the audio switch to choose between audible clicks with each count received or a discreet silent mode.



### Specifications

- Detector:** Energy Compensated GM Tube
- Dose Rate Linearity:** Better than  $\pm 15\%$  up to 15 R
- Energy Response:** Down to 20 KeV
- Accuracy:** Typically  $\pm 15\%$  of reading (Cs<sup>137</sup>)
- Gamma Sensitivity:** 1.5 cps/mR/hr (Co<sup>60</sup>)
- Operating Range:**
  - Dose Rate: 0.1 - 15 R/hr (1 µSv/hr - .15 Sv/hr)
  - Accumulated Dose: 0.1 - 65 R (1 µSv - .65 Sv)
- Audible Alarms:** Accumulated Dose & Dose Rate, 90db @ 1 ft.
- Alarm Thresholds:**
  - Default: Dose 500 mR / Rate 50 mR/hr
  - Sievert Option: Dose 5000 µSv / Rate 500 µSv/hr
- Alarm and warning levels are user selectable with the Free SentryCom Software.
- Switch Functions:** Power, Vibrate & Audible Alert, Silent Vibrating Only Alert, and Audio Clicks On/Off.
- Power Requirements:** 9-Volt Alkaline Battery(Included) Approx. 1500 hrs at normal background.
- Enclosure:** Anodized Aluminum Housing w/ Metal Belt Clip
- Outputs:** Mini-USB
- Temperature Range:** 14° - +122°F (-10° - + 50°C)
- Weight:** 8.6 oz (243 g)
- Size:** 4.2" X 2.7" X 1.1" (10.6 x 6.7 x 2.8 cm)

### SentryCom Software

The Windows™ based SentryCom Software enables you to set the values for dose and dose rate alarms and warnings, set the Cal Factor on your unit, and set how often the unit records. Downloading the accumulated exposure data, which includes time and date stamp, exposure, and power cycle identifiers for analysis. The data is stored in a convenient delimited text file for use with a spreadsheet program.

Item #	Description
343-270	Radiation Alert® Sentry EC Dosimeter & Rate Meter

# DOSIMETERS AND RADIATION MONITORS & METERS

## DIGITAL WALL-MOUNT AREA MONITOR MODEL 375/2



337-100



337-105

- Affordable Area Monitor
- Easy Setup and Use
- Internally Mounted, Energy Compensated GM Detector
- Operating Range: 1 $\mu$ Sv/h-10 mSv/h (0.1 mR/hr-1 R/hr)
- User-Programmable Alarms
- User-Programmable Units of Measurement
- Integrated Design
- Battery Backup
- Networkable (Requires Ethernet or Webpage Interface Option)
- Audio & Visual Alarms
- 48-Hour Battery Backup

The Model 375/2 Digital Wall-Mount Area Monitor is designed for visibility and ease of use. This monitor incorporates an internally-housed energy compensated GM detector with a range from 1  $\mu$ Sv/h to 10 mSv/h (0.1 mR/hr to 1 R/hr). It features a wall-mount chassis and a four-digit LED display that is readable from 9 meters (30 feet) away. Backlit indicators warn of low radiation (yellow), high radiation (red), instrument failure (red), and low battery (yellow), along with an alarm. A green status light indicates the instrument is functioning properly. Audible tones provide additional alerts.

Parameters are protected under a calibration cover. Calibration is easily accomplished by moving the cal dipswitch to the right, and using the pushbuttons to increment or decrement the calibration constant, dead time correction, and alarm point parameters. Parameters are stored in non-volatile memory (retained even with power disconnected). A five-decade logarithmic analog output is provided. A battery backup provides 48 hours of additional use after the primary power is removed.

With the addition of the optional Remote Display/Annunciator, Item 337-105 or 337-106, the Model 375/2 can be used to provide continuous monitoring of (normal) background radiation in radioactive material preparation and work areas (ie. Nuclear Medicine Hot Labs). The system can also be used for monitoring of Teletherapy (Cobalt) Treatment rooms, notifying personnel that the source is exposed and in-use.

### Remote Display/Annunciator (Item 337-105 or 337-106)

The optional Remote Display/Annunciator unit duplicates the alarm indication functions of the main unit at a remote location up to 1000 feet. It features a green status light, a red light for high alarm, and Sonalert for audible alarm with a disable switch. The remote unit is powered by the monitor and available with either a 20 ft or 50 ft cable.

### Specifications

#### Item 337-100 Digital Wall-Mount Area Monitor, Model 375/2

**Indicated Use:** gamma monitoring

**Display:** 4-digit LED, 0.8" H (2 cm) character height

**Display Range:** 000.0 to 9999

**Operating Range:** 1  $\mu$ Sv/h to 10 mSv/h (0.1 mR/hr to 1 R/hr)

**Display Units:** can be made to display in  $\mu$ R/hr, mR/hr, R/hr,  $\mu$ Sv/h, mSv/h, Sv/h,  $\mu$ rem/hr, mrem/hr, rem/hr, cpm, cps, and others

**Linearity:** readings within 10% of true value with detector connected

**Response:** typically 3 seconds from 10% to 90% of final reading

### Specifications

#### Indicators:

- **Status:** (green light) instrument functioning properly
- **Low Alarm:** (yellow light and slow [1 per second] beep) can be set at any point from 0.0 to 9999
- **High Alarm:** (red light and fast [4 per second] beep) can be set at any point from 0.0 to 9999
- **Det Fail:** (red light and audible tone) for conditions of detector overload, no count from detector, or instrument failure
- **Low Bat:** (yellow light) indicates less than 2 hours of battery power remaining
- **Overload:** display reading of -OL- and audible FAIL alarm indicate detector saturation
- **Over-Range:** display reading of "----" and activated low and high alarms indicate that the radiation field being measured has exceeded the counting range of the instrument (or when dead time correction accounts for more than 75% of the displayed reading)

**Remote (optional):** allows for connection of Ludlum Model 271 remote unit

**Calibration Controls:** accessible from the front of instrument (protective cover provided)

**High Voltage:** user-adjustable from 450 to 2500 volts

**Dead Time:** user-adjustable to compensate for dead time of the detector and electronics (can be read off the display)

**Audio:** can vary from approximately 68 dB to 100 dB through operation of the external rotary baffle and the internal voltage connection

**RS-232 Output:** a 2-second dump for computer data logging

**Power:** 9 Vdc wall-mount adapter with four sets of prongs for almost any style wall receptacle

**Battery Life:** Typically 48 hours in non-alarm condition; 12 hours in alarm condition

**Battery Charger:** Battery is continuously trickle charged when instrument is connected to line power and turned on

**Construction:** aluminum housing with ivory powder-coat finish

**Temperature Range:** -15 to 50 °C (5 to 122 °F); may be certified for operation from -40 to 65 °C (-40 to 150 °F)

**Size:** 7.4" H x 9.7" W x 2.5" D (18.7 x 24.6 x 6.4 cm)

**Weight:** 4.7 lb (2.1 kg)

**Item 337-105 and 337-106 Remote Display/Annunciator Indicated Use:** Remote display/annunciator for the Model 375 Area Monitors

**Audio:** Sonalert-type speaker with enable/disable switch (greater than 68 dB at 0.61 m [2 ft])

**Radiation Readout Display:** None

**Status Indicators:**

**Status OK:** Green LED

**High Alarm:** Red LED

**Det Fail:** Red LED

**Controls:**

**Audio:** ON/OFF

**Remote Alarm Relay:** Enable/Disable

**Power Supplied By:** Model 375/2 instrument, 20' (6.1 m) or 50' (15.2 m) cable provided

**Connector:** 9-pin "D" connector

**Construction:** Aluminum with ivory powder coat finish

**Temperature Range:** -4 to 122°F (-20 to 50°C), may be certified to operate from -40 to 150°F (-40 to 65°C)

**Size:** 7" H x 2" W x 2"D (17.8 x 5.1 x 5.1 cm)

**Weight:** 1.5 lb (0.7 kg)

Item #	Description
337-100	Digital Wall-Mount Area Monitor, Model 375/2
337-105	Remote Display/Annunciator, Model 271 w/ 20' Cable
337-106	Remote Display/Annunciator, Model 271 w/ 50' Cable

# DOSIMETERS AND RADIATION MONITORS & METERS

## RADIATION AREA MONITOR SYSTEM, MODEL 7008RT



337-110 and 337-112

- Built-in rechargeable back-up battery
- Radiation rate indicated on an 8-digit LCD display
- Alarm level may be preset in 0.1 mR/h increments
- Visual and audible alarm indication
- Audible alarm may be disabled

### Item 337-109 and 337-110

#### Radiation Area Monitor - Internal Solid State Detector

The Radiation Area Monitor, Model 7008RT is a wall-mounted radiation monitor designed to meet the specific needs of radiation therapy. It is designed to operate continuously from an AC power line. In the event of power failure, the built-in, continuously trickle charged NiMH battery automatically switches in to begin supplying power immediately, assuring interruption-free operation at all times.

The monitor features a digital display of radiation rate, audible and visual alarms, and alarm indicator, alarm setpoint adjustability over the entire range, and self diagnostic functions such as low battery, overrange, detector saturation and detector failure conditions. A green status light is a positive indication of normal instrument operation.

A flashing red light with 180° visibility and a red LED indicator below the digital display provide the visual alarm. The audible alarm (which may be disabled with a switch) consists of a single short beep at the beginning of the alarm mode.

### Item 337-111 and 337-112 Remote Alarm

The optional Remote Alarm unit duplicates the alarm indication functions of the main unit. It features a green status light, a red light for high alarm, and Sonalert for audible alarm with a disable switch. Item 337-111 is supplied with a 100' (30.5 m) cable and Item 337-112 is supplied with a 50' (15.25 m) cable. An optional 100' (30.5 m) cable is available if additional cable length is needed.

### Specifications

#### Radiation Area Monitor - Internal Solid State Detector

**Detector:** Internal solid state detector

**Display:** 8 digit, 12 mm high (0.5 in) LCD

**Range:** 0.1 to 999.9 mR/h (1 to 9999  $\mu$ Sv)

**Alarm:** May be preset in 0.1 mR/h (1  $\mu$ Sv) increments

**Visual:** Red light

**Audio:** Sonalert, single beep, may be disabled

**Battery:** Built-in rechargeable NiMH battery supplies 48 hours of non-alarm use under line power failure conditions. Low battery yellow LED on front panel

**Power:** 95 – 230 VAC, 50/60 Hz

**Dimensions:** 7.6" x 4.5" x 2.7" (19.4 x 11.5 x 6.8 cm)

**Weight:** 1.5 lb (0.7 kg)

### Item 337-111 and 337-112 Remote Alarm

**Alarm:** Red lamp indicates, Sonalert provides audio for alarm and failure, toggle switch disables audio

**Status OK:** Green light indicates correct monitor operation

**Power:** 12 VDC from main unit

**Cable:** 50' (15.25 m) or 100' (30.5 m) length cable

**Dimensions:** 7.6" x 4.5" x 2.7" (19.4 x 11.5 x 6.8 cm)

**Weight:** 1.0 lb (0.5 kg)

Item #	Description
337-109	Radiation Area Monitor, Model 7008 RT, $\mu$ Sv/hr
337-110	Radiation Area Monitor, Model 7008 RT, mR/hr
337-111	Remote Alarm Unit with 100' (30.5 m) Cable
337-112	Remote Alarm Unit with 50' (15.25 m) Cable
337-113	100' (30.5 m) Cable for 337-111 or 337-112

# DOSIMETERS AND RADIATION MONITORS & METERS

## CHECK SOURCE



338-122



338-120

### Specifications

**Item 337-141 and 338-120**

**Isotope:** 137Cs

**Size:** 1" Dia. x 0.1" T (2.5 x 0.3 cm (1 x 0.1 in.))

**Item 338-122**

- Typically Mounted to Side of Instrument with four (4) screws
  - Hinged swing-away door clicks closed to protect and secure the source
  - Holds 1" Dia. (2.5 cm) Check Sources
  - Made of aluminum with a beige powder coat
- Size:** 1.8" x 1.8" x 0.5" (4.4 x 4.4 x 1.3 cm)

Item #	Description
337-141	Check Source, Cs-137, 10uCi
338-120	Check Source, Cs-137, 1uCi
338-122	Holder for Check Source

## LEAD CASE FOR CS-137 CHECK SOURCE



### Specifications

**Item 994-078 Lead Case for Cs137 Check Source**

**Lead Wall:** 10 mm Thick

**Inside Dimensions:** 1.22" Dia x 0.3" D (31 x 8 mm)

**Overall Size:** 2.16" Dia. x 1.22" H (55 x 31 mm)

**Weight:** 1.5 lb (0.7 kg)

**Item 994-079 Lead Case for Cs137 Check Source**

**Lead Wall:** 1.0" Thick (25.5 mm)

**Inside Dimensions:** 1.25" Dia. x 0.5" D (31.9 x 13 mm)

**Overall Size:** 3.25" dia. x 2.5" H (85.4 x 63.7 mm)

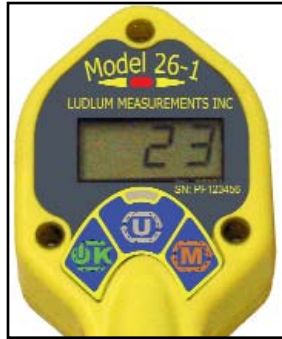
**Weight:** 8.5 lb (3.9 kg)

Item #	Description	Lead Thickness
994-078	Lead Case for Cs137 Check Source	10 mm
994-079	Lead Case for Cs137 Check Source	1" (25.5 mm)



# DOSIMETERS AND RADIATION MONITORS & METERS

## INTEGRATED FRISKER, MODEL 26



- **Integrated, Lightweight Design Simplifies Frisking**
- **Protective Rubber Covering Enhances Ruggedness, Water Resistance, and Non-Slip Comfort**
- **Employs Standard 15.51 cm<sup>2</sup> GM Pancake Detector**
- **Ratemeter, Peak, and Scaler Operating Modes**
- **Simple Two-Button Operation**
- **Count Rate and Scaler Alarms**
- **Automatic LCD Backlight Activation**
- **Wrist Cuff and Lanyard Included**

Frisking people and objects for alpha and beta contamination has always been a little awkward because manipulation of the cable, detector, and electronics required the use of both hands. The new cable-less Model 26 consolidates the electronics and the detector into one ergonomic housing. This optimized configuration incorporates a standard 15.51 cm<sup>2</sup> GM pancake probe, loud audio "click" output, and large auto-ranging LCD display with automatic backlighting into one convenient package, making it easier than ever to detect contamination.

Operation is simple requiring the use of just two buttons. A useful feature in the design is the MAX mode, which captures the highest or peak count rate. It is particularly convenient whenever the display is not directly visible. The scaler mode, with a preset count time, allows the user to take a discrete measurement. This system also incorporates low power circuitry, delivering hundreds of hours of use with two standard "AA" size batteries. The calibrator can protect parameters (cps/cpm, response time, alarm points, & scaler time) or allow the user to adjust them.

### Specifications

**Detector:** Pancake GM (Geiger-Mueller) detector, stainless steel screen (79% open)

#### Window Area:

Active: 15.51 cm<sup>2</sup> (2.4 in<sup>2</sup>)

Open: 12.26 cm<sup>2</sup> (1.9 in<sup>2</sup>)

#### Efficiency (4pi) (surface plane):

**Alpha:** 11% for <sup>239</sup>Pu

**Beta:** 18% for <sup>99</sup>Tc; 32% for <sup>32</sup>P; 2% for <sup>14</sup>C; 22% for <sup>90</sup>Sr/<sup>90</sup>Y; 0.2% for <sup>125</sup>I

**Gamma:** 3300 cpm/mR/hr or 5.5 cps/μSv/hr (<sup>137</sup>Cs); ≤ 1% for <sup>99m</sup>Tc

**Resolving Time:** Approximately 110 microseconds as defined by IEC 60325

**Linearity:** ± 10%

**Alarms:** Count rate and scaler alarm setpoints adjustable over the display range

**Overload:** High count rate saturation protection prevents false display of lower count rates

**Zero Protection:** After 60 seconds of no pulses from detector, unit will flash a zero reading and the alarm audio will be triggered

**LCD Display:** 3½ digit LCD with 12.7 mm (0.5 in.) digits, (k)cpm, (k)cps, low battery indicator, MAX, ALARM

**Range:** 0.1 cps to 1.99 kcps, or 1 cpm to 99.9 kcpm

**Backlight:** Built-in ambient light sensor automatically activates low-power LED backlight, or may be configured for 'Continuous On' operations (will reduce battery life)

**Controls:** Two pushbuttons

**OFF/ON/QUIET:** Press to turn ON, tap to alternate between 'click' audio and QUIET, hold for OFF

**MODE:** Alternates between NORMAL (count rate) and MAX (captures peak rate), and SCALER (user-selectable preset count time from 0 to 20 minutes). Each mode is separately programmable so it can be active or turned off.

**Response Time:** user-selectable from 1 to 60 seconds, or Auto-Response Rate FAST or SLOW

**Click Audio:** Greater than 60 dB at 0.6 m (2 ft)

**Power:** Two "AA" batteries

**Battery Life:** Approximately 1000 hours of operations (as low as 500 hours with backlight configured for 'Continuous On'), 16-hour low battery warning

**Construction:** High-impact polycarbonate plastic with water-resistant rubber seals, separate battery compartment and rubber overmold

**Environmental Rating:** NEMA 3 / IP 53

Temperature Range: -4° to 122 °F (-20 to 50 °C)

**Distance from Surface Plane to Screen:** 0.32 cm (0.125")

**Size:** 2.7" W x 10.7" L x 1.8" H (6.9 x 27.2 x 4.6 cm)

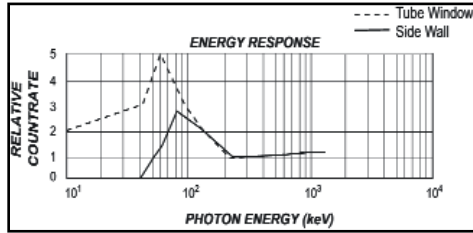
**Weight:** 1.0 lb (0.45 kg)

Item #	Description
339-026	Integrated Frisker, Model 26



# DOSIMETERS AND RADIATION MONITORS & METERS

## RADIATION ALERT® RANGER RADIATION SURVEY METER- $\alpha$ $\beta$ $\gamma$ x



Observer USB Software collects data stored in the internal memory of the Radiation Alert Ranger



Lanyard and stand included



Shown with Optional Wipe Test Plate

The Ranger offers maximum performance in a lightweight, rugged nuclear radiation detector for surveying at the facility or in the field. The Ranger is designed for industrial environments, but it still has all of the features you've come to love in the lab. The Ranger is a small, handheld, digital survey meter that offers excellent sensitivity to low levels of alpha, beta, gamma, and x-rays.

It has built in efficiencies for common isotopes to calculate activity in Bq and DPM. It has a backlit digital display, a red count light, and a beeper that sounds with each count detected. Other features include selectable alert levels, an adjustable timer, and an optional wipe test plate for swipes. Internal memory and the free Observer USB Software allow you to download your data, set computer alarms, and calibrate your instrument. The Bluetooth and Observer BLE app from the Google App Store, allows you to display the readings from your detector on to your android device, label sample readings and descriptions, take timed counts, append GPS data and send your saved survey file. Alarms set on the instrument will also activate on your android device.

The Free Observer USB software (Windows® only) reads in Total Counts, CPM,  $\mu$ R/hr, mR/hr, CPS,  $\mu$ Sv/hr, and has the ability to collect and log data, set alarms, set timed counts, set the calibration date and settings, and generate reports.

### Specifications

**Detector:** Internal Halogen-quenched, uncompensated GM tube with thin mica window, 1.4-2.0 mg/cm<sup>2</sup> areal density. Effective diameter of window is 45 mm (1.77 in.).

**Operating Range:**  
 mR/hr - .001 (1 $\mu$ R) to 100  
 CPM - 0 to 350,000  
 $\mu$ Sv/hr - .01 to 1000  
 CPS - 0 to 5000

Total Counts - 1 to 9,999,000 counts

**Accuracy:** (Referenced to Cs137) Typically  $\pm$ 15% from factory,  $\pm$ 10% with NIST Source Calibration

### Energy Sensitivity:

3340 CPM/mR/hr (Cs<sup>137</sup>)

- Detects Alpha down to 2 MeV.
- Detects Beta down to .16 MeV; typical detection efficiency at 1 MeV is approx. 25%.
- Detects Gamma down to 10 KeV through the detector window. Smallest detectable level for I<sup>125</sup> is .02  $\mu$ Ci at contact.

**Built-In Efficiencies:** Sulfur (<sup>35</sup>S), Strontium (<sup>90</sup>Sr/y), Cesium (Cs<sup>137</sup>), Phosphorus (<sup>32</sup>P), Carbon (<sup>14</sup>C), Iodine (<sup>131</sup>I), Cobalt (<sup>60</sup>Co), and Alpha

**Selectable Alert Set Range:** mR/hr .001 - 100 and CPM 1 - 350,000. Pulsating beeper sounds the alert. Adjustable alert levels are used for mR/hr / CPM, and  $\mu$ Sv/hr / CPS. 70db @ 1m. Alarm will sound when in Timer Mode when set alarm threshold is reached.

**Anti-Saturation:** Meter will hold at OVER RANGE in fields as high as 100 times the maximum reading

**Averaging Periods:** Display updates every 3 seconds. At low background levels, the update is the average for the past 30-second time period. The timed period for the average decreases as the radiation level increases.

**Display:** Graphic LCD with Backlight

**Count Light:** Red LED flashes with each radiation event

**Alarm Indicator:** Internal beeper. 70db @ 1m. (can be switched off for silent operation)

**Outputs:** USB for use with Observer USB Software for PCs, Bluetooth for use with the Observer BLE app for Android OS

**Power Requirements:** USB or two AA alkaline batteries. Approx. 800 hrs @ background.

**Temperature Range:** 14° to 122°F (-10° to 50°C)

**Humidity:** 10% to 70% Non-Condensing

**Size:** 5.5" X 2.7" X 1.3" (14.0 X 6.8 X 3.3 cm)

**Weight:** 10.3 oz (0.64 lbs.)

**Item 339-150 Includes:** Carrying Case, Xtreme Boot, Stand, Lanyard, Batteries, Mini-USB Cable, Observer USB Software, Observer BLE Software, Certificate of Conformance

### Options:

339-155 Wipe Test Plate

339-158 Swipes

339-160 NIST Calibration

Item #	Description
339-150	Radiation Alert® Ranger Radiation Survey Meter
339-155	Wipe Test Plate for Ranger Survey Meter, 339-150
339-158	Swipes for Wipe Test Plate, 339-155
339-160	NIST Calibration for Ranger Survey Meter

# DOSIMETERS AND RADIATION MONITORS & METERS

## RO-20 AA ION CHAMBER SURVEY METER



- Measures gamma or x-ray exposure rate
- Temperature compensated measurements
- Sliding shield for beta measurements
- Large, backlit display
- 5 ranges up to 50 R/h

The Model RO-20 AA is a portable air ionization chamber instrument, used to detect beta, gamma, and x-radiation. It features five linear ranges of operation to measure exposure from background to 50 R/h full scale.

The ionization chamber is vented to atmospheric pressure and is specifically designed to have a flat energy response into the x-ray region. The detector is fully temperature compensated, eliminating any need for temperature correction. Each instrument is factory calibrated to gamma radiation.

A single rotary switch turns the instrument off, checks the batteries, checks the zero setting, and selects the range of operation. An ergonomically located switch illuminates the meter. Internal switching of ranges is accomplished with reed relays, eliminating the mechanical swing arms typically used with portable ion chamber survey instruments.

Compared to the previous model RO-20, only standard batteries are used and the exchange of all batteries can be accomplished very quickly and easily. The total weight of the instrument is reduced by 10 % and the angular response is improved in the horizontal plane by up to 20 % under 180°.

### Detector

The RO-20 AA detector is an air-filled ionization chamber. It has a diameter of 7.32 cm and a volume of 220 cm<sup>3</sup>. The detector has 640 mg/cm<sup>2</sup> phenolic walls inside a 1.6 mm aluminum wall case for a total thickness of approximately 1,000 mg/cm<sup>2</sup>. A 7.9 mm thick phenolic sliding beta shield with a positive friction lock is mounted on the bottom of the chamber. The shield thickness is approximately 1,000 mg/cm<sup>2</sup>. The chamber window is comprised of two layers (one on the chamber, one on the can) 25 micron (0.001") mylar, approximately 7 mg/cm<sup>2</sup> total.

### Energy Response

**Photon Response:** Reference to <sup>137</sup>Cs measured through the bottom with the slide closed, the energy response is:

- ± 30% from 8 keV to 1.3 MeV with the open slide facing the source.
- ± 15% from 33 keV to 1.3 MeV with the closed slide facing the source.
- ± 15% from 55 keV to 1.3 MeV through the side of the instrument

**Beta Response:** Uranium Slab: 30% of true mrad/h field behind 7 mg/cm<sup>2</sup> window with RO-20 AA resting on slab, slide open. <sup>90</sup>Sr/<sup>90</sup>Y: Approximately 93% of true mrad/h field at 30 cm with slide open.

**Fast Neutron Response (PuBe):** Reads approximately 8% in mR/h of true neutron field in mrem/h.

**Radiation Detected:** Beta, gamma, and x-ray.

**Ranges:** Five linear ranges: 0-5, 0-50, 0-500 mR/h and 0-5, 0-50 R/h

**Meter:** Scale length, approx. 7.6 cm (3"), 2% accuracy. Linear markings from 0 to 5 in 50 minor increments. The meter is backlit

**Response Time:** 90% of final reading within 5 seconds,

**Linearity:** Within ± 5% of full scale

**External Controls:** Range switch, including Off, Zero, and Battery checking positions. Zero knob used to set meter to zero when Zero position of range switch is selected. Light switch, for meter light.

**Internal Controls:** Five calibration controls- one for each range.

**Batteries:** Main Power: Five "AA" cells

**Chamber Bias:** Three 12 volt standard "23A" alkaline cells, 36 volts.

**Battery Life:** "AA" cells, widely variable according to RO-20 AA usage. Typical Alkaline: mR/h ranges, 2500 hrs. All other positions, 125 hrs. Frequent or continuous use of the light will reduce battery life significantly. 36 volt chamber bias battery life: Totally dependent upon the usage of "Battery 2" position of the range switch. The battery capacity should allow for at least 50,000 five second battery checks. The battery drain is negligible on all other positions of the range switch.

**Temperature:** Operable from -40 °C to 60 °C (40 °F to 140 °F)

**Temperature Compensation:** The detector is fully compensated over the operational temperature range for output accuracy within 10% ± 0.5 mR/h

**Moisture:** Seals used at openings for dust and water resistance. Detector is protected by a silica-gel dryer.

**Humidity:** Operable from 0 to 95%, non-condensing

**Weight:** Approximately 3.6 lb (1.63 kg) with alkaline AA cells

**Size:** 4.2" W x 7.9" L x 7.7" H (including handle)

**Testing:** The RO-20 AA has been successfully tested to ANSI N42.17A and is CE Certified to European standard EN50082-1 (EN61000-4-2 & EN61000-4-3)



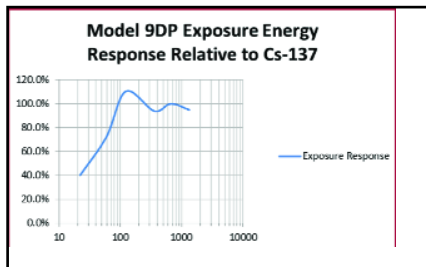
Item #	Description
343-150	RO-20 AA Survey Meter
343-155	5 Micro Curie Cs-137 Check Source

# DOSIMETERS AND RADIATION MONITORS & METERS

## MODEL 9DP, PRESSURIZED ION CHAMBER SURVEY METER



Function Buttons



- 0-50 mSv/h (0-5 R/hr) Range with µR/hr Sensitivity
- Simultaneous Rate and Integrate or Peak Hold Readouts
- Sunlight Readable Color Display
- Auto Zeroing & Ranging
- Rechargeable Batteries
- Alarming Capability
- Data Logging
- USB Connectivity
- Free Firmware Updates through Internet

The Model 9DP, pressurized ion chamber meter, provides highly sensitive measurements of exposure or dose. It can simultaneously display the rate and either integrated value or highest rate (peak) seen by the instrument. The integrated value or peak rate can be reset using one of the four convenient front-panel mounted buttons.

The stunning 256K color, bit-mapped display provides an optimized presentation of the data and is accompanied with icons informing the user of the active functions and instrument status. All logged data can be written in csv format to a standard USB thumb drive for convenient retrieval by a PC spreadsheet or database program. Alarms are manifested using color changes on the display and an acknowledgeable audio output.

This meter is part of the new Dimension series of meters employing state-of-the-art technologies that deliver tremendous capability, user-friendliness, and convenient PC connectivity. The built-in USB port facilitates password-protected access to parameter settings via direct connection to a USB keyboard (with no additional USB ports, and no integrated mouse or trackpad) thus foregoing any need to install PC application software or dealing with operating system compatibility issues. An optional Dimension PC Windows™ Interface Package is available that enables total control over the instrument and performs calibration.

### Specifications

**Radiation Detected:** Beta above 1 MeV; gamma & X-rays above 25 keV

### Operating Ranges:

Sv/h units: 0-5 µSv/h, 0-50 µSv/h, 0-500 µSv/h, 0-5 mSv/h, 0-50 mSv/h;

R/h units: 0-500 µR/h, 0-5 mR/h, 0-50 mR/h, 0-500 mR/h, 0-5 R/h

Gy/h units: 0-5 µGy/h, 0-50 µGy/h, 0-500 µGy/h, 0-5 mGy/h, 0-50 mGy/h

**Chamber Volume:** 230 cm<sup>3</sup> (14 in<sup>3</sup>) volume pressurized to 9 atm (122 psig)

**Chamber Density:** chamber wall density is 601.7 mg/cm<sup>2</sup>; can wall density is 332.5 mg/cm<sup>2</sup>. Total density of chamber + can is 934.2 mg/cm<sup>2</sup>

**Accuracy:** ±10%

**Energy Response:** ± 25% from 60 keV to 1.25 MeV

**Response Time:** Ranges from 5 seconds in lowest range to under 2 seconds highest range when measuring from 10% to 90% of final value

**Geotropism:** < 1%

**Measurement Readouts:** Simultaneous display of rate and either the integrated reading or highest rate (peak)

**Minimum Readout:** .01 µSv/h (0.1 µR/h, 0.01 µGy/h)

**LCD Display:** 3.5" (8.9 cm) diagonal, 240 H x 320 W pixels, TFT active matrix, >256k colors, 220 cd/m<sup>2</sup>, automatic sensor-controlled backlighting

**User Controls:** 4 push buttons : Instrument on/off, Function (for peak rate/integrate modes), Audio on/off, and Asterisk (for alarm acknowledge/meter reset/clearing integrated dose or peak rate)

**Automatic Functions:** Auto ranging, auto zeroing, auto LCD backlighting

**Data Streaming:** Data is stored to detachable USB thumb drive in CSV format for easy retrieval by PC spreadsheet/database programs. Data points include date and time, rate, integrated reading and instrument status. Logging time intervals are set by PC interface program.

**Audio Outputs:** Built-in unimorph speaker, > 60 dB at 2' (0.6 m) An option consisting of an audio jack and stereo/mono headphones may be ordered at time of purchase.

**Alarms:** Two available user-programmable levels of radiation alarms, each is user programmable throughout entire readout range

**USB Interface:** single USB port, connects directly to a USB keyboard (with no additional USB ports, and no integrated mouse or trackpad or audio controls) to facilitate password-protected parameter changes, accepts USB thumbdrive for storing logged data or to an optional Dimension Interface Package that facilitates connection to a PC parameter editing and calibration

**Temperature Range:** -20 to 40°C (-4 to 104°F)

**Warm Up Time:** <1 minute when the instrument is in temperature equilibrium with the surrounding environment

**Drift:** < 0.3 µSv/h (0.03 mR/h; 0.3 µGy/h)

**Humidity:** 0 - 95% non-condensing

**Power:** Eight rechargeable AA NiMH batteries, supplied with wall charger for direct connection to instrument

**Battery Life:** Approximately 12 to 30 hours between charges depending primarily upon use of backlighting and USB usage

**Construction:** Durable plastic accompanied by internal metal frame support

**Size:** 8.6" H x 4.6" W x 9.6" L (21.9 x 11.6 x 24.5 cm)

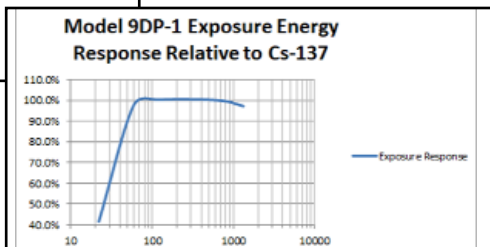
**Weight:** 3.3 lb (1.5kg) including batteries



Item #	Description
343-350	Model 9DP, Pressurized Ion Chamber Meter

# DOSIMETERS AND RADIATION MONITORS & METERS

## MODEL 9DP-1 ION CHAMBER SURVEY METER



- **Special Design for Measuring Pulsed Fields**
- **Low Pressure Chamber is Non Hazmat**
- **2  $\mu$ Sv/h to 500 mSv/h (200  $\mu$ R/h to 50 R/hr) Operating Range**
- **Sunlight Readable Color Display**
- **Auto Zeroing & Ranging**
- **Rechargeable Batteries**
- **Alarming Capability**
- **Rate, Integrate & Peak Hold Readouts**
- **Data Logging**
- **USB Connectivity**
- **Free Firmware Updates through Internet**

The Model 9DP-1 ion chamber meter is specially designed for radiography work where pulsed fields are being measured. This instrument correctly integrates 50 nanosecond pulses (and wider) that other systems typically miss or measure inaccurately. This instrument measures both exposure and exposure rate and can simultaneously display the exposure rate with either the integrated value or highest rate seen by the instrument. The integrated value can be reset (if desired) using one of the four convenient front-panel mounted buttons. The buttons also control instrument power, function selection, speaker volume and alarm acknowledgment.

The detector chamber is only pressurized to 2.5 atm (22 psig), thus avoiding all (USA) HAZMAT concerns for shipping and handling. However, this reduced pressure also reduces sensitivity, so the minimum "good" measurement point is 2  $\mu$ Sv/h (200  $\mu$ R/hr). The 256-color, bit-mapped display provides an optimized presentation of the data and is accompanied with icons informing the user of the active functions and instrument status. Alarms are manifested using color changes on the display and an audio output. The water resistant housing allows a broader range of work environments for the user.

The instrument is powered using NiMH type rechargeable batteries that deliver up to 30 hours operation between charges. Measurements can be logged to an industry standard USB thumb drive plugged into the instrument USB port. Data is written in CVS format for convenient retrieval by a PC spreadsheet or database program.

The Model 9DP-1 is part of the Dimension series of meters employing state-of-the-art technologies that deliver tremendous capability, user friendliness, and convenient PC connectivity. The built-in USB port facilitates password-protected access to parameter settings via direct

connection to a USB keyboard (with no additional USB ports, and no integrated mouse or trackpad) thus foregoing any need to install PC application software or dealing with operating system compatibility issues. An optional Dimension PC Windows™ interface program that enables total control over the instrument and performs calibration is also available.

### Specifications

**Radiation Detected:** gamma & X-rays above 25 keV; beta above 1 MeV, correctly integrates pulsed fields with 50 nanosecond pulse widths

### Operating Ranges:

R/h units: 0.2–5 mR/h, 0.2–50 mR/h, 0–500 mR/h, 0–5 R/h, 0–50 R/h  
Sv/h units: 2–50  $\mu$ Sv/h, 2–500  $\mu$ Sv/h, 0–5 mSv/h, 0–50 mSv/h, 0–500 mSv/h

Gy/h units: 2 - 50  $\mu$ Gy/h, 2 - 500  $\mu$ Gy/h, 0 - 500 mGy/h, 0 - 50 mGy/h

**Chamber Volume:** 220 cm<sup>3</sup> (13.4 in<sup>3</sup>) volume pressurized to 2.5 atm (22 psig)

**Accuracy:**  $\pm$ 10%

**Energy Response:**  $\pm$  25% from 60 keV to 1.25 MeV

**Response Time:** Ranges from 5 seconds in lowest range to 2 seconds in highest range when measuring from 10% to 90% of final value

**Measurement Readouts:** simultaneous display of rate and either the integrated reading or highest rate (peak hold), or pulsed mode status  
**Included Functions:** integrated reading, peak reading, range lock (0-50 R/h) for reading pulsed fields

**Data Logging:** Data is stored to detachable USB thumb drive in CSV format for easy retrieval by PC spreadsheet/database programs. Data points include real-time clock generated date and time with rate, integrated reading, and instrument status. Logging time intervals are set by PC interface program or standard USB keyboard.

**LCD Display:** 3.5" (8.9 cm) diagonal, 240 H x 320 W pixels, TFT active matrix, 262,144 colors, 220 cd/m<sup>2</sup>, automatic backlighting

**User Controls:** 4 pushbuttons: Instrument on/off, peak rate/integrate mode, audio on/off, alarm acknowledge / meter reset / clearing integrated dose or peak rate

**Automatic Functions:** auto ranging, auto zeroing, auto LCD backlighting

**Audio Outputs:** built-in unimorph speaker, > 60 dB at 2' (0.6 meters) An optional audio jack can be installed for connecting to an external headset

**Alarms:** Two levels of radiation alarms available, each is user programmable throughout entire readout range and set through a PC interface program. Other alarms include low battery and various detector failures.

**Temperature Range:** -20 to 40 °C (-4 to 104 °F)

**Power:** Eight rechargeable AA NiMH batteries, supplied with wall charger for direct connection to instrument

**Battery Life:** 12 to 30 hours between charges, depending upon use of backlighting

**USB Interface:** Single USB port, may be connected directly to a USB keyboard to facilitate password-protected parameter changes,

connect a USB thumbdrive for storing logged data, optional interface kit facilitates connection to a PC for parameter editing and calibration

**Construction:** Durable molded plastic with internal metal support

**Size:** 4.6" W x 9.6" L x 8.6" H (11.6 x 24.5 x 21.9 cm)

**Weight:** 3.3 lb (1.5 kg), including batteries



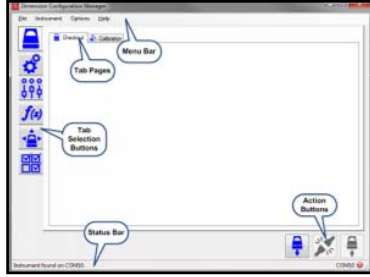
Item #	Description
343-352	Model 9DP-1, Ion Chamber Survey Meter

# DOSIMETERS AND RADIATION MONITORS & METERS

## ACCESSORIES OPTIONS FOR THE MODEL 9DP ION CHAMBER SURVEY METERS



343-353



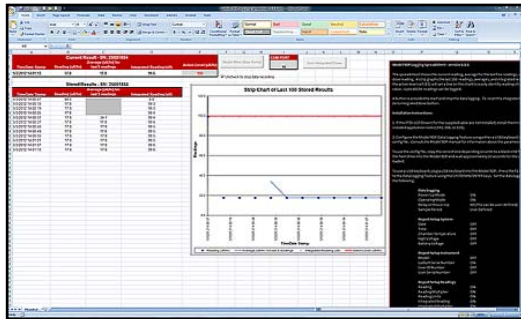
343-355



343-356



343-358



343-359

This transport and storage “satchel-type” case is ruggedly built with steel pin hinges, heavy duty latches, and comfortable, fold-down handles. The case is resistant to impact and chemical damage. The case is lined with dense foam padding providing further protection against impact during movement or storage. The case may be padlocked through the provided hasps for additional security for the instruments. Tongue and groove construction and an O-ring provide a dust and waterproof (up to 0.9 m [3']) design. This case has a manual bi-directional pressure equalization valve to give added protection to sensitive detectors during ambient air pressure changes encountered during air transport. This case is designed to meet or exceed TSA and ATA standards.

### Specifications

**Case Type:** hard side, satchel type

**Construction:** rugged case with stainless steel pins and spring-loaded latches, padded handle, tongue and groove O-ring seal for dust- and waterproof (up to 3 feet) protection, manual bi-directional pressure equalization valve, includes dense foam padding

**Interior Dimensions:** 17.5" H x 11.9" W x 6.3" L (44.4 x 30.1 x 15.9 cm)

**Exterior Dimensions:** 18.3" H x 13.8" W x 7" L (46.5 x 35 x 17.8 cm)

**Weight, empty:** 6 lb (2.7 kg)

### Item 343-358 Headphones and Audio Jack Output

This option for the Dimension 9DP series of instruments includes an Audio Jack Output and Stereo/Mono Headphones. The Audio Jack Output provides a standard socket for a headset jack. This option allows the instrument to be used in noisy or crowded environments with minimum distraction, or where the built-in audio output of the instrument might be disruptive to others such as in office or medical environments. The modification is factory-installed with all necessary electronics and modifications. This option can only be ordered with an order for a 9DP Survey Meter.

### The Stereo/Mono Headphones

- Separate Volume Control for Each Ear Cup
- Rugged ABS Plastic Headstrap
- Snap-On Adapter with Dual Plug Sizes
- Mono/Stereo Switch
- Padded Ear Cups with Replaceable Cushions

### 343-359 Logging Spreadsheet Software Package

The Model 9DP Logging Spreadsheet allows the user to log real-time data from the instrument directly to an Excel spreadsheet. The software comes with configuration (.cfg) files that can be loaded into a USB thumbdrive and inserted into the Model 9DP to easily configure the instrument to log data. A USB keyboard can also be used to configure the instrument to download. The spreadsheet then has controls to start/stop the download and to reset or zero the integrated dose. The default data shows up in columns: TimeDate Stamp, Reading ( $\mu\text{R/hr}$  or  $\mu\text{Sv/h}$ ), Average for the last 5 readings, and Integrated Reading ( $\mu\text{R}$  or  $\mu\text{Sv}$ ). The software has a single-user license. A special USB cable is needed and is supplied with the package.

Item #	Description
343-353	Alkaline Battery Pack
343-355	Dimension Interface Kit
343-356	Transport and Storage Case
343-358	Headphones and Audio Jack Output
343-359	Logging Spreadsheet Software Package
337-141	Check Source, $^{137}\text{Cs}$ , 10 $\mu\text{Ci}$

### Item 343-353 Alkaline Battery Pack

Battery pack of 8 non-rechargeable "AA" batteries, permitting quick battery change in the field.

- Convenient
- Reduces Chance of Losing Batteries in the Environment
- Stores Neatly

### Item 343-355 Dimension Interface

The Dimension Configuration Manager software enables calibration and setup of any of the Dimension product line of instruments. (9DP - Series) This package includes the Dimension Configuration Manager software and the required special USB cable for communications between the PC and instrument.

### Item 343-356 Transport and Storage Case

- Heavy-Duty Spring-Release Latches
- Large Easy-Grip Handles
- Stainless Steel Pin Hinges
- High-Density Foam Pads Included
- Non-Slip Finger Grip on Sides
- Accommodates Padlocks for Extra Security
- Waterproof (up to 3 feet) and Dustproof Design
- Manual Ambient Pressure Equalization Valve Helps Protect Detectors from Pressurization Damage During Air Transport
- Resistant to UV, Solvents, Corrosion, Fungus
- Resistant to Impact Damage

# DOSIMETERS AND RADIATION MONITORS & METERS

## GENERAL PURPOSE SURVEY RATEMETER AND GAMMA DETECTOR MODEL 3 AND MODEL 44-2



The Model 3 General Purpose Survey Rate Meter, Model 44-2 Gamma Detector and Check Source with Stick-on Holder is everything needed to do radiation survey checks of X-ray security scanners. The Model 3 General Purpose Survey Rate Meter has a  $\mu\text{Sv/h}$  meter face with a range of 0 to 0.5  $\mu\text{Sv/h}$ .

### Item 338-000 General Purpose Survey Rate Meter and Gamma Detector Includes:

- (1) Model 3 General Purpose Survey Rate Meter
- (1) Model 44-2 Gamma Detector
- (1) Check Source and Stick-on Holder, Cs-137, 1.0  $\mu\text{Ci}$

Using the Model 3 General Purpose Survey Rate Meter with the Model 44-2 Gamma Detector creates a very sensitive micro-R-meter. The advantage this instrument has over those with the detector housed inside the instrument enclosure is its ability to manipulate the detector into tight or difficult places. It has the additional benefit of keeping the meter conveniently in full view while performing an investigation.

The stick-on holder uses an industrial-strength adhesive to attach the very thin plastic laminate type 1.0  $\mu\text{Ci}$  Check Source to the Rate Meter. This provides for easy calibration of the Rate Meter and helps prevent losing the Check Source. The plastic laminate source with accompanying stick-on source holder is the only type of source and holder approved for use with any of Ludlum's Intrinsically Safe type instruments.

### Item 338-001 Model 3 General Purpose Survey Rate Meter with $\mu\text{Sv/h}$ Meter Face

- Rugged
- 4-Range Analog Rate Meter
- Supports GM & Scintillation Type Detectors
- Greater than 2000 Hour Battery Life

The Model 3 General Purpose Survey Rate Meter is a handheld analog rate meter known for accuracy and long-lasting dependability. The cast aluminum instrument housing with its separate battery compartment and accompanying metal handle offer an industrial robustness and quality that promote long lasting protection and instrument life. The front-panel controls include a rotary switch for selecting the four-decade range, instrument shut-off, battery test, an audio on/off switch, a fast/slow response switch, and a count reset button.

A one meter (39") straight type detector cable with "C" style connector is included with the Rate Meter and connects the Rate Meter to the Gamma Detector.

### Specifications

#### 338-001 Model 3 General Purpose Survey Rate Meter with $\mu\text{Sv/h}$ Meter Face

**Application:** Gamma surveying  
**Linearity:** reading within 10% of true value with detector connected  
**High Voltage:** adjustable from 400-1500 Vdc  
**Threshold:** fixed at -30 mV  $\pm$  10 mV  
**Meter Dial:** 0 - 0.5  $\mu\text{Sv/h}$ ; BAT TEST  
**Meter:** 2.5" (6.4 cm) arc, 1 mA analog type  
**Controls:**

**Rotary Selector Switch:** Switches between: Instrument off; Battery check; Ranges: x0.1, x1, x10, x100  
**Response Switch:** Toggles between FAST (4 seconds) or SLOW (22 seconds) from 10% to 90% of final reading  
**Reset Pushbutton:** To zero meter  
**Audio Switch:** For audio on/off, built-in unimorph speaker, greater than 60 dB at 2' (0.6 m)  
**Calibration Controls:** Accessible from front of instrument (protective cover provided)

**Temperature Range:** -4 to 122°F (-20 to 50°C), may be certified for operation from -40 to 150°F (-40 to 65°C)

**Power:** Two each "D" cell batteries (housed in externally accessible sealed compartment)

**Battery Life:** Typically greater than 2000 hours with alkaline batteries (battery condition can be checked on meter)

**Connector:** Series "C"

**Construction:** Cast and drawn aluminum with beige powder coat

**Size:** 6.5" H x 3.5" W x 8.5" L (16.5 x 8.9 x 21.6 cm), including handle

**Weight:** 3.5 lb (1.6 kg), including batteries

#### Item 338-076 Model 44-2 Gamma Detector

**Indicated Use:** low-level, wide-energy gamma survey

**Detector Type:** NaI(Tl) Scintillator, 1" Dia x 1" T (2.5 x 2.5 cm)

**Sensitivity:** typically 175 cpm/ $\mu\text{R/hr}$  ( $^{137}\text{Cs}$  gamma)

**Efficiency:**  $^{125}\text{I}$  - 7%;  $^{57}\text{Co}$  - 10%;  $^{137}\text{Cs}$  - 3%;  $^{60}\text{Co}$  - 3%

**Background:** 1800 cpm

**Recommended Energy Range:** 20 KeV-1.5 MeV

**Energy Response:** Energy dependent

**Photomultiplier Tube:** 1.1" (2.9 cm) diameter, magnetically shielded

**Operating Voltage:** typically 500-1200 volts

**Connector:** Series "C"

**Temperature Range:** 5 to 122°F (-15 to 50°C), may be certified for - to operate from -40 to 150°F (-40 to 65°C)

**Construction:** aluminum housing with beige powder coat finish

**Size:** 2" Dia x 7.3" L (5.1 x 18.5 cm)

**Weight:** 1 lb (0.5 kg)

#### Item 338-123 Check Source and Stick-On Holder

**Isotope:** Cesium-137

**Activity:** 1.0  $\mu\text{Ci}$

**Size:** 1" Dia x 0.006" T (2.5 cm x 0.15 mm)



Item #	Description
338-000	General Purpose Survey Rate Meter & Gamma Detector
338-001	Model 3 General Purpose Survey Rate Meter
338-076	Model 44-2 Gamma Detector
338-123	Check Source and Stick-On Holder, Cs-137, 1 $\mu\text{Ci}$



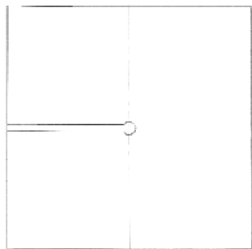
# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## COAX CABLES FOR DIODES

Item #	Accessories
322-884	Connector Adaptor Lemo-F to BNC-M
322-886	Coax Cable Extension w/Lemo-F to BNC-M Connector 10 m
322-888	Coax Cable Extension w/Lemo-F to BNC-M Connector 15 m
322-890	Coax Cable Extension w/Lemo-F to BNC-M Connector 20 m

Item #	Accessories
322-891	Coax Cable, Diode, BNC-F to BNC-M, 32' (10 m)
322-892	Coax Cable, Diode, BNC-F to BNC-M, 49' (15 m)
322-893	Coax Cable, Diode, BNC-F to BNC-M, 65' (20 m)

## EQUIDOSE II DIODE PHANTOM



### Specifications

**Material:** Polystyrene

**Size:** 9.8" x 9.8" x 1" (25 x 25 x 2.54 cm)

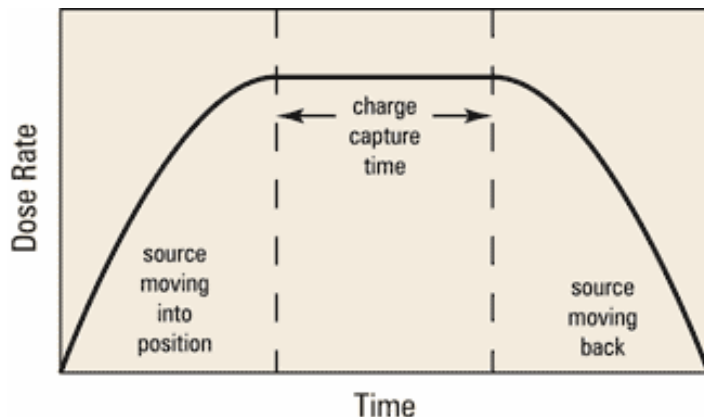
This phantom is also available in other materials. Call RPDinc for more information.

Item #	Description
638-000	Equidose II Diode Phantom

J

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## CDX 2000B ELECTROMETER



### Versatile, Affordable

The compact, stable, lightweight and easily transported CDX 2000B has wide amp and coulomb ranges for both external beam dosimetry measurements and precise HDR brachytherapy calibrations.

### Extended Range for Many Applications

The wide range of the CDX 2000B makes it an excellent instrument for external beam, absolute dosimetry measurements with standard Farmer-type and parallel plate ion chambers. It is also reliable and precise for HDR brachytherapy calibrations.

### Low Noise and Stable Repeatability

A powerful digital microprocessor provides 0.1% repeatability and exceptionally low leakage of less than 5 fA. The built-in digital filter nearly eliminates the effects of noise, resulting in stable and exact measurements.

### Easy to Use with Convenient Features

Control operations with a fast, push button interface. With user activated zeroing, just press the button and it is ready to measure. The CDX 2000B operates off a rechargeable battery for up to 8 hours of continuous use.

### Enhanced Bias Selection

The CDX 2000B allows a wide assortment of bias settings for performing both TG-51 and now TRS-398 measurements with support for 1/3 bias ratio settings. Apply (+/-) 450, 300, or 150 VDC to your chamber of choice with no external bias supply required.

### Unique Timing Capabilities

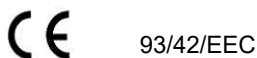
The unique timing feature is ideally suited for HDR brachytherapy calibration measurements. The CDX 2000B can capture charge for a selected amount of time during an exposure, thereby eliminating end effects or other variable portions of an exposure.

This timed collection application is very useful during the measurement of high dose rate brachytherapy sources, allowing the measurement of charge only during the time the source is in place and the rate is constant.

Simultaneous display of amp, coulomb and collection time minimizes the need to switch screens.

### Specifications

- Rate Mode:** 0.01 nA - 500.00 nA, 1 pA resolution
  - Charge Mode :** 0.01 nC - 999,999 nC, 10 pC resolution
  - Combined:** Accumulated charge and current readings are displayed simultaneously
  - Timed:** User set duration (Range: 0-600 sec; Increment: 15 sec; Resolution: 1 sec)
  - Continuous:** Unlimited duration with manual stop
  - Repeatability:**  $\pm 0.1\%$  (IEC 60731 requirement:  $\pm 0.5\%$ )
  - Long Term Stability:**  $\pm 0.5\%$  (over one year)
  - Stabilization Time:**  $\pm 0.1\%$  (IEC 60731 requirement:  $\pm 0.5\%$  of value at 1 hr for measurements taken at 15 min and 6 hrs)
  - Response time:**  $< 3$  s (IEC 60731 requirement:  $< 3$  s)
  - Non-Linearity:**  $\pm 0.25\%$  (IEC 60731 requirement:  $\pm 1.0\%$ )
  - Zero Drift:**  $< \pm 0.001$ nA
  - Zero Shift:**  $< \pm 0.001$  nA
  - Bias Voltage:** Nominal  $\pm 450$  volt bias
  - 5 User Settings:** -450, -300, -150, 0; 150, 300, 450 (VDC)
  - Bias Accuracy:**  $\pm 0.3$  volt
  - Display:** Backlit LCD, 2 x 20 with 5/16" characters
  - Input:** BNC two lug, triaxial connector
  - Zeroing:** Automatic zero function, user activated.
  - Output:** Isolated RS-232, unidirectional, 19,200 baud rate, 8 data bits, no parity, 1 stop bit
  - Power:** 100-240 VAC, 0.5 A max, 50/60 Hz input to external power supply, 9 VDC, 1.7 A power supply output to electrometer input, UL/TUL listed power supply; internal battery: 8 hrs per charge
  - Dimensions:** 8.24" W x 9" L x 2.75" H
  - Weight:** 3 lb
- Designed to exceed AAPM, ADCL and reference grade instrument specifications



Item #	Description
321-450	CDX 2000B Electrometer

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## PTW UNIDOS® E UNIVERSAL DOSEMETER



Easy to use reference class or field class dosimeter / electrometer for routine dosimetry.

- An economical high quality dosimeter for universal use in radiation therapy and diagnostic radiology
- Complies with the following standards:
  - IEC 60731 as a field class dosimeter
  - IEC 60731 as a reference class dosimeter (option)
  - IPEM guidelines on dosimetry transfer instruments as a secondary standard dosimeter (option)
  - IEC 61674 as a diagnostic dosimeter
- High accuracy, excellent resolution (1 fA) and wide dynamic measuring ranges
- HV power supply (0...±400) V in increments of ±50 V
- Measures integrated dose (or charge) and dose rate (or current) simultaneously
- RS232 interface for device control and data output

The lightweight and compact UNIDOS E is an easy to use dosimeter, mainly used for daily routine dosimetry in radiation therapy. Ion chambers and solid-state detectors can be connected. A chamber library makes it possible to store calibration data. Air density corrections are done by keying in air pressure and temperature. UNIDOS E displays the measured values of dose and dose rate in Gy, R, Gy/min, R/min or Gy·m. The electrical values charge and current are measured in C and A. The large, high-contrast LC display is easy to read. The device includes automatic leakage compensation and an RS232 interface. The high voltage between the ion chamber electrodes is checked automatically. UNIDOS E features both mains and battery operation.

### Specifications

#### Measuring Quantities and Units:

- Absorbed dose to water (Gy),
- Air Kerma (Gy)
- Absorbed dose rate to water (Gy/min)
- Air kerma rate (Gy/min)
- Exposure (R)
- Exposure rate (R/min)
- Dose length product (Gy·cm)
- Charge (C)
- Current (A)

#### Measuring Ranges:

- Charge: 2 pC - 65 mC
- Current: 200 fA - 1 µA

#### Resolution:

- Charge: 10 fC
- Current: 1 fA

**Long Term Stability:** <± 0.5% according to IEC

#### Non-linearity:

- Dose: <±0.5 % acc. to IEC
- Dose Rate: <± 1.0 % acc. to IEC

#### Accuracy of Current and Charge Measurement:

<± 0.5% ± 1 digit

**Interval Time:** 1 - 9999 s

**Temperature Range:** 50° - 104° F (10° - 40° C)

**Air Pressure Range:** 700 - 1060 hPa

**Humidity Range:** 10 - 80% rel. humidity; max 20 g/m<sup>3</sup>

**Leakage Current:** <± 1 fA

**Zeroing of the Amplifier:** Automatically in approx. 50 s

**Chamber Voltage:** 0 - ± 400 V in 50 V increments

**Power Supply:** 90 - 240 VAC, 50 - 60 Hz resp. rechargeable NiCd batteries

**Dimensions:** 9.8" W x 10.2" D x 3.9" H (25 x 26 x 10 cm)

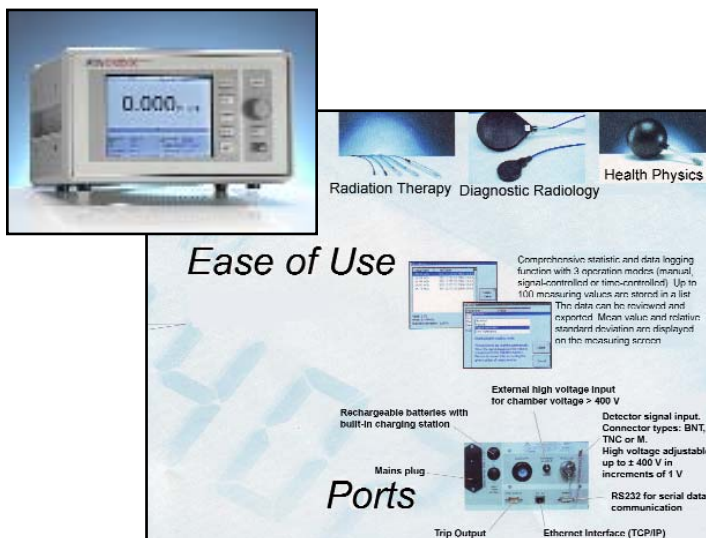
**Weight:** Approximately 6.6 lb (3 kg)

**Connectors:** Triax BNC-F or Triax TNC-F/M

Item #	Description
321-021-10	Unidos® E Universal Dosemeter - BNC-F Connector
321-021-09	Unidos® E Universal Dosemeter - TNC F/M Connector
321-022	Reference Class Certificate
321-023	Carrying Case

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## UNIDOS *weblin* DOSEMETER



UNIDOS *weblin* is a high-precision, secondary standard reference class dosimeter combined with modern network features.

This unique dosimeter offers high quality, reliability and an excellent adaptation to the measuring tasks. The Ethernet interface based on the TCP/IP protocol makes it possible to integrate the UNIDOS *weblin* in a LAN for remote access and e-mail capability. Its large, user-configurable TFT display guarantees visibility from wide angles. UNIDOS *weblin* features an easy to use menu prompting operation with help texts. Important settings can be password protected (different levels). The operation language is selectable. A comprehensive statistic and data logging function is implemented. Up to 100 measuring values are stored in a list. The data can be reviewed and exported. Mean value and relative standard deviation are displayed on the measuring screen. Chamber data are stored in a comprehensive chamber library. Air density is corrected by keying in air pressure and temperature or by means of radioactive check devices. The check device data are stored in a database. An internal clock calculates the isotope radioactivity decay. The device features both mains and battery operation.

### Ease of use

- Active, configurable TFT display.
- Large measuring display easily visible from great distances and wide viewing angles.
- Easy and fast menu-driven handling with navigation knob and help texts

### Network compatibility

- Integration in a LAN with the internet standard TCP/IP. Operation, measuring data acquisition and communication from every VNC client in the network via TCP/IP interface.
- Extensive self-test routines with the possibility to e-mail status reports

### Classification

- Highest classification in all applications (radiation therapy, diagnostic radiology, health physics).
- Surpasses the requirements for reference class dosimeters according to IEC 60731, the IPEM secondary standard dosimeter guidelines, IEC 61674 for diagnostic radiology and IEC 60846 for health physics.

### Specifications

#### Measuring Quantities and Units:

- Absorbed dose to water (G)
- Air Kerma (Gy)
- Photon equivalent dose (Sv)
- Ambient dose equivalent  $H^*(10)$
- Exposure (R)
- Dose length product (Gy-cm)
- Activity (Bq), (Ci),
- Corresponding rates above
- Charge (C)
- Current (A)

#### Measuring Ranges:

- Charge: 2 pC...9 C
- Current: 200 fA...2.5µA

#### Resolution:

- Charge: 10 fC
- Current: 1 fA

#### Long-term Stability: < ± 0.5 % p.a.

#### Non-linearity: < ± 0.5 % according to IEC

#### Interval Time: 1 - 9999 s

#### Temperature Range: 50°-104°F (10 - 40°C)

#### Relative Humidity Range: 20 - 80%, max 20 g/m<sup>3</sup>

#### Leakage Current: < ± 1 fA

#### Amplifier Zeroing: automatically within approx. 75 s

#### Chamber Voltage: 0 - ± 400 V in 1 V increments

#### Interfaces: IEEE802 (TCP/IP), RS232

#### Power Supply: Both mains and battery operation 85 - 265 VAC, 50 - 60 Hz resp. rechargeable batteries AA (NiMH)

#### Dimensions: 5.98" H x 10.12" W x 10.31" D (152 x 257 x 262 mm)

#### Weight: Approx. 13 lb (5.9 kg)

Item #	Description
321-015	UNIDOS <i>weblin</i> Universal Dosimeter
321-024	Carrying Case for UNIDOS <i>weblin</i>

## DOSE 1 REFERENCE CLASS ELECTROMETER



DOSE 1 is a portable, single channel, high-precision reference class electrometer for measurements of absorbed dose. The device significantly exceeds the recommendations of the IEC 60731 and AAPM ADCL. The electrometer can be used with ionization chambers, semiconductor detectors and diamond probes.

Dose, dose rate, average dose rate, charge, current and dose per monitor unit are all measured and displayed simultaneously. Up to 40 detector specific data sets can be stored in a sensor library, including physical and geometrical parameters.

For verification of the instrument, connecting cable, and proper sensor operation, an electrical check source as well as leakage and bias voltage testing are included as standard built-in features.

### Hardware

- Large and high contrast graphic electroluminescent display with a wide viewing angle (160°) for complete and comprehensive display of all measured values, chamber and correction factors
- Ergonomic design of the operator interface, intuitive easy to use soft keys, pop-up menus
- Dose, dose rate, average dose rate, charge, current and dose per monitor unit measurements are displayed simultaneously
- For verification of instrument, connecting cable and proper sensor operation, an electrical check source as well as leakage and bias voltage testing are included as standard built-in features
- Possibility to store up to 40 different sensors, same number of correction factors and up to 10 radioactive check sources

### Software

- Separate measurement or performance of a whole queue of batches (Batch measurement consists of doing several measurements, and to compute the average)
- Automatic starting and stopping function when running a batch measurement
- Fully automated calculation of average and normalization to a reference value (e.g. automated output factor determination)
- Visibility of old results due to saving of measurements in a database or file

- Results are collected and sent from the electrometer to the PC continuously
- Results can be presented on the screen as tables or graphics
- The communication between the DOSE 1 and the PC is realized via RS-232 serial interface
- Result of individual measurements as well as batch summaries can be adapted and saved in text and XML formats for data import, e.g. into Excel for further analysis
- The administration software allows the management of detectors, correction factors and radioactive check sources with PC

Item 321-105, the Dose 1 Electrometer with a Battery Pack is the same unit as the 321-100 but with the additional capability of battery power in case of power loss.

### Specifications

**Polarization Voltage:**  $\pm 600$  V, programmable in steps of 1 V

#### Sensor Connector Types

**Standard Option:** Triaxial TNC (threaded)

**Alternative "Convertible Option":** M-Type, BNC/Banana and triaxial TNC, triaxial BNC

**Temperature Range:** +15 - +35°C

**Relative Humidity:** 20 - 80% without condensation

**Absolute Humidity:** Max. 20 g/m<sup>3</sup>

**Power Supply (Mains):** 100 - 240 V, 50/60 Hz

**PC Interface:** Bidirectional RS-232, configuration and measurement software

**Outer Dimensions:** 11" W x 10.2" L x 6.1" H (28 x 26 x 15.5 cm)

**Weight:** 10.1 lb (4.6 kg) with battery pack

#### Measuring Modes/Range

**Charge (Dose):** 40pC to 1.0C at 0.1pC resolution

**Current (Dose Rate):** 40pA to 1000nA at 0.1pA resolution

#### Measuring Quantities and Units

**Electrical:** charge (C), Current (A)

**Integrate:** Gy, Sv, R, rad, rem

**Time Base for Rate:** Second, minute, hour

**Interval Time Range:** 1 to 9999 sec

**Accuracy/Repeatability:**  $\pm 0.2\%$

**Leakage Current:**  $\leq \pm 10$ fA, typically 1fA

**Linearity:**  $< \pm 0.25\%$  in whole range

**Stability:**  $< \pm 0.25\%$  per year

**Display:** Graphic electroluminescent

**Zero:** Automatic, within 60 sec.

**Memory:** All setup and detector parameters stored in EEPROM

**Background Compensation:** On/off mode with memory

#### Computer Requirements

**Operating System:** Windows® XP Pro, Windows® 2000, Windows 10

**Interface to DOSE 1:** RS232

Item	Description
321-100	DOSE 1 Reference Class Electrometer
321-105	DOSE 1 Reference Class Electrometer w/ Battery Pack

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## DOSE<sup>2</sup> DUAL-CHANNEL REFERENCE CLASS ELECTROMETER



DOSE<sup>2</sup> is a high-performance Dual-Channel Reference Class electrometer for reference dose and dose rate measurements in radiation therapy

### Independent Dual-Channel

- Two independent measurement channels
- Independent control of applied system factor, range, and bias voltage
- Wide measurement range for advanced applications

### Accuracy and Stability

- Reference Class Electrometer
- Significantly exceeds IEC 60731 and AAPM ADCL recommendations

### Workflow efficiency

- Threshold triggered measurement mode
- Intuitive touchscreen operated interface
- Simple data export via USB

### Additional features and benefits

- Real-time display of dose & dose-rate
- Date & time stamp of all measurements for clear identification
- Set automatic repeat measurements
- Built in chamber library for simple setup
- Integrated check source utility to ensure current strength or project future strength
- Both channels feature extensive range (0.001 pA to 500.0 nA, 0.001 pC to 999.9 μC) for a wide application, including ratio measurements



Specifications	DOSE <sup>2</sup>	Relevant ref. class limits as documented in IEC60731 standard
Repeatability	± 0.1 %	± 0.25 %
Long-Term Stability	± 0.5 % (over 1 year)	± 0.5 % (over 1 year)
Zero Drift	± 0.25 %	± 0.5 %
Non-Linearity	± 0.25 %	± 0.5 %
Response Time	< 2 sec (high range) < 12 sec (low range)	< 3 sec
Stabilization Time	± 0.1 %	± 0.5 % Min rated range = min to h
Dose Rate Dependence	<0.5 %	± 0.5 %
Dimensions	11.2" L x 8.2" W x 3.0" H (28.6 x 21.0 x 7.6 cm)	
Dimensions with Handle	11.9" x 10.6" x 3.0" H (30.4 x 27.0 x 7.6 cm)	
Weight	5.3 lb (2.4 kg)	

Item	Description
321-120	DOSE <sup>2</sup> Dual-Channel Reference Class Electrometer

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# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## MODEL 206 DOSIMETRY ELECTROMETER



### Electrometer Features

- External feedback module interface
- 2,000 hour operation on "D" cell batteries
- Less than 3 fA leakage current
- 4 1/2 digit custom LCD
- Internal electronic bias ( ±300V / ±150V)
- A/D voltage reference - band gap diode
- Analog electrometer output
- Auto-ranging
- Instant on - no stabilization period

### Removable Feedback Module

User selectable feedback element:

- Provides probe calibration
- Sets measurement range
- Defines input (floating or grounded)
- Selects appropriate display units
- Triax BNC-F input
- Calibration adjustment
- Charge, rate or both

The Model 206 Dosimetry Electrometer maintains the simplicity of classic electrometer styling while utilizing contemporary design and state-of-the-art electronics. It is simple to operate. All controls are located on the front panel. The value is displayed in easy-to-read 0.7" digits. A tilt bail is provided for optional viewing angles. The Model 206 Electrometer has a broad range of operation and can accommodate any size ion chamber utilizing any type of connector.

The versatility of the Model 206 Electrometer stems from its innovative modular design. The amplifier feedback element is contained in an external module. This module is removable and can be exchanged with any number of modules. Each module changes the measurement features of the electrometer. In this way, a single electrometer can be configured to satisfy a wide range of applications. By pairing an ion chamber with a specific module, full calibration, of all chambers, on a single electrometer can be achieved.

The Model 206 Electrometer is designed for long term reliability. Leakage currents as low as 1 fA are achieved due to the selection of special components and the implementation of proprietary production techniques. All feedback elements are extensively evaluated to insure long-term stability.

### Removable feedback modules

One 200nC (\*206-110) feedback module with a triaxial BNC-F connector, optimized for beam calibrations with a 0.6cc Farmer type ionization chamber, is supplied with each Model 206 Electrometer. This feedback module may be substituted at no additional cost, or additional feedback modules may be purchased to suit multiple applications. Feedback module connection is a triaxial BNC-F.

### Specifications

**Display:** 0.7", 4 1/2 digit custom LCD with floating decimal point, display hold and low battery indications

**Display Update:** 1 sec.

**Accuracy:** ±0.2% of full scale

**Repeatability:** ±0.03% of full scale

**Linearity:** ±0.05% of full scale

**Stability:** long term (1 year) ±0.1% of full scale

**Units:** feedback module selected

**Electrometry Units:** pA, nA, μA, pC, nC

**Dosimetry Units:** R or Gy with μ, m, c, prefix

**Rate Units:** in s, min, h

**Input Leakage Current:** Less than 3 fA

**Preamp Output:** 2V, banana jack (back panel) 10kΩ

**Internal Bias:** Electronic, ±300V and ±150V, ±300V and ±100V optional

**External Bias:** Via banana jacks (back panel)

**Ranges:** Three decade autoranging, unit powers up in high range with manual increase in sensitivity

**Electrometer Range:** With appropriate module selection capable of:  
Current: 0.001pA to 1999.9μA

Charge: 0.0001pC to 19999nC

**Standard Range:** 200nC module - 0.0001 to 199.99nC

**Exposure/Dose:** Determined by multiplying the above by the chamber calibration factor

**Module Storage:** Rear panel compartment holds up to three accessory feedback modules

**Input:** Triax BNC-F

**Power:** Six "D" cell batteries, 2000 hours of continuous operation (access panel on bottom)

**Size:** 5.2" W x 8.4" H x 7.9" D

**Weight:** 10 lbs

Item #	Description		
321-008	Model 206 Dosimetry Electrometer w/One Feedback Module		
Optional Feedback Modules			
Item #	Nominal Range	Min. - Max. Reading	Chamber Size
Charge			
206-108	20,000 nC	00.01 - 19,999 nC	Any
206-109	2,000 nC	0.001 - 1,999.9 nC	Any
* 206-110	200 nC	.0001 - 199.99 nC	Any
206-111	20,000 pC	00.01 - 19,999 pC	Any
206-112	2,000 pC	0.001 - 1,999.9 pC	Any
206-113	200 pC	.0001 - 199.99 pC	Any
Current			
206-120	2,000 pA	0.001 - 1,999.9 pA	Any
206-121	20,000 pA	00.01 - 19,999 pA	Any
206-126	200 nA	.0001 - 199.99 nA	Any
206-127	2,000 nA	0.001 - 1,999.9 nA	Any

## MOSFET DOSIMETERS



- One calibration factor for all photon and electron modalities in the radiotherapy energy range
- Isotropic ( $\pm 3\%$  or better for  $360^\circ$ )
- Active region of  $0.2 \times 0.2$  mm
- Permits pinpoint measurement without patient shielding
- Dose-rate and temperature independent
- Unobtrusive in procedures
- Lightweight and flexible
- Multiple dosimeter capability with one reader

### Reinforced MOSFET Dosimeter - Now Standard

Reinforcing the MOSFET dosimeter increases its durability during procedures that may cause high stress to the dosimeter. A thin layer of protective plastic coating is added to the tip of the dosimeter, which hardens, strengthens and protects the sensor.

### High Sensitivity MOSFET Dosimeter

The high sensitivity MOSFETs are three times as sensitive as the standard MOSFETs and help to maintain reproducibility at low doses. The high sensitivity MOSFETs are ideal for scatter doses to regions at risk, or radiology dose measurements.

### MicroMOSFET Dosimeter

With a width of 1.0 mm and an extra long 375 mm flex, the microMOSFET dosimeter is small enough and long enough for use inside a 6 Fr catheter.

### Radio-opaque Marker for Visualization

A tiny tungsten radio-opaque marker is added to the tip of the MOSFET dosimeter for localizing the dosimeter with OBI, or other imaging procedures. Additionally, these dosimeters are fully coated with a special plastic material that makes them more durable for repeated insertions inside a catheter.

### Linear Five Array

The Linear Five Array incorporates five (5) sensors separated 20 mm, center to center, on one 460 mm flex with a tungsten radio-opaque marker at the tip. The length of the dosimeter flex is fully coated with a special plastic material for greater durability during catheter insertions.



# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## MOSFET DOSIMETERS

Flex Dimensions*	Standard MOSFETs	microMOSFETs	Linear 5ive Arrays
Width of Flex	2.5 mm	1.0 mm	1.8 mm
Thickness of Flex (flat part of flex)	0.3 mm	0.3 mm	0.6 mm
Length of Flex (from end of gray cable)	200 mm	375 mm	460 mm
Thickness of Bulb	1.3 mm	1.0 mm	1.4 mm
Length of Bulb	8.0 mm	3.5 mm	5.0 mm
Distance to Center of Chip (from end of bulb)	4.0 mm	1.75 mm	2.5 mm
Common Uses	Dose verification during radiotherapy treatments; beam QA	Fits down a 6Fr catheter for dose verification during HDR procedures	Measurement of urethral dose during prostate brachytherapy

\*Measurements listed above are average values and are meant to serve as a guide for the use of MOSFET dosimeters. For phantom use and tolerances, please contact Best Medical Canada directly for more detailed information.

### Radiotherapy Applications\*\*

Typical Applications	Radiotherapy Dose	Recommended Dosimeter	Recommended Bias Supply
Scatter Dose / Research	1 to 20 cGy	High Sensitivity Dosimeter	High Setting
Central / Scatter Doses	20 to 100 cGy	Standard Dosimeter	High Setting
TBI / Central Dose	> 100 cGy	Standard Dosimeter	Standard Setting
HDR Brachytherapy	> 20 cGy	Standard Linear 5ive Array	Standard Setting
LDR Brachytherapy	1 to 20 cGy	High/Extreme Sensitivity Linear 5ive Array	High Setting

\*\* Pertains to the standard MOSFET dosimeter, the microMOSFET dosimeter, and the Linear 5ive Array Dosimeter

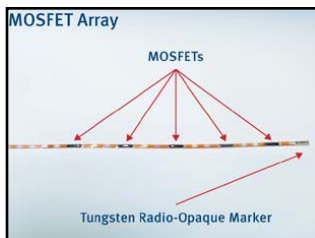
Item #	MOSFET Dosimeter	Quantity
322-322	Reinforced	2
322-323	Reinforced	5
322-324	Reinforced with Radio-opaque Marker	2
322-325	Reinforced with Radio-opaque Marker	5
322-328	Reinforced High Sensitivity	2
322-329	Reinforced High Sensitivity	5
322-330	Reinforced High Sensitivity with Radio-opaque Marker	2
322-331	Reinforced High Sensitivity with Radio-opaque Marker	5

Item #	MicroMOSFET Dosimeter	Quantity
322-337	Reinforced	2
322-338	Reinforced	5
322-339	Reinforced with Radio-opaque Marker	2
322-340	Reinforced with Radio-opaque Marker	5
322-343	Reinforced High Sensitivity	2
322-344	Reinforced High Sensitivity	5
322-345	Reinforced High Sensitivity with Radio-opaque Marker	2
322-346	Reinforced High Sensitivity with Radio-opaque Marker	5

Standard cable length is 6' (1.8 m)  
MOSFET Dosimeters are available with a 10' (3 m) cable upon request.

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## LINEAR 5IVE MOSFET ARRAY™



The Linear 5ive MOSFET Array is ideal for LDR/HDR Brachytherapy and IMRT QA.

- Suitable for in-vivo dosimetry and beam QA
- For use in both electron and photon modalities
- Isotropic response for 360° gantry angles
- Dose rate and energy independent
- Visible under CT or Fluoroscopy imaging
- Waterproof, resistant to body fluids and liquid sterilization
- Small, lightweight, flexible, and rugged for extensive handling

The Array contains five isotropic, energy independent MOSFET dosimeters, at 2cm intervals. The MOSFETs on the array can be read simultaneously, facilitating multiple dose measurements at several spatial points. The radio-opaque marker, located at the tip of the array, enables visualization under X-Ray imaging (CT, Fluoroscopy), allowing for five dosimetry points to be accurately located and easily compared to target doses.

### Applications

The isotropic Linear 5ive Array, with excellent reproducibility and linearity, is the tool of choice for a variety of radiotherapy applications such as in-vivo dosimetry and Beam Quality Assurance.

**LDR Implant/ HDR Brachytherapy** - The array can be used effectively for direct measurement of intra-cavitary dose profiles. For example, during gynecological and prostate procedures, five dose points can be read directly from a computer, displaying the dose profile of the organ at risk in real-time. This is then compared to the planned target dose, allowing for immediate assessments of post-implant base and apex dose, as well as the dose to the organs at risk (eg. urethra, rectum, or bladder).

**Beam Quality Assurance** - Two arrays crossing at the isocenter of a beam will provide quick 2D dose profiling with 10 simultaneous dose point readings for the X and Y-axes. Since arrays are isotropic, multiple beams at different gantry angles, as in IMRT, can be accurately and quickly checked.

### Dynamic Dose Measurements for Brachytherapy Dosimetry

The Linear 5ive MOSFET Array™, when used in combination with the

mobileMOSFET™, is the first and only commercially available combination that allows for real-time quality assurance of all brachytherapy procedures, without a significant investment in extra time.

Real-time dose profiling is provided by the in-vivo use of a mobileMOSFET Wireless Dosimetry System. the Linear Array is used for various HDR applications such as prostate and gynecological brachytherapy using Item 322-360.

When placed on the surface of the breast, the array can also validate Mammosite™ treatments. Implant and LDR dosimetry is performed using the higher sensitivity model, Item 322-362.

When inserted directly into a urethral catheter, the dose results provide immediate assessment of post-implant base and apex dose coverage, as well as the dose to organs at risk such as the urethra, rectum or bladder. This real-time dose feedback allows assessing the quality of the seed implant program in LDR and HDR brachytherapy. Absolute dose measurements or dose rate measurements are obtained in real-time. This helps to validate the quality of the treatment, and ultimately the quality of life for the patient.

### Compatibility

- mobileMOSFET Dose Verification System
- AutoSense Dose Verification System & Dual Bias Supply for Linear 5ive MOSFET Array
- Not compatible with MOSFET 20 Dose Verification System

### Radiation Characteristics

- 20,000 mV lifetime (~20,000 cGy on standard sensitivity setting)
- Five active detection points (0.04 mm<sup>2</sup> each)
- Suitable for photon and electron modalities
- Isotropic response ( $\pm 3\%$  for 360°)
- Temperature independent
- Visible under CT or Fluoroscopy with a radio-opaque tungsten marker at the tip

### Additional Applications

- IMRT IGRT, IORT, QA and In vivo
- Rectal Dose Measurements
- Skin Dosimetry
- Beam Profiling
- Fluoroscopy / CT Dose Verification
- External beam radiotherapy / TBI

### Dimensions

1.5 mm W x 46 cm L x 1.3 mm T  
2 cm Inter-MOSFET Spacing

Three linear arrays with different sensitivities are offered to accommodate all clinical and research applications

Linear 5ive Array	Common Use	Standard Sensitivity Bias	High Sensitivity Bias
322-360	HDR brachytherapy, MammoSite	0.98 mV/cGy (for <sup>192</sup> Ir)	1.38 mV/cGy (for <sup>192</sup> Ir)
322-362	LDR brachytherapy	11.1 mV/cGy (for <sup>125</sup> I)	15.2 mV/cGy (for <sup>125</sup> I)
322-364	LDR brachytherapy, diagnostic x-rays	25.8 mV/cGy (for <sup>125</sup> I)	37.2 mV/cGy (for <sup>125</sup> I)

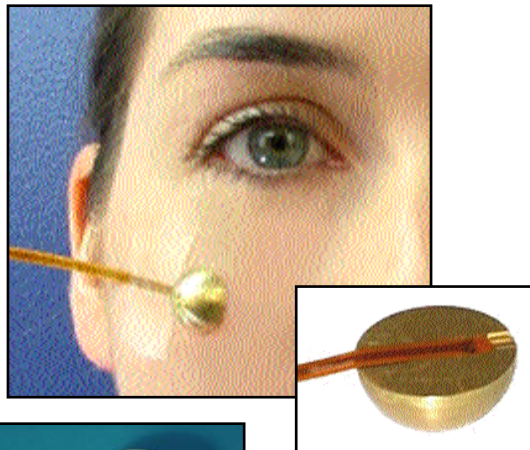
Note: sensitivities noted above are under full build-up (<sup>60</sup>Co)

All of these arrays continue to yield dose reproducibility at standard sensitivity bias at 1 $\sigma$

Linear 5ive Array	20 cGy	200 cGy
322-360	< 2%	< 1.0%
322-362	< 2%	< 1.5%
322-364	< 2%	< 1.5%

Item #	Description
322-360	Linear 5ive MOSFET Array, Standard Sensitivity
322-362	Linear 5ive MOSFET Array, High Sensitivity
322-364	Linear 5ive MOSFET Array, Extreme Sensitivity

## WIDE ENERGY HEMISPHERICAL BUILD-UP CAPS FOR MOSFET DOSIMETERS



### Hemispherical Build-up Caps

MOSFET dosimeters have only 0.8 mm inherent build-up, which allows for flexibility in measuring surface dose as well as dose at Dmax. In order to measure dose at Dmax, build-up is required. This custom designed Build-up Cap for use with MOSFET Dosimeters allows for depth dose measurements over a wide range of energies.

### Full Photon Range & 15 MeV - 18 MeV Electrons Brass Build-up Caps - 0.635 cm Radius

In order to maintain the isotropic characteristics of the MOSFET dosimeter ( $\pm 2\%$  for  $360^\circ$ ) and allow for one calibration factor for all energies and modalities, it is recommended that a hemispherical build-up cap be used. This small brass hemisphere is specially grooved for precise placement of the MOSFET and maintains the characteristics which distinguish these devices from other types of dosimeters.

The brass build-up cap is very lightweight (only 4g) and small (radius: 0.635 cm), which makes it ideal for placement on patients.

This build-up cap may be affixed to the MOSFET for the duration of its life, i.e. 200 doses. Using just one build-up cap for all Photons and some Electron energies makes the dosimeters easier to use.

**Why Brass?** Brass is a metal alloy containing mainly copper and zinc compounds. Due to its high density ( $8.5\text{g/cm}^3$ ) and to its high Z number ( $Z\sim 30$ ), it provides the minimal amount of metal needed to achieve full build-up at Dmax for a range of photon energies (4, 6, 10 and 18MV) and some electron energies (15-18MeV)\* at a very practical size.

\*Note: For low electron energies, it is suggested that no build-up is used. However, if desired, one can use the 1.5 cm radius tissue equivalent build-up cap.

### MOSFET Correction Factors (CR) Under Brass Build-Up Caps

To directly correct for dose readings at Dmax, the system's software allows for Correction Factor (CR) values to be entered which then convert MOSFET response to dose.

These CRs vary between 0.8 and 1.1 and are Linac and calibration set-up dependent. They must be determined for any new MOSFET/Cap combination. These CRs may be stored in the system's software dose measurement template.

For example, two sets of CRs were obtained with a Siemens Mevatron Linac at 6 and 18MV photon energies, with a nominal dose of 200 cGy at Dmax in water and  $10 \times 10 \text{ cm}^2$  field size (100 cm Source Axis Distance): See Below

### Typical Correction Factors for Brass Build-up Caps:

- 6 MV Energy - Correction Factor "CR": 1.10
- 18 MV Energy - Correction Factor "CR": 0.84

Note: The Correction Factor "CR" is the value used in the system software, along with the Calibration Factor "CF" to convert MOSFET response to dose. (Please refer to Operators' Manuals for further details).

### Tissue Equivalent Hemispherical Build-up Cap

These plastic water build-up caps come in sizes of 1.0 cm, 1.5 cm and 2.0 cm for various energies. The build-up caps have grooves specifically made for MOSFET dosimeters, allowing accurate measurements. A 3.0 cm build-up cap made of polystyrene is also available.

### Handling and Cleaning

Brass build-up caps are easily attached to the MOSFET. Circular adhesive patches are provided with the caps to fasten the MOSFET dosimeter to the build-up cap for the duration of the lifetime of the dosimeter. The cap/MOSFET is then adhered to the patient's skin using paper tape.

Cleaning - use rubbing alcohol or alcohol swabs.

### Custom Build-Up Caps

Build-up caps for MOSFET dosimeters can also be custom made per customers specifications.

Item #	Description
322-375	Brass Build-up Cap
322-377	1 cm Tissue Equivalent Build-up Cap
322-379	1.5 cm Tissue Equivalent Build-up Cap
322-381	2.0 cm Tissue Equivalent Build-up Cap
322-383	Set of 3 Tissue Equivalent Build-up Caps: 1, 1.5 & 2 cm
664-603	3.0 cm Tissue Equivalent Build-up Cap

## MOSFET CALIBRATION JIG



Calibration jig shown with mobileMOSFET

- Quick and easy calibration
- Consistent positioning
- Reproducible calibrations
- Quick verification of beam flatness and symmetry
- Better degree of accuracy in high field gradients (IMRT)
- Allows for customization of build-up
- Surface entrance dose and radiology applications

The MOSFET Calibration Jig is designed for consistent and reproducible MOSFET calibration with a simple set-up configuration. The jig reference lines can be easily aligned with the positioning lasers and linear accelerator light fields for 10 x 10 cm, 20 x 20 cm, and 30 x 30 cm fields. The use of the jig promotes easy and consistent positioning at the beam isocenter and, thereby, reproducible calibrations.

The MOSFET placement indentations not only aid positioning, but also prevent accidentally damaging the MOSFETs with build-up material during calibration. The staggered positioning reduces the influence of scatter from adjacent MOSFETs and the symmetrical design allows comparison of opposing MOSFETs to each other, and quick verification of beam flatness and symmetry.

The relatively thin 1 cm thickness of the MOSFET Calibration Jig provides a moderate amount of backscatter, but is thin enough to permit customized irradiation set-up with additional backscatter and build-up materials.

**Calibration with the mobileMOSFET Calibration Module Software**  
Calibration becomes even easier when the MOSFET Calibration Jig is combined with the mobileMOSFET Dose Verification System. The mobileMOSFET is completely software driven and contains a Calibration Module. The Calibration Module collects the calibration dose repetitions in a viewable pool of data. The software automatically calculates the Calibration Factor (CF), the average CF and the percent standard deviation for each MOSFET dosimeter. The CF data file can also be printed, saved, loaded, and edited.

### Other Applications

In addition to calibration, the simplicity of the calibration jig lends itself to customized use in phantom-based measurements. The MOSFET arrangement can be used for dose measurement as a two-dimensional array that provides an inexpensive and quick validation of dose distribution. Due to the small active volume of the MOSFET ( $2 \times 10^{-5} \text{ mm}^3$ ), there is limited dose averaging and therefore a better degree of accuracy in high field gradients. The standardized set-up geometry provides simple entry of positional data to treatment planning software, which can be compared to absolute MOSFET dosimeter measurements. The MOSFET dosimeters are also isotropic ( $\pm 2\%$  for  $360^\circ$ ) and have negligible energy dependence, which makes them an ideal dosimeter for IMRT validation.

Typically calibration measurements are done at  $D_{\text{max}}$ , but the MOSFET Calibration Jig places the dosimeters on the surface of the jig to allow for customization of build-up. With no build-up applied, the Calibration Jig can be used for entrance CF estimation during surface dose measurements in radiotherapy or radiology applications.

### Specifications:

- Material:** Acrylic (PMMA)
- Size:** 11.8" x 11.8" x 0.4" (30 cm x 30 cm x 1 cm)
- Field Sizes:** 10 x 10 cm; 20 x 20 cm; 30 x 30 cm
- MOSFET grooves:** 5
- Weight:** 2.4 lb (1.07 kg)

Item #	Description
322-301	MOSFET Calibration Jig

## MOSFET XWU-IMRT PHANTOM

### Phantom for MOSFET Dosimeters & Superimposed Film / Ion Chamber



The XWU-IMRT Phantom is ideal for obtaining qualitative dose measurements for film and MOSFET dosimetry. This 20 x 20 cm block phantom houses film and a minimum of nine MOSFET dosimeters on two orthogonal planes. One of the planes,

containing five MOSFET detection points, is the dividing plane of the two sub-phantoms where a film is housed. Five absolute MOSFET dose points on the plane of the film provide dose verification. Easy to use cassettes come with pre-manufactured slots for the dosimeters and allow for greater versatility.

### Advanced Applications: IMRT

Reliable and efficient MOSFETs are well suited for Quality Assurance in IMRT programs because they provide quantitative dose measurements. Due to their small size and excellent isotropic response, MOSFETs can be positioned in the XWU-IMRT Phantom for treatment planning QA of IMRT procedures. This can be done with single dosimeters or with the Linear 5ive Array, both in the phantom and on the patient.

Item #	Description
322-303	MOSFET XWU-IMRT Phantom

## PORTABLE DOSIMETER FOR MOSFET DOSIMETERS



- Stand-alone reader with LCD
- Portable and compact
- Quick set-up time
- Simple menu operation
- Supports two MOSFET dosimeters
- Supports all single MOSFETs
- Optional data export via USB and PortableDose Connect software
- Calibration factor library
- Long rechargeable battery life
- Manual measurement mode, or Automatic Sequential mode
- No software or computer necessary

### Applications

#### Radiotherapy

- In vivo dose – photon or electron
- Skin entrance and exit dose (TBI)
- $D_{max}$  dose measurements
- IMRT and Tomotherapy
- Brachytherapy

#### Radiology

- Pediatric CT dose
- Fluoroscopy dose

The Portable Dosimeter is an economical, compact, stand-alone system for radiation dose measurement. Patient dosimetry measurements are available at the touch of a button and display on the integrated LCD, without the need for software or a computer. Additionally, the rechargeable battery powered dosimeter allows easy transportation from room-to-room, or hospital-to-hospital.

The Portable Dosimeter supports up to two simultaneous dose points with any of the single MOSFETs on standard or high bias setting for optimal dose reproducibility. An automatic mode is available to continuously sample dose data at a fixed time interval during a session.

After every measurement the dosimetry data is automatically stored to memory for later viewing and can be downloaded to a computer via a USB connection and the PortableDose Connect software. A simple, menu driven interface allows customization of calibration factors, dose units and operational settings directly on the Portable Dosimeter. To save you time, a library of default calibration factors is stored in the memory, but the user also has the choice of entering their customized calibration factors.

For one-to-two dose points, the Portable dosimeter is a fast, simple solution for patient dosimetry that can be used for a wide range of applications in radiotherapy and radiology.

### Supported MOSFET Dosimeters

All single MOSFETs\* are supported by the Portable Dosimeter including, Standard and High Sensitivities, microMOSFETs, Heat shrink Reinforced, and Radio-opaque Marker dosimeters.

\*Linear 5 Array is not supported.

### Item 322-370 Portable Dosimeter for MOSFET Dosimeters Includes

- Portable Dosimeter Reader Module
- PortableDose Connect Software
- USB Cable (PC-to-Reader connection) - 3' (0.9 m)
- Medical Universal Power Adapter (to recharge Reader Module)
- (2) Standard Sensitivity Reinforced MOSFET Dosimeters (Item 322-322)
- (1) Brass Build-Up Cap (Item 322-375)
- (1) 1 cm Tissue Equivalent Build-up Cap (Item 322-377)
- Carrying Case

### Specifications

**Units:** Gy, cGy, mGy, rad, mV

**Internal clock:** Time and date in 24 hour format

**Bias settings:** High and Standard for customized sensitivity

**Batteries:** Two AA batteries. Estimated battery life of more than 1 month

**Rechargeable:** Integrated recharging circuit for NIMH AA batteries

**Software:** PortableDose Connect software provides data download support with Windows 2000/XP/Vista

**Resolution:** 0.1 mV over an accumulated total of 20,000 mV

**Linearity:**  $\pm 1$  mV for the total 20,000 mV

**Dose Range:** Typically 20,000 cGy for standard sensitivity and 7,000 cGy for high sensitivity

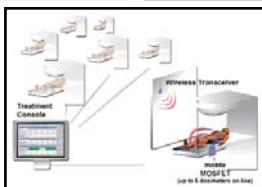
Dose Reproducibility ( $^{60}\text{Co}$ , 1  $\sigma$ )

Dose	Bias Setting	
	High	Standard
200 cGy	<1%	<2%
20 cGy	<1%	<3%

Item	Description
322-370	Portable Dosimeter for MOSFET Dosimeters
322-375	Brass Build-Up Cap for MOSFET Diode

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## mobileMOSFET WIRELESS DOSE VERIFICATION SYSTEM



- Export to MS Excel, Word, PDF and/or text files
- Set interval read times to sample multiple doses during treatment (automatic or manual control)
- With multiple systems and transceivers, one PC can read MOSFETs in multiple treatment rooms simultaneously
- Patient records can be saved/imported, and printed and are password protected
- Final dose report provided

### The MOSFET Dosimeter

- One dosimeter/calibration factor for all photon/electron modalities
- Isotropic ( $\pm 2\%$  for  $360^\circ$ )
- Active region of  $0.2 \times 0.2$  mm
- Permits pinpoint measurement without patient shielding
- Dose-rate and temperature independent
- Unobtrusive in procedures
- Lightweight and flexible
- Multiple dosimeter capability with one Reader
- Standard MOSFET is 2.5 mm wide
- microMOSFET is 1 mm wide
- Linear 5ive Array - 5 dose points on one flex

### Hardware Features

- Bluetooth™ transceiver (wall mounted)
- Reader Module (17.8 cm x 15.9 cm x 4.2 cm)
- Wireless (up to 10 meters), portable and mobile
- Contains reader, Bluetooth™ transceiver, dual bias supply settings (high and standard), ports for 5 MOSFETs and a port for 1 Linear 5ive Array
- One Reader Module can be used for 1-5 MOSFETs or one Linear 5ive Array
- Battery Operated (Rechargeable; >20 hours of typical use)
- Built-in smart charger (<3 hours)
- Software supports up to 8 readers and 40 MOSFETs simultaneously
- Portability between multiple treatment rooms

### Wireless Room Expansion Package

Your mobileMOSFET system with Bluetooth™ can easily be used in multiple rooms with the installation of Wireless Room Expansion Packages. The package is also compatible with previously installed mobileMOSFET wireless dosimetry systems.

### MOSFET Sensitivity

**Under Full Build-Up:** 1 mV/cGy on standard bias  
2.7 mV/cGy on high sensitivity bias  
**Under X-Ray Energies:** 9 mV/R on high sensitivity bias

Dose	BIAS SUPPLY	
	Standard	High
200 cGy	<2%	<0.8%
100 cGy	<3%	<1.2%
20 cGy	<8%	<3%

System Dose-to-Dose Reproducibility at  $1 \sigma$

### On-line Wireless Dosimetry

The mobileMOSFET Dose Verification System takes MOSFET Dosimetry to the next level. The mobileMOSFET is a portable, easy to use, seamlessly integrated system, that simplifies dosimetry and minimizes QA time.

This wireless system is entirely software driven, allowing for remote control of one or more systems from a PC. The system consists of Remote Monitoring Dose Verification Software, wall-mounted Bluetooth™ Wireless Transceiver and a small Reader Module acting as a channel between the MOSFET and software and provides a final dose report for patient records. Up to five MOSFETs or one Linear 5ive Array can be plugged into one module. This provides easy mobility within the treatment room. The PC is on-line with the Reader Module and dose is obtained in real-time.

### Applications

- Routine In-vivo Dosimetry
- One or multiple field measurements
- First Dose; Treatment Plan Verification
- IMRT invivo, QA and phantom work
- Brachytherapy
- IGRT / Tomotherapy
- Radiology
- Intracavitary Measurement

### Dose Points

- 1 - 5 on-line (Up to 40 on-line with additional Reader Modules and transceivers)

### Software Features

- Interactive, 2-way on-line communication between a PC and the Reader Module
- Dose obtained in real-time
- Performs all dose data measurements with a few mouse clicks
- Calibration feature enables quick and easy calibration of the MOSFETs
- Capability to assign Calibration Factors, Correction Factors and Target Dose to each MOSFET
- Final dose and percent deviation from target are automatically calculated

Item #	mobileMOSFET	Software	Dose Points	Reader Modules	Bluetooth™ Connection
322-350	Wireless	*	5	1	*
322-351	X Wireless	*	10	2	*
322-352	XX Wireless	*	20	4	*

# ELECTROMETERS & DOSIMETERS, MOSFET DOSIMETERS

## mobileMOSFET Component Details

### Item 322-350 mobileMOSFET Wireless Dosimetry System (5 Dose Points, 1 Reader Module)

A wireless Bluetooth™ connection allows for complete control of the system from a remote PC outside the treatment room and eliminates cables running across the floor. Additional Bluetooth™ transceivers expand the use of the system to more treatment rooms.

System Components Include:

- Reader Module
- (5) Reinforced Standard Dosimeters
- Bluetooth Wireless Transceiver and 2 m/6' Cable
- Universal Power Adapter
- 15m/50' RS-232 Serial Cable (PC-to-Reader Connection)
- mobileMOSFET Software
- (1) Brass Build-up Cap (0.63cm) for Photons
- (1) 1 cm Tissue Equivalent Build-up Cap
- Calibration Jig (Acrylic, 30cm x 30cm x 1cm, MOSFET grooves)
- Carrying Case
- USB Serial Adapter

### Item 322-351 mobileMOSFET X Wireless Dosimetry System (10 Dose Points, 2 Reader Modules)

The mobileMOSFET system is expanded to ten dose points by the addition of a second Reader module. Both Readers are controlled from the same PC through a single Bluetooth™ wireless transceiver. Additional Bluetooth™ transceivers expand the use of the system to more treatment rooms.

System Components Include:

- (2) Reader Modules
- (10) Reinforced Standard Dosimeters
- Bluetooth Wireless Transceiver and 2 m/6' Cable
- (2) Universal Power Adapters
- 15m/50' RS-232 Serial Cable (PC-to-Reader Connection)
- mobileMOSFET Software
- (1) Brass Build-up Cap (0.63cm) for Photons
- (1) 1 cm Tissue Equivalent Build-up Cap
- Calibration Jig (Acrylic, 30cm x 30cm x 1cm, MOSFET grooves)
- USB Serial Adapter

### Item 322-352 mobileMOSFET XX Wireless Dosimetry System (20 Dose Points, Four Reader Modules)

The mobileMOSFET system is expanded to twenty dose points by the addition of more Reader Modules. All four Readers are controlled from the same PC through a single Bluetooth™ transceiver. The system can accommodate up to eight (8) Reader Modules simultaneously for a total of forty (40) dose points.

Item #	mobileMOSFET
322-350	Wireless Dosimetry System, 5 dose points
322-351	X Wireless Dosimetry System, 10 dose pts
322-352	XX Wireless Dosimetry System, 20 dose pts
322-353	Wireless Room Expansion Pkg, 1 Add'l Rm
322-354	Wireless Room Expansion Pkg, 2 Add'l Rms
322-355	Wireless Room Expansion Pkg, 3 Add'l Rms
322-356	15m/50' RS-232 Extension Cable (PC-to-Reader Connection)

System Components Include:

- (4) Reader Modules
- (20) Reinforced Standard Dosimeters
- Bluetooth Wireless Transceiver and 2 m/6' Cable
- (4) Universal Power Adapters
- 15m/50' RS-232 Serial Cable (PC-to-Reader Connection)
- mobileMOSFET Software
- (1) Brass Build-up Cap (0.63cm) for Photons
- (1) 1 cm Tissue Equivalent Build-up Cap
- Calibration Jig (Acrylic, 30cm x 30cm x 1cm, MOSFET grooves)
- USB Serial Adapter

### Wireless Room Expansion Packages

- **Item 322-353 One Additional Room**
- **Item 322-354 Two Additional Rooms**
- **Item 322-355 Three Additional Rooms**

The mobileMOSFET Reader Module can easily be shared with an additional room by the installation of a wireless room expansion package.

Package Components Include:

- Bluetooth™ wireless transceiver and 6' (2 m) cable
- 15m/50' RS-232 Serial Cable (PC-to-Reader Connection)
- Additional single user software license
- USB Serial Adapter

### Item 322-356 Additional Cable

- 50' (15 m ) RS-232 Extension Cable (PC to Reader connection)

### Item 322-357 Single User mobileMOSFET Software License

- Includes two years of software support

### Item 322-358 mobileMOSFET Software License for 2-9 Users

- License for software installation on 2 to 9 PC workstations

### Item 322-359 mobileMOSFET Software License for 10+ Users

- License for software installation on 10 or more PC workstations

### Item 322-365 Carrying Case

### Item 322-366 Additional Reader Module

Includes a universal power adapter.

### Item 322-367 Additional USB Serial Adapter

one (1) included with system.

### Item 322-384 Optional mobileMOSFET Extended Warranty

The extended warranty is available for all new system purchases. Price is per year, per Reader module and is available for up to two (2) extra years (total of three years coverage). Terms and conditions are as per the original warranty, excluding dosimeters and batteries.

### Item 322-385 Optional mobileMOSFET Service Contract

The service contract is under the same terms as the warranty, with the additional option to return the system once a year for annual maintenance. The service contract is available up to five (5) years from the time of purchase and covers parts and labor as per the original warranty, excluding dosimeters and batteries. Volume discounts for multiple Reader Modules are available.

Item #	mobileMOSFET
322-357	Additional Software License, Single user
322-358	Additional Software License, 2 to 9 users
322-359	Additional Software License, 10+ users
322-365	Carrying Case, Black
322-366	Additional Reader Module
322-367	Additional USB Serial Adapter
322-384	Extended Warranty (Per Year)
322-385	Service Contract (Per Year)

# ELECTRON MINI-CONES, PERISCPIC SYSTEM, MOLDS

## SIEMENS CAM LOCKS FOR SECURING ALLOY MOLDS TO ELECTRON CONES

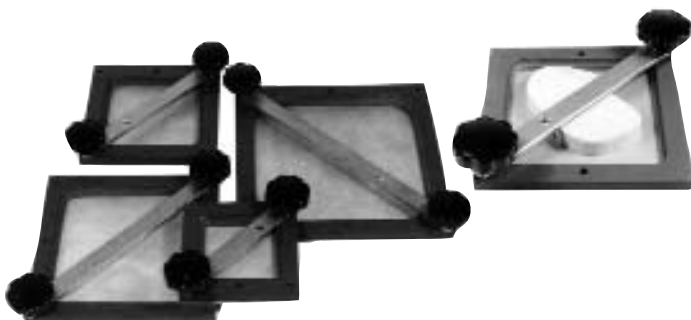


Siemens Cam Locks are used to secure the alloy shield to the electron cone. Cam Locks can also be used to secure the acrylic drawing plates to the electron cone.

**Item 894-420** would require sending your electron cone to RPD to have the Cam Locks mounted. **Item 894-422** is the Cam Locks ONLY and customer would have to mount on the electron cone.

Item #	Description
894-420	Mounted Cam Locks (Set of 2)
894-422	Unmounted Cam Locks (Set of 2)

## ELECTRON BLOCK MOLDS FOR SIEMENS ELECTRON CONES



The molds are made of an aluminum base and crossbar and the frames are 3/4" PVC - 2 knobs are included. When an order is placed, the customer will be sent a specification form to be completed and returned to RPD prior to manufacturing of molds.

Item #	Description	Size
894-430	Siemens Electron Block Mold	5 cm Dia.
894-432	Siemens Electron Block Mold	10 cm sq.
894-434	Siemens Electron Block Mold	15 cm sq.
894-436	Siemens Electron Block Mold	20 cm sq.
894-438	Siemens Electron Block Mold	25 cm sq.

## ELECTRON BLOCK MOLD FOR SIEMENS PRIMUS

Made For 1/2" Thick Brass Electron Cones

Item #	Description	Size
894-530	Siemens Primus Electron Block Mold	5 cm Dia.
894-531	Siemens Primus Electron Block Mold	10 cm sq.
894-532	Siemens Primus Electron Block Mold	15 cm sq.
894-533	Siemens Primus Electron Block Mold	20 cm sq.
894-534	Siemens Primus Electron Block Mold	25 cm sq.

## ELECTRON BLOCK MOLD FOR SIEMENS MEVATRON (95 cm)

Made For 1" Thick Aluminum Electron Cones

Item #	Description	Size
894-630	Siemens Mevatron Electron Block Mold	5 cm Dia.
894-631	Siemens Mevatron Electron Block Mold	10 cm sq.
894-632	Siemens Mevatron Electron Block Mold	15 cm sq.
894-634	Siemens Mevatron Electron Block Mold	20 cm sq.
894-635	Siemens Mevatron Electron Block Mold	25 cm sq.

## SIEMENS ACRYLIC DRAWING PLATES

For Electron Cone Treatment Fields



Item #	Description	Size
894-500	Siemens Acrylic Drawing Plate Set Set Includes: 5, 10, 15, 20, and 25 cm sq. Plates	
894-506	Siemens Acrylic Drawing Plate	5 cm dia.
894-510	Siemens Acrylic Drawing Plate	10 cm sq.
894-515	Siemens Acrylic Drawing Plate	15 cm sq.
894-520	Siemens Acrylic Drawing Plate	20 cm sq.
894-525	Siemens Acrylic Drawing Plate	25 cm sq.

Item #	Description	Size
894-540	Siemens Primus Acrylic Drawing Plate Set Set Includes: 5, 10, 15, 20, and 25 cm sq. Plates	
894-535	Siemens Primus Acrylic Drawing Plate	5 cm dia.
894-536	Siemens Primus Acrylic Drawing Plate	10 cm sq.
894-537	Siemens Primus Acrylic Drawing Plate	15 cm sq.
894-538	Siemens Primus Acrylic Drawing Plate	20 cm sq.
894-539	Siemens Primus Acrylic Drawing Plate	25 cm sq.

Item #	Description	Size
894-600	Siemens Mevatron Acrylic Drawing Plate Set Set Includes: 5, 10, 15, 20, and 25 cm sq. Plates	
894-605	Siemens Mevatron Acrylic Drawing Plate	5 cm dia.
894-610	Siemens Mevatron Acrylic Drawing Plate	10 cm sq.
894-615	Siemens Mevatron Acrylic Drawing Plate	15 cm sq.
894-620	Siemens Mevatron Acrylic Drawing Plate	20 cm sq.
894-625	Siemens Mevatron Acrylic Drawing Plate	25 cm sq.



# ELECTRON MINI-CONES, PERISCOPIC SYSTEM, MOLDS

## ELEKTA ELECTRON BLOCK MOLDS



The Elekta Electron Block Molds are made of a 3/4" (1.9 cm) PVC base, aluminum rails and knobs. Four adjustable coding pins are used to set code in low melting alloy.

Item #	Description	Cone Size
896-160	Elekta Electron Block Mold	6 cm
896-161	Elekta Electron Block Mold	10 cm
896-162	Elekta Electron Block Mold	14 cm
896-163	Elekta Electron Block Mold	20 cm
896-164	Elekta Electron Block Mold	25 cm
896-165	Elekta Electron Block Molding Set	

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## ELEKTA ACRYLIC DRAWING PLATES

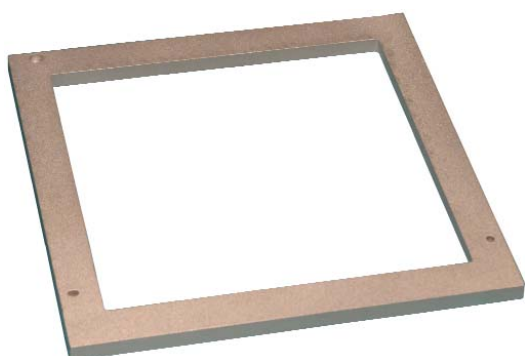
9 mm Thick



Item #	Elekta Acrylic Drawing Plate	Cone Size
896-140	Acrylic Drawing Plate Set, w/CA Scribe for Cone Sizes: 6, 10, 14, 20 and 25 cm	
896-141	Acrylic Drawing Plate w/CA Scribe	6 cm
896-142	Acrylic Drawing Plate w/CA Scribe	10 cm
896-143	Acrylic Drawing Plate w/CA Scribe	14 cm
896-144	Acrylic Drawing Plate w/CA Scribe	20 cm
896-145	Acrylic Drawing Plate w/CA Scribe	25 cm
896-146	Acrylic Drawing Plate w/CA Scribe	10 x 20 cm
896-147	Acrylic Drawing Plate w/CA Scribe	6 x 10 cm

## ELEKTA ELECTRON CONE INSERTS

These lead inserts fit into the specified Elekta electron cone and collimate the field to the specified size at 100 cm.



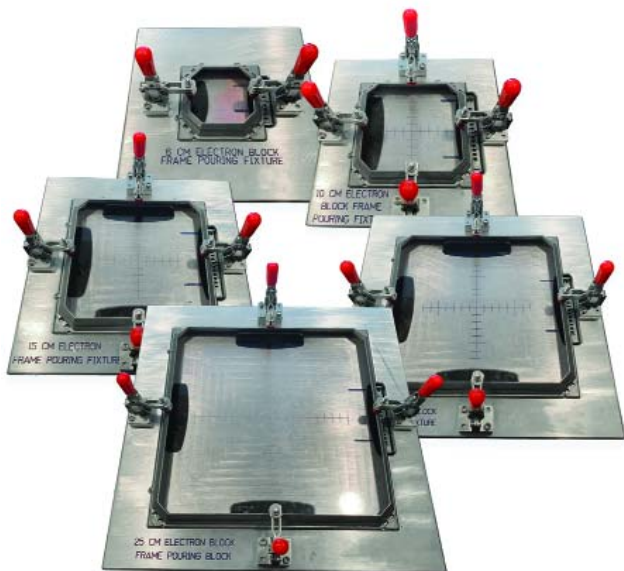
### Specifications

**Material:** Lead

Item #	Description	Electron Cone
896-180	6 cm Electron Cone Insert, Insert collimates field to 6 cm at 100 cm	6 cm sq.
896-181	10 cm Electron Cone Insert, Insert collimates field to 10 cm at 100 cm	10 cm sq.
896-182	14 cm Electron Cone Insert, Insert collimates field to 14 cm at 100 cm	14 cm sq.
896-183	20 cm Electron Cone Insert, Insert collimates field to 20 cm at 100 cm	20 cm sq.
896-184	25 cm Electron Cone Insert, Insert collimates field to 25 cm at 100 cm	25 cm sq.

# ELECTRON MINI-CONES, PERISCPIC SYSTEM, MOLDS

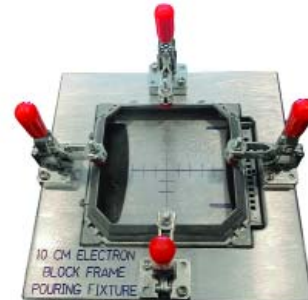
## VARIAN MLC EBS ELECTRON BLOCK FRAME POURING FIXTURES



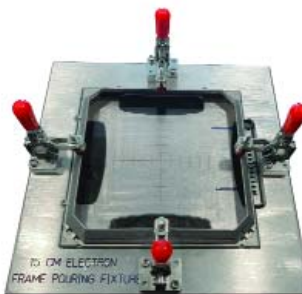
896-060



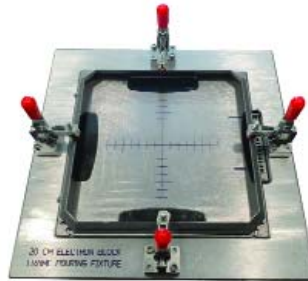
896-061



896-062



896-063



896-064



896-065

- **Raised Aluminum Base Plate** acts as a heatsink to reduce cooling time.
- **Engraved alignment marks** help with block foam placement
- **Milled pocket and alignment grooves** provide easy centering of the lucite/acrylic block tray
- **Precision pocket** is designed to hold the Varian electron frame and will not allow bulging or deformation.
- **Clamps** hold frame securely without extending into the pour area.
- **Access cutouts** make block and tray removal easy.

The EBS Electron Block Frame Pouring Fixtures are designed for the Varian MLC Electron cones to make electron block pouring easy and more precise.

The aluminum base plate promotes faster cooling and will not allow bulging of the frames enabling the blocks to fit into the accessory with ease and without breaking code reader pins.

The fixture clamps hold the frame tightly against the tray to prevent leakage and do not extend into the block material making a uniform and full thickness pour possible.

Access slots from below allow for easy removal of the block and frame.

Item #	Description	Size
896-060	Varian MLC Electron Block Frame Pouring Fixtures	Set of 5
896-061	Varian MLC Electron Block Frame Pouring Fixture	6 cm sq
896-062	Varian MLC Electron Block Frame Pouring Fixture	10 cm sq
896-063	Varian MLC Electron Block Frame Pouring Fixture	15 cm sq
896-064	Varian MLC Electron Block Frame Pouring Fixture	20 cm sq
896-065	Varian MLC Electron Block Frame Pouring Fixture	25 cm sq

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# ELECTRON MINI-CONES, PERISCOPIC SYSTEM, MOLDS

## ELECTRON CONE BLOCK FRAME FOR VARIAN MLC

Refurbished

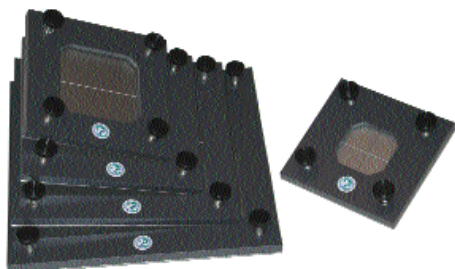


The insert frame sits in the Electron Cone and the electron Block sits in the frame. Electron block is held in place by means of the corner tabs.

Item #	Description	Cone Size
896-040-01	Electron Cone Block Frame, Varian MLC	6 x 6 cm
896-040-02	Electron Cone Block Frame, Varian MLC	6 x 10 cm
896-040-03	Electron Cone Block Frame, Varian MLC	10 x 10 cm
896-040-04	Electron Cone Block Frame, Varian MLC	15 x 15 cm
896-040-05	Electron Cone Block Frame, Varian MLC	20 x 20 cm
896-040-06	Electron Cone Block Frame, Varian MLC	25 x 25 cm

Call for Availability

## VARIAN TYPE II ELECTRON BLOCK MOLDING SYSTEM



Item #	Description	Size
896-300	Varian II Electron Block Molding System Set Includes: 6, 10, 15, 20, and 25 cm sq. Plates	
896-306	Varian II Electron Block Mold	6 cm sq.(75.3 mm O.D.)
896-310	Varian II Electron Block Mold	10 cm sq.(113.0 mm O.D.)
896-315	Varian II Electron Block Mold	15 cm sq. (160.4 mm O.D.)
896-320	Varian II Electron Block Mold	20 cm sq.(207.7 mm O.D.)
896-325	Varian II Electron Block Mold	25 cm sq.(255.1 mm O.D.)

For Varian with No MLC

## VARIAN TYPE II ACRYLIC DRAWING PLATES

No Notches for Block Frame

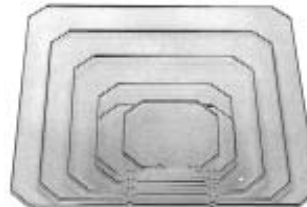


Item #	Description	Size
896-000	Varian II Acrylic Drawing Plate Set Set Includes: 6, 10, 15, 20, and 25 cm sq. Plates	
896-006	Varian II Acrylic Drawing Plate	6 cm sq.
896-008	Varian II Acrylic Drawing Plate	6 cm x 10 cm
896-010	Varian II Acrylic Drawing Plate	10 cm sq.
896-015	Varian II Acrylic Drawing Plate	15 cm sq.
896-020	Varian II Acrylic Drawing Plate	20 cm sq.
896-025	Varian II Acrylic Drawing Plate	25 cm sq.

For Varian with No MLC

## VARIAN TYPE III ACRYLIC DRAWING PLATES

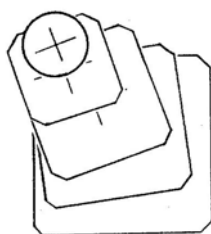
2 Notches to Fit Block Frame



Item #	Description	Size
896-030	Varian III Acrylic Drawing Plate Set Set Includes: 6, 10, 15, 20, and 25 cm sq. Plates	
896-031	Varian III Acrylic Drawing Plate	6 cm sq.
896-032	Varian III Acrylic Drawing Plate	6 cm x 10 cm
896-033	Varian III Acrylic Drawing Plate	10 cm sq.
896-034	Varian III Acrylic Drawing Plate	15 cm sq.
896-035	Varian III Acrylic Drawing Plate	20 cm sq.
896-036	Varian III Acrylic Drawing Plate	25 cm sq.

For Varian with MLC

## MYLAR TEMPLATES FOR VARIAN ELCTRON CONES



The CAX is clearly marked on the clear mylar film.

Item	Mylar Templates for Varian Electron Cone
457-411	6 cm square
457-412	10 cm square
457-413	15 cm square
457-414	20 cm square
457-415	25 cm square

# ELECTRON MINI-CONES, PERISCPIC SYSTEM, MOLDS

## SIMULATOR ELECTRON CONE SETS



697-200 95 cm Siemens Cones



697-710 Two Piece Oldelft Simulator Cones

The simulator electron cone set is used to simulate electron fields in the simulator. The cones are manufactured for all simulators to all accelerator electron cones. The set can include the following: 5 cm diameter, 6 cm x 10 cm, 5 cm, 6 cm, 10 cm, 14 cm, 15 cm, 20 cm, and 25 cm square. The set usually consists of 5 cones that will vary per manufacturer.

### Information needed from customer when placing order:

- Accelerator manufacturer and type
- Electron cone distance
- Simulator manufacturer and type
- Simulator target to bottom of tray slot
- Contact person and phone number

Item #	Description
697-100	Varian 1800 or 2100C Type II Cone Set
697-200	Siemens 95 cm Cone Set
697-210	Siemens KD-2 Digital Electron Cone Set
697-500	Mitsubishi Cone Set

Item #	Description
697-000	AECL Simulator to Varian Cone Set
697-115	Varian Simulator (Type III Mount) to Siemens Cone Set
697-130	Varian Ximatron Sim. to Varian Type III (65.4 cm) Cone Set
697-300	Toshiba Simulator to Philips SL20 Cone Set
697-710	Oldelft Simulator to Varian Type III Cone Set
697-711	Oldelft Simulator to Varian Type II Cone Set

## VARIAN TYPE III SIMULATOR CONE SET



Varian Simulator Cones use acrylic trays (Items 896-030 thru 896-036) that snap lock in place. Pull the lever back for easy removal. The Varian Type III Simulator Cone Set includes the following cones: 6 cm sq., 10 cm sq., 15 cm sq., 20 cm sq. and 25 cm sq.

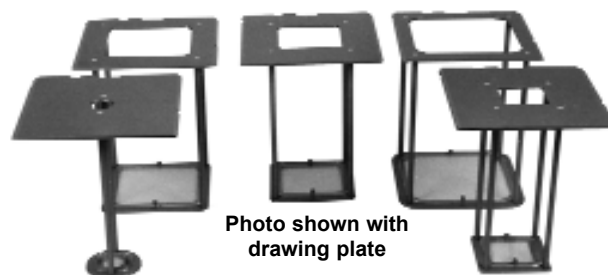


Photo shown with drawing plate

### Information needed from customer when placing order:

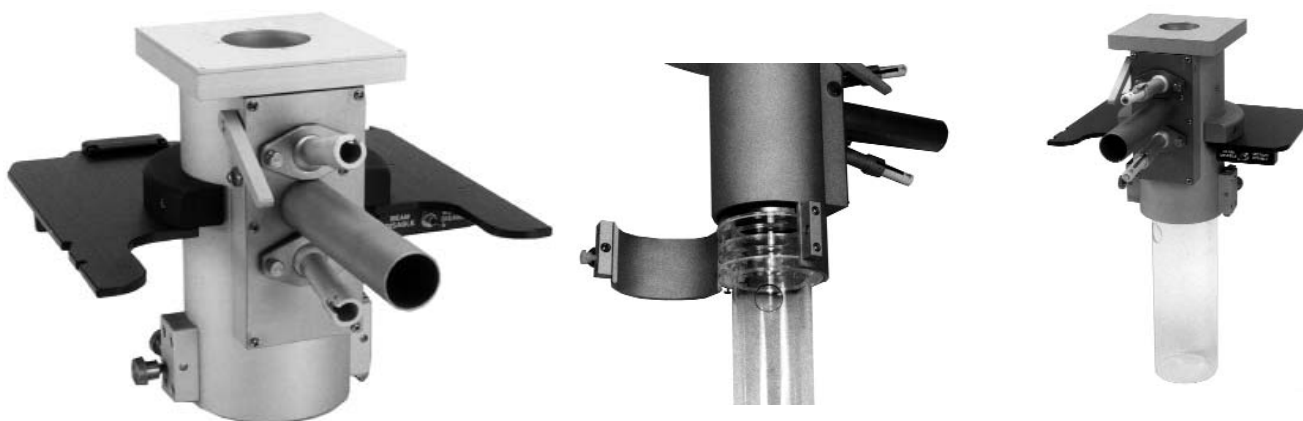
- Simulator manufacturer and type
- Simulator target to bottom of tray slot
- Contact person and phone number

Item #	Description
697-105	Simulator Cone Set w/out Drawing Plates
697-107	Simulator Electron Cone (6 x 10)
896-030	Drawing Plates - Set of 5

# ELECTRON MINI-CONES, PERISCOPIC SYSTEM, MOLDS

## PERISCOPIC ELECTRON CONE SYSTEM

For Intraoperative or Intracavitary



- Lateral docking
- Upward movement of periscopic electron cone
- For electron beam energies up to 18MeV

The periscopic viewer is used with the periscopic electron cones (Item 1100EC-1.9 to 1100EC-9.5) for intraoperative or intracavitary treatment. The periscopic viewer is made of stainless steel and clear anodized aluminum parts.

The most important feature of the periscopic viewer is the lateral docking. The bottom part of the barrel has a hinged door which opens to allow for the lateral docking of the periscopic electron cone into the viewer. The door has to be closed and secured to keep the periscopic electron cone in alignment with the beam. The periscopic electron cone can be held in place by the stainless steel locking knob.

If necessary the periscopic electron cone can slide approximately 8" into the barrel of the periscopic viewer. If the periscopic electron cone is being held in place by the locking knob this will have to be loosened to allow the retraction of the periscopic electron cone into the barrel.

Centering washers, four screws and beveled washers are used to attach the periscopic viewer to the plate that slides into the electron slot of the treatment machine. To adjust the periscopic viewer to the central axis of the beam, remove centering washers, position the periscopic viewer to central axis and using the beveled washers, tighten the screws. The centering washers keep the periscopic viewer centered to the plate.

Inside the periscopic viewer is a highly polished stainless steel mirror. The mirror is held and retracted by two independent springs. This prevents the possibility of the mirror remaining in the field if a spring should fail. A lever on the outside of the viewer adjusts the angle of the mirror for viewing through the periscopic electron cone.

At the top of the barrel of the periscopic viewer a sheet of 0.002" thick mylar® is secured to prevent any foreign matter from entering the treatment field.

On the outside of the periscopic viewer are two pen light holders which are mounted on swivel sockets. The pen lights can be adjusted to allow maximum light into the periscopic viewer and electron cone. The pen light holders can be removed to allow for a fiber optics light source. A light source can also be inserted into the 2.5 cm hole in the side of periscopic electron cones that are 3.8 cm in diameter or larger. Ceiling spotlights or flashlights can be aimed at the periscopic electron cone to transmit light to the treatment area. Located between the pen holders is the periscopic viewer tube for viewing.

Custom electronics may need to be supplied by the accelerator manufacturer. RPD will assist the customer in determining what is needed for electronics.

As a safety precaution the gantry rotation power and couch vertical drive power should be disabled or turned off just before the lateral docking into the periscopic viewer. This prevents any accidental movement of the gantry or couch.

**Optional:** Color Camera System includes camera with zoom lens and video monitor. Call RPD for more information.

**Sterilization:** Gas

When placing an order, please provide the following information:

- Item 1100-05-\_\_
- Manufacturer
- Model
- Serial Number
- Target to Bottom of Wedge Tray Slot in centimeters
- Does the machine have a MLC
- Software Version
- Does the Machine have "Reserve E" in Physics Mode
- Contact Information

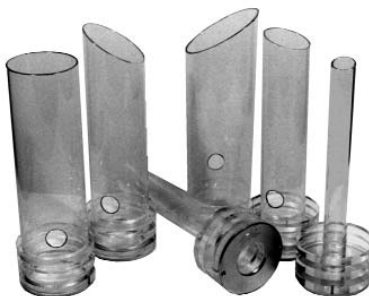
The contact person will have to verify all information prior to manufacturing.

Item #	Description
1100-05-02M	Varian III Intraoperative Periscopic Viewer MLC 65.4
1100-05-40	Elekta Intraoperative Periscopic Viewer 65.4cm
1006-00	6 Pen Lights

Items are Custom Made and Nonreturnable

# ELECTRON MINI-CONES, PERISCOPIC SYSTEM, MOLDS

## PERISCOPIC ELECTRON CONES



The periscopic electron cones are clear acrylic cylinders which are 3.1 mm thick and 30.5 cm long. The top of each cone has three acrylic spacer rings which slide into the barrel of the periscopic viewer. When the bottom of the periscopic electron cone is flush with the end of the periscopic viewer barrel the distance from the bottom of the periscope to the center of the cone angle is 25 cm.

A 4.8 mm thick brass plate with a center hole is attached to the top of each periscopic electron cone. The brass plate collimates and prevents electrons from penetrating the acrylic spacer rings.

Periscopic electron cones that are larger than 3.8 cm I.D. diameter have a 2.5 cm diameter hole in the side of the cone. This hole allows easy access for TLD placement or a fiber optic light source.

The periscopic electron cones are available in angles of 15°, 30°, 45° and 90° or no angle. The inside diameters range from 1.9 cm to 9.5 cm.

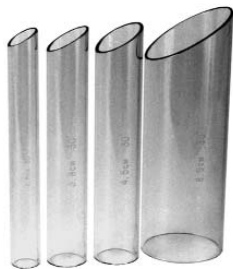
Any of the periscopic electron cones will fit in any periscopic viewer made by Radiation Products Design, Inc.

**Sterilization:** Gas

Item #	Electron Cone Inside Dimension
1100EC-1.9-__*	1.9 cm
1100EC-2.5-__*	2.5 cm
1100EC-3.2-__*	3.2 cm
1100EC-3.8-__*	3.8 cm
1100EC-4.5-__*	4.5 cm
1100EC-5.1-__*	5.1 cm
1100EC-5.7-__*	5.7 cm
1100EC-6.4-__*	6.4 cm
1100EC-7.0-__*	7.0 cm
1100EC-7.6-__*	7.6 cm
1100EC-8.3-__*	8.3 cm
1100EC-8.9-__*	8.9 cm
1100EC-9.5-__*	9.5 cm

\* Specify Angle (15°, 30°, 45° or 90°)

## SURGICAL DUMMY CONES



The Surgical Dummy Cones are used in surgery to select the cone diameter and angle needed for treatment.

The Surgical Dummy Cones are made of 3.1 mm thick clear acrylic and are 25.4 cm long. One end of the cone is flat and the other end is angled to 15°, 30° or 45°.

It is best not to use the Periscopic Electron Cones in surgery because they could be dropped, become non-sterile, or the cone may be become partially covered in blood and would obscure viewing of the field with the Periscopic Viewer.

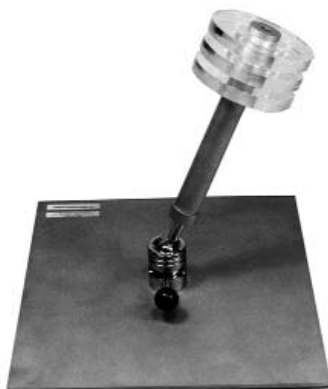
**Sterilization:** Gas

Item #	Surgical Dummy Cone Inside Dimension
1100SC-1.9-__*	1.9 cm
1100SC-2.5-__*	2.5 cm
1100SC-3.2-__*	3.2 cm
1100SC-3.8-__*	3.8 cm
1100SC-4.5-__*	4.5 cm
1100SC-5.1-__*	5.1 cm
1100SC-5.7-__*	5.7 cm
1100SC-6.4-__*	6.4 cm
1100SC-7.0-__*	7.0 cm
1100SC-7.6-__*	7.6 cm
1100SC-8.3-__*	8.3 cm
1100SC-8.9-__*	8.9 cm
1100SC-9.5-__*	9.5 cm

\* Specify Angle (15°, 30°, or 45°) - All Cones Have One Flat End

# ELECTRON MINI-CONES, PERISCPIC SYSTEM, MOLDS

## PRACTICE UNIT FOR DOCKING PERISCPIC ELECTRON CONES



The Practice Unit is placed on the treatment couch to simulate a periscopic electron cone that has been placed in a patient.

The lever allows for the movement and docking of the practice cone. The practice cone can rotate 360° and angle 35° from the vertical. The baseplate is 12 3/8" square x 1/4" thick (31.4 x 0.635 cm) aluminum with a rubber covered bottom to prevent movement on the treatment couch.

Item #	Description
1100-80	Practice Unit for Docking

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## OBTURATORS FOR PERISCPIC ELECTRON CONES



### Procedure

The obturator is placed in the corresponding periscopic electron cone through the acrylic ring end, the obturator is then lubricated and inserted into the patient. The obturator is removed from the periscopic electron cone and the position is viewed through the periscopic electron cone using a flashlight. A groove the length of the obturator prevents suction when removing the obturator.

When viewing, if the position of the periscopic electron cone needs to be adjusted or changed the obturator can be reinserted to help reposition the periscopic electron cone.

Once the proper position of the periscopic electron cone is set docking to the periscopic viewer can be done. After docking the position of the periscopic electron cone should be verified using the periscopic viewer.

### Sterilization: Gas

Item #	Obturator Cone Inside Dimension
1100-OB-1.9	1.9 cm
1100-OB-2.5	2.5 cm
1100-OB-3.2	3.2 cm
1100-OB-3.8	3.8 cm
1100-OB-4.5	4.5 cm
1100-OB-5.1	5.1 cm

The Obturators are used to make insertion of the Periscopic Electron Cones easier. The primary use for the obturators is for vaginal insertion.

The Obturators are made of solid clear acrylic with diameters of 1.9 to 5.1 cm. The reversible obturator cap/handle has a large and a small diameter. The 2 diameters of the cap/handle determine the insertion length of the obturator into the periscopic electron cone. This cap/handle design allows one obturator to fit all angles of the periscopic electron cones. The larger diameter end is used for the 0° and 15° angles and the smaller end is used for the 30° and 45° angles. The larger diameter end also has a groove around the side to facilitate ease in handling. A screw with a knob is used to attach the cap/handle to the obturator.

# ELECTRON MINI-CONES, PERISCOPIC SYSTEM, MOLDS

## ELECTRON MINI-CONES FOR VARIAN OR ELEKTA AND ADAPTER PLATE FOR 14CM OR 15CM ELECTRON CONE



Picture shown with Adapter Plate and Electron Mini-Cone (sold separately).

### Specifications

**Energy Range:** 6 MeV to 12 MeV, Transmission at 12 MeV is less than 5% outside of cone  
**Steel Density:** 7.83 g/cm<sup>3</sup>  
**Brass Density:** 8.515 g/cm<sup>3</sup>  
**Acrylic Density:** 1.18 g/cm<sup>3</sup>

### Adapter Plate

**Size:** 14x14 cm or 15x15 cm (5.5" x 5.5" or 5.9" x 5.9")  
**Opening:** 4" Diameter (10.2 cm)  
**Material:** 1.88 cm Thick Steel (0.74")  
**Finish:** Nickel Chrome Plated  
**Sterilization:** Autoclave or Gas - Sterrad NX-100

### Electron Mini-Cone (Items 895-41915 to 895-47090)

**Base:** 3/8" Thick x 4" Diameter Brass Ring (0.96 x 10.2 cm)  
**Material:** 1/8" (0.32 cm) Clear Acrylic  
**Sterilization:** Gas - Sterrad NX-100

Item #	Electron Cone Adapter Plate
895-400	Varian Type III (with MLC) 15 cm Cone
895-401	Varian Type II (no MLC) 15 cm Cone
895-402	Elekta 14 cm Cone

Item #	Electron Mini-Cone Inside Dimension
895-419__*	1.9 cm
895-432__*	3.2 cm
895-445__*	4.5 cm
895-457__*	5.7 cm
895-470__*	7.0 cm

\*Specify Angle (0°, 15°, 30° or 45°)

The Electron Cone Adapter Plates allow a 14 or 15cm electron cone to hold the Electron Mini-Cones, Items 895-41900 to 895-47045. The adapter plates are 1.88 cm thick steel with a nickel chrome plate finish. A 4" diameter opening in each adapter plate and three (3) spring plungers hold the brass ring base of each Electron Mini-Cone. If side or front pressure is presented, the spring plungers allow the Electron Mini-Cone to flip out.

The Electron Mini-Cones are made of 1/8" clear acrylic tubing and affixed to a 3/8" thick x 4" diameter nickel chrome brass ring base. The Electron Mini-Cones are available in diameters of 1.9 cm, 3.2 cm, 4.5 cm, 5.7 cm and 7.0 cm and can have angles of 0°, 15°, 30° and 45° on the bottom of the Electron Mini-Cone.

Isodose curves are available upon request.

## DUMMY MINI-CONES

The Dummy Mini-Cones are used to select the cone diameter and angle needed for treatment.

The Dummy Mini-Cones are made of 3.1 mm thick clear acrylic and are approximately 12 cm long. One end of the cone is flat and the other end is angled to 0°, 15°, 30° or 45°.

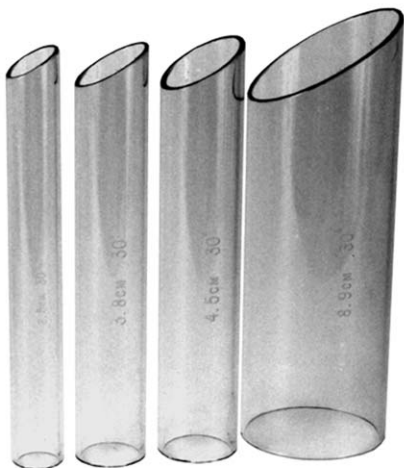
It is best not to use the Treatment Electron Mini-Cones in clinical setting because they could be dropped.

### Specifications

**Sterilization:** Gas, Sterrad NX-100  
**Material:** 1/8" Clear Acrylic

Item #	Dummy Mini-Cone Inside Dimension
895-519__*	1.9 cm
895-532__*	3.2 cm
895-545__*	4.5 cm
895-557__*	5.7 cm
895-570__*	7.0 cm

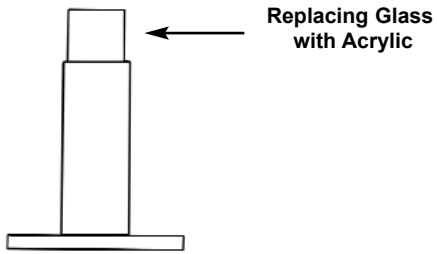
\*Specify Angle (0°, 15°, 30° or 45°)





# ELECTRON MINI-CONES, PERISCOPIC SYSTEM, MOLDS

## SUPERFICIAL CONE REPAIR



Cone repair consists of replacing the glass or acrylic end of the superficial cone with polished acrylic. Call for more information.

Item	Description
201-000	Superficial Cone Repair for all Manufacturers

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# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## PERMA-DOC PHANTOM

Compatible with VariSource® / MicroSelectron® / GammaMed® HDR Afterloading Systems



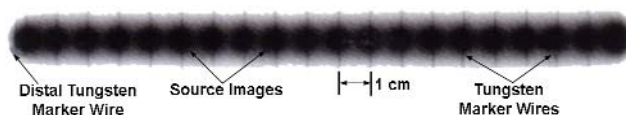
The PermaDoc Phantom is shown with the permanently embedded tungsten wire centimeter scale and removable 3mm diameter tandems.

**“Your Daily Quality Assurance performed with Ease and Confidence!”**

- Verifies Source Positioning and Stepping Accuracy
- Images Centimeter Scale Directly on Film
- Requires Single Exposure Only
- Set-up Accomplished in Seconds
- Eliminates All Guess-Work
- Precision Built
- Compatible with All HDR Units
- Fulfills Documentary QA Requirements

The Perma-Doc Phantom provides the necessary permanent documentation required by the NRC quality assurance tests associated with HDR. The Perma-Doc Phantom, with its centimeter scale automatically transferred to the film by fluorescent radiation, readily identifies up to 20 source positions and their stepping accuracy. Two matching 3/8" plexi plates allow for insertion of a 10" x 12" ready-pack V-film. The film is exposed by the HDR source dwell times of one second over a maximum of 20 positions spaced 1 cm apart. The resulting film displays the source images superimposed on the image of the centimeter scale.

**Source Images are Superimposed on the Image of the Centimeter Scale**



Shown is part of the V-film exposed with an HDR Ir-192 source for dwell times of 1 second over a distance of 20 cm. Source position and stepping accuracy are verified by scale lines that pass exactly through the centers of the corresponding source images. Most importantly, the first two distally located markers are spaced such as to represent the distance from tip of tandem to center of active source.

For example: Tip of tandem to center of source for the GammaMed 12i sources is 3.75mm, i.e., separation of the first two tungsten wires is 3.75mm. With the incorporation of the distal marker wire, the necessity to prick a hole into the film is therefore eliminated.

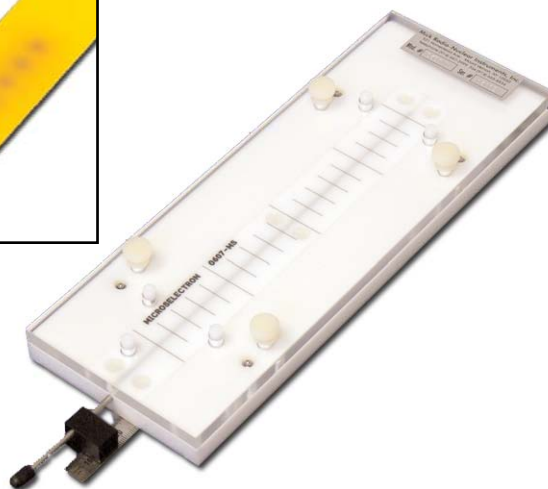
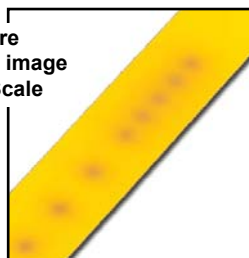
Item #	Description
940-400-V	Perma-Doc Phantom, VariSource® HDR
940-400-M	Perma-Doc Phantom, microSelectron® HDR
940-400-GM	Perma-Doc Phantom, GammaMed® Plus HDR

Connector Type: Click Fit

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## PERMA-DOC GC PHANTOM For use with GAFCHROMIC® RTQA Film

Source Images are  
Superimposed on the image  
of the Centimeter Scale



- Verifies Source Positioning and Stepping Accuracy
- Images Centimeter Scale Directly on Film
- Requires Single Exposure Only
- Set-Up Accomplished in Seconds
- Eliminates All Guess-Work
- Small / Lightweight and Precision Built
- Compatible with all HDR Remote Afterloaders
- Fulfills Documentary QA Requirements
- GAFCHROMIC® RTQA Film is “Self-Developing”
- Eliminates the Need of a Darkroom
- Film can be Handled in Room Light
- Simple, Easy and Efficient QA Management

The Perma-Doc GC Phantom is designed to check source positioning and stepping accuracy of HDR remote afterloading systems and provides a permanent record. The Perma-Doc GC Phantom has a centimeter scale, which is projected onto the GAFCHROMIC® RTQA film by fluorescent radiation, and readily locates, up to 20 source positions.

The device consists of two plexi-glass plates stacked on top of each other with five locating pins and four knobs to ensure alignment. Four embedded ball plungers provide a space for easy

insertion of the film. A 3 mm diameter groove is provided for the insertion of a straight tandem.

According to U.S. Regulatory Commission 10 CFR 35.633, source positioning accuracy on remote afterloading units is to be within  $\pm 1$  mm. Additionally, it is highly recommended to check source positioning accuracy daily or prior to HDR treatments. The test consists of 3 easy steps: insertion of GAFCHROMIC® RTQA film into PermaDoc Phantom, attachment of the source transfer tube to the PermaDoc Phantom and exposing the GAFCHROMIC® RTQA film. Due to the “self-developing” attribute of the film, the need for a visit to the darkroom is therefore eliminated.

### Specifications

**Size:** 4" x 13" x 1 5/8" (10.2 x 33 x 4.2 cm) Tandem Inserted  
**Weight:** 1.75 lb (0.8 kg)

**Note:** The PermaDoc GC Phantom can only be used with GAFCHROMIC® RTQA film strips, Item 115-024.

Item #	Description
940-406-GM	PermaDoc GC Phantom, GammaMed Plus® HDR
940-406-M	PermaDoc GC Phantom, microSelectron® HDR
940-406-V	PermaDoc GC Phantom, VariSource® HDR
115-024	Gafchromic Film, RTQA2-111, 1.25" x 11"

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## CT/MR SLESSINGER BOARD V2.0 FOR HDR BRACHYTHERAPY



- CT and/or MR Compatible
- Easy to Clean

The Slessinger Board is a padded sliding board that is CT and MR compatible. It is designed to facilitate HDR brachytherapy, specifically for pelvic treatments. The patient can be transferred onto the board from the operating room couch and remain on the board in recovery, during imaging for planning and until the HDR treatment is given. The intent is to minimize patient movement to ensure that the imaging for planning is not compromised by patient leg movement prior to treatment and thus delivering the treatment plan faithfully. The legs are slightly elevated, affording ready access to the perineum and preventing applicators from resting against anything. Leg elevation is maintained with the use of two (2) tightening knobs at the end of the elevation panels. Transfers on and off CT/MR/simulator couches are relatively easy due to the smooth plastic bottom surface and side handles. The board is also very useful when a patient is transferred via ambulance from the surgical facility to the treatment facility.



The CT/MR Slessinger Board V2.0 for HDR Brachytherapy has the additional benefit of having a hinged flexi-split to allow raising the head when on a stretcher. This version also includes heel cushions for additional patient comfort.



Image guided HDR brachytherapy is gaining in prominence. Prostate and gynecological applications are reliant on patient stability and comfort between the acquisition of imaging for planning and treatment. Although the Slessinger Board was devised to facilitate precise prostate HDR brachytherapy its application for image guided GYN HDR is also very significant with increasing reliance on DVH analyses. The concept of limiting rotation of a multichannel APBI balloon is yet another possible application, by avoiding the patient walking between imaging and treatment prior to each treatment fraction. The rationale and description of the Slessinger Board has also been described in the Brachytherapy Journal article by Slessinger, entitled "Practical considerations for prostate HDR brachytherapy", published early in 2010.



The Slessinger Board can be easily cleaned with non-caustic germicidal cloths or sprays. Patients may not be carried on the Slessinger Board, but rather are transferred directly from one support to another.

MR Safe

### Specifications

**Base Dimensions:** 21" W x 72" L x 0.75" T (53.3 x 183 x 1.9 cm)

**Base Material:** Corrugated polypropylene

**Pad Dimensions:** 20.5" W x 69" L x 1.5" T (52.3 x 175 x 3.8 cm)

**Pad Material:** Vinyl coated closed cell foam

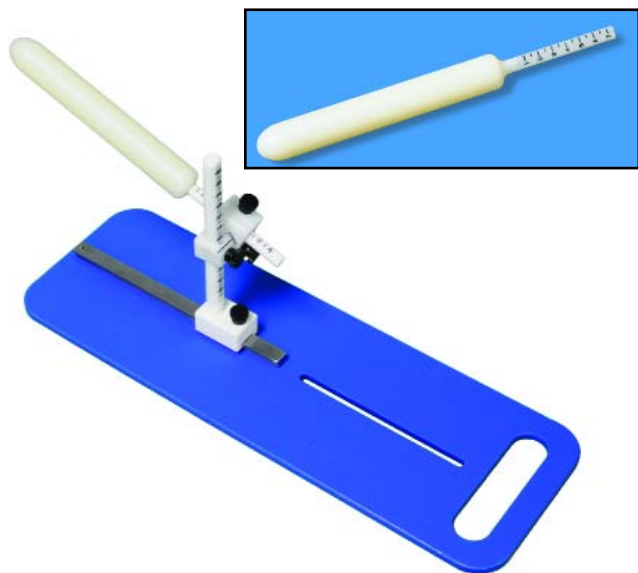
**Assembled Board Weight:** 26 lb (11.8kg)

**Weight Limit:** 350 lb (159 kg)

Item	Description
946-004	CT/MR Slessinger Board V2.0 for HDR Brachytherapy

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## ADJUSTABLE HOLDER WITH SLESSINGER COMPATIBLE BOARD FOR DILATORS WITH STEM SCALE



This item is compatible with the Slessinger Board System (Item # 946-004).

Item 946-210 includes only the Holder and board.

### Specifications

#### Item 946-210

**Vertical Post Scale:** from 4.5 cm to 16 cm with black markings every 0.5 cm and whole numbers every centimeter starting at 5.0 cm

**Angle Scale:** Marked every 5° to 45°

**Material:** Ertalyte

**Clamp:** Dual clamps with thumb screws allow for vertical and anterior-posterior angle adjustment of the dilator

**Post Assembly Material:** Ertalyte

**Board Size:** 5.5" W x 16" L x 0.25" Thick (13.8 x 40.6 x 0.6cm)

**Handle Cutout:** 4" W x 1" L (10.1 x 2.5 cm)

**Board Material:** HDPE Blue Polyethylene Colorboard

**Sterilization:** Autoclave or gas

**CT/MR Conditional**

#### Items 946-220 to 946-235

**Material:** Nylon

**Overall Length:** 10" (25.4 cm)

**Dilator Length:** 6.5" (16.5 cm), not including stem

**CT/MRI Safe**

The Adjustable Holder with Slessinger Compatible Board for Dilators with Stem Scale was designed to be used when treating anal cancer in females with chemoradiation. The dilator is used to delineate and displace the vulva and lower vagina away from the primary tumor with the intention of decreasing dose to these areas.

The vertical post scale on the holder ranges from 4.5cm to 16cm and allows for reproducing from day to day the vertical position of the dilator. The dilator can also be angled up or down in the anterior - posterior position with a scale marked every 5° to 45° and a locking thumb screw. All dilators are 6.5" (16.5cm) long not including the stem. The included dilators have a scale on the stem that ranges from 1cm to 7cm which is used for depth.

This holder board included is made from HDPE Blue Polyethylene Colorboard and has a 6" titanium rail. A rail block allows the dilator holder to slide forward and backward when positioning as well as being removable from the rail itself.

Item #	Description
946-210	Adjustable Holder & Slessinger Compatible Board for Dilators with Stem Scale
946-220	20 mm Dia. Nylon Dilator with Stem Scale
946-225	25 mm Dia. Nylon Dilator with Stem Scale
946-230	30 mm Dia. Nylon Dilator with Stem Scale
946-235	35 mm Dia. Nylon Dilator with Stem Scale

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## CS-137 DOT SOURCE TRANSPORT PIG CONTAINER

### Rental Only

The Cesium-137 DOT Source Transport Pig Container provides for safe temporary storage and transport of up to nine (9) Cesium-137 tube sources. The set consists of a pail with a cover and handle for carrying, foam insert, stainless steel container and cap, lead pig with nine holes for sources and a lead cap. Item 067-650 is for rental only. Rental time is 30 days.

### Specifications

**Maximum Source Size:** 3.17 mm Diameter x 30 mm L

**Pig Cap:** 37 mm Lead

**Pig Sides:** 35 mm Lead

**Pig Bottom:** 30 mm Lead

**Stainless Steel Container:** 29 mm bottom

**Weight:** 35 lbs (16 kg)

Item	Description
067-650	Cs-137 DOT Source Transport Pig Container
RENTAL ONLY	



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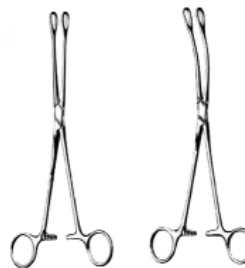
# GYN APPLICATORS - HDR & LDR BRACHY THERAPY ACC.

## HANDLING INSTRUMENTS



Item #	Description
970-439	10" Curved Forceps
970-440	10" Tweezers for 1/8" (3mm) Dia. Source Handling
970-4402	12" Tweezers for 1/8" (3mm) Dia. Source Handling
970-441	10" Tweezers
970-442	12" Tweezers
970-443	6.5 " Reverse Action Tweezers with Groove
1006-01	5 1/2" Scissors

## HOLDING FORCEPS



Item #	Forceps
970-952	Straight, Serrated, 9 1/2"
970-960	Curved, Serrated, 9 1/2"
970-978	Straight, Smooth, 9 1/2"
970-986	Curved, Smooth, 9 1/2"

## NYLON DILATORS



The Nylon Dilator has one elliptical radius end and one full rounded end. The dilator is 10" long and very durable. It is made from an impact resistant material that can stand up to wear and abrasion.

**Sterilization:** Autoclave or Gas

These can be used in CT and MR.

Item #	Nylon Dilator
970-656-10	10 mm Diameter
970-656-15	15 mm Diameter
970-656-16	16 mm Diameter
970-656-20	20 mm Diameter
970-656-23	23 mm Diameter
970-656-25	25 mm Diameter
970-656-26	26 mm Diameter
970-656-30	30 mm Diameter
970-656-35	35 mm Diameter
970-656-40	40 mm Diameter
970-656-45	45 mm Diameter
970-656-50	50 mm Diameter

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## RADIATION IMPLANT BRIEF



- Effective means of securing the implant
- Comfortable - no sutures
- No skin irritation - no tape
- Maintains patient dignity
- Reduces staff exposure to radiation

The radiation implant brief will accommodate LDR and HDR gyn brachytherapy applicators. The brief is made of a soft cotton lycra spandex and is sized according to a womens standard undergarment size. A slit in the fabric allows the physician to insert the applicator and catheters and to pack the vaginal cavity with gauze. The implant is held in place by a strap that goes between the leg from front to back.

The brief is comfortable for the patient as no labia sutures or tape are needed. The brief covers the patient genitalia and perineum which helps maintain the patient's dignity.

Item #	Radiation Implant Brief
970-050	S, Fits 36-38" Hips (underpant 5)
970-051	M, Fits 39-41" Hips (underpant 6)
970-052	L, Fits 42-44" Hips (underpant 7)
970-053	XL, Fits 45-47" Hips (underpant 8)
970-054	1X, Fits 48-50" Hips (underpant 9)

Item #	Radiation Implant Brief
970-055	2X, Fits 51-53" Hips (underpant 10)
970-056	3X, Fits 54-56" Hips (underpant 11)
970-057	4X, Fits 57-59" Hips (underpant 12)
970-058	5X, Fits 60-62" Hips (underpant 13)

## MR/CT MULTIPURPOSE COLLAR CLAMPS



Secure one end of the the Velcro to Brief, then insert other end through slot in clamp and secure back to velcro.

Our Collars Clamps are produced in sizes ranging from 10mm to 50mm diameter corresponding with the diameters of our available nylon dilators and vaginal cylinders. Other sizes not listed in that range can be made to order by request.

Item	Description
977-6210	MR/CT Multipurpose 10mm Dia. Collar Clamp
977-6215	MR/CT Multipurpose 15mm Dia. Collar Clamp
977-6216	MR/CT Multipurpose 16mm Dia. Collar Clamp
977-6220	MR/CT Multipurpose 20mm Dia. Collar Clamp
977-6223	MR/CT Multipurpose 23mm Dia. Collar Clamp
977-6225	MR/CT Multipurpose 25mm Dia. Collar Clamp
977-6226	MR/CT Multipurpose 26mm Dia. Collar Clamp
977-6230	MR/CT Multipurpose 30mm Dia. Collar Clamp
977-6235	MR/CT Multipurpose 35mm Dia. Collar Clamp
977-6240	MR/CT Multipurpose 40mm Dia. Collar Clamp
977-6245	MR/CT Multipurpose 45mm Dia. Collar Clamp
977-6250	MR/CT Multipurpose 50mm Dia. Collar Clamp

Other collar clamp diameter sizes available at request ranging from 11 to 50 mm at 1 mm increments

RPD Intravaginal Device Collar Clamp Dia. Chart						Device Accessories	
Diameter	Collar Clamp*	Nylon Dilator	Nylon Dilator w/ Stem Scale	HDR Vaginal Cylinder	Acrylic Vaginal Cylinder	Item #	Description
10mm		970 656 10				977 600	Velcro, 3/8", White, 25 yds. Hook & Loop
15mm	977-6215	970-656-15		977-3161, 977-3162, 977-3163, 977-3165			
16mm	977-6216						
20mm	977-6220	970-656-20	946-220	977-3204			
23mm	977-6223			977-32345	977-6223		
25mm	977-6225	970-656-25	946-225		977-6225		
26mm	977-6226			977-3265, 977-3266			
30mm	977-6230	970-656-30	946-230		977-6230		
35mm	977-6235		946-235				
40mm	977-6240	970-656-40					
45mm	977-6245	970-656-45					
50mm	977-6250	970-656-50			977-6250		

\*Other collar clamp diameter sizes available at request ranging from 15 to 50mm at 1mm increments

## VELCRO, WHITE HOOK & LOOP 3/8" x 25 yds.



The velcro is used to secure HDR cylinders with Collar Clamp to Radiation Implant Brief (970-050 to 970-058)

Item	Description
977-600	Velcro, White Hook & Loop 3/8" x 25 yds.



# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## STAINLESS STEEL ARTICULATING ARM, BOARD AND CLAMP



The applicator clamp is fixed to one arm of the articulating arm and the other arm is fixed to the rail block. The rail block slides onto the 3" long board rail and is locked in position with the thumb screw.

The Articulating Arm has two (2) arms that can rotate 360°. The end of each arm has a cutout swivel that houses a ball stud and allows for another 360° of rotation. A wing knob in the center of the arms locks the position of both arms and the swivel ball ends.

### Specifications

**Base Size:** 5.5" W x 20.5" L x 0.25" Thick (13.8 x 52.1 x 0.6 cm)

**Handle Cutout:** 4" W x 1" L (10.1 x 2.5 cm)

**Material:** HDPE Blue Polyethylene Colorboard

### Articulating Arm Size:

**Arm length including Ball Stud:** 12.2 cm

**Overall Size with arms at 180°:** 27 cm W x 6 cm H

**Material:** Stainless Steel

Item #	Description
978-6031	Articulating SS Arm, Board & Nucletron Clamp for Tandems 101040-03 & # 101005-03
978-6032	Articulating SS Arm, Board & Varian Clamp
978-6033	Articulating SS Arm Board & Eckert & Ziegler Clamp
978-6034	Articulating SS Arm Board & FSD & Weeks Clamp

- Board is tapered at patient end for patient comfort
- Cutout handle for easy removal

The Articulating Arm Board was designed to hold a HDR Nucletron, HDR Varian, HDR Eckert & Zigler, FSD LDR Applicators, Vaginal Cylinder, Tandems or other objects securely in place during for GYN brachytherapy treatment.

The treatment applicator is placed into the patient and the tapered end of the board is slid under the patient. The articulating arm rail block is slid onto the board rail and the applicator clamp is adjusted to fit onto the applicator and locked. The articulating arm and rail block are then locked into place.

## VERTICAL RAIL SUPPORT



The vertical rail support is used to position the articulating arm from the patient's side. The vertical rail allows for clearance over the leg. This is fixed to the rail block that slides onto the rail on the base board and the articulating arm attaches to the vertical rail.

### Specifications

**Height:** 0.475"/0.30" W x 12.5" H

**Material:** Stainless Steel

Item	Description
978-601	Vertical Rail Support 12 1/2"

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## MR TITANIUM FLEX ARM, BOARD & CLAMP



The aluminum vertical post allows the Flex Arm to rotate 360° and has vertical markings every half centimeter from 3 cm to 15 cm. The wing knob on the vertical post clamp locks the vertical, rotational and in/out position of the Flex Arm. Slightly tightening the post wing knob will lock the vertical and rotational position of the Flex Arm while still allowing in/out travel of the Flex Arm. The wing knob at the end of the Flex Arm locks the swivel of the applicator clamp. Loosen the Flex Arm wing knob to adjust the swivel of the applicator clamp into position and attach to the treatment applicator. When attached to the treatment applicator tighten the applicator clamp thumb screw and then tighten the Flex Arm wing knob at the end of the Flex Arm. Then tighten the post wing knob to lock in/out position of the Flex Arm.

The applicator clamp end of the Flex Arm has a cutout swivel that houses a 1 cm diameter ball stud and allows the applicator clamp 360° of rotation. Thumb screws lock the clamp and the board rail block.

### Specifications

**Base Size:** 5.5" W x 20.5" L x 0.25" Thick (13.8 x 52.1 x 0.6 cm)

**Handle Cutout:** 4" W x 1" L (10.1 x 2.5 cm)

**Material:** HDPE Blue Polyethylene Colorboard

**Flex Arm Size:**

**Arm Height:** 16.2cm

**Flex Arm Material:** Titanium

**Vertical Post Material:** Black Aluminum

- Board is tapered at patient end for patient comfort
- Cutout handle for easy removal

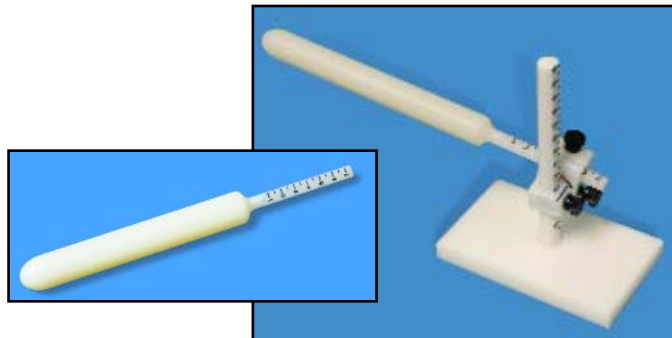
The MR Flex Arm was designed for use in an MR to hold a HDR Nucletron, HDR Varian, HDR Eckert & Ziegler, FSD LDR Applicators, Vaginal Cylinder, Tandems or other objects securely in place during GYN brachytherapy treatment.

The treatment applicator is placed into the patient and the tapered end of the base is slid under the patient. The Flex Arm rail block is slid onto the board rail and the applicator clamp is adjusted to fit onto the treatment applicator and locked. The Flex Arm and rail block are then locked into place.

Item #	Description
978-6051	MR Titanium Flex Arm, Board & Nucletron Clamp for Tandems 101040-03 & # 101005-03
978-6052	MR Titanium Flex Arm, Board & Varian Clamp
978-6053	MR Titanium Flex Arm, Board & Eckert & Ziegler Clamp
978-6054	MR Titanium Flex Arm, Board & FSD & Weeks Clamp

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## ADJUSTABLE HOLDER WITH BASE FOR DILATORS AND DILATORS WITH STEM SCALE



This CT/MR Safe Adjustable Holder with Base for Dilators with Stem Scale was designed to be used when treating anal cancer in females with chemoradiation. The use of a dilator is used to delineate and displace the vulva and lower vagina away from the primary tumor with the intention of decreasing dose to these areas.

The vertical post scale on the holder ranges from 2.5cm to 15cm and allows for reproducing from day to day the vertical position of the dilator. The dilator can also be angled up or down in the anterior - posterior position with a scale marked every 5° to 45° and a locking thumb screw. All dilators are 6.5" (16.5cm) long, not including stem. The dilators have a scale on the stem that ranges from 1cm to 7cm which is used for depth.

Because the base that this item includes is made entirely from ertalyte plastic, it is completely CT/MR safe. The base can be set into position in the vacuum cushion that is used for positioning the patient legs. This will give a reproducible base location on a daily basis.

Item 946-200 includes only the Holder and base.

### Specifications

#### Item 946-200

**Base Size:** 3" x 5" x 0.5" Thick (7.6 x 12.7 x 1.27 cm)

**Vertical Post Scale:** From 2.5 cm to 15 cm with black markings every 5 mm and whole numbers every centimeter starting at 3.0 cm

**Angle Scale:** Marked every 5° to 45°

**Clamp:** Dual clamps with thumb screws allow for vertical and anterior-posterior angle adjustment of the dilator

**Post Assembly and Base Material:** Ertalyte

**Sterilization:** Autoclave or gas

**CT/MRI Conditional**

#### Items 946-220 to 946-235

**Material:** Nylon

**Overall Length:** 10" (25.4 cm)

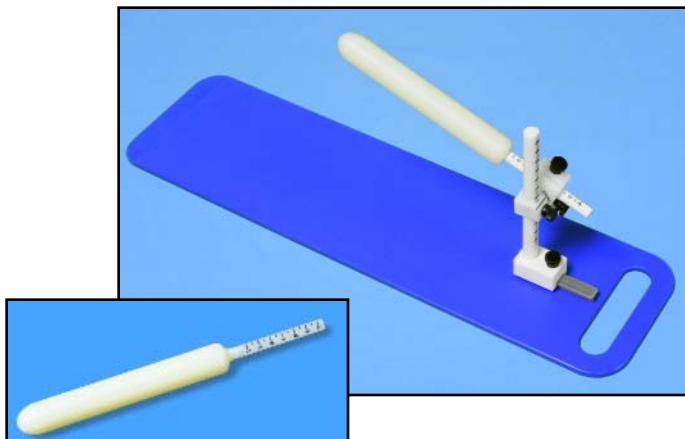
**Dilator Length:** 6.5" (16.5 cm), not including stem

**CT/MRI Safe**

Item #	Nylon Dilator
946-200	Adjustable Holder with Base for Dilators with Stem Scale
946-220	20mm Dia. Nylon Dilator with Stem Scale
946-225	25mm Dia. Nylon Dilator with Stem Scale
946-230	30mm Dia. Nylon Dilator with Stem Scale
946-235	35mm Dia. Nylon Dilator with Stem Scale

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## ADJUSTABLE HOLDER WITH BOARD FOR DILATORS AND DILATORS WITH STEM SCALE



The holder board included is made from HDPE Blue Polyethylene Colorboard and has a 3" titanium rail. A rail block allows the dilator holder to slide forward and backward when positioning as well as being removable from the rail itself.

Item 946-610 includes only the Holder and board.

### Specifications

#### Item 978-610

**Vertical Post Scale:** From 4.5 cm to 16 cm with black markings every 5 mm and whole numbers every centimeter starting at 3.0 cm

**Angle Scale:** Marked every 5° to 45°

**Clamp:** Dual clamps with thumb screws allow for vertical and anterior-posterior angle adjustment of the dilator

**Post Assembly Material:** Ertalyte

**Board Size:** 5.5" W x 20.5" L x 0.25" Thick (13.8 x 52.1 x 0.6 cm)

**Handle Cutout:** 4" W x 1" L (10.1 x 2.5 cm)

**Board Material:** HDPE Blue Polyethylene Colorboard

**Sterilization:** Autoclave or gas

**CT/MRI Conditional**

#### Items 946-220 to 946-235

**Material:** Nylon

**Overall Length:** 10" (25.4 cm)

**Dilator Length:** 6.5" (16.5 cm), not including stem

**CT/MRI Safe**

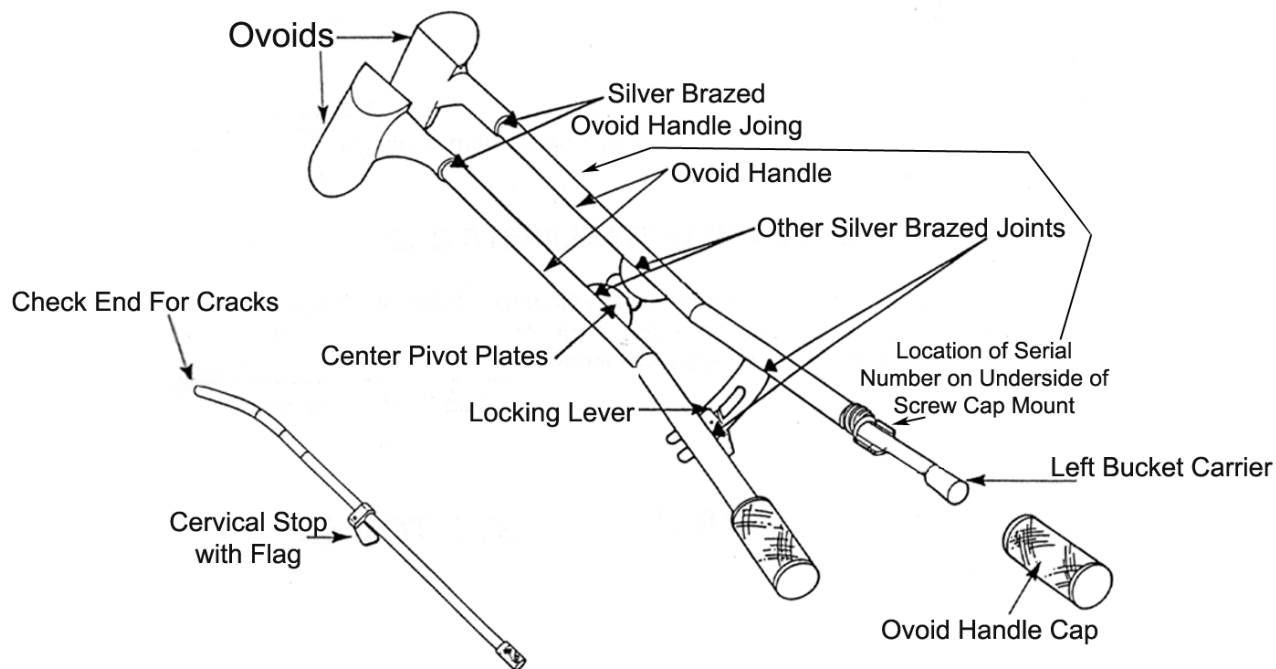
The Adjustable Holder with Board for Dilators with Stem Scale was designed to be used when treating anal cancer in females with chemoradiation. The dilator is used to delineate and displace the vulva and lower vagina away from the primary tumor with the intention of decreasing dose to these areas.

The vertical post scale on the holder ranges from 4.5cm to 16cm and allows for reproducing from day to day the vertical position of the dilator. The dilator can also be angled up or down in the anterior - posterior position with a scale marked every 5° to 45° and a locking thumb screw. All dilators are 6.5" (16.5cm) long, not including the stem. The dilators have a scale on the stem that ranges from 1cm to 7cm which is used for depth.

Item #	Nylon Dilator
978-610	Adjustable Holder with Board for Dilators with Stem Scale
946-220	20mm Dia. Nylon Dilator with Stem Scale
946-225	25mm Dia. Nylon Dilator with Stem Scale
946-230	30mm Dia. Nylon Dilator with Stem Scale
946-235	35mm Dia. Nylon Dilator with Stem Scale

**Repair and Testing Services for ALL Aferloading Applicators,  
Call for Details.**

## FLETCHER-SUIT-DELCLOS (FSD) APPLICATOR INSPECTIONS, TESTS AND REPAIRS



Complete units, including the bucket carriers, must be sent to Radiation Products Design for repair. When sending in an applicator for repair the following information is needed: contact name, phone number, address and what repairs are needed.

**Radiation Products Design does fiber optic inspection of tungsten shielding inside of the ovoid. We can detect if the tungsten shields are mounted at the top and the bottom of the ovoid.**

The following tests can be conducted at Radiation Products Design or within your organization:

Separate the Fletcher-Suit-Delclos (FSD) Applicator into two halves and conduct **Tests A, B, C and D** on each half as follows:

### **Mechanical Test A**

Gently manipulate each ovoid with one hand while holding the ovoid handle with the other. Each ovoid should be solidly attached to the handle. If the ovoid is loose, Test A fails and unit may be repaired. No other tests need to be done. If test A passes, continue to Test B.

### **Visual Test B**

Visually inspect each half of the FSD for hairline cracks at the top and bottom of the ovoid and the ovoid handle joint. Inspect silver-

brazed joints where center pivots and the locking brackets attach to the ovoid handles. If cracks are seen, Test B fails and unit may be repaired. No other tests need to be done. If Test B passes, continue to Test C.

### **Pressure Test C**

Conduct the following test on each half of the FSD:

**Test 1:** Remove the ovoid handle cap from the end of the ovoid handle

**Test 2:** Remove the bucket carrier

**Test 3:** Stand the ovoid in a cup of water to a depth above the ovoid handle joint

**Test 4:** Apply slight air pressure on the open end of the FSD handle (using for example, a 20 cc syringe connected to surgical tubing connected to the FSD handle), and look for air bubbles escaping from the ovoid or ovoid handle joint. If bubbles are seen, Test C fails and unit may be repaired. If Test C passes, the ovoid is solidly attached to the ovoid handle and no immediate action is necessary.

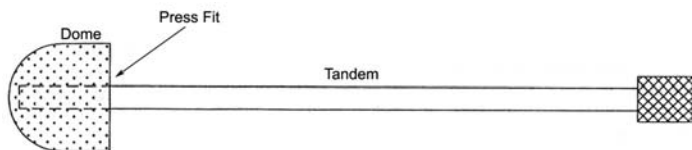
### **Fiber Optics or Radiograph Test D**

Use fiber optic inspection for tungsten placement or radiograph using film.

**If Tests A, B, C or D fails stop using the FSD for patient therapy.**

# GYN APPLICATORS - HDR & LDR BRACHY THERAPY ACC.

## DELCLLOS UTERINE/VAGINAL AFTERLOADING APPLICATOR TEST AND INSPECTION



### Mechanical Test for Dome Tandem Assembly

With one hand grip the dome and with the other hand grip the tandem then try pulling the two apart. If the two pull apart stop using the unit for patient therapy.

## CAUTION FOR FLETCHER-SUIT APPLICATORS

"The U.S. Food and Drug Administration (FDA) has received reports of eight incidents in which the closed end of the intrauterine colpostats of a Fletcher Suit applicator separated from the applicator and remained in the uterus after the applicator had been removed, necessitating an additional removal procedure. Clearly this can cause undesirable complications for patients and holds the potential for the loss radioactive sources within the patient's uterus. The reasons for these separations is unknown. However, cleaning the applicator with hydrogen peroxide or glutaraldehyde (Cidex) prior to autoclaving or cold sterilization can result in corrosion of the applicator's welds.

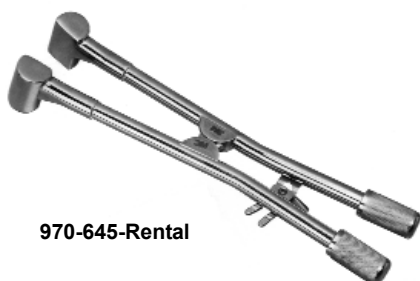
FDA is using this notice to alert users of Fletcher Suit applicators of this potential problem. FDA believes that all Fletcher Suit applicators should be inspected to determine whether or not

the closed end of the colpostats or the colpostats themselves are adequately secured, and that any applicators that are questionable should not be used. Until recently, manufacturers guidance on cleaning and sterilization may not have been clear. The applicators should be cleaned using **only** a mild detergent and water, and then thoroughly rinsed with water before sterilization.

Although, to date, FDA has only received reports of the problems with Fletcher Suit applicators, it is also recommending that all applicators of similar design be checked, and that the same cleaning instructions be followed."

The above article appears in the American Association of Physicists in Medicine. Volume 14 No. 3, May/June 1988, Pages 7 and 8.

## RENTALS AND REPLACEMENT PARTS FOR 3M #6586 OR MPI FSD AFTERLOADING APPLICATOR



970-645-Rental

The 3M #6586 or MPI FSD Applicator is no longer available for purchase. Item 970-542, 970-550 and 970-553 on the following pages are suggested replacements.

Complete units including the bucket carriers must be sent to Radiation Products Design for repair or fitting of Ovoid Caps. When sending in an applicator for repair the following information is needed: contact name, phone number, address and what repairs are needed.

Item #	Description
970-645-RENTAL	Rental for 3M #6586 FSD Applicator

### Replacement parts for the 3M #6586 or MPI Fletcher-Suit Delclos Shielded Afterloading Applicators

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
970-200	Straight Standard Tandem w/Cap
970-201	#1 - 15° Standard S.S. Tandem w/Cap
970-202	#2 - 30° Standard S.S. Tandem w/Cap
970-203	#3 - 45° Standard S.S. Tandem w/Cap
970-204	#4 - 60° Standard S.S. Tandem w/Cap
970-212	S.S. Cap for Tandem
970-216	S.S. Cervical Stop
970-217	S.S. Flagged Cervical Stop
970-218	S.S. Screw Cervical Stop #4-40 x 5/16"
970-220	S.S. 3/32" Allen Wrench
970-229	Optional - S.S. Tandem Support Bracket w/1/16" Wrench

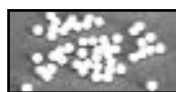
Item #	Description
970-252	Sterilization Tray with Autoclave Nameplate
970-645-12	S.S. Cap for Ovoid Handle
970-360-32	Locking Knob, Titanium
970-645-16	S.S. Locking Lever 3M #6-32
970-645-19	2.0 cm Right "D" Shape Nylon Ovoid Cap
970-645-20	2.0 cm Left "D" Shape Nylon Ovoid Cap
970-645-21	2.0 cm Right Nylon Ovoid Cap w/Tungsten
970-645-22	2.0 cm Left Nylon Ovoid Cap w/Tungsten
970-645-26	2.5 cm Right Nylon Ovoid Cap w/Tungsten
970-645-27	2.5 cm Left Nylon Ovoid Cap w/Tungsten
970-645-31	3.0 cm Right Nylon Ovoid Cap w/Tungsten
970-645-32	3.0 cm Left Nylon Ovoid Cap w/Tungsten
970-645-40	Right S.S. Bucket Carrier
970-645-42	Left S.S. Bucket Carrier

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## PLASTIC AFTERLOADERS



970-000



970-030

Item	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems <b>Only</b>
970-020	12 plastic Pushers <b>Only</b>
970-030	50 Nylon Spacer Balls - 3/32" Dia. (2.4 mm)

## TUNGSTEN DUMMY SOURCES



985-001



985-010



985-020



985-030



985-031

Item	Description
985-001	Tungsten Dummy Source 3.2 mm Dia. x 20 mm L
985-010	Tungsten Mini Dummy Source 1.6 mm Dia. x 19 mm L
985-020	3M FSD Al Cased Tungsten Dummy Source with Hole Outside: 3.0 mm Dia. x 20 mm L Tungsten: 1.5 mm Dia. x 13.8 mm L
985-030	Tungsten Dummy Source 3.0 mm Dia. x 20 mm L
985-031	3M Tungsten Dummy Source 3.0 mm Dia. x 16 mm L

## STANDARD AND MINI TANDEM



970-201 to 970-206

970-212 970-216



970-217 970-218



970-231 to 970-233

970-242



970-243



970-246



970-220



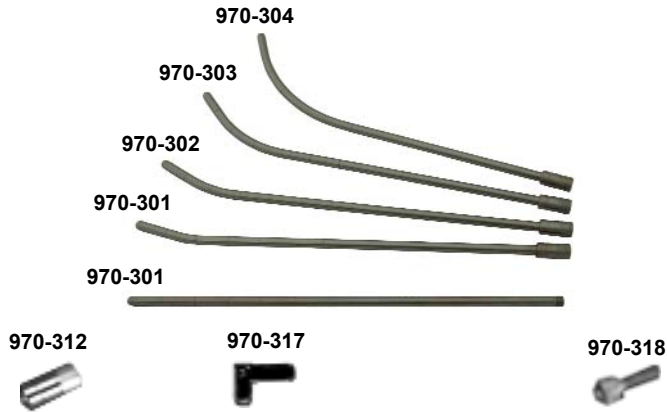
970-670-59

Item #	Description
970-200	Straight Standard S.S. Tandem w/Cap
970-201	#1 - 15° Standard S.S. Tandem w/Cap
970-202	#2 - 30° Standard S.S. Tandem w/Cap
970-203	#3 - 45° Standard S.S. Tandem w/Cap
970-204	#4 - 60° Standard S.S. Tandem w/Cap
970-205	#3 - 45° Double Curved S.S. Tandem for Bracket w/Cap
970-206	#4 - 60° Double Curved S.S. Tandem for Bracket w/Cap
970-212	S.S. Cap for Tandem (3M Style)
970-216	S.S. Cervical Stop
970-217	S.S. Flagged Cervical Stop
970-218	S.S. Screw Cervical Stop #4-40 x 5/16"
970-220	S.S. 3/32" Allen Wrench
970-670-59	S.S. 3/32" Long Handle Allen Wrench

Item #	Description
970-231	Mini #1 - 15° S.S. Tandem w/Cap
970-232	Mini #2 - 30° S.S. Tandem w/Cap
970-233	Mini #3 - 45° S.S. Tandem w/Cap
970-242	Mini S.S. Cervical Stop
970-243	Mini S.S. Flagged Cervical Stop
970-246	FSD S.S. Bucket Liner for Mini Sources

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## TITANIUM STANDARD TANDEM AND ACCESSORIES



Item #	Description	Material
970-300	Straight Standard Tandem w/Cap	Titanium
970-301	#1 - 15° Standard Tandem w/Cap	Titanium
970-302	#2 - 30° Standard Tandem w/Cap	Titanium
970-303	#3 - 45° Standard Tandem w/Cap	Titanium
970-304	#4 - 60° Standard Tandem w/Cap	Titanium
970-312	Cap for Tandem	Titanium
970-317	Flagged Cervical Stop	Titanium
970-318	Screw Cervical Stop #4-40 x 5/16"	Titanium
970-670-08	15 cm Threaded Tandem for Dome	Titanium
970-220	3/32" Allen Wrench	Stainless Steel
970-670-59	3/32" Long Handle Allen Wrench	Stainless Steel

## STERILIZATION TRAYS



These instrument trays are designed to encase instruments during processing and are safe for all standard sterilization methods: Autoclave/dry heat up to 360°F, ETO, and Cold Solutions.

These trays will last over 1000 cycles when properly handled and processed.

Use of these Instrument Trays must be in accordance with the operating instruction supplied with your particular sterilization equipment and in keeping with your particular sterilization equipment and in keeping with your hospital policy on sterilization validation. Several organizations (e.g., AAMI, AORN and ISO) publish guidance information on sterilization usage should you need additional information.

Periodic cleaning of the trays after sterilization process is recommended to prolong usable life.

Do not use if damaged

RPD sterilization trays can be customized to adapt to a wide variety of individualized configurations.

The uniquely engineered "grid system" allows for easy insertion of the special silicone instrument bars manufactured from medical grade silicone.

Sterilization trays are engineered with a rubber bristle surface to facilitate better steam penetration underneath the mats.

Sterilization trays are made to withstand common sterilization protocols including steam, gas, cold sterilizing solutions, and temperatures up to 360o Fahrenheit.

Sterilization trays are engineered and manufactured to the extend sterilization life cycles.

Advanced medical grade polymers are used to manufacture RPD trays.

Sterilization trays are designed to encase instruments for sterilization in steam and ethylene oxide.

An appropriate sterile barrier will be required to maintain sterility.

### Specifications

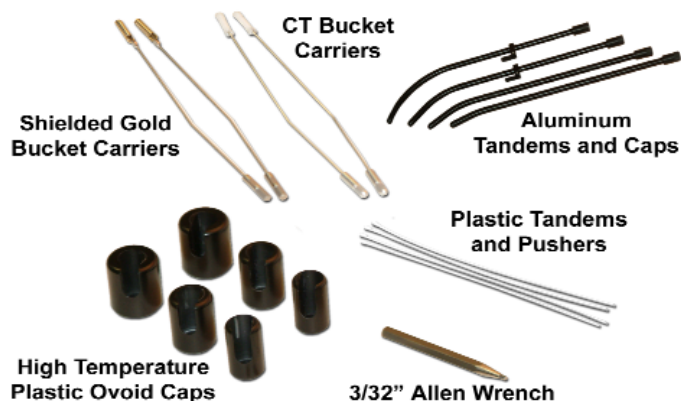
**Overall Size:** 15.5" W x 10.3" D x 1.85" H (39.5 x 26.5 x 4.7 cm)

Item	Description
970-250	Large Sterilization Tray with RPD Nameplate
970-252	Large Sterilization Tray with Autoclave Nameplate
970-254	Large Sterilization Tray with Gas Nameplate



# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## WEEKS CT MINI-OVOID APPLICATOR SET



The Weeks CT Applicator Afterloading Set (with CT Mini-Ovoid, Stainless Steel Pivot, and Shielded Gold Buckets), was designed for the patient with narrow vault anatomy that will not accommodate the round ovoid of the standard Fletcher Suit Applicator. The ovoid is flattened medially. The handle is 19 cm long to the ovoid center. The ovoids, made of high temperature plastic, are 13 mm in width and 30 mm high and have a 15° angle. The handle is made of stainless steel for durability with light weight titanium knob and caps. The applicator's shielded gold bucket carriers accommodate Cesium 137 (Cs-137) sources up to 3.2 mm diameter x 20 mm long for LDR Brachytherapy treatments. Two CT Dummy Bucket Carriers with markers indicating radiation source location are also provided. Included with the set are 2 cm, 2.5 cm, and 3 cm ovoid caps made of high temperature plastic. The set also includes four 8 mm diameter coated aluminum tandems with curvatures of 15°, 30°, 45°, and 60° with caps made of high temperature plastic. The tandems are marked every 2 cm over a 12 cm range from the tip. Also included are two flagged cervical stops made of high temperature plastic.

### Specifications

**High temperature plastic density:** 1.28 g/cm<sup>3</sup>

**Gold density:** 19.3 g/cm<sup>3</sup>

### Sterilization

Autoclavable

Clean using detergent

### Item 970-360 Weeks CT Mini-Ovoid Set Includes

- (1) Applicator with Stainless Steel Pivot
- (2) Shielded Gold Bucket Carriers
- (2) CT Bucket Carriers for Left or Right Side
- (2) 2.0 cm Diameter High Temperature Plastic (HTP) Ovoid Caps
- (2) 2.5 cm Diameter High Temperature Plastic (HTP) Ovoid Caps
- (2) 3.0 cm Diameter High Temperature Plastic (HTP) Ovoid Caps
- (4) Coated Aluminum Tandems and Caps (15°, 30°, 45°, and 60°)
- (2) Flagged Cervical Stops, High Temperature Plastic
- (1) 3/32" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources
- (1) Sterilization Tray

Item	Description
970-360	Weeks CT Mini-Ovoid Pivot S.S. Applicator Set w/Tray
970-360-001	Weeks CT Mini-Ovoid Pivot S.S. Applicator (Set Only)
970-360-002	Weeks CT Mini-Ovoid Pivot S.S. Applicator ONLY

### Replacement parts for Weeks CT Applicator Item 970-360

Item	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
970-101	DVD on Fletcher Colpostat Technique
970-220	3/32" Allen Wrench
970-360-10	Bucket Carrier, Right, Shielded Gold
970-360-11	Bucket Carrier, Left, Shielded Gold
970-360-25	CT Bucket Carrier (Right or Left Side)
970-360-30	Cap, Titanium, for Ovoid Handle
970-360-32	Knob, Locking, Titanium
970-360-50	2.0cm Right Ovoid HTP Cap, No Tungsten
970-360-51	2.0cm Left Ovoid HTP Cap, No Tungsten
970-360-52	2.5cm Right Ovoid HTP Cap, No Tungsten

Item	Description
970-360-53	2.5cm Left Ovoid HTP Cap, No Tungsten
970-360-54	3.0cm Right Ovoid HTP Cap, No Tungsten
970-360-55	3.0cm Left Ovoid HTP Cap, No Tungsten
970-371	#1 - 15°, 8mm Dia. Tandem, Coated Alum. w/ Cap
970-372	#2 - 30°, 8mm Dia. Tandem, Coated Alum. w/ Cap
970-373	#3 - 45°, 8mm Dia. Tandem, Coated Alum. w/ Cap
970-374	#4 - 60°, 8mm Dia. Tandem, Coated Alum. w/ Cap
970-375	Flagged Cervical Stop, High Temperature Plastic
970-3752	Screw Aluminum Cervical Stop #4-40 x 5/16"
970-377	Cap for Tandem, High Temperature Plastic
970-379	Dummy Source for CT, Teflon
970-252	Sterilization Tray with Autoclave Nameplate

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## TITANIUM MINI-OVOID LONG HANDLE AFTERLOADING APPLICATOR SET WITH TITANIUM PIVOT



The Titanium Mini-Ovoid Long Handle Afterloading Applicator Set with Titanium Pivot was designed for the patient with a narrow or tortuous vault that will not accommodate the round ovoid of the standard Fletcher-Suit Applicator. The ovoid is flattened medially to accommodate a very small anatomy. The flattened area results in an increased dose to the cervix. The handle is 19 cm long to the ovoid center. The ovoids are 12 mm in width, 29 mm high, have a 15° angle and **do not have shielding**. The applicator bucket carriers accommodate Cesium 137 sources up to 3.2 mm diameter x 20 mm long. Option dummy sources are available (Item 985-000 to Item 985-031). Tungsten shielded high temperature plastic ovoid caps are optional. The titanium tandems are marked every 2 cm over a 12 cm range.

### Sterilization:

Clean using detergent  
Autoclavable

### Item 970-350 Titanium Mini-Ovoid Long Handle Afterloading Applicator Set with Titanium Pivot includes:

- (1) Titanium Applicator with titanium pivot and two bucket carriers
- (4) Titanium tandems and caps -15°, 30°, 45° and 60°
- (2) Titanium flagged cervical stops
- (1) 3/32" Allen wrench
- (4) Plastic tandems and pushers
- (1) Sterilization tray

**Item 970-350-01** is the same as Item 970-350 without the sterilization tray.

**Item 970-350-02** is the applicator with titanium pivot and two bucket carriers.

Item #	Description
970-350	Mini-Ovoid Applicator Set with Sterilization Tray
970-350-01	Mini-Ovoid Applicator Set without Sterilization Tray
970-350-02	Mini-Ovoid Applicator with (2) Bucket Carriers

### Replacement parts for the Titanium Mini-Ovoid with Pivot Applicator Item 970-350, 970-350-01 and 970-350-02

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
970-300	Optional Straight Standard Titanium Tandem w/Cap
970-301	#1 - 15° Standard Titanium Tandem w/Cap
970-302	#2 - 30° Standard Titanium Tandem w/Cap
970-303	#3 - 45° Standard Titanium Tandem w/Cap
970-304	#4 - 60° Standard Titanium Tandem w/Cap
970-312	Cap for Tandem - Titanium
970-317	Flagged Cervical Stop - Titanium
970-318	Screw for Flagged Cervical Stop #4-40 x 5/16" - Titanium
970-220	3/32" Allen Wrench
970-670-59	Optional - 3/32" Large Handle Allen Wrench

Item #	Description
970-353-12	Cap for Ovoid Handle - Titanium
970-350-18	Optional Tandem Support Hook Assembly - Titanium
970-353-70	Right/Left Bucket Carrier - Stainless Steel
970-353-60	Optional Right/Left CT Bucket Carrier - Titanium/Delrin
970-350-50	Knob #6-32 - Titanium
970-252	Sterilization Tray with Autoclave Nameplate
970-650-40	Optional 2.0 cm Right Ovoid HTP Cap w/Tungsten
970-650-41	Optional 2.0 cm Left Ovoid HTP Cap w/Tungsten
970-650-42	Optional 2.5 cm Right Ovoid HTP Cap w/Tungsten
970-650-43	Optional 2.5 cm Left Ovoid HTP Cap w/Tungsten
970-650-44	Optional 3.0 cm Right Ovoid HTP Cap w/Tungsten
970-650-45	Optional 3.0 cm Left Ovoid HTP Cap w/Tungsten
970-229	Optional Tandem Support Bracket S.S. w/1 1/16" Wrench

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## FLETCHER-SUIT DELCLOS SHIELDED ROUND OVOID STAINLESS STEEL APPLICATOR



- **Lightweight**
- **Easy Source Loading Procedure**
- **Unbreakable Joints**

FSD Shielded Round Ovoid Long Handle Applicator with Stainless Steel Pivot employs the same features as the Rectangular Handle Fletcher-Suit Afterloading applicator but is less bulky, lighter, and has an easier source loading procedure. The lead (density 11.35 g/cm<sup>3</sup>) shields were replaced with high density 19.3 g/cm<sup>3</sup> tungsten. The handle is 19 cm long to the ovoid center. The ovoid's are 20 mm in diameter, 30 mm high, have a 15° angle. The ovoid's have immovable tungsten shielding for bladder and rectal protection. The handle is stainless steel for durability with a lightweight titanium knob and lightweight titanium ovoid handle caps. The handle is completely Heli-Arc welded at all joints

Item	Description
970-541	F.S.D. Shielded Round Ovoid, Stainless Steel Pivot Applicator Set with Sterilization Tray
970-541-1	F.S.D. Shielded Round Ovoid, Stainless Steel Pivot Applicator Set, No Sterilization Tray
970-541-2	F.S.D. Shielded Round Ovoid, Stainless Steel Pivot Applicator with Caps ONLY

Item	Optional Items
970-101	DVD on Fletcher Colpostat Technique
970-200	Straight Standard S.S. Tandem with Cap
970-229	S.S. Tandem Support Bracket with 1/16" Allen Wrench
985-030	Tungsten Dummy Source, 3.0 mm Dia. x 20 mm L

including pivot and locking for unbreakable joints. The applicator bucket carriers accommodate Cesium 137 sources up to 3.2 mm diameter x 20 mm long. A hole in the bucket carrier allows the user to push the source out, if the source gets stuck inside the bucket carrier. Ovoid caps increase the diameter of the ovoid. Four ovoid caps, (2) 2.5 cm and (2) 3.0 cm diameter are furnished with the applicator. The stainless steel tandems are marked every 2 cm over a 12 cm range. Optional items available include Stainless Steel Tandem Support Bracket with 1/16" Allen Wrench (Item 970-229) Tungsten Dummy Sources (Item 985-030) and Cesium 137 Tube Sources (Items 067-6510 to 067-6540).

### Item 970-541 Includes

- (1) Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stop
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources
- (1) Sterilization Tray

### Item 970-541-1 Includes

- (1) Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stop
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources

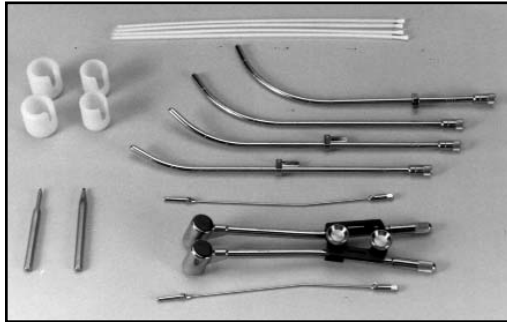
### Item 970-541-2 Includes

- (1) Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap

Item	Replacement Parts
970-000	Afterloading Plastic TANDEMS & PUSHERS (12/pkg)
970-010	Afterloading Plastic TANDEMS ONLY
970-020	Afterloading Plastic PUSHERS ONLY
970-201	#1 Tandem-15° Standard S.S with Cap (970-212)
970-202	#2 Tandem-30° Standard S.S with Cap (970-212)
970-203	#3 Tandem-45° Standard S.S. with Cap (970-212)
970-204	#4 Tandem-60° Standard S.S. with Cap (970-212)
970-212	Cap for Tandems (3M), Stainless Steel
970-216	Cervical Stop, Stainless Steel
970-217	Flagged Cervical Stop, Stainless Steel
970-218	Screw, S.S., f/Cervical Stop #4-40x5/16" Socket Head
970-220	3/32" Allen Wrench, Stainless Steel
970-360-30	Cap, Titanium, for Ovoid Handle
970-360-32	Locking Knob, Titanium
970-541-40	Bucket Carrier Right, Stainless Steel
970-541-42	Bucket Carrier Left, Stainless Steel
970-541-50	2.5cm Left/Right Nylon Ovoid Cap
970-541-52	3.0cm Left/Right Nylon Ovoid Cap
970-252	Sterilization Tray with Autoclave Nameplate

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## FLETCHER-SUIT DELCLOS SHIELDED ROUND OVOID LONG HANDLE APPLICATOR



to 3.2 mm diameter x 20 mm long. A hole in the bucket carrier allows the user to push the source out, if the source gets stuck inside the bucket carrier. Ovoid caps increase the diameter of the ovoid. Four ovoid caps, (2) 2.5 cm and (2) 3.0 cm diameter are furnished with the applicator. The stainless steel tandems are marked every 2 cm over a 12 cm range. Optional items available include Tungsten Dummy Sources (Item 985-030) and Cesium 137 Tube Sources (Items 067-6510 to 067-6540).

### Item 970-543 Includes

- (1) Applicator with Bracket Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stop
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (1) 1/16" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources
- (1) Sterilization Tray

### Item 970-543-1 Includes

- (1) Applicator with Bracket Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stop
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (1) 1/16" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources

### Item 970-543-2 Includes

- (1) Applicator with Bracket Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap
- (1) 1/16" Allen Wrench

- **Lightweight**
- **Easy Source Loading Procedure**
- **Unbreakable Joints**

FSD Shielded Round Ovoid Long Handle Applicator with Bracket Pivot employs the same features as the Rectangular Handle Fletcher-Suit Afterloading Applicator but is less bulky, lighter, and has an easier source loading procedure. The lead (density 11.35 g/cm<sup>3</sup>) shields were replaced with high density 19.3 g/cm<sup>3</sup> tungsten. The handle is 19 cm long to the ovoid center. The ovoids are 20 mm in diameter, 30 mm high, have a 15° angle. The ovoids have immovable tungsten shielding for bladder and rectal protection. The applicator uses a two piece adjustable handle pivot bracket with a tandem support hook. The applicator is completely Heli-Arc welded at all joints for unbreakable joints. The applicator bucket carriers accommodate Cesium 137 sources up

Item	Description
970-543	F.S.D. Shielded Round Ovoid, Bracket Pivot Applicator Set with Sterilization Tray
970-543-1	F.S.D. Shielded Round Ovoid, Bracket Pivot Applicator Set, No Sterilization Tray
970-543-2	F.S.D. Shielded Round Ovoid, Bracket Pivot Applicator with Caps and 1/16" Allen Wrench ONLY

Item	Optional Items
970-101	DVD on Fletcher Colpostat Technique
970-200	Straight Standard S.S. Tandem with Cap
985-030	Tungsten Dummy Source, 3.0 mm Dia. x 20 mm L

Item	Replacement Parts
970-000	Afterloading Plastic TANDEM & PUSHERS (12/pkg)
970-010	Afterloading Plastic TANDEM ONLY
970-020	Afterloading Plastic PUSHERS ONLY
970-201	#1 Tandem-15° Standard S.S with Cap (970-212)
970-202	#2 Tandem-30° Standard S.S with Cap (970-212)
970-203	#3 Tandem-45° Standard S.S. with Cap (970-212)
970-204	#4 Tandem-60° Standard S.S. with Cap (970-212)
970-212	Cap for Tandems (3M), Stainless Steel
970-216	Cervical Stop, Stainless Steel
970-217	Flagged Cervical Stop, Stainless Steel
970-218	Screw, S.S., f/Cervical Stop #4-40x5/16" Socket Head
970-220	3/32" Allen Wrench, Stainless Steel
970-643-22	Handle Bracket Set, Complete with Knobs and Wrench
970-360-30	Titanium Cap for Ovoid Handle
970-541-40	Bucket Carrier Right, Stainless Steel
970-541-42	Bucket Carrier Left, Stainless Steel
970-541-50	2.5cm Left/Right Nylon Ovoid Cap
970-541-52	3.0cm Left/Right Nylon Ovoid Cap
970-252	Sterilization Tray with Autoclave Nameplate

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

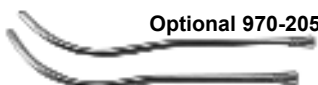
## FLETCHER-SUIT DELCLOS SHIELDED ROUND LONG HANDLE AFTERLOADING APPLICATOR SET With Tandem Support Replacement for Rectangular Handle Fletcher-Suit Applicator



970-643



970-643-01



Optional 970-205

Optional 970-206

The FSD Shielded Round Long Handle S.S. Afterloading Applicator employs the same features as the Rectangular Handle Fletcher-Suit S.S. Afterloading Applicator but is less bulky, lighter, and has an easier loading procedure of the source. The S.S. applicator handle measures 19 cm long to the ovoid. The stainless steel ovoids are 20 mm diameter x 30 mm high and have an angle of 15°. They have immovable tungsten shielding for bladder and rectal protection. The applicator uses a two piece S.S. adjustable handle pivot bracket with a tandem support hook. The applicator S.S. bucket carriers accommodate either Cesium 137 or Radium 226 sources up to 3.4 mm diameter x 23 mm long. Dummy sources are available (Item 985-000 to 985-031). The S.S. tandems are marked every 2 cm over an 8 cm range.

### Item 970-643 FSD Shielded Round Long Handle Afterloading Applicator Set with Tandem Support includes:

- (1) S.S. Applicator with adjustable handle bracket with a tandem support hook and two S.S. bucket carriers
- (2) Each of the 2.5 and 3.0 cm diameter nylon ovoid caps
- (4) Stainless steel tandems and caps - 15°, 30°, 45° and 60°
- (1) S.S. Cervical stop
- (2) S.S. Flagged cervical stops
- (2) S.S. Allen wrenches
- (4) Plastic tandems and pushers
- (1) Sterilization tray

Item 970-643-01 is the same as Item 970-643 without the sterilization tray.

Item 970-643-02 is the applicator with handle bracket and tandem support hook, two bucket carriers, and a wrench.

Item #	Description
970-643	FSD Long Handle S.S. Applicator Set with Sterilization Tray
970-643-01	FSD Long Handle S.S. Applicator Set w/out Sterilization Tray
970-643-02	FSD Long Handle S.S. Applicator with Bucket Carriers

### Replacement parts for the FSD Shielded Round Long Handle Applicator with Tandem Support Item 970-643, 970-643-01 and 970-643-02

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
970-200	Straight Standard S.S. Tandem w/Cap
970-201	#1 - 15° Standard S.S. Tandem w/Cap
970-202	#2 - 30° Standard S.S. Tandem w/Cap
970-203	#3 - 45° Standard S.S. Tandem w/Cap
970-204	#4 - 60° Standard S.S. Tandem w/Cap
970-205	#3 - 45° Double Curved S.S. Tandem for Bracket w/Cap
970-206	#4 - 60° Double Curved S.S. Tandem for Bracket w/Cap
970-212	S.S. Cap for Tandem
970-216	S.S. Cervical Stop
970-217	S.S. Flagged Cervical Stop
970-218	S.S. Screw Cervical Stop #4-40 x 5/16"
970-220	3/32" S.S. Allen Wrench
970-670-59	Optional - 3/32" Large Handle S.S. Allen Wrench

Item #	Description
970-229-6	1/16" S.S. Allen Wrench
970-641-12	S.S. Cap for Ovoid Handle
970-641-2	2.5 cm Nylon Ovoid Cap
970-641-3	3.0 cm Nylon Ovoid Cap
970-643-18	S.S. Tandem Support Hook
970-643-20	S.S. Upper Left Handle Bracket
970-643-21	S.S. Lower Right Handle Bracket
970-643-22	S.S. Handle Bracket Set
970-643-23	Nylon Pivot for Bracket
970-643-50	S.S. Knob w/Holes #10-32
970-643-51	S.S. "U" Knob #10-32
970-252	Sterilization Tray with Autoclave Nameplate

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## DELCLOS MINI-OVOID LONG HANDLE STAINLESS STEEL PIVOT APPLICATOR SET



- Accommodates a Very Small Anatomy
- Unbreakable Joints

The Delclos Mini-Ovoid Long Handle Afterloading Applicator Set with Stainless Steel Pivot was designed for the patient with a narrow or tortuous vault that will not accommodate the round ovoid of the standard Fletcher-Suit Applicator. The ovoid is flattened medially to accommodate a very small anatomy. The flattened area results in an increased dose to the cervix. The handle is 19 cm long to the ovoid center. The ovoid's are 12.8 mm in width, 30 mm high, have a 15° angle and **do not have shielding**. The handle is stainless steel for durability with a lightweight titanium locking knob and lightweight titanium ovoid handle caps.

The handle is completely Heli-Arc welded at all joints including pivot and locking for unbreakable joints. The applicator bucket carriers accommodate Cesium 137 sources up to 3.2 mm diameter x 20 mm long. A hole in the bucket carrier allows the user to push the source out, if the source gets stuck inside the bucket carrier. The stainless steel tandems are marked every 2 cm over a 12 cm range. Optional items available include Stainless Steel Tandem Support Bracket with 1/16" Allen Wrench (Item 970-229), 2.0 cm, 2.5 cm and 3.0 cm diameter Tungsten Shielded High Temperature Plastic Ovoid Caps (Items 970-650-40 to 970-650-45), Cesium 137 Tube Sources (Items 067-6510 to 067-6540) and Tungsten Dummy Sources (Item 985-030).

### Item 970-550 Includes

- (1) Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stops
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources
- (1) Sterilization Tray

### Item 970-550-1 Includes

- (1) Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources

### Item 970-550-2 Includes

- (1) Applicator with Stainless Steel Pivot and Two Bucket Carriers

Item	Description
970-550	Delclos Mini-Ovoid Long Handle Stainless Steel Pivot Applicator Set with Sterilization Tray
970-550-1	Delclos Mini-Ovoid Long Handle Stainless Steel Pivot Applicator Set, No Sterilization Tray
970-550-2	Delclos Mini-Ovoid Long Handle Stainless Steel Pivot Applicator

Item	Replacement Parts
970-000	Afterloading Plastic TANDEMS & PUSHERS (12/pkg)
970-010	Afterloading Plastic TANDEMS ONLY
970-020	Afterloading Plastic PUSHERS ONLY
970-201	#1 Tandem-15° Standard S.S with Cap (970-212)
970-202	#2 Tandem-30° Standard S.S with Cap (970-212)
970-203	#3 Tandem-45° Standard S.S. with Cap (970-212)
970-204	#4 Tandem-60° Standard S.S. with Cap (970-212)
970-212	Cap for Tandems (3M), Stainless Steel
970-216	Cervical Stop, Stainless Steel
970-217	Flagged Cervical Stop, Stainless Steel
970-218	Screw, S.S., f/Cervical Stop #4-40x5/16" Socket Head
970-220	3/32" Allen Wrench, Stainless Steel
970-360-30	Titanium Cap for Ovoid Handle
970-360-32	Locking Knob, Titanium
970-541-40	Bucket Carrier Right, Stainless Steel
970-541-42	Bucket Carrier Left, Stainless Steel
970-252	Sterilization Tray with Autoclave Nameplate

Item	Optional Items
970-101	DVD on Fletcher Colpostat Technique
970-200	Straight Standard S.S. Tandem with Cap
970-229	S.S. Tandem Support Bracket with 1/16" Allen Wrench
970-650-40	2.0cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-41	2.0cm Left Mini Ovoid HTP Cap w/Tungsten Shield
970-650-42	2.5cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-43	2.5cm Left Mini Ovoid HTP Cap w/Tungsten Shield
970-650-44	3.0cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-45	3.0cm Left Mini Ovoid HTP Cap w/Tungsten Shield
985-030	Tungsten Dummy Source, 3.0 mm Dia. x 20 mm L

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## DELCLOS MINI-OVOID LONG HANDLE BRACKET PIVOT APPLICATOR SET



tandems are marked every 2 cm over a 12 cm range. Optional items available include Tungsten Dummy Sources (Item 985-030), 2.0 cm, 2.5 cm and 3.0 cm diameter Tungsten Shielded High Temperature Plastic Ovoid Caps (Items 970-650-40 to 970-650-45) and Cesium 137 Tube Sources (Items 067-6510 to 067-6540).

### Item 970-553 Includes

- (1) Applicator with Bracket Pivot and Two Bucket Carriers
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stop
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (1) 1/16" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources
- (1) Sterilization Tray

### Item 970-553-1 Includes

- (1) Applicator with Bracket Pivot and Two Bucket Carriers
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
- (1) Cervical Stop
- (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (1) 1/16" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources

### Item 970-553-2 Includes

- (1) Applicator with Bracket Pivot and Two Bucket Carriers
- (1) 1/16" Allen Wrench

- Accommodates a Very Small Anatomy
- Unbreakable Joints

The Delclos Mini-Ovoid Long Handle Afterloading Applicator Set with Bracket Pivot was designed for the patient with a narrow or tortuous vault that will not accommodate the round ovoid of the standard Fletcher-Suit Applicator. The ovoid is flattened medially to accommodate a very small anatomy. The flattened area results in an increased dose to the cervix. The handle is 19 cm long to the ovoid center. The ovoids are 12.8 mm in width, 30 mm high, have a 15° angle and **do not have shielding**. The applicator uses a two piece adjustable handle pivot bracket with a tandem support hook. The applicator is completely Heli-Arc welded at all joints for unbreakable joints. The applicator bucket carriers accommodate Cesium 137 sources up to 3.2 mm diameter x 20 mm long. A hole in the bucket carrier allows the user to push the source out, if the source gets stuck inside the bucket carrier. The stainless steel

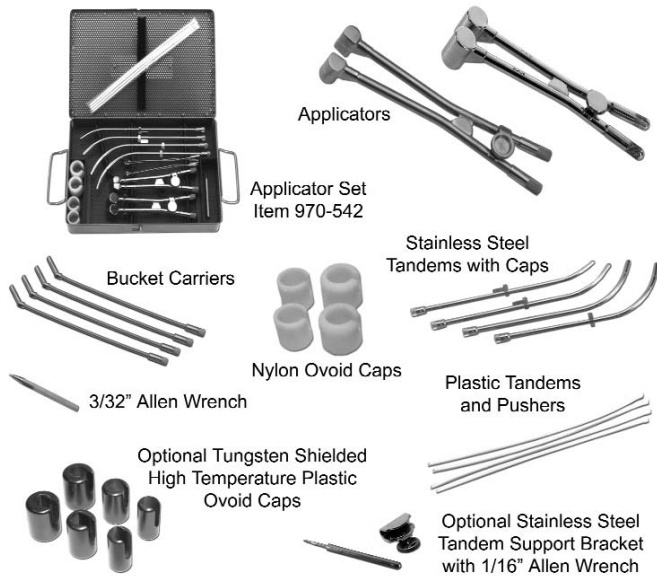
Item	Description
970-553	Delclos Mini-Ovoid Long Handle Applicator Set with Bracket Pivot, Tandem Support Hook and Sterilization Tray
970-553-1	Delclos Mini-Ovoid Long Handle Applicator Set with Bracket Pivot and Tandem Support Hook, No Sterilization Tray
970-553-2	Delclos Mini-Ovoid Long Handle Applicator with Bracket Pivot and Tandem Support Hook

Item	Optional Items
970-101	DVD on Fletcher Colpostat Technique
970-200	Straight Standard S.S. Tandem with Cap
970-650-40	2.0cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-41	2.0cm Left Mini Ovoid HTP Cap w/Tungsten Shield
970-650-42	2.5cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-43	2.5cm Left Mini Ovoid HTP Cap w/Tungsten Shield
970-650-44	3.0cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-45	3.0cm Left Mini Ovoid HTP Cap w/Tungsten Shield
985-030	Tungsten Dummy Source, 3.0 mm Dia. x 20 mm L

Item	Replacement Parts
970-000	Afterloading Plastic TANDEMS & PUSHERS (12/pkg)
970-010	Afterloading Plastic TANDEMS ONLY
970-020	Afterloading Plastic PUSHERS ONLY
970-201	#1 Tandem-15° Standard S.S with Cap (970-212)
970-202	#2 Tandem-30° Standard S.S with Cap (970-212)
970-203	#3 Tandem-45° Standard S.S. with Cap (970-212)
970-204	#4 Tandem-60° Standard S.S. with Cap (970-212)
970-212	Cap for Tandems (3M), Stainless Steel
970-216	Cervical Stop, Stainless Steel
970-217	Flagged Cervical Stop, Stainless Steel
970-218	Screw, S.S., f/Cervical Stop #4-40x5/16" Socket Head
970-220	3/32" Allen Wrench, Stainless Steel
970-360-30	Titanium Cap for Ovoid Handle
970-541-40	Bucket Carrier Right, Stainless Steel
970-541-42	Bucket Carrier Left, Stainless Steel
970-643-22	Handle Bracket Set, Complete with Knobs and Wrench
970-252	Sterilization Tray with Autoclave Nameplate

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## COMBINATION FSD SHIELDED ROUND OVOID AND DELCLOS MINI-OVOID LONG HANDLE APPLICATOR SET



- **Lightweight**
- **Easy Source Loading Procedure**
- **Accommodates a Very Small Anatomy**
- **Unbreakable Joints**

FSD Shielded Round Ovoid Long Handle Applicator with Stainless Steel Pivot employs the same features as the Rectangular Handle Fletcher-Suit Afterloading applicator but is less bulky, lighter, and has an easier source loading procedure. The ovoid's have immovable tungsten shielding for bladder and rectal protection. The applicator bucket carriers accommodate Cesium 137 sources up to 3.2 mm diameter x 20 mm long.

The Delclos Mini-Ovoid Long Handle Afterloading Applicator Set with Stainless Steel Pivot was designed for the patient with a narrow or tortuous vault that will not accommodate the round ovoid of the standard Fletcher-Suit Applicator. The ovoid is flattened medially to accommodate a very small anatomy. The flattened area results in an increased dose to the cervix. The ovoid's are 12.8 mm in width, 30 mm high, have a 15° angle and **do not have shielding**. The applicator bucket carriers accommodate Cesium 137 sources up to 3.2 mm diameter x 20 mm long.

Optional items available include Stainless Steel Tandem Support Bracket with 1/16" Allen Wrench (Item 970-229), 2.0 cm, 2.5 cm and 3.0 cm diameter Tungsten Shielded High Temperature Plastic Ovoid Caps (Items 970-650-40 to 970-650-45), Cesium 137 Tube Sources (Items 067-6510 to 067-6540) and Tungsten Dummy Sources (Item 985-030).

### Item 970-542 Includes

- (1) FSD Shielded Round Ovoid Long Handle Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (2) 2.5 cm Diameter Nylon Ovoid Cap
- (2) 3.0 cm Diameter Nylon Ovoid Cap
- (1) Delclos Mini-Ovoid Long Handle Applicator with Stainless Steel Pivot and Two Bucket Carriers
- (4) Stainless Steel Tandems and Caps (15°, 30°, 45°, and 60°)
  - (1) Cervical Stop
  - (2) Flagged Cervical Stops
- (1) 3/32" Allen Wrench
- (4) Plastic Tandems and Pushers for Sources
- (1) Sterilization Tray

Item	Description
970-542	Combination FSD Shielded Round Ovoid Long Handle Applicator with Stainless Steel Pivot and Delclos Mini-Ovoid Long Handle Applicator with Stainless Steel Pivot Set, Includes Tandems and Sterilization Tray

Item	Optional Items
067-6510	Cs-137 TUBE SOURCE, 10 mg Ra Equivalent-Red
067-6515	Cs-137 TUBE SOURCE, 15 mg Ra Equivalent-Black
067-6520	Cs-137 TUBE SOURCE, 20 mg Ra Equivalent-White
067-6525	Cs-137 TUBE SOURCE, 25 mg Ra Equivalent-Blue
067-6530	Cs-137 TUBE SOURCE, 30 mg Ra Equivalent-Orange
067-6535	Cs-137 TUBE SOURCE, 35 mg Ra Equivalent-Green
067-6540	Cs-137 TUBE SOURCE, 40 mg Ra Equivalent-Gray
970-101	DVD on Fletcher Colpostat Technique
970-200	Straight Standard S.S. Tandem with Cap
970-229	S.S. Tandem Support Bracket with 1/16" Allen Wrench
970-650-40	2.0cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-41	2.0cm Left Mini Ovoid HTP Cap w/Tungsten Shield
970-650-42	2.5cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-43	2.5cm Left Mini Ovoid HTP Cap w/Tungsten Shield
970-650-44	3.0cm Right Mini Ovoid HTP Cap w/Tungsten Shield
970-650-45	3.0cm Left Mini Ovoid HTP Cap w/Tungsten Shield
985-030	Tungsten Dummy Source, 3.0 mm Dia. x 20 mm L

Item	Replacement Parts
970-000	Afterloading Plastic TANDEMS & PUSHERS (12/pkg)
970-010	Afterloading Plastic TANDEMS ONLY
970-020	Afterloading Plastic PUSHERS ONLY
970-201	#1 Tandem-15° Standard S.S with Cap (970-212)
970-202	#2 Tandem-30° Standard S.S with Cap (970-212)
970-203	#3 Tandem-45° Standard S.S. with Cap (970-212)
970-204	#4 Tandem-60° Standard S.S. with Cap (970-212)
970-212	Cap for Tandems (3M), Stainless Steel
970-216	Cervical Stop, Stainless Steel
970-217	Flagged Cervical Stop, Stainless Steel
970-218	Screw, S.S., f/Cervical Stop #4-40x5/16" Socket Head
970-220	3/32" Allen Wrench, Stainless Steel
970-360-30	Cap, Titanium, for Ovoid Handle
970-360-32	Locking Knob, Titanium
970-541-2	FSD Shielded Round Ovoid, SS Pivot Applicator w/Caps
970-541-40	Bucket Carrier Right, Stainless Steel
970-541-42	Bucket Carrier Left, Stainless Steel
970-541-50	2.5cm Left/Right Nylon Ovoid Cap
970-541-52	3.0cm Left/Right Nylon Ovoid Cap
970-550-2	Delclos Mini-Ovoid Long Handle Applicator w/S.S. Pivot
970-252	Sterilization Tray with Autoclave Nameplate



# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## DVD ON FLETCHER COLPOSTAT TECHNIQUE



Item #	Description
970-101	DVD on Fletcher Colpostat Technique

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# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## DELCLOS UTERINE/VAGINAL AFTERLOADING APPLICATOR SET

With Type "B" Dome Assembly.

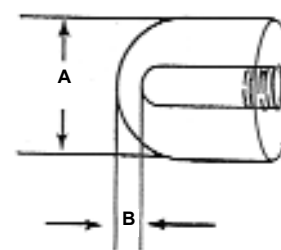


970-670-01

The Delclos Uterine/Vaginal Type "B" Applicator was originally manufactured by Radium Chemical then Radium Accessories. **The dimension from the source to tip of the dome for all dome cylinders is the same (Dimension B).**

The Delclos Uterine/Vaginal Afterloading Applicator and Dome Assembly is used primarily to irradiate the vagina where the tumor extends downward from the cervix along the vaginal wall. The acrylic vaginal cylinders are 2.5 cm long permitting a maximum assembled length of 15 cm and come in diameters from 2.0 cm to 4.5 cm to accommodate different vaginal sizes. The cylinders have four stainless steel pins .1" from edge to identify the location radiographically and have an inside groove to facilitate removal with the cylinder extractor. The 15°, 30° and 45° S.S. tandems are marked every 2 cm over an 8 cm range. The dome cylinders are threaded to accommodate a 15 cm long threaded tandem.

Type "B" Threaded Dome



Dimension

	A	B
	2.0 cm	0.1 cm
	2.5 cm	0.1 cm
	3.0 cm	0.1 cm
	3.5 cm	0.1 cm
	4.0 cm	0.1 cm
	4.5 cm	0.1 cm

### Item 970-670-01 includes:

- (3) S.S. Tandems with caps - 15°, 30°, 45°
- (3) S.S. Cervical stops
- (1) 15 cm Threaded S.S. Tandem with Cap for Dome
- (2) S.S. Flagged Cylinder Stop
- (1) S.S. Flat End Vaginal Tandem with Cap
- (4) Plastic Tandems and Pushers
- (2) 3/32" S.S. Allen Wrenches (short and long handle)
- (1) S.S. Cylinder Extractor
- (6) Threaded Acrylic Domes - 2.0, 2.5, 3.0, 3.5, 4.0, 4.5 cm
- (5) Cylinders for Flat End Tandem - 2.5, 3.0, 3.5, 4.0, 4.5 cm
- (5) 2.0 cm Acrylic Cylinders
- (4) Acrylic Cylinders of each - 2.5, 3.0, 3.5, 4.0, 4.5 cm
- (1) Sterilization Tray

Item 970-670-02 does not include the 3 Tandems and Cervical Stops, 1 Short Handle Allen Wrench and Sterilization Tray.

Item #	Description
970-670-01	Type "B" Applicator Set with Sterilization Tray
970-670-02	Type "B" Applicator <b>Without</b> 3 Tandems, 3 Cervical Stops, 1 Wrench & Sterilization Tray

### Replacement parts for Delclos Uterine/Vaginal Afterloading Applicator With Type "B" Dome Assembly Item 970-670-01 and 970-670-02

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-200	Straight Standard S.S. Tandem w/Cap
970-201	#1 - 15° Standard S.S. Tandem w/Cap
970-202	#2 - 30° Standard S.S. Tandem w/Cap
970-203	#3 - 45° Standard S.S. Tandem w/Cap
970-204	#4 - 60° Standard S.S. Tandem w/Cap
970-212	S.S. Cap for Tandem
970-216	S.S. Cervical Stop
970-217	Optional: S.S. Flagged Cervical Stop
970-218	S.S. Screw Cervical Stop #4-40 x 5/16"
970-254	Sterilization Tray with Gas Nameplate
970-670-18	15 cm Threaded S.S. Tandem for Dome
970-670-19	2.0 cm Acrylic Dome w/Thread
970-670-21	2.0 cm Acrylic Cylinder
970-670-23	15 cm Vaginal S.S. Tandem w/Flat End
970-670-24	2.5 cm Acrylic Dome w/Thread
970-670-26	2.5 cm Acrylic Cylinder
970-670-27	2.5 cm Acrylic Cylinder for Flat End Tandem

Item #	Description
970-670-29	3.0 cm Acrylic Dome w/Thread
970-670-31	3.0 cm Acrylic Cylinder
970-670-32	3.0 cm Acrylic Cylinder for Flat End Tandem
970-670-34	3.5 cm Acrylic Dome w/Thread
970-670-36	3.5 cm Acrylic Cylinder
970-670-37	3.5 cm Acrylic Cylinder for Flat End Tandem
970-670-39	4.0 cm Acrylic Dome w/Thread
970-670-41	4.0 cm Acrylic Cylinder
970-670-42	4.0 cm Acrylic Cylinder for Flat End Tandem
970-670-44	4.5 cm Acrylic Dome w/Thread
970-670-46	4.5 cm Acrylic Cylinder
970-670-47	4.5 cm Acrylic Cylinder for Flat End Tandem
970-670-49	S.S. Cylinder Extractor
970-670-52	S.S. Cylinder Stop w/Flag
970-670-54	Optional: S.S. Cylinder Stop
970-670-56	Tapered S.S. Allen Screw 4-40 x 1/4"
970-670-59	3/32" Long Handle S.S. Allen Wrench
970-670-60	3/32" Short Handle S.S. Allen Wrench

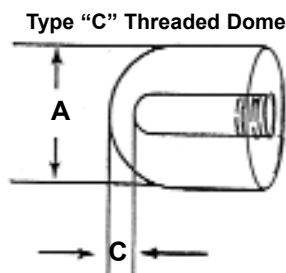
# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## DELCLOS UTERINE/VAGINAL AFTERLOADING APPLICATOR SET

With Type "C" Dome Assembly



970-670-03



### Dimensions

A	C
2.0 cm	0.5 cm
2.5 cm	0.8 cm
3.0 cm	1.0 cm
3.5 cm	1.0 cm
4.0 cm	1.0 cm
4.5 cm	1.3 cm

### Item 970-670-03 includes:

- (3) S.S. Tandems with caps - 15°, 30°, 45°
- (3) S.S. Cervical Stops
- (1) 15 cm Threaded S.S. Tandem with Cap for Dome
- (2) S.S. Flagged Cervical Stop
- (1) Flat End Vaginal S.S. Tandem with Cap
- (4) Plastic Tandems and Pushers
- (2) 3/32" S.S. Allen Wrenches (short and long handle)
- (1) S.S. Cylinder Extractor
- (6) Threaded Acrylic Domes - 2.0, 2.5, 3.0, 3.5, 4.0, 4.5 cm
- (5) Acrylic Cylinders for Flat End Tandem- 2.5, 3.0, 3.5, 4.0, 4.5 cm
- (5) 2.0 cm Acrylic Cylinders
- (4) Acrylic Cylinders of each - 2.5, 3.0, 3.5, 4.0, 4.5 cm
- (1) Sterilization Tray

Item 970-670-04 does not include the 3 Tandems and Cervical Stops, 1 Short Handle Allen Wrench and Sterilization Tray.

Item #	Description
970-670-03	Type "C" Applicator Set with Sterilization Tray
970-670-04	Type "C" Applicator <b>Without</b> 3 Tandems, 3 Cervical Stops, 1 Wrench & Sterilization Tray

The Delclos Uterine/Vaginal Type "C" Applicator was originally manufactured by 3M. **The dimension from the source to tip of dome varies for the cylinders (Dimension C).**

The Delclos Uterine/Vaginal Afterloading Applicator and Dome Assembly is used primarily to irradiate the vagina where the tumor extends downward from the cervix along the vaginal wall. The acrylic vaginal cylinders are 2.5 cm long permitting a maximum assembled length of 15 cm and come in diameters from 2.0 cm to 4.5 cm to accommodate different vaginal sizes. The cylinders have four stainless steel pins .1" from edge to identify the location radiographically and have an inside groove to facilitate removal with the cylinder extractor. The 15°, 30° and 45° S.S. tandems are marked every 2 cm over an 8 cm range. The acrylic dome cylinders are threaded to accommodate a 15 cm long threaded S.S. tandem.

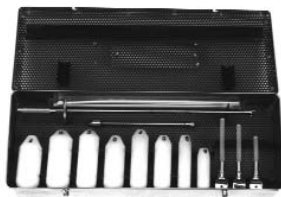
### Replacement parts for the Delclos Uterine/Vaginal Afterloading Applicator With Type "C" Dome Assembly Item 970-670-03 and 970-670-04

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-200	Straight Standard S.S. Tandem w/Cap
970-201	#1 - 15° Standard S.S. Tandem w/Cap
970-202	#2 - 30° Standard S.S. Tandem w/Cap
970-203	#3 - 45° Standard S.S. Tandem w/Cap
970-204	#4 - 60° Standard S.S. Tandem w/Cap
970-212	S.S. Cap for Tandem
970-216	S.S. Cervical Stop
970-217	Optional: S.S. Flagged Cervical Stop
970-218	S.S. Screw Cervical Stop #4-40 x 5/16"
970-254	Sterilization Tray with Gas Nameplate
970-670-18	15 cm Threaded S.S. Tandem for Dome
970-670-20	2.0 cm Acrylic Dome w/Thread
970-670-21	2.0 cm Acrylic Cylinder
970-670-23	15 cm Vaginal S.S. Tandem w/Flat End
970-670-25	2.5 cm Acrylic Dome w/Thread
970-670-26	2.5 cm Acrylic Cylinder
970-670-27	2.5 cm Acrylic Cylinder for Flat End Tandem

Item #	Description
970-670-30	3.0 cm Acrylic Dome w/Thread
970-670-31	3.0 cm Acrylic Cylinder
970-670-32	3.0 cm Acrylic Cylinder for Flat End Tandem
970-670-35	3.5 cm Acrylic Dome w/Thread
970-670-36	3.5 cm Acrylic Cylinder
970-670-37	3.5 cm Acrylic Cylinder for Flat End Tandem
970-670-40	4.0 cm Acrylic Dome w/Thread
970-670-41	4.0 cm Acrylic Cylinder
970-670-42	4.0 cm Acrylic Cylinder for Flat End Tandem
970-670-45	4.5 cm Acrylic Dome w/Thread
970-670-46	4.5 cm Acrylic Cylinder
970-670-47	4.5 cm Acrylic Cylinder for Flat End Tandem
970-670-49	S.S. Cylinder Extractor
970-670-52	S.S. Cylinder Stop w/Flag
970-670-54	Optional: S.S. Cylinder Stop
970-670-56	S.S. Tapered Allen Screw 4-40 x 1/4"
970-670-59	3/32" Long Handle S.S. Allen Wrench
970-670-60	3/32" Short Handle S.S. Allen Wrench

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## BURNETT AFTERLOADING VAGINAL APPLICATOR SET



970-700



970-700-02



**Item 970-700 Burnett Afterloading Vaginal Applicator Set includes:**

- (8) Nylon cylinders
- (1) Cylinder afterloading tandem
- (1) Loading handle
- (3) Screw caps with 5.7, 7.6, 8.4 cm source carriers
- (4) Four plastic tandems and pushers
- (1) Sterilization tray

**Item 970-700-02 Burnett Afterloading Vaginal Applicator includes:**

- (8) Nylon cylinders
- (1) Cylinder afterloading tandem
- (4) Plastic tandems and pushers
- (1) Sterilization tray

**Specifications**

**Material:** Nylon  
**Density:** 1.14 -1.15 g/cm<sup>3</sup>

Item #	Description
970-700	Burnett Applicator Set
970-700-02	Burnett Applicator

The Burnett Afterloading Applicator is effective in reducing vaginal recurrence when used post-hysterectomy for cancer of the endometrium. Eight combinations of length and diameter are available.

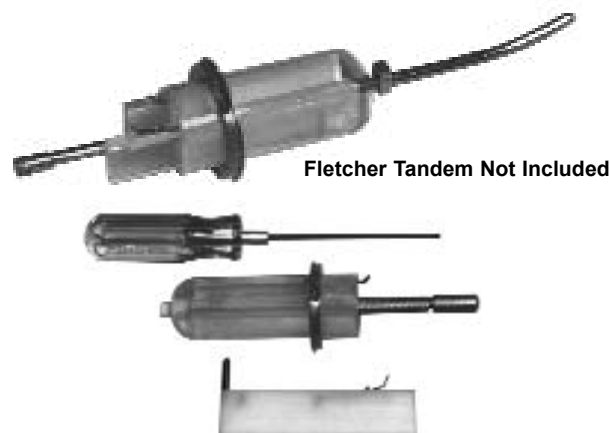
### Replacement parts for the Burnett Afterloading Vaginal Applicator Item 970-700, and 970-700-02

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
970-212	S.S. Cap for Tandem
970-700-06	Sterilization Tray
970-700-11	"A" 20 x 66 mm Nylon Cylinder
970-700-12	"B" 20 x 87 mm Nylon Cylinder
970-700-13	"C" 25 x 87 mm Nylon Cylinder
970-700-14	"D" 30 x 87 mm Nylon Cylinder
970-700-15	"E" 35 x 87 mm Nylon Cylinder

Item #	Description
970-700-16	"F" 25 x 95 mm Nylon Cylinder
970-700-17	"G" 30 x 95 mm Nylon Cylinder
970-700-18	"H" 35 x 95 mm Nylon Cylinder
970-700-20	S.S. Screw Cap for Source Carrier
970-700-22	S.S. Loading Handle for Screw Cap w/Carrier
970-700-25	5.7 cm Long Source Carrier
970-700-27	7.6 cm Long Source Carrier
970-700-28	8.4 cm Long Source Carrier
970-700-30	S.S. 6" Afterloading Tandem with Cap for Cylinders
970-700-30-17	Sleeve Nylon Centering Set, for A,B,C,D,E,F,G,H

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## VAGINAL AFTER-LOADING CYLINDER SET



### Vaginal Afterloading Acrylic Cylinder Set includes

- (1) Acrylic Cylinder
- (1) Threaded delrin plug
- (2) Rectangular delrin afterloading sliders
- (1) 6 cm threaded stainless steel afterloading barrel with cap
- (1) Adjustable stainless steel suture ring with screw
- (1) 3/32" ball hex driver
- (1) Source pusher for the rectangular afterloading slider

### Specifications

#### Vaginal Afterloading Cylinder

**Material:** Acrylic

**Density:** 1.185 g/cm<sup>3</sup>

**Item 976-033:** 3.3 cm dia. x 12 cm L

**Item 976-038:** 3.8 cm dia. x 12 cm L

**Item 976-040:** 4.0 cm dia. x 12 cm L

#### Afterloading Slider

**Material:** Delrin

**Density:** 1.425 g/cm<sup>3</sup>

**Sterilization:** Gas only

**DO NOT clean with alcohol this may fracture the acrylic.**

Item	Vaginal Afterloading Acrylic Cylinder Set
976-033	33 mm
976-038	38 mm
976-040	40 mm

Item	Accessories and Replacement Parts
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
976-042	Source Pusher
976-065	Optional Lead Slider for Vaginal Cylinder
977-065-33	33 mm Adjustable S.S. Suture Ring
977-065-40	40 mm Adjustable S.S. Suture Ring
977-066	Optional Lead Slider for Vaginal Cylinder w/Lock
977-067	S.S. Ball Style Hex Driver
977-068	6 cm Afterloading S.S. Barrel w/Cap
977-069	S.S. Cap for Afterloading Barrel
977-070	Delrin Threaded Plug for Cylinders

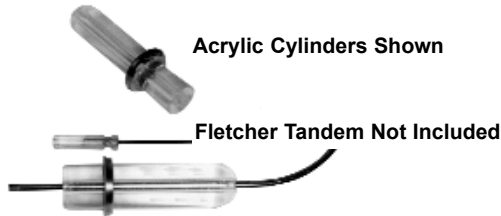
The Vaginal After-Loading Acrylic Cylinders are of special value where cervical tumors are large and exophytic, where the uterus has been removed, when the vagina is quite small (sometimes due to post irradiation changes) or when the cervix cannot be identified or entered because of tumor deformity. Often the applicator can be placed without more than local infiltrative anesthesia into the labia; packing is not required to hold the applicator in place. It can be adapted to irradiate both cervical and vaginal cancers and is simple to apply and afterload.

The vaginal acrylic cylinder has a 6.6 mm diameter center hole for a Fletcher tandem or an afterloading tandem. If using a afterloading tandem, a threaded delrin plug is screwed into the tip. The acrylic cylinder has two channels for the rectangular afterloading sliders and an adjustable stainless steel suture ring. The rectangular afterloading sliders are made of delrin and use a vertical source. The separation between vertical sources in the afterloading sliders is 15 mm for the 33 mm cylinder and 20 mm for the 38 mm and 40 mm cylinders. A locking spring secures the afterloading slider in the cylinder and a pressure spring holds the source in the afterloader. A source pusher is used to remove sources. Optional Lead sliders can be placed into the after-loading channel to provide shielding to the rectum or bladder.

Original paper printed in OBSTETRICS AND GYNECOLOGY, Vol. 40, No. 1, July 1972, "A New After-Loading Applicator for Treatment of Cancer of the Cervix and Vagina" by William J. Peeples, MD ET AL, Norfolk General Hospital, Norfolk, VA.

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## VAGINAL CYLINDERS With 6.6 mm Diameter Tandem Hole



The Vaginal Acrylic or UHMW Cylinders are 12 cm long with a 6.6 mm diameter hole through the center for a Fletcher Tandem. Included is an adjustable stainless steel collar with suture holes for securing to the patient and a 3/32" ball socket type screwdriver for tightening the collar screw. **The tandem is not included.**

Item #	Description
970-000	12 Plastic Tandems and Pushers
970-010	12 Plastic Tandems
970-020	12 Plastic Pushers
977-019	19 mm Dia. Acrylic Cylinder w/Suture Ring
977-025	25 mm Dia. Acrylic Cylinder w/Suture Ring
977-032	32 mm Dia. Acrylic Cylinder w/Suture Ring
977-038	38 mm Dia. Acrylic Cylinder w/Suture Ring
977-060	Custom Made Acrylic Cylinder <b>Only</b> - State Size
977-065-19	19 mm Adjustable S.S. Suture Ring <b>Only</b>
977-065-25	25 mm Adjustable S.S. Suture Ring <b>Only</b>
977-065-33	33 mm Adjustable S.S. Suture Ring <b>Only</b>

### Optional:

A delrin threaded plug (Item 977-070) may be used to close the tip of the vaginal cylinder. An afterloading stainless steel barrel (Item 977-068) may be screwed in to the cylinder to hold the source tandem.

### Specifications

**Sterilization:** Gas only

**Do Not clean with alcohol, this may fracture the acrylic.**

**Acrylic Density:** 1.185 g/cm<sup>3</sup>

**UHMW Density:** 0.94 g/cm<sup>3</sup>

Item #	Description
977-065-38	38 mm Adjustable S.S. Suture Ring <b>Only</b>
977-067	Ball Style Hex Driver
977-068	Afterloading Stainless Steel Barrel w/Cap
977-069	S.S. Cap for Afterloading Barrel
977-070	Delrin Threaded Plug for Cylinders
977-119	19 mm Dia. UHMW Low Density Cylinder w/Suture Ring
977-125	25 mm Dia. UHMW Low Density Cylinder w/Suture Ring
977-133	33 mm Dia. UHMW Low Density Cylinder w/Suture Ring
977-138	38 mm Dia. UHMW Low Density Cylinder w/Suture Ring
977-160	Custom Made - UHMW Low Density Cylinder <b>Only</b>

## OBLONG UHMW LOW DENSITY CYLINDER



Fletcher Tandem Not Included

Item #	Description
978-638	UHMW Low Density Cylinder w/Suture Ring & Hex Driver
977-068	Optional - S.S. Afterloading Barrel w/Cap
977-070	Optional - Delrin Threaded Plug

The oblong UHMW, Low Density Cylinder measures 20 mm wide x 38 mm diameter x 12 cm long with an adjustable stainless steel suture ring. It can be used with a tandem (not furnished) or it can be filled with radiation sources using the stainless steel afterloading barrel (Item 977-068) and a front end screw-in delrin plug (Item 977-070). The Plastic Tandem/Pusher (Item 970-000) source carrier can also be used. A ball hex driver is included for locking the suture ring in place.

### Specifications

**UHMW Density:** 0.94 g/cm<sup>3</sup>

**Sterilization:** Gas Only

## NYLON CYLINDER WITH LEAD OR TUNGSTEN



The Nylon Cylinder with Lead or Tungsten has an 11 mm lead or tungsten bottom and an adjustable stainless steel suture ring. The lead or tungsten is coated with a clear polyurethane paint and easily cleaned by removing six screws with a 7/64" allen wrench (included). This unit can be used with a tandem (not furnished) or it can be filled with radiation sources using the stainless steel afterloading barrel (Item 977-068) and a front end screw-in delrin plug (Item 977-070).

The Plastic Tandem/Pusher (Item 970-000) source carrier can also be used. A ball hex driver is included for locking the suture ring in place.

### Specifications

**Cylinder Weight:** .8 lbs

**Diameter:** 33 mm

**Length:** 12 cm

Item #	Description
979-070	Lead/Nylon Cylinder w/Suture Ring and 2 Wrenches
979-072	Tungsten/Nylon Cylinder w/Suture Ring and 2 Wrenches
977-068	Optional - S.S. Afterloading Barrel w/Cap
977-070	Optional - Delrin Threaded Plug

**Custom diameters and lengths can be made to order.**

# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

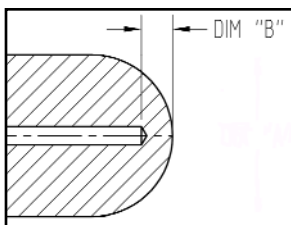
## ACRYLIC VAGINAL CYLINDERS FOR VARIAN GAMMAMED PLUS HDR



977-32345



977-32345 Shown with Tandem and Lock Collar



These acrylic vaginal cylinders are made for use with the Varian GammaMed Plus HDR system or can be used as spacers in proton therapy.

The cylinder channel accommodates a tandem with a 3.0 mm diameter. The end of the cylinder is threaded to screw in the collet of the applicator.

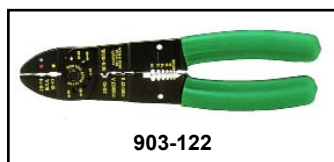
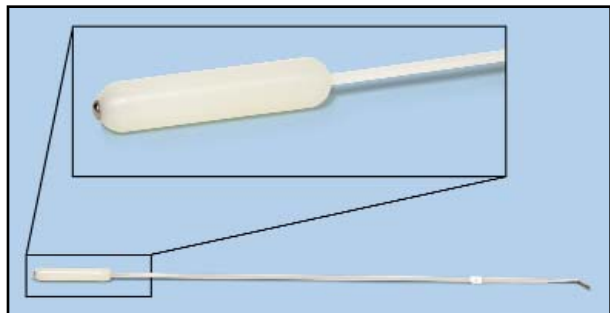
Item #	Acrylic Vaginal Cylinder	Dimension B
977-3161	1.6 cm Diameter x 14cm Long	1.0 mm
977-3162	1.6 cm Diameter x 14cm Long	2.0 mm
977-3163	1.6 cm Diameter x 14cm Long	3.0 mm
977-31635	1.6 cm Diameter x 14cm Long	3.5 mm
977-3204	2.0 cm Diameter x 14cm Long	4.0 mm
977-32345	2.3 cm Diameter x 14cm Long	4.5 mm
977-3265	2.6 cm Diameter x 14cm Long	5.0 mm
977-3306	2.6 cm Diameter x 14cm Long	6.0 mm

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# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## HDR SIMON-HEYMAN APPLICATORS

### For Iridium 192 Ribbons



There may be some scatter in CT from the stainless steel screw in the applicator tip. Remove the stainless steel obturator before CT.

HDR connections to the Simon-Heyman applicator is via 15ga. tubing, which is the same size as prostate needles. The source depth is 250 mm from end to tip.

#### For use with Iridium 192 Ribbon

An Iridium 192 ribbon can be inserted into the 15ga. tubing. The end of the tubing can be secured by heat sealing or by using the stainless steel sleeve (Item 903-120) that can be crimped closed.

Item #	Simon-Heyman Disposable Applicator	Qty
903-0420	4.0 mm Dia. x 20 mm L. Active Area x 250 mm	10/Pkg
903-0430	4.0 mm Dia. x 30 mm L. Active Area x 250 mm	10/Pkg
903-0620	6.0 mm Dia. x 20 mm L. Active Area x 250 mm	10/Pkg
903-0630	6.0 mm Dia. x 30 mm L. Active Area x 250 mm	10/Pkg
903-06420	6.4 mm Dia. x 20 mm L. Active Area x 250 mm	10/Pkg
903-06430	6.4 mm Dia. x 30 mm L. Active Area x 250 mm	10/Pkg
903-0820	8.0 mm Dia. x 20 mm L. Active Area x 250 mm	10/Pkg
903-0830	8.0 mm Dia. x 30 mm L. Active Area x 250 mm	10/Pkg
903-1020	10.0 mm Dia. x 20 mm L. Active Area x 250 mm	10/Pkg
903-1030	10.0 mm Dia. x 30 mm L. Active Area x 250 mm	10/Pkg
903-120	Sleeve, Crimping, Stainless Steel, f/Iridium Ribbon	25/Pkg
903-122	Crimping Tool For 903-120	Each
903-123	Cutter Tool For 903-0420 to 903-1030	Each

The Simon-Heyman Afterloading Applicators are used in the treatment of endometrial cancer. These applicators are a disposable item and intended for single use only. Each applicator has a radio-opaque marker in the tip, a stainless steel obturator, and is individually numbered. There are 10 applicators in each package. Color variations for capsules are due to the material. These applicators can also be used with Iridium-192 ribbons with active lengths of 20 mm or 30 mm..



# GYN APPLICATORS - HDR & LDR BRACHYTHERAPY ACC.

## HDR TRANSFER TUBE HOLDER FOR 10 TUBES



### Specifications

**Slot Width:** 3/16" (4.76mm)

**Slot Depth:** 5/8" (15.88)

**Front Lip Height:** .3" (0.7 cm)

**Overall Size:** 11" W x 1.16" Deep x 1.67" H (27.9 x 2.94 x 4.2 cm)

**Material:** Gray PVC

Item	Description
950-098	HDR Transfer Tube Holder for 10 Tubes

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## EC FILM PORTAL IMAGING



The EC Film is used in the EC-L Lightweight cassettes. The cassettes are no longer offered from Carestream.

CE

Item #	Description	Size	Quantity
113-234	EC Film, 100 Films/Box	14" x 17" (35 x 43 cm)	5 Boxes

## AGFA RADIATION THERAPY CASSETTES



CRC Radiation Therapy Cassettes use all brands of film, including ready pack films. They are designed especially for radiotherapy and feature high-quality lead intensifying screens similar to those used in high-energy industrial radiography.

**Note: These cassettes are not returnable.**

Item #	Film Size	Front Screen	Rear Screen	Window	Energy	Weight
869406	10" x 12"	1.00 mm T	0.50 mm T	No	10 MeV - Up	5.4 lb

## SIMULATOR RADIOGRAPHIC CASSETTE WITH GRID



The Radiographic Cassette with grid (14" x 17" or 35.7 x 43.3 cm) has an aluminum inter-spaced grid, 103 line, 8:1 Ratio and 48" to 72" focus range. The use of Kodak Lanex Fast Green Screens give a faster film speed than regular screens.

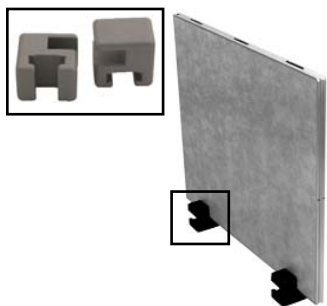
Note:  
Order lead screens separately.

Customer must verify the thickness of a cassette that will fit into cassette holder.

Item #	Size	Thickness	Window
118-117-02	14" x 17"	0.545" (1.4 cm)	No

**Non-Returnable Item**

## RAIL CASSETTE HOLDERS



The Rail Cassette Holders (set of two) easily slide onto the couch rails from either side. They are securely held in place and can not be jarred off.

### Specifications

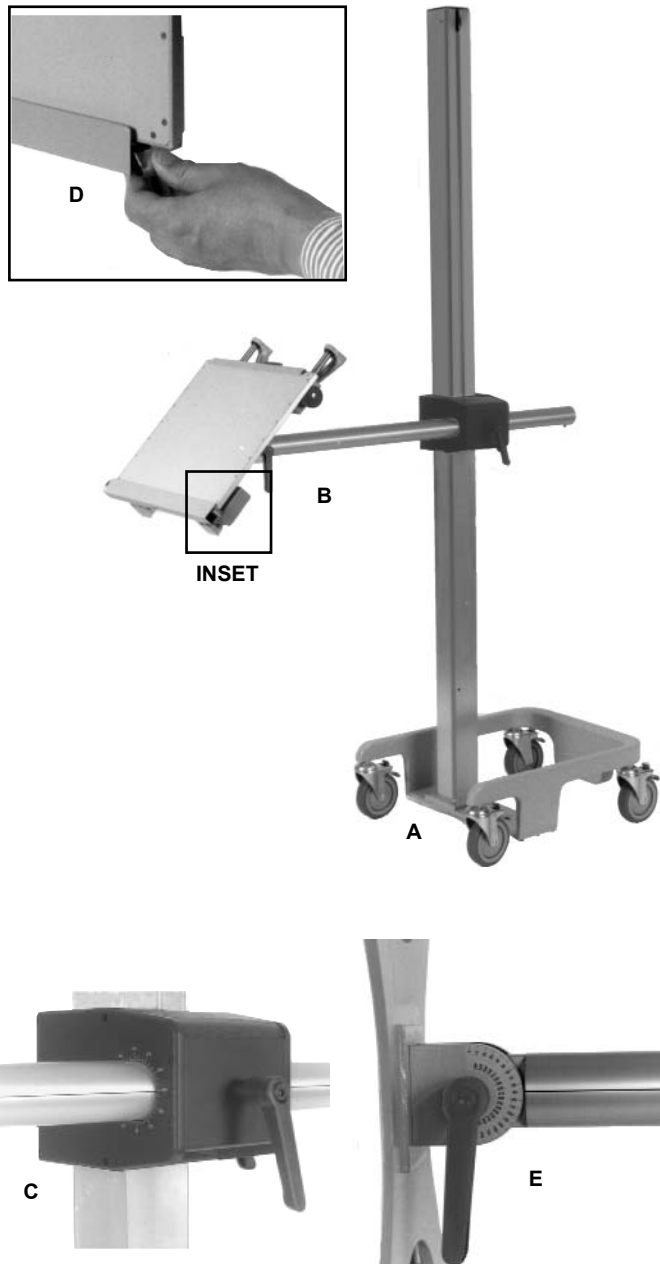
**Width of Cassette:** 5/8" (1.6 cm)

Item #	Description	Size
128-403	Varian Clinac 4 Set	3/8" x 1 1/8" (0.95 x 2.87 cm)
128-403	Varian PSA Spine Set	3/8" x 1 1/8" (0.95 x 2.87 cm)
128-404	Varian ETR Set	3/8" x 1 1/8" (0.95 x 2.87 cm)
128-403	Varian Ximatron Set	3/8" x 1 1/8" (0.95 x 2.87 cm)
128-420	Siemens Z-II, Z-IV or Z-XT Set	3/8" x 1" (0.95 x 2.55 cm)
128-420	Siemens Mevasim Set	3/8" x 1" (0.95 x 2.55 cm)
128-427	Siemens TEM Set	3/8" x 1" (0.95 x 2.55 cm)
128-430	Philips SL25 or SL75 Set	State Rail Size
128-460	Oldelft Simulator Set	State Rail Size
128-470	Mitsubishi Set	.2" x 1" (0.5 x 2.5 cm)

## MOBILE DR, CR AND CASSETTE HOLDER

RPDinc's design allows the DR, CR and Cassette Holder to extend 6" (15.24 cm) further over the couch than other units on the market. An option is available for a custom post height for extended range couches.

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- Smooth gliding motion on roller bearings
- High range of motion
- Counter-balanced DR, CR and cassette holder
- Counter-balanced base
- DR, CR and Cassette safety latch
- Easy loading from either side
- Automatic angle indicators
- Holds most DR and CR plates

The Mobile DR, CR and Cassette Holder has been engineered around the needs of the radiation therapist with unmatched ease of motion obtained through the use of precision components.

Needle roller bearings enable smooth travel both vertically and horizontally eliminating the frustrating binding action found on other cassette holders when repositioning. The DR, CR and Cassette Holder glides freely even while a heavy cassette is loaded. A counter-weight offsets the weight of the cassette, allowing for almost effortless motion. The DR, CR and Cassette Holder is able to position close to tables and objects due to the unique base counter-weight system and the offset square post (Figure A). These 2 features prevent rotation and the possibility of the unit tipping over.

The DR, CR and Cassette Holder can tilt 180° (Figure B), rotate 360° (Figure C) and is spring loaded to provide tension on the cassette to ensure that it is secured. A spring loaded latching system (Figure D) enables up to a 14" x 17" (35.5 x 43 cm) cassette to be inserted from either side and once latched, secures the cassette from sliding out during rotation. The cassette carrier will also accept 14" x 36" and 17" x 28" (35.5 x 91.5 cm and 43 x 71 cm) cassettes by bypassing the latching mechanism.

Easy to read angle indicators (Figures C & E) allow for accurate angulation of the cassette carrier. Indicator scales coincide with the degree rotation of the treatment machine gantry, eliminating the need for calculating the correct cassette carrier angle. Simply rotate the cassette carrier so the degree indicator reading is the same as the machine gantry reading, and the correct corresponding angle is automatically established.

Motion locking systems are equipped with large comfortable ratchet type handles which enable the operator to easily secure positions with minimal effort. Easy mobility is accomplished with four high quality ball bearing wheels. The wheels have a toe tap positive locking mechanism which doesn't allow swivel or movement of the wheel, providing excellent safety and stability.

The Mobile Cassette Holder will hold any DR or CR plate that has the same dimensions as an analog film cassette.

### Specifications

- Maximum DR, CR and Cassette Height:** 70" (177 cm)
- Minimum DR, CR and Cassette Height:** 15" (38 cm)
- Maximum DR, CR and Cassette Extension:** 26" (66 cm) from front edge of base to center of cassette
- Arm Length:** 36" (91.5 cm)
- Base:** 19" x 24" (48.3 x 61 cm)
- Height:** 82.75" (210 cm)
- Finish:** Textured tan polyurethane, clear and black anodizing
- Weight:** 145 lb (66 kg)
- Shipped UPS (3 cartons)**

Item #	Description
130-001	Mobile DR, CR and Cassette Holder

## HUESTIS FLEXI-HOLDER®



Huestis Flex-Holder® significantly reduces retakes caused by improper cassette positioning. It permits smoother scheduling and superior radiographs saving film, time and labor for cost effective radiographic procedures.

The free-standing model features an extra wide base for maximum stability. It allows accurate radiographs to be taken from virtually any angle from floor level to 71" + (180 cm) high. It rolls into position on large, locking casters and tilts the cassette 180° facing straight up, down, or anywhere in between. This free-standing model accepts virtually all cassettes.

### Eliminates Retakes

- Helps eliminate retakes caused by improper cassette positioning.
- Replaces inefficient sandbags and other "make-shift" holders.

### Versatile Savings

- Saves time and labor for smoother scheduling and superior radiographs.
- Saves film and reduces radiation exposure due to minimal retakes.
- Minimizes patient assistance and discomfort in positioning.

### Flexible Arm Movement

- Radiographs can be taken from any angle from floor level to 71" (180 cm).
- Tilts cassette 180° facing straight up, straight down or anywhere in between
- Rotates cassette 360° clockwise or counterclockwise
- Arm rotates 360° on vertical column
- Arm assembly is counter-weighted for easy raising or lowering
- 36" (91 cm) arm

### Convenient Ratchet Handles

Ratchet handles can be repositioned easily to help eliminate interference problems when positioning cassettes.

### One Hand Operation

A lip on the cassette holder enables the cassette to be inserted with one hand, if necessary.

### Accurate Calibration Scales

Column and arm calibration scales provide exact, repeatable angulation.

### Easy Operation

Drop cassette against stop and tighten grips. Adjust visually or by calibration scales. Roll into place and lock casters.

### Diagnostic Applications

- Three-way studies of acute abdomens
- Myelograms
- Fractures where patient is immobilized
- Lateral decubitus fluid level studies of abdomen and chest
- Operating room radiography

### Therapeutic Applications

- Radiation therapy verification films (portal films)
- Localization for tangential breast, isocentric or oblique fields
- Simulation without fluoroscopy
- Implant source localization by orthogonal films

### Specifications

**Base:** 19" x 22" (48.4 x 56.1 cm)

**Overall Height:** 75" (191.2 cm)

**Weight:** 110 lb (50 kg)

**Ships by truck**

Item #	Description	Horizontal Arm
130-303-1	Mobile Flexi-Holder	36" (91.8 cm)

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## 21 STEP WEDGE SENSITIVITY GUIDE



The 21 Step Wedge Sensitivity Guide is a transparent step wedge with 21 steps that get progressively denser by increments of 0.15. Each step is numbered and has accurate and uniform increments.

The 21 Step Wedge Sensitivity Guide meets the needs for critical densitometry with traceability. Densities compare with those of a NIST Standard Reference Material No, 1008 Step Tablet by means of a densitometer that conforms to conditions specified in American National Standards Diffuse Transmission Density A.N.S.I. PH2.19-1986. NIST traceable.

### Specifications

**Size:** 1.375" W x 9.5" L (3.49 x 24.13 cm)

Item	Description
370-005	21 Step Wedge

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## TBX1000™ TRANSMISSION DENSITOMETER



The TBX1000™ Transmission Densitometer measures ISO Visual diffuse Optical Density (OD) to 6.00D. This wide measuring range allows evaluation of many types of film, laminates, and substrates. The data can be uploaded to spreadsheets via the USB port. To meet special requirements an optional filter carrier may be supplied allowing supplementary filters to be used to isolate a portion of the spectrum that may be of interest. The TBX™ can show deviations from a stored reference value for all functions.

### Specifications

**Optical Design:** ANSIPH2.19

**Display:** Graphical LCD (128x64 pixel)

**Apertures:** 1, 2, 3mm

**Throat Length (Arm):** 7.5" (191mm)

**Output Port:** USB

**Power:** 12V via universal 110/220 Adapter

**Measuring Range:** 0 to 6.00D

**Accuracy:** ±0.02D

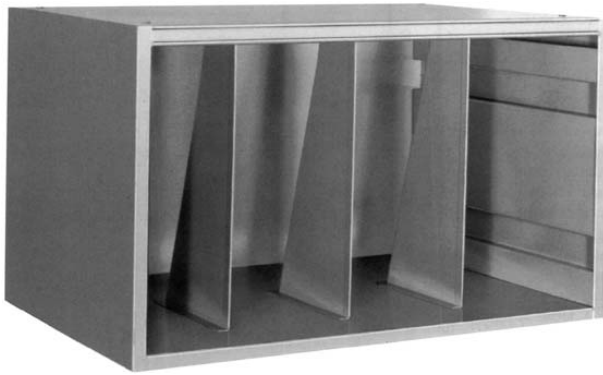
**Precision:** ±0.01D

**Warm-up Time:** None

Item	Description
370-002	TBX1000™ Transmission Densitometer
370-000-3	0.3mm Aperture for 370-002 Densitometer

- Soft key menu operation
- Advance optical system to meet various industries' specifications
- 7.5 inch throat to measure large samples
- Readings are very repeatable with a high degree of accuracy
- Optional band pass filter
- USB port standard
- Software Calibration
- Switchable LED table lamps
- Excellent for measuring optical densities of metallized films

## STACKABLE VERTIFILE



The open shelf Vertifile can be stacked one upon the other, side by side, and back to back. Each section is shipped complete and set up. No assembly is required. When stacking, the cabinets are secured together with 4 screws through matching holes in top and bottom of each cabinet. Partitions are fixed and not adjustable.

### Specifications

**Inside Dimensions of Each Shelf:** 19.5" D and 16.1" H  
(49.7 x 41 cm)

**Exterior Dimensions:** 29" W x 19.75" D x 17.25" H  
(73.9 x 50.3 x 43.9 cm)

**Approximate Distance Between Partitions:** 7.25" (18.5 cm)

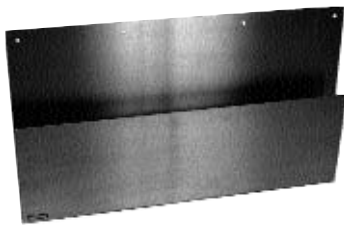
**Finish:** Light gray baked enamel (on cold rolled steel).

**Weight:** 48 lb (22 kg)

Item	Description
122-841	Stackable Vertifile

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## WALL MOUNTED CASSETTE HOLDERS



These stainless steel Cassette Holders mount to the wall for storing cassettes before using.

### Specifications

**Size:** 31" W x 19" H x 2" D (79.02 x 48.43 x 5.1 cm)

Item	Description
129-831	Wall Mounted Cassette Holder

## TRIMLINE PLUS HI-LO™ ILLUMINATORS



- Variable light intensities per viewing area
- Film activated auto switches
- Cluster switches and a master switch on 2 over 2 units and up
- Gravity roller grip film retainer
- “E-Z”™ Bar for easy surface wall mounting
- Power: 120VAC, 60Hz, 1.10 Amp

The Trimline Plus Hi-Lo™ provides two light intensities per each 14" x 17" (35.7 x 43.3 cm) viewing area. Uniquely at the lower light intensity, all 4 bulbs remain lit to maintain the even light distribution. The Trimline Plus Hi-Lo™ is available in 12 sizes.

It features a sleek 3.25" (8.3 cm) deep cabinet with a baked on white finish, a roller grip film retainer, an 8' (2.4 m) power cord with hospital grade plug, film activated auto switches. Cluster switches on 2 over 2 units and up. Recessed wall mounting is available and includes a frame.

UL 60601-1  
CAN/CSA C22.2 No. 601.1



Item	Trimline Plus Hi-Lo™ Illuminators	Wall Mounting Size	Weight
1020-602	2 Bank Unit with 28" x 17" (71.4 x 43.3 cm) view	28" W x 3.25" D x 22" H (71.4 x 8.3 x 56.1 cm)	45 lb (21 kg)
1020-603	3 Bank Unit with 42" x 17" (107.1 x x 43.3 cm) view	42" W x 3.25" D x 22" H (107.1 x 8.3 x 56.1 cm)	68 lb (31 kg)
1020-604	4 Bank Unit with 56" x 17" (142.7 x 43.3 cm) view	56" W x 3.25" D x 22" H (142.7 x 8.3 x 56.1 cm)	93 lb (43 kg)
1020-622	2 Over 2 with 28" x 34" (71.4 x 86.7 cm) view	28" W x 3.25" D x 44" H (71.4 x 8.3 x 112.2 cm)	94 lb (43 kg)
1020-633	3 Over 3 with 42" x 34" (107.1 x 86.7 cm) view	42" W x 3.25" D x 44" H (107.1 x 8.3 x 112.2 cm)	131 lb (60 kg)

Other Sizes Available

# IMAGING-FILM, GRATICULES, DENSITOMETERS, GAFCHROMIC

## DESK TOP VIEW BOXES



1020-28



1020-36

### Item 1020-28

- Brightest lightbox on the market.
- Rust resistant stainless steel frame
- Rugged, durable and long lasting
- Proven, Green LED technology
- Color Temperature: Bright White LED
- Components are CE and RoHS. This newer technology allows our light boxes to be used in any country
- Energy efficient and rated 50,000 hours

### Specifications

**Lights:** 21 Bright White LED Modules

**Power Cord:** Integrated 6' / 1.8 m three-prong grounded cable

**Power:** 110/240 VAC, 50/60 Hz

**Size:** 18" W x 24.5" L x 3" H (45.9 x 62.5 x 7.7 cm)

**Weight:** 12 lb (5.5 kg)

### Item 1020-36

- Shatter-resistant acrylic top gives maximum light diffusion and minimum glare
- Rubber feet prevent sliding
- Screw-on acrylic top is easily replaced and all interior components are easily serviced
- No starters to burn out
- 6' (2 m), 3-wire electric cord with grounding plug
- Rust-resistant stainless steel frame
- Listed by Underwriters' Laboratories

### Specifications

**Lights:** Six 20 watt fluorescent bulbs

**Switches:** Three (each switch controls two bulbs)

**Power:** 115 VAC, 60 Hz

**Size:** 24.5" W x 36" L x 3" H (62.5 x 91.8 x 7.7 cm)

**Weight:** 29 lb (13.2 kg)

Item	Description	Power
1020-28	Small View Box, 18" x 24.5" x 3"	110/240 V, 50/60 Hz
1020-36	Large View Box, 24.5" x 36" x 3"	115 VAC, 60 Hz

M



## INTENSI-SPOT



The Intensi-Spot provides a concentrated light source for viewing sections of an overexposed film. Utilizing a 75-watt lamp, shielded by an octagon mask for light concentration, the Intensi-Spot can be tilted to any angle.

The Intensi-Spot includes a handy foot switch that can vary the light's intensity . The unit comes in a baked-on white polyester powder finish, with holes in the base for wall mounting, and a 6' (1.8 m) power cord with 3 prong plug.

### Specifications

**Power:** 120VAC, 60Hz

**Size:** 9" H x 6" D (23 x 15.3 cm)

**Weight:** 5 lb (2.3 kg)

Item	Description
1021-295	Intensi-Spot

M

## COOL-LITE



The Cool-Lite is a unique viewing device that provides concentrated light for viewing sections of over-exposed film. By using an energy-efficient 15 watt fluorescent bulb (equiv . to 60 watt incandescent), the Cool-lite can be left on all day and does not generate heat.

The Cool-Lite tilts to any angle, has a white baked-on polyester powder finish, and includes holes in the base for easy wall mounting. The Cool-lite comes with a 6' (1.8 m) power cord with a 3 prong lug.

### Specifications

**Power:** 120VAC, 60Hz

**Size:** 9" H x 6" D (23 x 15.3 cm)

**Weight:** 5 lb (2.3 kg)

UL 60601-1CAN/CSA C22-2 No. 601.1

Item	Description
1021-695	Cool-Lite

## BRIGHT-SPOT ILLUMINATOR



- **Wall or Desk Mount**
- **Swivel Base**
- **Variable Intensity Foot Switch Control**

A unique low cost bright spot illuminator for viewing dense films. The lamp housing swivels for easy viewing, base has key holes for wall mounting and plastic non-marring feet to stand on a desk. A rheostat foot switch is supplied to vary the brightness of the special high intensity bulb which is surrounded by a polished aluminum reflector.

Bright-Spot comes with a 6' (2 m) line cord with 3 prong plug.

### Specifications

**Finish:** Light gray baked enamel

**Power:** Viewer operates on 120 VAC, 60Hz, 0.7 Amps AC

**Size:** 6" W x 7" D x 8" H (15.3 x 17.8 x 20.4 cm)

Item	Description
1021-188	Bright Spot Illuminator

## FILM DUPLICATOR



Constructed of stainless steel finished in durable baked enamel, this duplicator can be used with any available duplicating film.

To operate the duplicator, simply place the film to be duplicated on the plexiglass screen with a sheet of duplicating film on top, close the cover and set the exposure time. The red light will signal you when exposure is complete. Develop your duplicating film.

### Specifications

**Screen Size:** 14" x 17" (35.68 x 43.33 cm)

**Unit Size:** 16" W x 23.25" L x 9" H (40.8 x 59.3 x 22.9 cm)

**Weight:** 41 lb (18.7 kg)

Item	Description
370-250	Film Duplicator

M

## ACCELERATOR LOCALIZING CROSS TRAY

With Divergent Tungsten Pins - Wedge Slot

The Accelerator Localizing Cross Trays have divergent tungsten pins 1/16" and 3/32" in diameter x 1/2" long (0.16 and 0.24 x 1.27 cm). They are spaced 1 cm apart in four quadrants at isocenter. Every fifth pin is 3/32" (0.24 cm) diameter, which makes for easy counting. The small dots prevent any obscuring of the film viewing, yet allow easy measurements. The acrylic graticule fits into the metal tray so the graticule will not shift off center even if bumped. **Note: Localizing Cross Trays can be manufactured for any accelerator.**

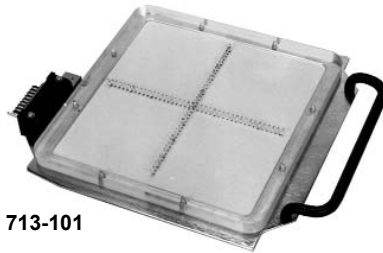
### Information Needed To Order

- Machine Manufacturer and Model
- Type of Coding
- Target to bottom of wedge tray slot in centimeters
- Contact Information

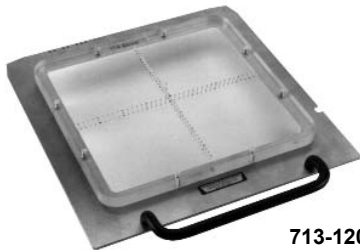
### Specifications

Acrylic Tray Density: 1.185 g/cm<sup>3</sup>

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713-101



713-120



713-232



713-403

## VARIAN GRATICULES

Item	Description	Field Size	Distance
713-101	Varian Type II Graticule Wedge Slot, Coding Plug (15 or 09) on Metal Tray		42.1, 49.2, 53.0 or 53.8 cm
713-103	Varian Type II Graticule Wedge Slot, Coding By-Pass on Metal Tray		
713-120	Varian Type III Graticule Wedge Slot, Optical Coded on Metal Tray		49.2 or 53.0 cm
713-121	Varian Type III with MLC Graticule Wedge Slot, Optical Coded MLC on Metal Tray	30 x 30 cm	57.6 cm
713-123	Varian Type III with MLC Graticule Wedge Slot, Optical Coded MLC on Metal Tray	40 x 40 cm	57.6 cm

**Graticules for Other Varian Machines Are Available  
Please Provide Contact Information When Placing Order**

## SIEMENS GRATICULES

Item	Description
713-221	Siemens Mevatron Graticule Wedge Slot with Screw Coding
713-232	Siemens Primus with MLC or Mevatron Graticule Wedge Slot with Digital Coding Plug (S2N01 or S2N18)
713-235	Siemens Mev 12 Graticule Wedge Slot
713-236	Siemens Mev 6 Graticule Wedge Slot

## OTHER MANUFACTURERS GRATICULES

Item	Description
713-300	AECL Therac 6 Graticule
713-400	Elekta/Philips SL15, 18, 20, 25 Graticule Tray Slot
713-401	Elekta/Philips SL75-5 Graticule Tray Slot
713-403	Elekta/Philips SL-20, 75, L5 Graticule Mounted to Gantry Head

## SIEMENS REPLACEMENT GRATICULE

This replacement Siemens photon light field graticule can be mounted to a removable tray.



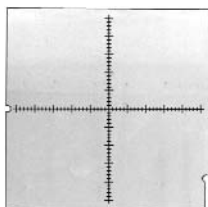
793-000 and 793-001



793-002

Item	Siemens Replacement Graticule
793-000	Screw Coding, Siemens P/N 19-41-959 Rev. D Revision D: The central axis starts at 4.283" (109mm)
793-001	Screw Coding, Siemens P/N 19-45-463 Rev. A Revision A: The central axis starts at 4.187" (106mm)
793-002	Digital Coding, Siemens P/N 8497752

## SIEMENS SIMULATOR GRATICULES

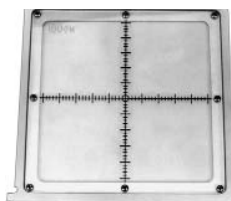


790-100

Item	Description	Distance
790-080	Siemens Simulator Graticule	80 cm
790-100	Siemens Simulator Graticule	100 cm
790-120	Siemens Simulator Graticule	120 cm
790-140	Siemens Simulator Graticule	140 cm

Please Provide Contact Information When Placing Order

## SIEMENS MEVASIM S SIMULATOR GRATICULES With Aluminum Frame



790-210

Item	Description	Distance
790-208	Siemens Mevasim S Simulator Graticule with Frame	80 cm
790-210	Siemens Mevasim S Simulator Graticule with Frame	100 cm
790-220	Siemens Mevasim S Simulator Graticule with Frame	120 cm
790-240	Siemens Mevasim S Simulator Graticule with Frame	140 cm

Please Provide Contact Information When Placing Order

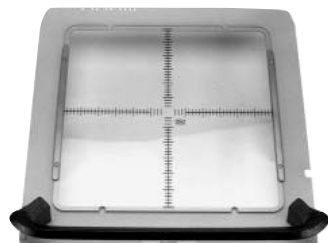
## VARIAN XIMATRON SIMULATOR GRATICULES With Aluminum Frame



791-108

Item	Description	Distance
791-108	Varian II Ximatron Simulator Graticule with Frame	80 cm
791-100	Varian II Ximatron Simulator Graticule with Frame	100 cm
791-120	Varian II Ximatron Simulator Graticule with Frame	120 cm
791-130	Varian II Ximatron Simulator Graticule with Frame	130 cm
791-140	Varian II Ximatron Simulator Graticule with Frame	140 cm
791-101	Graticule Frame ONLY	

Please Provide Contact Information When Placing Order



791-168

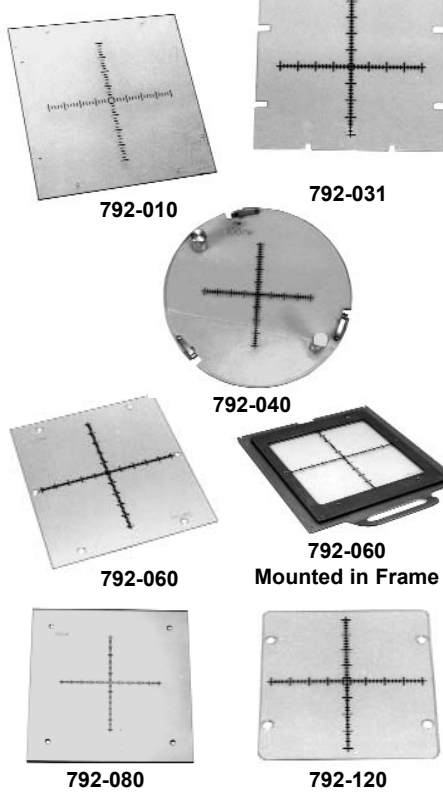
Item	Description	Distance
791-160	Varian III Ximatron Simulator Graticule with Frame	80 cm
791-162	Varian III Ximatron Simulator Graticule with Frame	90 cm
791-164	Varian III Ximatron Simulator Graticule with Frame	100 cm
791-166	Varian III Ximatron Simulator Graticule with Frame	110 cm
791-168	Varian III Ximatron Simulator Graticule with Frame	120 cm
791-170	Varian III Ximatron Simulator Graticule with Frame	130 cm
791-172	Varian III Ximatron Simulator Graticule with Frame	140 cm
791-160-4	Graticule Handle ONLY	
791-160-11	Graticule Frame ONLY, Optical Coded	

Please Provide Contact Information When Placing Order

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## SIMULATOR GRATICULES (80 cm, 100 cm, 120 cm or 140 cm)

The Graticule is custom made for any simulator and can be furnished with a holder for mounting to the simulator. Line spacing at isocenter is 1 cm with every 5th cm line longer, as pictured. The high density line is 0.020" (0.050 cm) wide. Please specify distance needed for graticule and contact information.



Item	Description	Distance
792-010	AECL Simulator Line Graticule	All
792-011	AECL Therasim Line Graticule	All
792-020	TEM Simulator Line Graticule	All
792-030	Philips Simulator Line Graticule	All
792-031	Philips 1976 Simulator Line Graticule	All
792-032	Philips Super M80 Simulator Line Graticule	All
792-033	Philips SLS-9 Simulator Line Graticule	All
792-040	Oldelft Simulator Line Graticule	All
792-041	Replacement Oldelft Simulator Graticule	All
792-050	CGR Simulator Line Graticule	All
792-060	Kermath Simulator Line Graticule	All
792-070	Mitsubishi Simulator Line Graticule	All
792-080	Picker Simulator Line Graticule	All
792-090	Toshiba LX-8 Simulator Line Graticule	All
792-092-1	Toshiba LX-30A Simulator Line Graticule, Tray ONLY	
792-092-2	Toshiba LX-30A Simulator Line Graticule	80 cm
792-092-3	Toshiba LX-30A Simulator Line Graticule	100 cm
792-100	TEM (Sold by Siemens) Simulator Line Graticule	All
792-102	Replacement Varian Simulator Line Graticule	80 cm
792-120	Haynes Simulator Line Line Graticule	All

## SIMULATOR GRATICULE HOLDERS

The holder will allow different graticules (80 cm, 100 cm, 120 cm or 140 cm) to be used.



Item	Description
792-601	AECL Simulator Holder for Multiple Graticules
792-630	Philips Simulator Holder for Multiple Graticules

**Other Manufacturers Available**

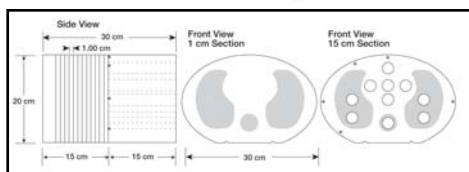
# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## CIRS IMRT PHANTOMS

The CIRS IMRT Phantoms for Film and Ion Chamber Dosimetry are designed to address the complex issues surrounding commissioning and comparison of treatment planning systems while providing a simple yet reliable method for verification of individual patient plans and delivery.

CIRS IMRT phantoms are manufactured from tissue equivalent materials that mimic within 1% from 50 keV to 15 MeV for accurate simulation from CT planning to treatment delivery. The interchangeable rod design allows the phantom to accommodate a multitude of dose measurement devices such as ion chambers, TLD, diodes and MOSFET's in the same location within the phantom.\* Phantom cross sections accommodate GafChromic® or standard ready-pack films.

## CIRS IMRT THORAX PHANTOM



- Verify heterogeneity corrections
- Correlate CTU to electron density
- Check dose distributions in sensitive areas
- Check depth doses and absolute dose
- 2D and 3D isodoses
- Calibrate film with an ion chamber and other detectors\*
- Verify individual patient treatment plans

The IMRT Thorax Phantom is elliptical in shape and properly represents an average human torso in proportion, density, and two-dimensional structure. It measures 30 cm Long x 30 cm Wide x 20 cm Thick.

Tissue equivalent interchangeable rod inserts accommodate ionization chambers allowing for point dose measurements in multiple planes within the phantom. Hole placement allows verification in the most critical areas of the chest. One half of the phantom is divided into 12 sections, each 1 cm thick, to support radiographic or GafChromic® Film<sup>1</sup>. Additional inserts are available to support a variety of other detectors including TLD's, MOSFET and diodes

Handling, assembly and proper orientation of the phantom is made easy with the use of a unique alignment base and holding device. The surfaces of the phantom are marked for ease of laser alignment. CT markers are included to ensure accurate film to plan registration on the center film.

### 682-510 IMRT Thorax Phantom Includes

- (1) Thorax section drilled to accommodate rod inserts
- (12) 1cm thorax sections
  - (1) 3cm end section
- (5) Water equivalent solid rod inserts
  - (1) Bone equivalent solid rod insert
  - (4) Lung equivalent solid rod inserts
- (1) Set of CT to film fiducial markers
- (1) Alignment base
- (1) Holding Device

### Insert Options

\*Customers are encouraged to complete their order with the purchase of at least one (1) of each insert option listed below. Customer must specify ion chamber and cavity code. Refer to the separate ion chamber and cavity codes chart (see Appendix A).

- 682-533 Water Equivalent Rod Insert with Ion Chamber Cavity
- 682-534 Bone Equivalent Rod Insert with Ion Chamber Cavity
- 682-535 Lung Equivalent Rod Insert with Ion Chamber Cavity

### Specifications

**Overall Dim:** 17" x 15" x 9" (43.2 x 38.1 x 22.9 cm)

**Weight:** 30 lb (11.2 kg)

**Phantom Body Material:** Tissue Equivalent Epoxy Materials

**Insert Material:** CIRS Tissue Equivalent Materials (epoxy resin based)

### References

Vatnitsky S. Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques. 1583rd ed. (Brunckhorst E, Gershkevitch E, Ibbott G, et al, eds.). IAEA. 2008.

Gershkevitch, Eduard, et al., Dosimetric Verification of Radiotherapy Treatment Planning Systems: Results of IAEA Pilot Study. 2008 Elsevier Ireland Ltd., Radiotherapy and Oncology 89 (2009) 338-346, pgs. 338-346, March 2009.

Zhao, Y. et al., Monte Carlo evaluation of a treatment planning system for helical tomotherapy in an anthropomorphic heterogeneous phantom and for clinical treatment plans. Med. Phys., vol. 35 (12), pgs. 5366-5374, December 2008.

Luo, W., et al., Analysis of image quality for real-time target tracking using simultaneous kV-MV imaging. Med. Phys., vol. 35 (12), pgs. 5501-5509, December 2008.

Brunckhorst E., et al., Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques. IAEA, International Atomic Energy Agency, IAEA-TECDOC-1583, pgs. 1-67, January 2008

Altman, M., et al., A Novel Phantom for use in 3-dimensional In Vitro Cell Experiments. Med. Phys., vol. 33 (6), pgs. 2058-2059, Poster # SU-FF-T-40, June 2006.

Item #	Description
682-510	IMRT Thorax Phantom
682-533	Water Equiv Rod Insert with Chamber Cavity Specify Chamber and Cavity Code
682-534	Bone Equivalent Insert with Ion Chamber Cavity Specify Chamber and Cavity Code
682-535	Lung Equivalent Insert with Ion Chamber Cavity Specify Chamber and Cavity Code

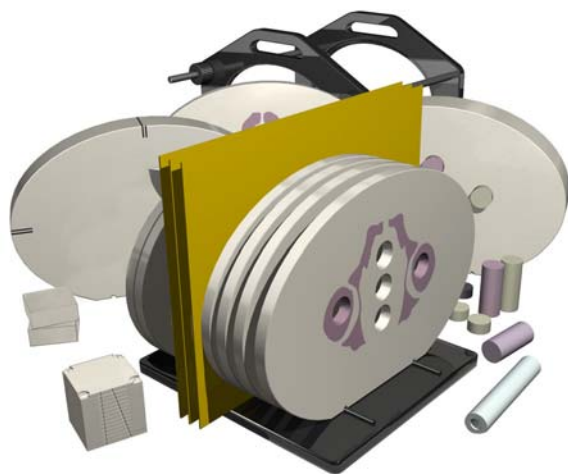
**Ion chamber and cavity codes can be found in Appendix A**

Item #	Optional Accessories
682-525	Water Equivalent Rods for TLD's, Set of 5
682-526	Single Breast Attachment
682-527	Film Stack for Small Volume 3D Image Reconstruction
682-528	Gel Dosimetry Cassette
682-529	Thorax Region Section Accommodates 682-527 or 682-528
682-530	Homogeneous Section Accommodates 682-527 or 682-528
682-532	Set of CT to Film Fiducial Markers
682-537	Electron Density Ref Plugs Set of 4: lung, bone, muscle, adipose
682-540	Thorax Region Spacer Slab (1 cm)
682-545	Case for IMRT Phantoms and Cavity Slab
682-546	Case for IMRT Phantoms

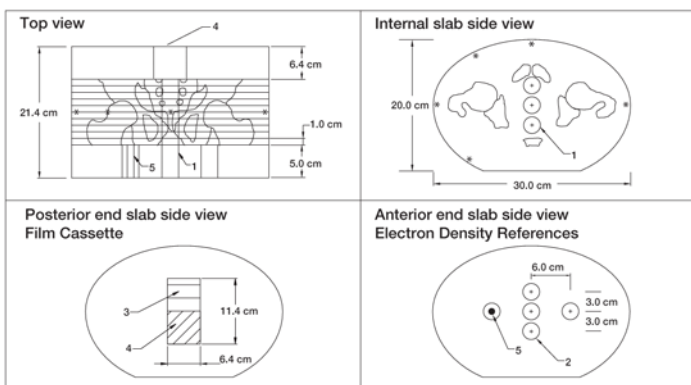
**Ion chamber and cavity codes can be found in Appendix A**

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

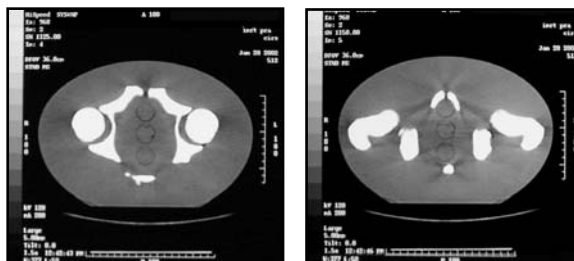
## CIRS IMRT PELVIC 3D PHANTOM



Shown with Optional Accessories



- 1 - Holes plugged with rods (Ø 2.5 cm)
- 2 - Holes for electron density inserts
- 3 - Spacers
- 4 - Film stack (cube 2.5 inches)
- 5 - Bone core (diam. 1 cm in water background)



The IMRT Pelvic 3D Phantom includes four different Electron Density reference plugs which can be interchanged in five separate locations within the phantom. The surface of the phantom is etched with grooves to ensure proper orientation of the CT slices and accurate film to plan registration.

<sup>1</sup> The CIRS line of IMRT phantoms is compatible with the RIT 113 software for film to plan analysis. GafChromic® is a registered trademark of International Specialty Products, Wayne, NJ

### Item 682-515 IMRT Pelvic 3D Phantom includes

- (1) 5 cm tissue equivalent reference section for interchangeable electron density inserts
- (10) 1 cm thick contiguous 3D pelvic sections each drilled to accommodate rod inserts
- (1) Homogeneous section that accommodates 682-527 and 682-528 cassettes
- (1) Film Stack for 3D reconstruction
- (5) Water equivalent rod inserts (2.5 cm dia x 5 cm long)
- (20) Bone equivalent solid disks (2.5 cm dia x 1 cm thick)
- (30) Water equivalent solid disks (2.5 cm dia x 1 cm thick)
- (1) Electron density reference plugs, (set of 4: lung, bone, muscle, adipose)
- (1) Set of CT to film fiducial markers
- (1) Alignment base
- (1) Holding device

### Insert Options

Customers are encouraged to complete their order with the purchase of at least one (1) of each insert option listed below. Customer must specify ion chamber and cavity code. Refer to the separate ion chamber and cavity codes chart (see Appendix A).

682-533 Water Equivalent Rod Insert with Ion Chamber Cavity

682-534 Bone Equivalent Rod Insert with Ion Chamber Cavity

### Specifications

**Overall Dim:** 14" x 15" x 9" (35.6 x 38.1 x 22.9 cm)

**Weight:** 28 lb (10.5 kg)

**Phantom Body Material:** Tissue Equivalent Epoxy Materials

**Insert Material:** CIRS Tissue Equivalent Materials (epoxy resin based)

### References

Gershkevitch, Eduard, et al., Dosimetric Verification of Radiotherapy Treatment Planning Systems: Results of IAEA Pilot Study. 2008 Elsevier Ireland Ltd., Radiotherapy and Oncology 89 (2009) 338-346, pgs. 338-346, March 2009.

Zhao, Y. et al., Monte Carlo evaluation of a treatment planning system for helical tomotherapy in an anthropomorphic heterogeneous phantom and for clinical treatment plans. Med. Phys., vol. 35 (12), pgs. 5366-5374, December 2008.

Luo, W., et al., Analysis of image quality for real-time target tracking using simultaneous KV-MV imaging. Med. Phys., vol. 35 (12), pgs. 5501-5509, December 2008.

Brunchhorst E., et al., Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques. IAEA, International Atomic Energy Agency, IAEA-TECDOC-1583, pgs. 1-67, January 2008.

Altman, M., et al., A Novel Phantom for use in 3-dimensional In Vitro Cell Experiments. Med. Phys., vol. 33 (6), pgs. 2058-2059, Poster # SU-FF-T-40, June 2006.

Item #	Description
682-515	IMRT Pelvic 3D Phantom
682-533	Water Equiv Rod Insert with Chamber Cavity Specify Chamber and Cavity Code
682-534	Bone Equivalent Insert with Ion Chamber Cavity Specify Chamber and Cavity Code
682-531	Pelvic Region Slab Accommodates 682-527 or 682-528
682-545	Case for IMRT Phantoms and Cavity Slab
682-546	Case for IMRT Phantoms

**Ion chamber and cavity codes can be found in Appendix A**

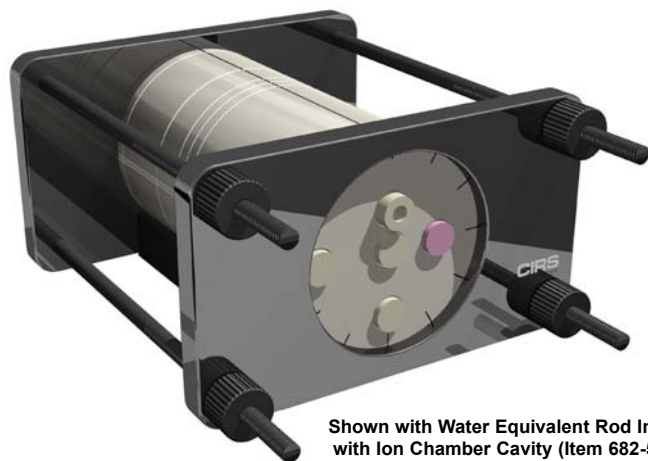
- Verify heterogeneity corrections
- Correlate CTU to electron density
- Check dose distributions insensitive areas
- Check depth doses and absolute dose
- 2D and 3D isodoses
- Calibrate film with an ion chamber
- Verify individual patient treatment plans

The IMRT Pelvic 3D phantom properly represents human pelvic anatomy in shape, proportion and structure as well as density. This enables thorough analysis of both the imaging and dosimetry system.

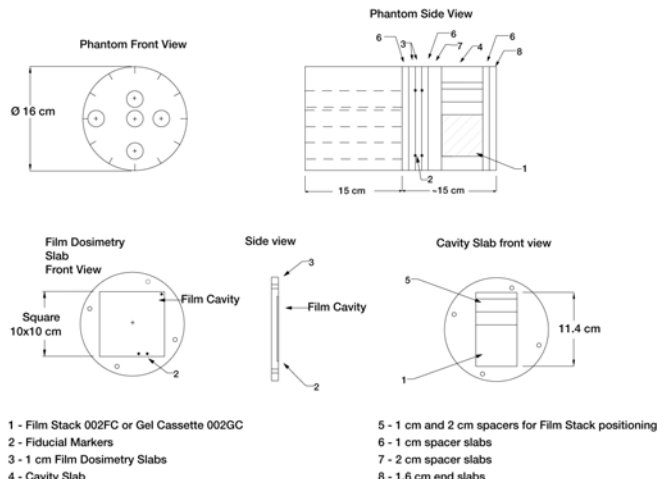
The phantom is elliptical in shape, approximates the size of an average patient, and has a tissue equivalent, three dimensional skeleton. Tissue equivalent interchangeable rod inserts for ionization chambers allow for point dose measurements in multiple planes in the phantom and film calibration.\* The phantom also supports film dosimetry with not only standard radiographic films but also GafChromic® media<sup>1</sup>. Additional inserts are available to support a variety of other detectors including TLD's, MOSFET, and diodes.

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## CIRS IMRT HEAD AND NECK PHANTOM



Shown with Water Equivalent Rod Insert with Ion Chamber Cavity (Item 682-533)



- Verify heterogeneity corrections
- Correlate CTU to electron density
- Check dose distributions in sensitive areas
- Check depth doses and absolute dose
- 2D and 3D isodoses
- Calibrate film with an ion chamber
- Verify individual patient treatment plans

The IMRT Head and Neck Phantom is circular in shape and approximates the size of an average patient. Tissue equivalent interchangeable rod inserts for ionization chambers allow for point dose measurements in multiple planes in the phantom, film calibration and isodose normalization.\* The phantom also supports film dosimetry with not only standard radiographic films but also GafChromic® media<sup>1</sup>. Additional inserts are available to support a variety of other detectors including TLD's, MOSFET and diodes.

The IMRT Head and Neck Phantom accommodates one Ready Pack™ 10" x 12" film in transverse orientation, two radiochromic or radiographic 10 x 10 cm films in transverse orientation and a stack of thirteen radiochromic films precut to 63.5 x 63.5 mm in three different orientations.

The IMRT Head and Neck Phantom has an optional four Electron Density reference plugs which can be interchanged in five separate locations within the phantom. The surface of the phantom is etched with grooves to ensure proper orientation of the CT slices and accurate film to plan registration. An optional cranial bone ring is also available.

### Item 682-520 IMRT Phantom Head and Neck Includes

- (1) Water equivalent homogeneous section drilled to accommodate rod inserts (15 cm)
- (2) Film slabs, 1 cm, film cavity 10 x 10 cm with a set of CT to Film Fiducial Markers
  - (1) CT to film fiducial markers in film slabs
- (1) Cavity slab, 6.34 cm, to accommodate Film Stack or Gel Cassette
  - (1) Film Stack for small volume 3D image reconstruction
  - (2) Spacer slabs, 1 cm
  - (2) Spacer slabs, 2 cm
  - (2) End slabs - 1 cm and ~1.6 cm
  - (5) Water equivalent solid rod inserts
    - (1) Bone equivalent solid rod insert
    - (1) Alignment base
    - (1) Holding device

### Insert Options

Customers are encouraged to complete their order with the purchase of at least one (1) of each insert option listed below. Customer must specify ion chamber and cavity code. Refer to the separate ion chamber and cavity codes chart (see Appendix A).

- 682-533 Water Equivalent Rod Insert with Ion Chamber Cavity
- 682-534 Bone Equivalent Rod Insert with Ion Chamber Cavity

### Specifications

**Overall Dim:** 17" x 13" x 8" (43.2 x 33 x 20.3 cm)  
**Weight:** 28 lb (10.5 kg)

**Phantom Body Material:** Tissue Equivalent Epoxy Materials  
**Insert Material:** CIRS Tissue Equivalent Materials (epoxy resin based)

### References

- Gershkevitch, Eduard, et al., Dosimetric Verification of Radiotherapy Treatment Planning Systems: Results of IAEA Pilot Study, 2008 Elsevier Ireland Ltd., Radiotherapy and Oncology 89 (2009) 338-346, pgs. 338-346, March 2009.
- Zhao, Y. et al., Monte Carlo evaluation of a treatment planning system for helical tomotherapy in an anthropomorphic heterogeneous phantom and for clinical treatment plans. Med. Phys., vol. 35 (12), pgs. 5366-5374, December 2008.
- Luo, W., et al., Analysis of image quality for real-time target tracking using simultaneous kV-MV imaging. Med. Phys., vol. 35 (12), pgs. 5501-5509, December 2008.
- Brunckhorst E., et al., Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques. IAEA, International Atomic Energy Agency, IAEA-TECDOC-1583, pgs. 1-67, January 2008.
- Altman, M., et al., A Novel Phantom for use in 3-dimensional In Vitro Cell Experiments. Med. Phys., vol. 33 (6), pgs. 2058-2059, Poster # SU-FF-T-40, June 2006.

Item #	Description
682-520	IMRT Phantom Head and Neck
682-533	Water Equiv Rod Insert with Chamber Cavity Specify Chamber and Cavity Code
682-534	Bone Equivalent Insert with Ion Chamber Cavity Specify Chamber and Cavity Code

**Ion chamber and cavity codes can be found in Appendix A**

Item #	Optional Accessories
682-525	Water Equivalent Rods for TLD's, Set of 5
682-528	Gel Dosimetry Cassette
682-532	Set of CT to Film Fiducial Markers
682-537	Electron Density Ref Plugs Set of 4: lung, bone, muscle, adipose
682-547	Case for IMRT Head and Neck Phantom

**Ion chamber and cavity codes can be found in Appendix A**



# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## CIRS IMRT HEAD AND TORSO FREEPOINT PHANTOM



Shown with Water Equivalent Rod Insert with Ion Chamber Cavity (Item 682-533)

### Insert Options

Customers are encouraged to complete their order with the purchase of at least one (1) of each insert option listed below. Customer must specify ion chamber and cavity code. Refer to the separate ion chamber and cavity codes chart (see Appendix A).

- 682-533 Water Equivalent Rod Insert with Ion Chamber Cavity
- 682-534 Bone Equivalent Rod Insert with Ion Chamber Cavity

### Specifications

**Overall Dim:** 17" x 15.5" x 10" (43.2 x 39.4 x 25.4 cm)

**Weight:** 47 lb (17.5 kg)

**Phantom Body Material:** Tissue Equivalent Epoxy Materials

**Insert Material:** CIRS Tissue Equivalent Materials (epoxy resin based)

### References

Gershkevitch, Eduard, et al., Dosimetric Verification of Radiotherapy Treatment Planning Systems: Results of IAEA Pilot Study, 2008 Elsevier Ireland Ltd., Radiotherapy and Oncology 89 (2009) 338-346, pgs. 338-346, March 2009.

Zhao, Y. et al., Monte Carlo evaluation of a treatment planning system for helical tomotherapy in an anthropomorphic heterogeneous phantom and for clinical treatment plans. Med. Phys., vol. 35 (12), pgs. 5366-5374, December 2008.

Luo, W., et al., Analysis of image quality for real-time target tracking using simultaneous kV-MV imaging. Med. Phys., vol. 35 (12), pgs. 5501-5509, December 2008.

Brunckhorst E., et al., Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques. IAEA, International Atomic Energy Agency, IAEA-TECDOC-1583, pgs. 1-67, January 2008.

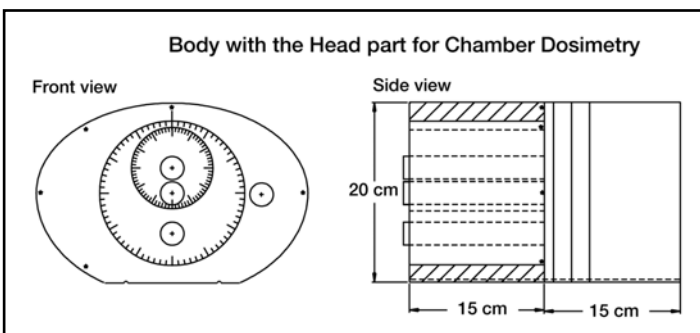
Altman, M., et al., A Novel Phantom for use in 3-dimensional In Vitro Cell Experiments. Med. Phys., vol. 33 (6), pgs. 2058-2059, Poster # SU-FF-T-40, June 2006.

Item #	Description
682-522	IMRT Head and Torso Freepoint Phantom
682-533	Water Equiv Rod Insert with Chamber Cavity Specify Chamber and Cavity Code
682-534	Bone Equivalent Insert with Ion Chamber Cavity Specify Chamber and Cavity Code

**Ion chamber and cavity codes can be found in Appendix A**

Item #	Optional Accessories
682-525	Water Equivalent Rods for TLD's, Set of 5
682-526	Single Breast Attachment
682-527	Film Stack for Small Volume 3D Image Reconstruction
682-528	Gel Dosimetry Cassette
682-529	Thorax Region Section Accommodates 682-527 or 682-528
682-530	Homogeneous Section Accommodates 682-527 or 682-528
682-532	Set of CT to Film Fiducial Markers
682-535	Lung Equivalent Rod Insert with Ion Chamber Cavity Specify Chamber and Cavity Code
682-537	Electron Density Ref Plugs Set of 4: lung, bone, muscle, adipose
682-538	Lung Equivalent Solid Rod Insert
682-545	Case for IMRT Phantoms and Cavity Slab
682-546	Case for IMRT Phantoms

**Ion chamber and cavity codes can be found in Appendix A**



- Ionization chambers, TLD, MOSFET and Diodes easily positioned using interchangeable rods
- Choose any point dose location by rotating the cylinders
- Use radiographic film dosimetry Ready Pack® and/or Gafchromic® film
- Close placement of detectors to film improves film calibration
- CT - film markers ensure accurate film to plan registration
- Surfaces are etched with indices for precise alignment
- Configure with or without heterogeneities.

The IMRT Head and Torso Freepoint Phantom was designed in collaboration with David D. Loshek PhD. With the Freepoint Phantom choose any point dose location within a circular area with diameter of 11.2 cm by simply adjusting the two rotating cylinders. Lung and bone equivalent rods can be positioned at any location within the circular area for assessment of heterogeneity correction. Remove the center cylinder from the phantom body to simulate head and neck set-ups.

### Item 682-522 IMRT Head and Torso Freepoint Phantom Includes

- (1) Water equivalent homogeneous torso section with cylindrical inserts (15 cm)
- (2) Spacer slabs, 2 cm
  - (1) Spacer slab, 1 cm
  - (1) Spacer slab, 10 cm
- (4) Water equivalent solid rod inserts
  - (1) Bone equivalent solid rod insert
  - (1) Set of CT film fiducial markers
  - (1) Alignment base
  - (1) Holding device

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## CIRS IMRT PHANTOM ACCESSORIES

### For Homogenous, Thorax, Pelvis and Head and Neck



**Item 682-525** Short tissue equivalent rods for TLD (set of five). Each rod is 50 mm long by 25.4 mm (1") Outside Diameter and allows the placement of TLDs in the same position as an ion chamber in a multitude of locations along the z-axis. Inside hole  $\varnothing$  5 mm with water-equivalent plugs 25 mm long. Rods are also available in other tissues and length.



**Item 682-526** Single breast attachment 350 cc, 50/50 glandular/adipose ratio with TLD holes  $\varnothing$  5 mm, 20 x 20 mm grid spacing with tissue equivalent plugs.



**Item 682-527** Film stack 2.5" x 2.5" x 2.5" (63.5 x 63.5 x 63.5 mm) for 3D image reconstruction using 13 layers of X-Ray or Gafchromic® film with 4 mm thick tissue equivalent spacers in between each film.



**Item 682-528** Gel dosimetry cassette has the same outside cubic dimensions as the 682-527 film cassette. It receives a disposable Barrex™ cylinder (max  $\varnothing$  50 mm, height 63.5 mm) that can be filled with BANG™ or other dosimetry gel.

**Item 682-529** Thorax Region Section - Accommodates 682-527 or 682-528 cassettes. Thickness of sections 2.5" (63.5 mm). Cavity and three water-equivalent spacers are included to allow use of cassette in six different positions inside the phantom. Spacer's thickness is 20, 20 and 10 mm. Extra solid blocks to replace the cassette are included.

**Item 682-530** Homogeneous Section - Accommodates 682-527 or 682-528 cassettes. Thickness of sections 2.5" (63.5 mm). Cavity and three water-equivalent spacers are included to allow use of cassette in six different positions inside the phantom. Spacer's thickness is 20, 20 and 10 mm. Extra solid blocks to replace the cassette are included.

**Item 682-531** Pelvic Region Slab - Accommodates 682-527 and 528 cassettes.

**Item 682-532** Set of CT to film fiducial markers from stainless steel are visible during the CT simulation. They also imprint small but clearly visible indentations on the film. Five fiducials at each phantom to film interface allow for very precise film to plan registration.

**Item 682-533** Water equivalent insert with ion chamber cavity (Specify ion chamber and cavity code, see Appendix A).

**Item 682-534** Bone equivalent rod with ion chamber cavity (Specify ion chamber and cavity code, see Appendix A).

**Item 682-535** Lung equivalent insert with ion chamber cavity (Specify ion chamber and cavity code, see Appendix A).

**Item 682-537** Electron density reference plugs (set of 4: lung, bone, muscle and adipose)

#### ELECTRON DENSITY REFERENCE INSERT

	Density	Electron Density per cc x 10 <sup>23</sup>	Electron Density Relative to H <sub>2</sub> O
Lung	0.21	0.69	0.207
Bone	1.60	5.03	1.506
Muscle	1.06	3.48	1.042
Adipose	0.96	3.17	0.949

**Item 682-538** Lung equivalent solid rod insert

**Item 682-539** Water Equivalent Spacer Slab

**Item 682-540** Thorax Region Spacer Slab for 682-515

**Item 682-545** Case for IMRT Phantoms when ordered with corresponding Cavity Slab: 682-510, 682-515 and 682-522.

**Item 682-546** Case for IMRT Phantoms 682-510, 682-515 and 682-522.

**Item 682-547** Case for IMRT Head and Neck Phantom, Item 682-520.

Item #	Optional Accessories
682-525	Water Equivalent Rods for TLD's, Set of 5
682-526	Single Breast Attachment
682-527	Film Stack for Small Volume 3D Image Reconstruction
682-528	Gel Dosimetry Cassette
682-529	Thorax Region Section Accommodates 682-527 or 682-528
682-530	Homogeneous Section Accommodates 682-527 or 682-528
682-531	Pelvic Region Slab Accommodates 682-527 or 682-528
682-532	Set of CT to Film Fiducial Markers
682-533	Water Equiv Rod Insert with Chamber Cavity Specify Chamber and Cavity Code
682-534	Bone Equivalent Rod Insert with Ion Chamber Cavity Specify Chamber and Cavity Code
682-535	Lung Equivalent Rod Insert with Ion Chamber Cavity Specify Chamber and Cavity Code
682-537	Electron Density Ref Plugs Set of 4: lung, bone, muscle, adipose
682-538	Lung Equivalent Solid Rod Insert
682-539	Water Equivalent Spacer Slab (1 cm)
682-540	Thorax Region Spacer Slab (1 cm)
682-545	Case for IMRT Phantoms and Cavity Slab
682-546	Case for IMRT Phantoms
682-547	Case for IMRT Head and Neck Phantom

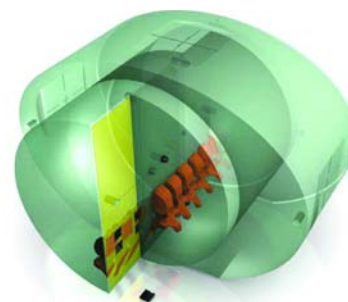
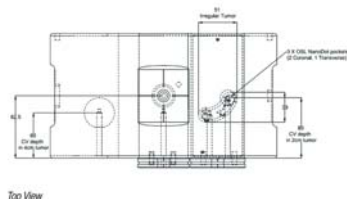
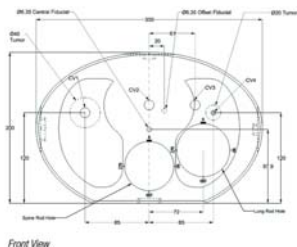
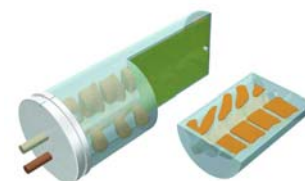
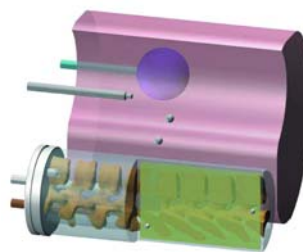
Ion chamber and cavity codes can be found in Appendix A

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

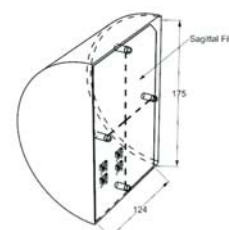
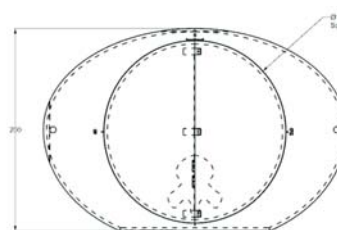
## E2E® SBRT PHANTOM WITH REMOVABLE SPINE “END-TO-END” SBRT TESTING SOLUTION



682-575



682-580



- Thorax with articulated spine, ribs and lungs
- Optional Abdomen with film insert
- High Resolution Anthropomorphic Characteristics
- Center point fiducial and offset target for daily system checks
- Ideal for commissioning an SBRT program
- Excellent test environment for Monte Carlo dose calculation verification
- Supports use and testing of Image Guidance capabilities

The high dose per fraction associated with SBRT necessitates a high degree of accuracy in target localization and dose delivery. Small errors can result in significant under treatment of portions of the tumor volume and over dosage of nearby normal tissues. The E2E® SBRT Phantom with Removable Spine provides a means to check the entire treatment chain during commissioning and routine QA.

Item 682-575 is an anthropomorphic, thorax body phantom containing articulated spine, ribs, and lungs. All materials are suitable for use in kV and MV energies. The thorax section contains two lung tumor volumes with ionization chamber cavities in the center of each target\*. The phantom also includes a lung insert with an irregular-shaped lung target. The proximity of the lung target to the vertebral body allows clinicians to measure high-resolution dose distribution to the target and dose to the spinal cord in a single delivery. The surface of the thorax body is machined with concentric circle targets and alignment marks for daily system checks.

This phantom has more options for dose verification in the spine as an organ at risk, including a removable split spine. The removable spine facilitates the use of radiochromic film in the sagittal orientation in the inferior half of the spine rod. Ion chamber cavities are located in the spinal cord and the vertebrae in the superior half of the removable spine rod. Alignment marks at 0°, 90°, 180° & 270° allow for consistent re-positioning. Precision-cut films with integral registration holes are available for both the lung insert and spine insert.

\*Customer must specify chamber at time of purchase. Refer to CIRS cavity codes for corresponding CV number.

An optional abdominal section Item 682-580 SBRT Abdomen Phantom with 3D spine for film and nanoDot™ Dosimetry is available separately. Item 682-580 provides extra bolus material to allow dose assessments with the abdomen due to non-coplanar beams. It can also accommodate Item 682-585, the CBCT Image Quality Phantom.

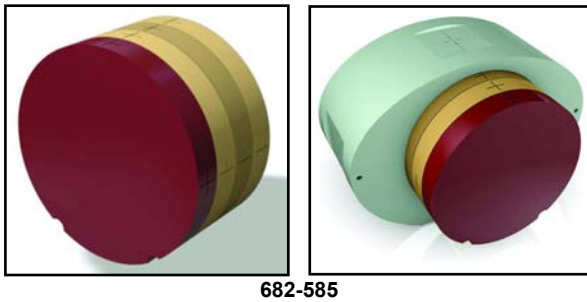
The Item 682-580 SBRT Abdomen Phantom abdomen measures 127 mm long and is machined to receive a central insert, which contains the anatomic spine with cortical and trabecular distinction. All materials are tissue equivalent and suitable for use from 50 keV to 15 MeV.

The central insert is cut in the sagittal plane. A film for high resolution dosimetry measurements can be placed between the two halves. Item 682-582 Precision Cut EBT3 Film is available as an optional accessory. Four nanoDot pockets permit for localized dosimetry measurements within the vertebra body (1), spinal cord (2) and spinal disc (1).

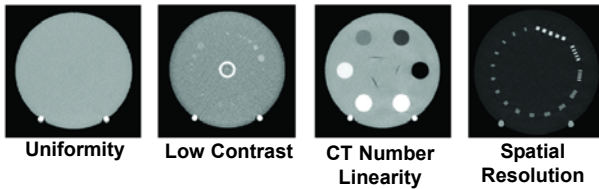
Items 682-575 and 682-580 are connected using lateral pins, which allow rotation of the central insert about the Inferior-Superior axis.

The central insert of Item 682-580 can also accommodate the CBCT Image Quality Phantom, Item 682-585, to perform image quality assessments of on-board imaging (OBI) systems.

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES



682-585



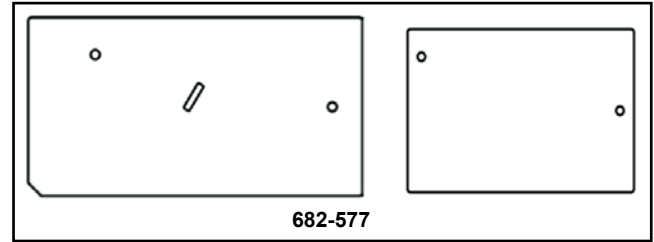
Uniformity

Low Contrast

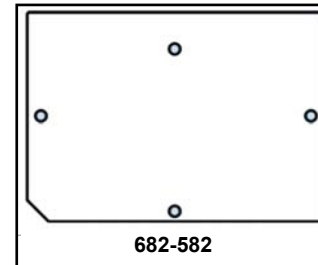
CT Number Linearity

Spatial Resolution

## Precision Cut EBT3 Gafchromic Film



682-577



682-582

### Item 682-575 Includes:

- 1 - E2E® SBRT Phantom with Removable Spine drilled for customer specified ion chamber\*
- 1 - User Guide
- 1 - Foam-Lined Carry Case

\*Customer must specify chamber at time of purchase. Refer to CIRS cavity codes for corresponding CV number.

### Specifications - Item 682-575

**Materials:** Proprietary Epoxy Resins

**Dimensions:** 6.5" x 11.8" x 7.9" (16.5 cm x 30 cm x 20 cm)

**Phantom Weight:** 15 lb (~7 kg)

### OPTIONAL ITEMS

**Item 682-577** Precision Cut EBT3 Film Kit for Item 682-575 is a set of 18 spine inserts, 12 lung inserts and 6 calibration strips. Size: 5" x 2.5" and 4" x 2.5"

**Item 682-580** SBRT Abdomen Phantom with 3D spine for film and nanoDot™ Dosimetry (includes foam-lined carry case).

**Item 682-582** Precision Cut EBT3 Film Kit for Item 682-580 set of 4 inserts plus 6 calibration strips. Size: 5" x 7"

### Item 682-585 CBCT Image Quality Phantom

Item #	Description
682-575	E2E® SBRT Phantom with Removable Spine, Specify Chamber
682-577	Precision Cut EBT3 Film Kit for 682-575
682-580	SBRT Abdomen Phantom with 3D spine for film and nanoDot™ Dosimetry
682-582	Precision Cut EBT3 Film Kit for 682-580
682-585	CBCT Image Quality Phantom

**Must specify ion chamber at time of purchase**

### Item 682-585 CBCT Image Quality Phantom

The purpose of image quality measurements is to quantify various image quality indicators for images taken from a selection of image acquisition and reconstruction settings representative of clinical practices. Assessment of the image quality parameters over time can show trends in variation of said parameters helping the user to decide whether or not recalibrations of the imaging system are necessary.

The CBCT Image Quality Phantom is composed of four layers:

**1) Uniformity layer** - designed to measure the system's ability to produce uniform images across the field of view of an object with highly homogeneous physical properties in all directions.

**2) Low Contrast/Magnification layer** - intended to assess the system's ability to detect small differences in contrast. It contains three sets of low contrast rods with linear attenuation differences of 0.5%, 1% and 2% relative to the background material. The diameters of the low contrast rods were chosen so as to provide a 0.5 ratio between two adjacent rods by cross section and volume.

Additional features are designed to evaluate the magnification on the orthogonal axes of the transversal image and provide input for calculation of Point Spread Function and subsequent calculation of Modulation Transfer Function.

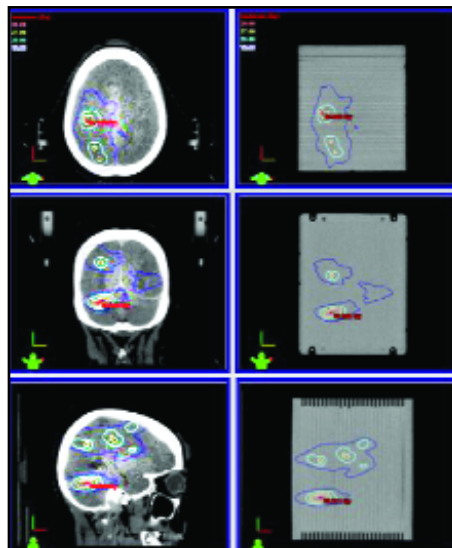
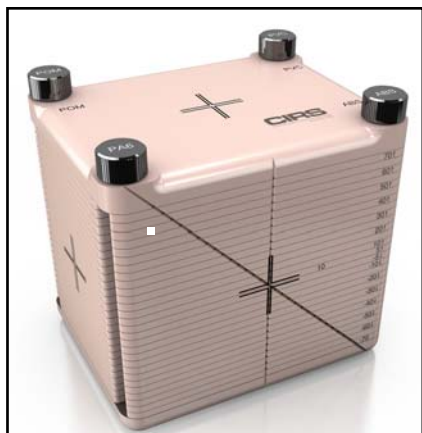
**3) CT Number Linearity/Slice Thickness layer** - is designed to determine Contrast-to-Noise Ratio (CNR), Hounsfield number accuracy and Slice Thickness Sensitivity. Six rods made of Air, Low Density Polyethylene (LDPE), Polystyrene, Acrylic, Delrin and Teflon are used to measure the CNR and Hounsfield number accuracy. Three angled air channels arranged in an equilateral triangle can be used to assess the Slice thickness sensitivity.

**4) Spatial resolution layer** - is designed to evaluate the spatial resolution of IGRT systems. Line pair patterns from 1 lp/cm to 16 lp/cm are embedded in the background. In order to minimize artifacts, each line pair pattern is made from a material with 350HU greater than the background attenuation. The line pair patterns are 3D patterns, 12 mm in height along the longitudinal axis of the CBCT Image Quality Phantom. The spatial resolution targets are arranged in a circular pattern.

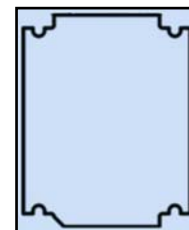
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# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## MULTI-LESION BRAIN QA PHANTOM



Clinical Images of Multi-Lesion Brain QA Phantom for SRS



682-658

- Receives up to 29 GafChromic films
- Allows dose measurements to multiple targets with a single delivery
- Alignment marks for repeatable set up with sub-millimeter accuracy
- Pre-loaded polyester sheets allow flexibility in number and location of films
- Accurate film registration markings for dose distribution to treatment plan verification

Our Multi-Lesion Brain QA Phantom provides a unique solution for fast, comprehensive film dosimetry for single isocenter plans treating multiple targets simultaneously. The phantom may be used for thorough validation of multi-lesion treatment methods and for patient-specific quality assurance.

Our phantom is rectangular in shape with rounded corners to minimize CT artifacts and large enough in size to cover brain anatomy variations. Linear attenuation of simulated brain tissue is within 1% of real tissue from 50 keV to 15 MeV.

This phantom has two pairs of asymmetrical imbedded fiducial markers and a central fiducial split in half at the phantom isocenter to aid you during pre-irradiation imaging. You can also align the imaged fiducials (from a CBCT, ExacTrac®, or kV images) and compare them to the reference image of the phantom in order to make more accurate shifts of the phantom with the linear accelerator couch top.

The phantom receives radiochromic film to as many as 29 locations in 5mm increments. Pre-loaded polyester film sheets allow flexibility in film placement without affecting sensitive geometry. External grooves and marking on the phantom sides helps with easy film positioning at only desired locations to cover specific lesions. Film allows multiple planning target volumes (PTVs) to be reviewed individually.

Also offered is pre-cut EBT3 film designed specifically to fit this phantom. A sample pack of Precision Cut™ film is shipped with each phantom. Additional film may be purchased separately.

Four assembly rods, each made of different materials, allows for orientation and registration to ExacTrac® systems.

\*ExacTrac® is a registered trademark of Brainlab (Munich, DE)

### Item 682-650 includes:

- 1 - Multi-Lesion Brain QA Phantom
- 1 - Sample Precision Cut EBT3 Film Kit
- 1 - User Guide
- 1 - Foam-Lined Carry Case

### Specifications

**Overall Dimensions:** 150 mm (W) x 190 mm (H) x 170 mm (L)

**Slab Thickness:** Top and Bottom slabs: 15 mm  
Spacers: 4.7 mm

**Material:** Brain Equivalent Epoxy resin

**Polyester Sheets (PET):** ) 29 pcs, 0.3 mm thick

**Film Dimensions:** 167mm x 150 mm

**Weight:** 5 kg (11 lbs)

**Item 682-658** Precision Cut EBT3 Film Kit for Item 682-650 is a set of 2 inserts plus 6 calibration strips. Size: 7.5" x 6"

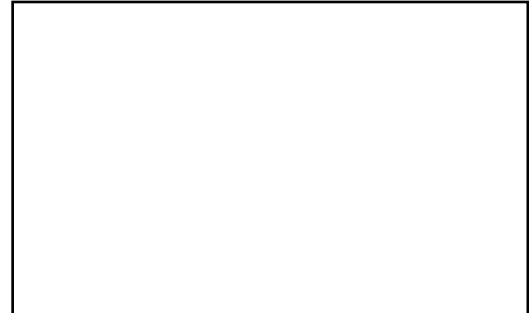
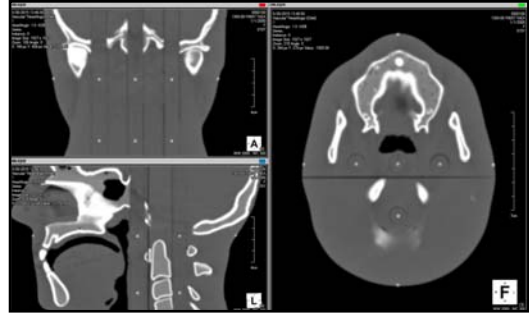
### REFERENCES

1. Maurer J, Sintay B, Varchena V. SU-E-T-52: A New Device for Quality Assurance of a Single Isocenter Technique for the Simultaneous Treatment of Multiple Brain Metastases. Med Phys. 2015;42(6):3342.
2. Maurer J, Liu H, Wiant D, Koch K, Manning M, Sintay B. SU-E-T-197: Comparing Quality Assurance Strategies for Single Isocenter Treatments of Multiple Brain Metastases. Med Phys. 2015;42(6):3377.
3. Maurer J, Sintay B, Manning M, Wiant D, Liu H. SU-F-T-510: Single Isocenter Radiosurgery for the Simultaneous Treatment of Multiple Brain Metastases: Volumetric Modulated Arc Therapy or Dynamic Conformal Arc? Med Phys. 2016; 43(6):3580.

Item	Description
682-650	Multi-Lesion Brain QA Phantom
682-658	Precision Cut EBT3 Film Kit for 682-650

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## SHANE PHANTOM PATIENT FOR VMAT AND IMRT



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- High fidelity phantom-patient
- Suitable for use with various commercially available fixation devices
- Enables dose measurements in large regions of head and neck through use of radiographic film
- Allows dose measurements with ion chambers
- Performs Electron Density calibration in shoulders

The CIRS Shoulder, Head and Neck End-to-End Verification Phantom (SHANE) is designed for end-to-end testing of treatment planning systems. The phantom can be used for every step in this process from imaging acquisition to dosimetry verification and patient-specific QA during head-and-neck VMAT and IMRT procedures.

The head and shoulders are cut in the coronal plane to receive large radiochromic or radiographic film for treatment plan verification. The phantom also receives ion chambers or other detectors, which can be positioned in four parallel holes drilled through the phantom in Inferior-Superior direction.

The high-fidelity anthropomorphic design contains complex internal anatomy that provides a realistic clinical simulation to evaluate the challenging effects of intra- and extracranial anatomies.

Head and shoulder portions are manufactured as a single piece to enable use with various fixation devices. The shoulder portion contains thoracic vertebrae, which enable TPS verification to the level of T2 vertebra. Shoulders also include tissue inserts for electron density calibration.

The phantom comes with carry case.

### Item 682-680 Includes:

- 1 - Head Vertex
- 1 - Head & Shoulders Anterior part
- 1 - Head & Shoulders Posterior part
- 1 - End plate, ABS black
- 4 - Solid Rod w/BB @ ISO center, 330 mm long
- 3 - Sleeve CV511C, 115 mm long
- 1 - Plug PL-CV511C solid, 330 mm long
- 1 - Plug PL-CV511C solid w/BB, 330 mm long
- 1 - Plug PL-CV511C solid to fit Cavity Rod @ ISO center, 217 mm long
- 1 - Plug PL-CV511C solid to fit Cavity Rod @ ISO center + 50 mm, 167 mm long
- 1 - Spacer Plugs CV511C Kit, total length 370 mm x 7mm Ø
- 1 - Spacer Plugs CV511C Kit, total length 130 mm x 13mm Ø
- 1 - Cavity Rod CV511C for Ion Chamber @ ISO location, 320 mm
- 1 - Cavity Rod CV511C for Ion Chamber @ ISO+50 mm location, 320 mm
- 5 - Water vial
- 1 - Screw driver
- 12 - Nylon screws 1/4-20x1-1/4"
- 6 - Black nylon thumbscrews 1/4-20x1/2"
- 8 - Nylon pins 1/4x1"
- 1 - Black nylon strap with a buckle
- 1 - User's Guide (electronic copy)
- 1 - Carry case, foam lined

### Specifications

**Materials:** CIRS proprietary epoxy resins

**Dimensions:** 14.1" W x 14.1" L x 8.6" H (36 x 36 x 22 cm)

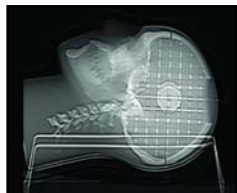
**Weight:** 22.4 lb (10.2 kg) without rods

Item	Description
682-680	SHANE Phantom Patient for VMAT & IMRT

# IMRT DOSE VERIFICATION PHANTOMS AND CUBES

## MRI DISTORTION PHANTOM FOR SRS

For Assessment of Image Distortion in Treatment Planning Systems



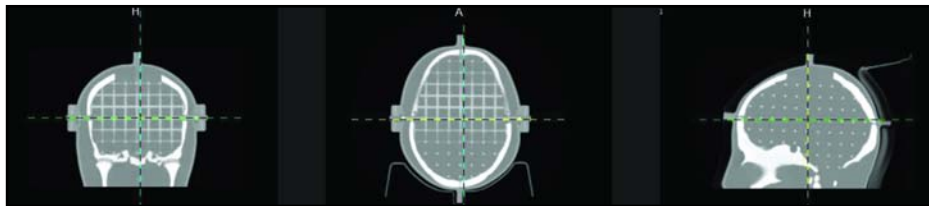
CT



MRI



CT Showing Ear Canals



CT Reconstruction

- Provides a realistic anthropomorphic scenario for CT and MR imaging
- Unique inter-cranial 3D grid design allows assessment of spatial distortion
- Special pads enable use with all fixation frames
- CT/MR markers facilitate positioning and image registration

CIRS Model 603A was designed for assessment of MR image distortion in Stereotactic Radiosurgery Planning. It is also a useful tool for verifying image fusion and deformable image registration algorithms used in various treatment planning systems. The tissue equivalent, anthropomorphic design provides the closest conditions to a clinical imaging scenario. The phantom can be imaged using X-ray, Computed Tomography and Magnetic Resonance. It images well with all MRI sequences tested to date, including T1 weighted, T2 weighted, 3D Time of Flight, MPRAGE and CISS.

The skull is manufactured from a plastic-based bone substitute, and the interstitial and surrounding soft tissues are made from a proprietary signal generating water-based polymer. The entire phantom is encased in a clear plastic shell to protect gel from desiccation. The phantom is supplied with specially designed pads that allow fixation with any stereotactic frame or mounting for end-to-end testing. The phantom is also suitable for frameless SRS QA.

The entire inter-cranial portion of the skull volume is filled with an orthogonal 3D grid of 3 mm diameter rods spaced 15 mm apart. Five extended axis-rods intersect at the reference origin of the grid. The end of each extended axis is fitted with CT/MR markers allowing for accurate positioning with lasers and co-registration of CT and MR image sets.

The phantom includes right and left air voids, 3 mm in diameter by 17 mm long to simulate each ear canal for evaluation of potential distortions commonly found in clinical settings.

### 682-825 Includes

- (1) 3D Anthropomorphic Skull Phantom
- (1) ABS Cradle
- (1) SRS Frame Support Cups (Set of 4)
- (1) Custom Carry Case
- (1) User Guide
- (1) 48-Month Warranty

### Specifications

**Overall Dimensions:** 32 cm x 24 cm x 18 cm

**Weight:** 12 lbs (5.5 kg)

### Materials

**Skull:** Plastic-based bone substitute

**Interstitial/Soft Tissues:** Water-base polymer

**Grid:** Reinforced nylon

Item	Description
682-825	MRI Distortion Phantom for SRS

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## CARFUSION DYE AND ANTI-SPILL HOLDER



464-040



463-000



464-080

Carfusion Dye/Castellanis Paint is a long lasting skin marking dye. It dissolves skin oils and penetrates into the pores and will resist mild washings. To apply use Item 464-080, Pointed Wood Stick Applicators. On rare occasion, a patient's skin could react to this chemical, forming small water blisters where the dye was applied.

Easy removal of Castellanis Paint is accomplished by using Erado-Sol Stain Remover (Item 466-000 or 466-100).

To reduce the risk of spills, the dye can be used with the Item 463-000, Carfusion Dye Holder. The Carfusion Dye Holder is an aluminum container which stands 4" (10 cm) high and has a 3 1/2" (9 cm) square base with four rubber feet. The screw-on cap with seal has a 2" (5 cm) stainless steel tube that goes down into the container. Therefore, if the holder is knocked to the floor, due to the vacuum seal and tube design, only a few drops will spill and the holder will not break.

Item	Description	Quantity
463-000	Carfusion Dye Holder	1
464-040	Carfusion Dye/Castellanis Paint, 4 oz (118 mL)	6
464-040-1	Carfusion Dye/Castellanis Paint, 4 oz (118 mL)	1
464-080	Pointed Wood Stick Applicators	100

## SECURLINE



- Fine tip
- Non-toxic
- Gentian violet ink
- Single patient use
- High visibility

Item	Description	Quantity
467-102	Securline	1

## SKIN/FILM MARKING PENS



Single patient use.

Item	Skin/Film Marking Pen	Quantity
467-410-12	Black	12
467-415-12	Green	12
467-425-12	Purple	12
467-430-12	Blue	12

## DECOCOLOR™ PAINT MARKERS



These markers are solvent-based and dry instantly. Single patient use.

Item	DecoColor™ Paint Markers	Quantity
467-200	Fine Tip, Black	1
467-202	Fine Tip, Violet	1
467-204	Fine Tip, Yellow	1
467-206	Fine Tip, Red	1
467-207	Fine Tip, Light Blue	1
467-208	Fine Tip, Green	1
467-210	Fine Tip, Orange	1
467-212	Fine Tip, Blue	1
467-214	Fine Tip, White	1



# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## SKIN MARKING PEN



- Extra fine point (0.5 mm) provides precise delivery
- Pliable tip is pressure sensitive
- Xylene-free, permanent, waterproof black ink
- Non-toxic
- Quick drying
- Clip on cap

**NOTE:** Single patient use.

Item	Description
467-100	Skin Marking Pen

O

## TATTOO ACCESSORIES AND INK



468-009



468-002



468-016

The Black Tattoo Ink, Item 468-016, contains alcohol and two stainless steel balls inside for better mixing by shaking.

Item	Description	Quantity
468-002	18 Ga. Disposable Tattoo Needles	100
468-009	Cups for Holding Tattoo Ink, NON-STERILE	100
468-016	Black Tattoo Ink with Stainless Steel Balls, NON-STERILE	0.5 oz / 15 ml

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## STERITATT® TATTOO CARTRIDGE



SteriTatt® is a single-use device that contains sterile, non-toxic, permanent ink. Each SteriTatt® device contains low-allergy ink that is safety-sealed and gamma irradiated to guarantee sterility for the highest quality of patient care.

SteriTatt's® pen-like design offers ease and comfort of use and helps standardize the methods therapists employ to administer tattoo markings. The ink flow is easily regulated so too much ink will not be dispersed.

SteriTatt® can be used two different ways: it can be applied to a prepared site using the "dropping method", or a hypodermic needle can be attached to the SteriTatt® unit so the ink can be injected under the patient's skin.

Item	SteriTatt® Tattoo Cartridge	Quantity
468-100	Black	25/Box
468-1001	Black with Needles	25/Box
468-1002	UV White	5/Box
468-1022	UV Pink	5/Box
468-1023	UV Pink	25/Box

- Sterile, Non-toxic, Low-allergy Ink
- Neat and Easy to Use
- Supports Precision of Treatment
- Single-use for Patient Safety
- Standardizes the Tattooing Method

## STERITATT® DROPPERS



- 3 cc Dropper Bottles
- Sterile
- Available in Black
- 10 Bottles/Box

Item	Description	Quantity
468-105	SteriTatt® 3 cc Droppers, Black	10/Box

## UV LIGHT



- Water Resistant - With "O" Ring sealed on both ends
- Shock Resistant - Hard anodized finish for extreme corrosion impact
- Made by High Quality 6061T CNC aluminum
- Water & Scratch resistance glass lens

### Specifications

**Color:** Black  
**Dimensions:** 1.2" W x 1.1" H x 5.2" L (3.06 x 2.8 x 79.38 cm)  
**Weight:** 3.2 oz (90.7 g) without batteries  
**Power:** Two 3V Lithium Batteries

Item 468-124 Can Not ship International or inside the UV Flashlight, Item 468-122.

Item	Description
468-122	UV Light, Batteries NOT Included
468-124	Battery, 123A Lithium 3V (2/Pkg)

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## STAIN REMOVER



Erado-Sol Stain Remover rapidly removes carfusion dye markings and it is non-irritating to skin.

## ADHESIVE REMOVER WIPES



This Adhesive Remover Wipe dissolves and removes adhesive residue from skin and surfaces. It will also easily remove the marks from a Decocolor Paint Marker. This wipe does leave a slightly oily residue so if re-marking it is recommended to clean the residue with alcohol before re-marking. The wipe has a fresh scent, is latex-free, nonirritating and is 1.25" x 3" (3.2 x 7.6 cm) in size.

Item	Description	Size
466-000	Liquid Erado-Sol Stain Remover	16 oz
466-100	Cream Erada-Stain Remover	6 oz

Item #	Description	Quantity
466-103	Adhesive Remover Wipes	75/Box

## IZ PORT® RADIATION THERAPY MARKERS



- Clear adhesive backing for precise application
- Hypoallergenic medical grade adhesive
- Highly visible blue ink
- Split liner for easy application
- Water resistant

Pre-marked, these hypoallergenic tapes are easily applied on the skin to outline the treatment field. They remain in place between 7-10 days on most patients.

### Specifications

#### Item 462-002 Isocenters, Blue

**Line Width:** Approximately 0.075" (0.19 cm)

**Isocenter Diameter:** Approximately 0.56" (1.43 cm)

#### Item 462-003 Lines, Blue

**Line Width:** Approximately 0.075" (0.19 cm)

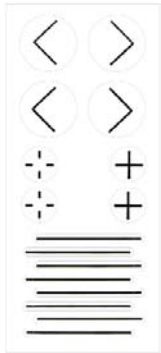
**Line Length:** Approximately 1.75" (4.46 cm)



Item #	IZ Port® Markers	Quantity
462-002	Isocenters, Blue	300
462-003	Lines, Blue	150

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

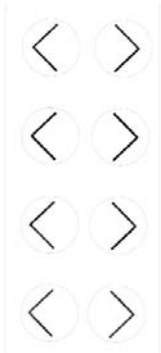
## PORTALMARK™ RADIATION THERAPY MARKERS



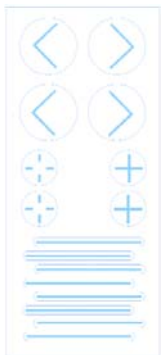
462-150



462-151



462-152



462-155



462-156



462-157



462-180  
462-181



462-182  
462-183



462-185  
462-186



462-187  
462-188

- Medical grade adhesive
- Hypo-allergenic
- Latex-free
- Minimizes tattooing
- Water-proof

PortalMark™ labels are constructed of water-proof, yet breathable material for maximum performance and comfort for up to two weeks. The unique Suregrip™ applicator discs ensure easy and accurate placement of PortalMark™ labels without contaminating the adhesive.

The Alternate Material/Adhesion PortalMark™ markers are used in humid conditions and particular skin surfaces.

**Item 462-150, 462-155 Variety, Each Sheet Includes**  
8 field lines, 4 corners, 2 set up points and 2 isocenters

**Item 462-151, 462-156 Isocenters/Lines, Each Sheet Includes**  
18 isocenters and 6 field lines

**Item 462-152, 462-157 Corners, Each Sheet Includes**  
8 corners



Item #	PortalMark™	Sheets/Box
462-150	Variety	50
462-151	Isocenters/Lines	50
462-152	Corners	50
462-155	Variety, Dark Skin	50
462-156	Isocenters/Lines, Dark Skin	50
462-157	Corners, Dark Skin	50
462-180	Set-Up Point	110
462-181	Set-Up Point, Alternate Material/Adhesion	110
462-182	Set-Up Point, Dark Skin	110
462-183	Set-Up Point, Dark Skin, Alternate Material/Adhesion	110
462-185	Isocenter	110
462-186	Isocenter, Alternate Material/Adhesion	110
462-187	Isocenter, Dark Skin	110
462-188	Isocenter, Dark Skin, Alternate Material/Adhesion	110

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## SUREMARK RELIEF TABS™



The unique adhesive-free center won't stick to sensitive areas of the skin. Available in 1.5 mm, 2.0 mm and 2.5 mm lead ball sizes.

CE

Item	Suremark Relief Tabs™	Quantity
462-100	1.5 mm Ball	110
462-101	2.0 mm Ball	110
462-102	2.5 mm Ball	110

## SUREMARK TABS™



This design maintains all of the advantages of our regular Suremark™ labels, with the added benefit of a “tabbed” feature that enables natural and conforming placement where more skin contact is preferred. Available in 1.5 mm, 2.0 mm and 2.5 mm lead ball sizes.

CE

Item	Suremark Tabs™	Quantity
462-120	1.5 mm Ball	110
462-121	2.0 mm Ball	110
462-122	2.5 mm Ball	110

## POWERMARK™



This design maintains all of the advantages of our regular Suremark™ labels, with larger lead ball sizes for visibility in radiation therapy. Available in 3.0 mm, 4.0 mm, and 5.0 mm lead ball sizes on a 15 mm round label.

The 1/2" (1.27 cm) lead cross marker is excellent for central axis and other anatomical skin reference points. Easy placement and removable tab feature.

CE

Item	Powermark™	Quantity
462-110	3.0 mm Ball	50
462-111	4.0 mm Ball	50
462-112	5.0 mm Ball	50
462-115	Cross (+)	50

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## SUREMARK™



The most common style for general use, Suremark™ 1.0 mm, 1.5 mm, 2.0 mm and 2.5 mm lead balls on 15 mm round labels are perfect for many uses in radiation therapy.

CE

Item	Suremark™	Quantity
462-105	1.0 mm Ball	110
462-106	1.5 mm Ball	110
462-107	2.0 mm Ball	110
462-108	2.5 mm Ball	110

## SUREMARK ARROW™

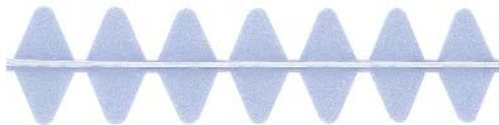


This 1 mm x 8 mm lead arrow on a 15 mm round transparent, disposable label is the best tool to use when a directional marker is preferred.

CE

Item	Description	Quantity
462-130	Suremark Arrow™	100

## SUREMARK WIRE™



Available in 0.3 mm, 0.4 mm, 0.8 mm and 1.5 mm covered lead wire sizes. **1.5 mm not recommended for CT.**

CE

Item	Suremark Wire™	Quantity
462-134	0.3 mm	330 cm
462-135	0.4 mm	330 cm
462-136	0.8 mm	330 cm
462-137	1.5 mm	330 cm

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## VISIONMARK™



The Visionmark™ is the next generation in general use skin markers. These specially formulated NON-METALLIC markers perform consistently and accurately in a variety of applications. An excellent tool for distinguishing between nipple shadow and lesion, the Visionmark™ reduces the need for repeat examinations.

CE

Item	Visionmark™	Quantity
680-305	2.0 mm Ball	50
680-310	2.5 mm Ball	50
680-312	3.0 mm Ball	50
680-314	4.0 mm Ball	50
680-316	5.0 mm Ball	50

## CT Mark Wire and Dots



This specially formulated non-metallic material is the result of years of research and development, resulting in a virtually artifact-free opaque marker that is perfect for nearly all CT marking applications.

CE

Item	Description	Quantity
680-349	CT Mark Wire, 1.0 mm	330 cm
680-350	CT Mark Wire, 2.0 mm	300 cm
680-352	CT Mark, 2.3 mm	110
680-354	CT Mark, 4.0 mm	50

## INDICATOR® RADIOPAQUE MARKERS - CT AND X-RAY



- Creates precise reference points without artifacts
- Works for CT, X-Ray, fluoroscopy, angiography
- Disposable
- Flat design

Indicator® Radiopaque Markers can be used in a variety of imaging procedures to identify any point of interest, including: Masses, Scar tissue, Moles, Isocenter, Points of Pain

The markers provide a clear, accurate reference point that is free of spray artifacts. The flat design prevents tissue indentation and the clear adhesive backing aids in precise marker placement. In addition to enhancing accuracy, they promote procedural efficiency with double pulls tabs that permit easy application and removal.

NOT for use in MRI

CE

Item #	Indicator® Radiopaque Markers-CT/X-Ray	Quantity
680-401	Crosses, 10 mm	130
680-402	Crosses, 20 mm	130
680-403	Dots, 1.5 mm	115
680-404	Dots, 2.0 mm	115
680-405	Dots, 2.5 mm	115

Item #	Indicator® Radiopaque Markers-CT/X-Ray	Quantity
680-406	Dots, 3.0 mm	115
680-408	Dots, 4.0 mm	115
680-410	Line, 0.5 mm	69 Lines (138")
680-411	Line, 1.0 mm	66 Lines (132")
680-412	Line, 1.5 mm	62 Lines (125")

# MARKING - FILM, SKIN & TATTOO, FIDUCIAL MARKERS

## X-LINE™ PRECISION RADIOTHERAPY TAPE FOR CT SIMULATION



X-Line™ allows accurate contouring within distorted regions of the CT image, improving radiotherapy outcomes.

Obese patients must be imaged with the extended field of view (eFOV), often resulting in distorted body contours. X-Line™ provides a series of reliable dots within the distorted sections of the eFOV, allowing for easy identification of the true body contour. The radiopaque lines on X-Line™ show up as hyperdense in CT simulation. Connect underneath the dots to get an accurate body contour - it's that easy!

### Body contour distortion from large patients in the eFOV

- GE Discovery CT590 RT, Optima CT580 RT and LightSpeed RT have a scan FOV (sFOV) of 50cm and a 65cm extended FOV (eFOV) option
- Siemens Somatom models have a 50cm sFOV and eFOV up to 80cm
- Body regions within the eFOV is distorted and contains artifact, resulting in an inaccurate body contour
- Body contour inaccuracies can lead to incorrect SSD and dosage calculations

### X-Line™ General Instructions

- Apply X-Line™ to all body regions that might fall outside of the scan field of view
- Tear a strip length that fully encompasses the region of interest
- Expect to use 3-5 strips per patient, depending on their size

#### Step 1 - Peel

- Peel away the protective backing
- X-Line™ is kiss cut to make for easier removal

#### Step 2 - Apply

- Apply X-Line™ to the region of interest
- Orient the radiopaque lines perpendicular to the direction of the CT cross section
- Space the X-line™ strips approximately 1 inch apart
- Only apply each X-Line™ strip once

#### Step 3 - Scan

- Then, perform the CT scan as usual
- Remove and discard the X-Line™ strips after the scan

#### Step 4 - Connect

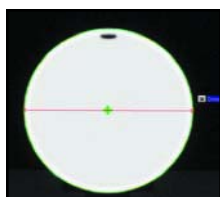
- Finally, connect just underneath the bright, hyperdense dots in the resulting CT images
- Connecting underneath the dots avoids including these hyperdense regions in the radiation dose planning

### Specifications

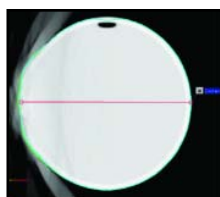
**Size:** 2" wide (5.08 cm) with three equally spaced radiopaque lines 1" apart (2.54 cm)

**Quantity:** Rolls are 50' long (15.24 m) with perforations spaced every 2" (5.08 cm).

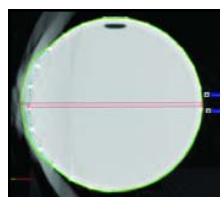
Item	Description
680-470	X-Line Tape, Full Adhesive
680-475	X-Line Tape, Partial Adhesive



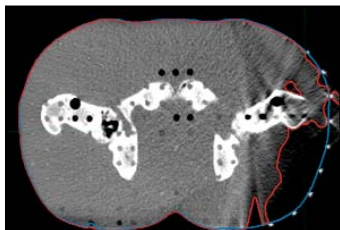
Clear scan within sFOV



Distorted image in 65cm eFOV



X-Line™ connect-the-dots body contour



Siemens HDFOV PRO Phantom

### A Solution to CT Simulation Image Distortion in Obese Patients

- More Accurate
- Fast and Simple
- Low-Cost
- Optimal Dosage
- Latex Free



# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## CT MARKING WIRE



682-090

682-100

Item	Description	Length
682-080	Aluminum Wire 0.080" (2.03 mm) Diameter	42' (12.8 m)
682-090	Aluminum Wire 0.040" (1.02 mm) Diameter	165' (50.3 m)
682-100	Aluminum Wire 0.064" (1.63 mm) Diameter	67' (20.4 m)

## LIQUIMARK MRI MARKERS

The LiquiMark MRI markers are non-metallic, latex-free, and perform consistently and accurately in a variety of applications.

CE



684-100



684-105



684-107



684-110



684-112



684-114

Item	LiquiMark MRI Markers	Quantity
684-100	8 mm Round	40/Box
684-105	15 mm Tube	40/Box
684-107	30 mm Tube	40/Box
684-110	10 mm Square	40/Box
684-112	10 mm x 24 mm	40/Box
684-114	10 mm x 38 mm	40/Box

## MULTI-MODALITY MARKERS



- No tissue indentation
- No artifacts
- Clear, accurate reference point identification
- Visible in all modalities
- Does not melt or leak
- Size and shape are ideal for small area
- Disposable

The Multi-Modality Markers provide a clear and accurate reference point on any type of scan. Made of a hydrogel component with a medical grade adhesive, they appear as a bright object on CT, MRI, nuclear medicine, PET and x-Ray scans and can be seen on all MRI sequences. These versatile markers attach securely and detach easily. Our Radiology/Radiation Therapy Marker has an inner center hole that permits hypodermic needle passage, while our Nuclear Med/PET Marker has a well-used for injecting a radionuclide with a conventional hypodermic needle.

**Item 462-029** Multi-Modality Markers, Radiation/Radiology have a 2 mm inner center hole for hypodermic needle passage.

**Item 462-030** MultiModality Markers for NucMed/PET have a Liquid-containing center well for injection of short-life radionuclide.

**Item 462-031** MultiModality Markers for MRI/CT are a 15mm disc shaped marker.

### Specifications

15mm outer diameter  
3.5mm thick  
50 markers per jar

Item #	Description	Quantity
462-029	Multi-Modality Markers, Radiation/Radiology	50
462-030	Multi-Modality Markers, Nuc Med/PET	50
462-031	Multi-Modality Markers, MRI/CT	50

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## THERAMARK



Designed specifically for use on radiation therapy immobilization masks, Suremark TheraMark is a precision label that allows technologists to accurately mark specific points for radiation treatment.

NOTE: Contains Natural Rubber Latex



Item	Description	Quantity
462-200	Suremark TheraMark	110/Box

## BOX HOLDER



The Box Holder holds five standard Suremark™ boxes. It can be placed on a desktop or mounted to a wall.



Item	Description
462-140	Box Holder



# MARKING - PATIENT & FILM

## FILM MARKING PENCILS



Marks on paper, glass, plastic or metal

Item	Description	Quantity
467-440	Film Marking Pencils	12

## CHINA MARKERS



Item	China Markers	Quantity
467-450	Red	12
467-451	White	12
467-452	Green	12
467-453	Yellow	12
467-455	Black	12

E

## STABILO® COLORED PENCILS



Writes on glass, plastic, ceramics, metal, film, coated paper, cellophane, photos. Wax based yet sharpens to a point. Water soluble colors wipe off instantly with a damp cloth.

Item	Stabilo® Colored Pencil	Quantity
467-840	Red	12
467-841	Blue	12
467-844	Yellow	12
467-846	Black	12
467-852	White	12

## ACCELERATOR LEAD MARKERS And Storage Board



The Accelerator Lead Markers are mounted on a plastic frame with a hole, for easy placement on the storage board. The storage board will hold 14 markers.

### Item 401-000 Accelerator Lead Marker Set with Storage Board Includes

- |        |         |                   |
|--------|---------|-------------------|
| (1) L  | (1) PL  | (1) MED           |
| (1) R  | (1) LAO | (1) LAT           |
| (1) AR | (1) RAO | (1) Storage Board |
| (1) PR | (1) LPO |                   |
| (1) AL | (1) RPO |                   |

### Specifications

**Marker Size:** 3/4" H x 1/4" T (1.9 x 0.6 cm)

**Board Size:** 11 3/4" W x 7 1/4" H x 3/4" T (29.8 x 18.4 x 1.9 cm)

Item	Accelerator Lead Markers
401-000	Set with Storage Board
401-010-L	L
401-010-R	R
401-020-AR	AR
401-020-PR	PR
401-020-AL	AL
401-020-PL	PL
401-020-AP	AP
401-020-PA	PA
401-030-LAO	LAO
401-030-RAO	RAO
401-030-LPO	LPO
401-030-RPO	RPO
401-030-MED	MED
401-030-LAT	LAT
401-100	Storage Board

**Custom Characters Available Up to 10 Characters.  
Items are Custom Made and Nonreturnable.**

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## STOCKMAN (ZIPSER) PENIS CLAMP



### Specifications

**Material:** Stainless steel



Item	Description
467-480	Stockman (Zipser) Penis Clamp

## CUNNINGHAM INCONTINENCE CLAMP



Constructed of soft sponge rubber and can be adjusted to fit comfortably. Reusable, non-sterile. This product contains dry natural rubber.

Item	Description
467-485	Cunningham Incontinence Clamp, Regular 2"
467-486	Cunningham Incontinence Clamp, Large 3"

## BAUMRUCKER INCONTINENCE CLAMP



The Greenwald Surgical Baumrucker Clamp is a hinged, frame supporting three foam rubber pads (two on one side and one on the other), and a Velcro closure.

Item	Description
467-490	Baumrucker Incontinence Clamp

## HIGH DENSITY RECTAL MARKER

Rectal - Vaginal - External



460-000

Shown with Latex Cover



460-010

The Rectal Marker is a flexible tube packed with lead balls spaced at 1 cm intervals from center to center. The CT Rectal Marker has teflon balls with same spacing. The Rectal Marker is used to accurately obtain both the rectum position and magnification by counting the balls. This determines the rectum location relative to the radiation field. An adjustable anus marker can be utilized during simulation or port filming. The Rectal Marker can be used in the vagina or as an external marker.

### Specifications

**Sterilization:** Gas

**Tubing:** 5/16" (8 mm) diameter x 30 cm flexible

**Balls:** 3/16" (5 mm) diameter spaced every cm

**Anus Locator:** Adjustable stainless steel or delrin

Item	Description
460-000	High Density Rectal Marker with Anus Marker
460-010	CT Rectal Marker with Anus Marker
460-007	Probe Cover, Sterile & Latex Free, 1" x 11.8", 24/pkg

## SHADOWFORM MARKERS



460-501



460-502



460-503

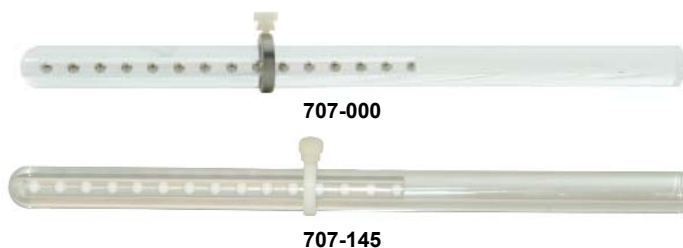
- T-Bar handle which can be removed for insertion of barium
- Disposable
- Rectal markers are available in two lengths and are marked at 1 cm intervals
- No cross contamination
- Outlines the soft tissue of the pelvic region
- Latex-free
- Markers are made from a soft, smooth, flexible plastic
- Used for Simulation and CT Planning
  - Provides excellent localization of pelvic structures



Item	Shadowform Markers	Quantity
460-501	18 cm Vaginal Marker	10
460-502	38 cm Rectal Marker	10
460-503	10 cm Rectal Marker	10

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## VAGINAL DEPTH SCALES



### Specifications

**Scale Size:** 26 cm L

**Material:** Acrylic

**Acrylic Density:** 1.1859 g/cm<sup>3</sup>

**Lead Balls:** 5 mm Dia. Spaced Every 1 cm

**Lead Ball Density:** 11.35 g/cm<sup>3</sup>

**Material:** Teflon

**Teflon Density:** 2.16 g/cm<sup>3</sup>

**Latex Cover:** 2.0 cm Dia. x 30 cm L

The vaginal depth scale can be used during simulation or for a port film. Position and magnification can be determined by counting the lead balls which are spaced 1 cm apart and are 5 mm in diameter.

The vaginal depth scales up to 3.2 cm diameter can be used with the standard holder (Item 707-020). The special vaginal depth scale holder (Item 707-030) is needed for the 3.8 cm diameter vaginal depth scale but will also accommodate all vaginal depth scales.

The CT Vaginal Depth Scale (Item 707-145) is 1.6 cm in diameter and 26 cm long and has teflon balls instead of the lead balls.

An introitus marker is included with the 1.6 cm diameter vaginal scale (Item 707-000) or can be purchased separately. Introitus markers for all other vaginal depth scales are sold separately.

A thumb screw holds the introitus marker in position.

Item	Vaginal Depth Scale
707-000	Scale With Introitus Marker, 1.6 cm Diameter
707-120	Scale Only, 2.0 cm Diameter
707-125	Scale Only, 2.5 cm Diameter
707-132	Scale Only, 3.2 cm Diameter
707-138	Scale Only, 3.8 cm Diameter
707-145	CT Scale Only, 1.6 cm Diameter
460-007	Probe Cover, Sterile & Latex Free, 1" x 11.8", 24/pkg

Item	Accessories
707-010-6	Introitus Marker for Item 707-000
707-120-6	Introitus Marker for Item 707-120
707-125-6	Introitus Marker for Item 707-125
707-132-6	Introitus Marker for Item 707-132
707-138-6	Introitus Marker for Item 707-138

## VAGINAL DEPTH SCALE HOLDER

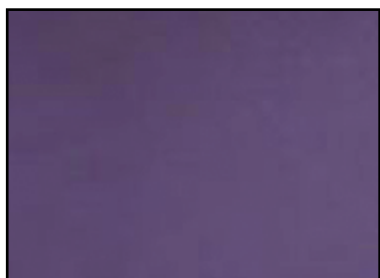


The vaginal depth scale holder has a swivel, angling joint that slides up/down on the baseplate post. This allows the vaginal depth scale to be adjusted and held at the proper height and angle. The heavy steel base has a nickel chrome finish.

The standard holder accommodates all vaginal depth scales up to 3.2 cm in diameter. The large holder is needed for the 3.8 cm diameter vaginal depth scale and will accommodate all vaginal depth scales. Both holders can be used in CT if scanned area does not include the holder.

Item	Description
707-020	Vaginal Depth Scale Holder, Standard
707-030	Vaginal Depth Scale Holder, Large

## PROBE COVER, STERILE and LATEX FREE



These high-quality rolled covers are sterile and latex free. All packs include elastic bands. Gel packet not included.

Item #	Description
460-007	Probe Cover, Sterile & Latex Free, 1" x 11.8", 24/pkg

# MARKING - FILM, SKIN & TATTOO, FIDICIAL MARKERS

## CERVIX MARKER IMPLANTER (ANDERSON)



### Specifications

**Material:** Stainless Steel  
**Point Angle:** 30° Beveled  
**Overall Length:** 26.5 cm  
**Fixed Depth:** 1 cm  
**Tip Outside Diameter:** 1.47 mm  
**Inside Diameter:** 1.07 mm  
**Stylet Diameter:** 0.89 mm

Item	Description
455-010	Cervix Marker Implanter (Anderson)
455-011	Brush, 28 Ga x 18" L, Stainless Steel

**Implanter MUST Be Sterilized Before Use**

## ADJUSTABLE CERVIX MARKER IMPLANTER



The Adjustable Cervix Marker has an implanter with adjustable depth control that covers a 4 cm insertion range.

### Specifications

**Overall Size:** 10 cm long  
**Stylet**  
**Outside Diameter:** 2.1 mm  
**Inside Diameter:** 0.94 mm  
**Stylet**  
**Outside Diameter:** 0.89 mm  
**Inside Diameter:** 0.58 mm

Item	Description
455-002-7	Adjustable Cervix Marker Implanter with 10Ga Depth Gauge
455-011	Brush, 28 Ga x 18" L, Stainless Steel

**Implanter MUST Be Sterilized Before Use**

## PROSTATE MARKER IMPLANTER WITH ADJUSTABLE STOP



### Specifications

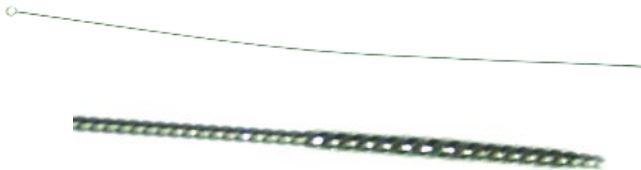
**Material:** Stainless Steel  
**Point Angle:** 30° Beveled  
**Overall Length:** 26.3 cm  
**Outside Diameter:** 1.47 mm  
**Inside Diameter:** 1.07 mm  
**Stylet Diameter:** 0.89 mm

Item	Description
455-005	Prostate Marker Implanter w/ Adjustable Stop
455-009	Adjustable Stop for 17ga. Needle f/Cervix/Prostate
455-011	Brush, 28 Ga x 18" L, Stainless Steel

**Implanter MUST be Sterilized Before Use**

## STAINLESS STEEL BRUSH

For Cleaning Cervix and Prostate Marker Implanters



### Specifications

**Dimensions:** 0.039" Dia x 18" L (1 mm x 45 cm)  
**Brush:** 0.5" L (1.2 cm)  
**Material:** 28Ga Stainless Steel

Item	Description
455-011	Brush, 28 Ga x 18" L, Stainless Steel

## LONG STERILIZATION TRAY



Consists of Base, Lid and Mat. This tray can be used in all standard methods of sterilization (autoclave, steam, dry heat, chemical).

### Specifications

**Size:** 2.6" W x 16" L x 1.5" H (6.6 x 40.6 x 3.8 cm)

Item #	Description
455-012	Long Sterilization Tray, 2.6" x 16" x 1.5"

# MARKING - FILM, SKIN & TATTOO, FIDUCIAL MARKERS

## CERVIX MARKERS AND FIDUCIAL MARKERS



These markers can be used in any area of the body.

The Gold Markers are 99.9% pure gold. The 0.8 mm diameter Gold Markers can be used with digital imaging and CT without showing any artifact. The 1.2 mm diameter Gold Markers are for use with film.

The Titanium Markers do not cause artifacts in CT and MRI.

Item	Cervix Marker	Size	Quantity
455-050	Stainless Steel	0.8 mm Dia. x 5 mm L	50
455-100	Stainless Steel	0.8 mm Dia. x 5 mm L	100
455-103	Stainless Steel	0.8 mm Dia. x 3 mm L	50
455-105	Stainless Steel	0.8 mm Dia. x 3 mm L	100
455-201	Gold Marker	0.8 mm Dia. x 3 mm L	1
455-201-50	Gold Marker	0.8 mm Dia. x 3 mm L	50
455-206	Gold Marker	0.8 mm Dia. x 5 mm L	1
455-206-50	Gold Marker	0.8 mm Dia. x 5 mm L	50

Item	Cervix Marker	Size	Quantity
455-208	Gold Marker	1.2 mm Dia. x 8 mm L	1
455-208-50	Gold Marker	1.2 mm Dia. x 8 mm L	50
455-212	Gold Marker	1.2 mm Dia. x 5 mm L	1
455-212-50	Gold Marker	1.2 mm Dia. x 5 mm L	50
455-250	Titanium	0.8 mm Dia. x 5 mm L	10
455-251	Titanium	0.8 mm Dia. x 3 mm L	50
455-252	Titanium	0.8 mm Dia. x 3 mm L	10
455-255	Titanium	0.8 mm Dia. x 5 mm L	50

**Cervix Markers Must Be Sterilized Before Use**

## CERVIX BALL MARKERS



455-300



455-301

The disposable Cervix Ball Marker is sutured to the cervix with a dissolving suture to allow the ball to fall out of the patient. The Delrin ball will not produce an artifact on a CT Image.

### Specifications

**Overall Size: 3/16" Diameter (0.48 cm)**

**Hole Diameter: 1/16" Diameter (0.16 cm)**

Item	Cervix Ball Markers
455-300	Stainless Steel, 50/pkg
455-301	Delrin for CT, 50/pkg

**Cervix Ball Markers Must Be Sterilized Before Use**

# MARKING - FILM, SKIN & TATTOO, FIDUCIAL MARKERS

## FLEXIMARC™ GOLD FIDUCIAL MARKERS



456-100



456-110



- Uses node technology for better visibility
- Specifically shaped to prevent migration
- Available in 2 or 3 node configurations
- One marker provides 2 distinct reference points
- Visible in TRUS, BAT, Portal, MRI, CT and x-Ray
- Multiple diameters and needle gauges to meet your needs
  - 0.9 MM diameter with 18 GA needle
  - 1.2 MM diameter with 17 GA needle

FlexiMarc™ fiducial marker is the first of its kind, this implantable marker produces a unique non-biological node based projection. The FlexiMarc™ combines 99.99% pure, biocompatible, gold connectors and 3 mm long gold nodes. Unlike regular linear or coiled markers, FlexiMarc™ has nodes that inhibit migration and are easily recognized by the human eye and IGRT software.

**The unique patent pending shape allows soft tissue to anchor the marker in place thus greatly reducing the probability of marker migration.**

Items 456-100 and 456-110 with 0.9mm diameter have a spacing of 10 mm and are in a 18GA, 20 cm long needle

Items 456-120 and 456-130 with a 1.2 mm diameter have a spacing of 10 mm and are in a 17GA, 20 cm long needle.

The FlexiMarc™ Fiducial Markers are preloaded in the needles and sterile.

Item	Description
456-100	FlexiMarc™ Marker, 0.9 mm Dia and 2 Node
456-110	FlexiMarc™ Marker, 0.9 mm Dia and 3 Node
456-120	FlexiMarc™ Marker, 1.2 mm Dia and 2 Node
456-130	FlexiMarc™ Marker, 1.2 mm Dia and 3 Node



# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## DIGITAL BREAST BRIDGE



The Digital Breast Bridge aids in setting up tangential breast treatment fields. After the borders of the tangential fields are determined place the digital breast bridge to these skin marks. The digital readout will give the angles needed for the gantry. The field separation is determined by the scale on the rails.

The acrylic plates are 20 cm wide x 15 cm high and have 1 cm inscribed markings.

Separations can be measured from 13 cm to 31 cm.

**Weight:** 3.2 lbs

Item #	Description
270-001	Digital Breast Bridge

## BREAST BRIDGE



The Breast Bridge aids in setting up portals for tangential breast treatment. After the area to be treated has been marked, the bridge is placed on the patient's chest and adjusted to the skin markings, thus, determining the separation of the fields. The angulation of the portals is determined from the ball protractor.

The acrylic plates are 20 cm wide x 15 cm high and have 1 cm inscribed markings.

Separations can be measured from 15 cm to 35 cm.

The ball protractor provides angulation readings from 15° to 80°.

Item #	Description
270-000	Breast Bridge

## BREAST BRIDGE COMPRESSOR



The Breast Bridge Compressor is used to compress the breast, particularly when it is desired to increase the dose to the residual mass at the end of a course of treatment. The aluminum mesh and frame are coated with a smooth blue vinyl plastic for minimum skin dose.

### Specifications

**Treatment Area Size:** 10 cm H x 15 cm W

**Compression Distance:** 1 cm to 13 cm

Item #	Description
272-100	Breast Bridge Compressor

## MAMMO CALIPER WITH DIGITAL LEVEL



The Mammo Caliper is a rugged and accurate caliper designed to provide measurements for breast simulation or as general purpose caliper. Separations can be measured between 0 cm and 45.5 cm. The measurement is locked in position by tightening a thumb screw attached to the slide.

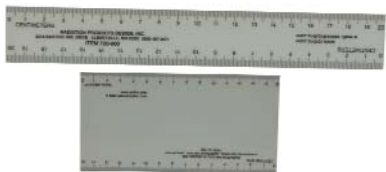
The digital level measures the angle of a line drawn between the tips of the caliper jaw. The HOLD button freezes the measurement on the level display. The level is attached with a thumb screw and can easily be removed. The level also has a magnetic base.

The Mammo Caliper has an accuracy measurement of  $\pm 0.1^\circ$ .

Item	Description
705-801	Mammo Caliper with Digital Level

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

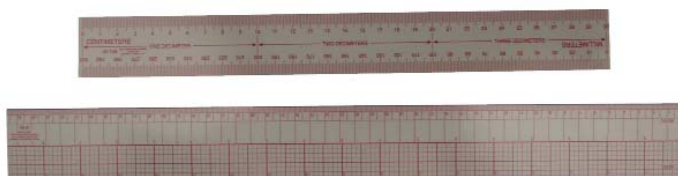
## WHITE RULERS



The white plastic rulers start at zero, and allow easy viewing of the light field edges. Rulers are checked for total accuracy of 1 mm.

Item	Description	Quantity
720-000	2.9 cm W x 20 cm L Rulers	12
721-000	7.6 cm W x 15 cm L Rulers	12
722-000	5.1 cm W x 45 cm L Ruler	1
722-000-12	5.1 cm W x 45 cm L Rulers	12

## TRANSPARENT PLASTIC RULERS



Item	Description
723-001	30 cm Transparent Plastic Rule
723-002	45 cm/18" Transparent Plastic Graph Rule

## ALUMINUM RULERS



The Aluminum Rulers are extremely accurate and have large, easy to read black numbers.

Item	Description	Graduations
723-020	30 cm Aluminum Ruler, 35 mm Wide	1 mm - 1 cm
723-022	60 cm Aluminum Ruler, 35 mm Wide	1 mm - 1 cm
723-024	100 cm Aluminum Ruler, 35 mm Wide	1 mm - 1 cm
723-026	200 cm Aluminum Ruler, 35 mm Wide	1 mm - 1 cm

## STAINLESS STEEL FLEXIBLE RULERS



Item	Description	Graduations
723-030	150mm Ruler with Pocket Clip	1mm - 0.5mm
723-031	6"/15cm Ruler w/o Pocket Clip	1/16" - 1mm
723-032	12"/30cm Ruler w/o Pocket Clip	1/32"-1/64" & 1mm-0.5mm
723-033	6" Ruler with Pocket Clip	1/32" - 1/64"
723-034	150mm Ruler with Plastic Case	1mm - 0.5mm

## METRIC TAPES

Graduations in Millimeters



Item	Description	Scale
723-043	Vinyl Measuring Tape	150cm/60"
723-044	Wooden Metric/Inch Folding Rule	2m/78"
723-045	Metric Measuring Tape	5m/196"

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## TAPE MEASURES



- Pee Wee Pocket Tape
- High Strength Case
- Yellow Clad Blade
- 1/4"/6mm Wide Blade is Flexible; Bold Graduations on Yellow Background

Item	Description
723-040	Tape Measure, 3 Meter x 6mm wide Black



- Orange Case - Easy to Find
- Rubber Cushion Case Exterior Protects Tape From Impact and Improves Grip
- Bright Yellow Blade Has Clear Easy-To-Read Numerals
- Toggle Lock is Positioned for Convenient Operation
- Holds the Blade Securely in Any Position
- Cushioned Blade Return
- Removable Belt Clip

Item	Description
723-041	Tape Measure, 3 Meter x 13mm wide Orange

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# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## TRIANGLES



723-010

723-013

723-016

Item	Description	Degree
723-010	6" Plastic Triangle	30/60
723-013	12" Plastic Triangle	30/60
723-016	12" Plastic Triangle	45/45

## RADIOLOGIST'S POCKET CALIPER/ANGLE RULE



**Inches:** Up to 6.5"

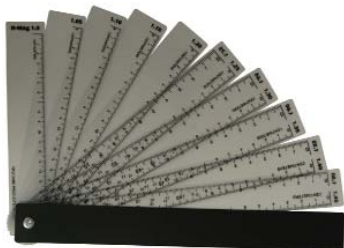
**cm:** 16 cm closed, 32 cm open

**mm:** Up to 50 mm

**Angle:** Measurements

Item	Description
718-000	Radiologist's Pocket Caliper/Angle Rule

## MAGNIFICATION RULES



The Magnification Rules includes 15 cm scales (1.0, 1.05, 1.10, 1.15, 1.20, 1.25, 1.30, 1.35, and 1.40) magnified in increments of hundredth from 1.0 to 1.75. One scale will correspond to the magnification of most films to allow direct measurements. All scales are printed on clear mylar and can be superimposed on the area of interest, enabling measurements to be taken directly on the film.

Item	Description
719-000	Magnification Rules

## CT-MAG RULES

For CT and MRI Images



The CT-Mag Rules consist of 22 point scales (3.5-5, 5.5-6, 6.5-7, 7.5-8, 8.5-9, 9.5-10, 10.5-11, 11.5-12, 12.5-13, and 13.5-14), and can be expanded to 40 cm for use with CT and MRI images.

Item	Description
719-002	CT-Mag Rules

## D-MAG RULES



The D-Mag Rules consist of 11 scales (0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 0.95 and 1.00), graduated in demagnification from 1 to 0.5 cm.

Item	Description
719-003	D-Mag Rules

P

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## HEAD-NECK CALIPER



The Head-Neck Caliper is useful in measurements of either patient diameter or surface to tumor depth. The depth of a tumor or intraoral structure relative to either the lateral or anterior/posterior surfaces can be easily determined.

### Specifications

**Vertical Adjustment:** 23 cm

**Horizontal Adjustment:** 26 cm

**Material:** Acrylic, Brass and Nickel

Item	Description
706-000	Head-Neck Caliper

## HEAD AND NECK PLASTIC CALIPER

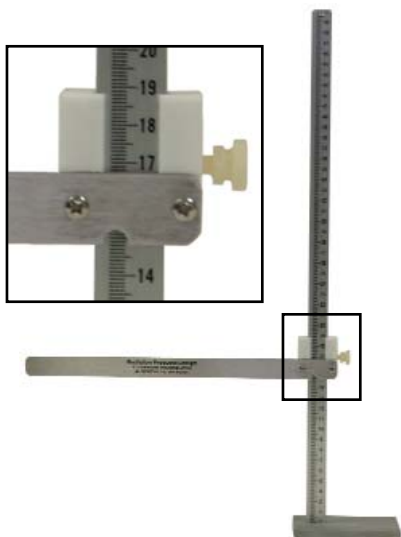


The Head and Neck Plastic Caliper can be locked tight in any opening. Measurement is accomplished by using a separate scale to measure between the rounded tips.

**Material:** Acrylic, Brass and Stainless Steel

Item	Description
704-000	Head and Neck Plastic Caliper

## TABLE TOP CALIPER



The 55cm Table Top Caliper measures from the table top to the surface of patient.

**Material:** Aluminum and Stainless Steel

Item	Description	Scale
705-660	Table Top Caliper	55 cm

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# MEASURING DEVICES & BAROMETERS/THERMOMETERS

## UNDER/OVER TABLE BODY CALIPER

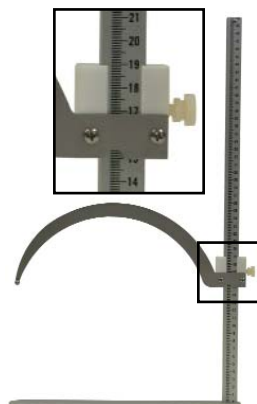


**F** The 55cm Under/Over Table Body Caliper measures 6.5" from the base plate to the curved blade. The blade is 15.5" long.

**Material:** Aluminum and Stainless Steel

Item	Description	Scale
705-700	Under/Over Table Body Caliper	55 cm

## CURVED BLADE BODY CALIPERS

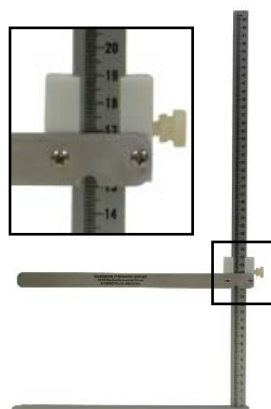


This lightweight precision Curved Blade Body Caliper has one scale and a non-removable slider which prevents errors caused by reading the wrong scale on a dual scale caliper. The slider can be locked at any position. The rigid leg that slips under the patient is 1/8" thick and 11" long.

**Material:** Aluminum and Stainless Steel

Item	Description	Scale
705-546	Curved Blade Body Caliper	45 cm
705-551	Curved Blade Body Caliper	55 cm

## FLAT BLADE BODY CALIPERS

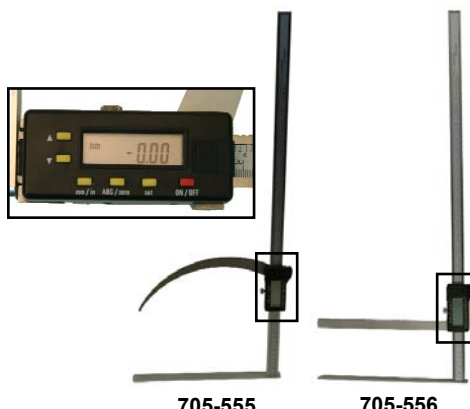


The lightweight Body Caliper with flat blade has one scale on a non-removable slider that prevents errors caused by reading the wrong scale on a dual scale caliper. The slider can be locked at any position. The rigid leg that slips under the patient is 1/8" thick and 11" long.

**Material:** Aluminum and Stainless Steel

Item	Description	Scale
705-545	Body Caliper with Flat Blade	45 cm
705-550	Body Caliper with Flat Blade	55 cm

## DIGITAL CALIPER



This precision digital caliper has a scale on one side and a non-removable slider with a digital display. The caliper is 74.5cm or 29.3" long. The scale reads to 600mm or 24". The maximum reading of the digital display is 643mm/25.31". The slider can be locked at any position. The flat blade base that goes under the patient is 1/8" thick and 11" long. Includes a replacement battery.

### Slider Functions

ON / OFF, ABS / INC, ZERO, mm/in, SET, and HOLD.  
RS232 output for connection via cable to computer.

Cable and software are sold separately from the caliper.

**Material:** Aluminum and Stainless Steel

Item	Description
705-555	Digital Caliper with Curved Blade
705-556	Digital Caliper with Straight Blade
705-557	Digital Caliper with Level and Straight Blade

# MEASURING DEVICES & BAROMETERS/THERMOMETERS

## DIGITAL CALIPER, 8" (20 cm)



**The LCD Display mode functions include:**

- "IN/MM" inches or millimeters measurement
- "H" for the HOLD function
- Power On/Off and Zero Setting

This groundbreaking Digital Fractional Caliper brings you three universal systems of measurement, making it an equally practical choice for both professional and do-it-yourself projects. The high-contrast digital display easily switches between inches, millimeters and fractions, with guaranteed accuracy to 0.001". In addition, the rugged stainless steel design delivers accurate readings of inside, outside, step and depth measurements. This caliper comes with a foam padded plastic case for safe storage when not in use. Auto off feature preserves battery life. Bar scale is graduated in inches and millimeters. Free-wheeling friction roller advances and retracts slide. Extendable depth gage for use in slots and small holes. Etched and filled black graduations.

**Specifications**

**The caliper offers:** Outside, inside, depth measurement

**Resolution:** 0.0005in (0.01mm)

**Accuracy:** ±0.001in (±0.02mm)

Item	Description	Scale
723-062	Digital Caliper	20 cm/8"

F

## DIGITAL CALIPER, 12" (30.5 cm)



**The LCD Display mode functions include:**

- "IN/MM" inches or millimeters measurement
- "H" for the HOLD function
- Power On/Off and Zero Setting

The main body is made of hardened steel and the reference scale is marked with easy to read lines and numerals in millimeter and inches. A thumb screw on top of the caliper locks the display unit in position anywhere along the scale. Flashing digits shows low battery. Uses 1.55 V button cell battery (p/n 357) - included.

**Specifications**

**The Caliper Offers:** Outside, inside, depth measurement

**Resolution:** 0.01 mm / 0.0005"

**Accuracy:** ±0.02 mm / 0.001" (<100 mm): ±0.03 mm / 0.001" (>100-200 mm): ±0.04 mm / 0.0015" (>200-300 mm)



Item	Description	Scale
723-063	Digital Caliper	30.5 cm/12"

## MICROMETERS



**Specifications**

**Item 723-051**

**Scale:** 1"

**Graduations:** 0.001"

Item	Description
723-051	Inch Economy Micrometer

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## RETRACTABLE TAPE MEASURE TRAY



The 3 meter Retractable Tape Measure Tray is used to measure the distance between the source of radiation and the point of interest on a patient. It is very useful in extended field dosimetry, enabling one to obtain an accurate measurement of source to skin distance. It can also be used for setting source to phantom distances for calibration and experimentation.

This measuring device is mounted on a lexan (polycarbonate) tray which slides into the block tray slot. Attached to the center of the tray is a 3 meter tape measure. The tape measure has an adjustable stainless steel end. This can be positioned at any point along the tape, allowing the tape to be cut at the desired length to compensate for the source to tape measure distance.

Item	Retractable Tape Measure Tray
701-622	for Siemens, Digital Coding
701-631	for Varian Clinac 4/6, No Coding
701-632	for Varian II, No Coding, no MLC
701-633	for Varian III, Optical Coding with MLC
701-634	for Varian III - Wedge Slot with MLC

## INCLINOMETER



The dial of the 10cm diameter Inclinometer swings 0 to 90 in either direction for fast accurate readings up to 1°. It is constructed of high impact plastic. The pointer and face are enclosed and protected with clear tough plastic. It can magnetically attach itself to the treatment machine or it can be used to set the angle of a film cassette.

Item	Description
352-118	Inclinometer

## PLUMB BOB - NICKEL-PLATED



The Plumb Bob can be used to align gantries, couches, laser lights and more. Gantry vertical alignment can be accomplished by marking the cross hair projection spot on the ceiling and floor, then dropping the Plumb Bob line from the ceiling spot to the floor spot. The machine alignment is vertical when the Plumb Bob line intersects with the ceiling and floor spots.

Item	Description
352-120	Plumb Bob, Nickel-Plated

## BULLS EYE CIRCULAR LEVEL



The all purpose Bulls Eye Circular Level will show level of any surface in all directions at once.

Item	Description
352-104	Bulls Eye Circular Level

P



# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## 6CM LEVEL



The 6cm Level has a level vial mounted in an anodized hard drawn 3/8" (0.97 cm) hexagonal aluminum tubing. The bottom surface is perfectly flat for accurate surface leveling.

CE

Item	Description
352-108	6cm Level

## POCKET LEVEL



The pen-size, 12cm Pocket Level comes in a hexagonal aluminum case. The bottom surface is perfectly flat for accurate surface leveling. A large easy to read glass vial is mounted in an anodized hexagonal tube with a black plastic clip.

Item	Description
352-112	12cm Pocket Level with Clip

## MAGNETIC GANTRY LEVEL



The 9" magnetic torpedo level is durable and accurate. Its bi-material body with rubber end caps protect finished work surfaces from damage. With a heavy-duty aluminum frame, open top-read vial, and pipe groove for use on rounded surfaces, this tool is built for accuracy, ease of use and durability.

Item	Description
352-233	Magnetic Gantry Level

## HIGH PRECISION FOUR-SIDED GANTRY LEVEL

### 1/40 Degree Accuracy



The four-sided High Precision Gantry Level has a main vial that has graduated divisions of 0.005" per foot per division and is wrench adjustable. The level housing consists of a satin chrome brass tube with a friction fit closing cover to prevent breakage. The level frame is made of aluminum with a black anodized finish, accurately machined and finished on all four sides.

This level is used to check the gantry angle indicators at four locations: 0, 90, 180, and 270 degrees, with accuracy to 1/40 of a degree.

### Specifications

**Size:** 6" square x 0.75" thick (15.29 x 1.91 cm)

Item	Description
352-200	High Precision Four-Sided Gantry Level
352-201	Vinyl Case for High Precision Gantry Level

# MEASURING DEVICES & BAROMETERS/THERMOMETERS

## MAGNETIC DIGITAL LEVEL

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- Units of measure: degrees, percent, mm/m, in/ft in decimal, in/ft in fractional
- Small and handy
- Push button calibration
- Audible indicator for level 0° and plumb 90°
- Automatic digit inversion for overhead measurements
- Hold function to freeze measurement
- Strong holding magnetic edge allows hands free use on Ferrous metal surfaces
- Working range 4 x 90°
- 1/4" - 20 thread for connection to tripod
- 6" Long (15.3 cm)

### Specifications

**Accuracy:** ±0.1° for 0° and 90°, ±0.2° for 1° and 89°

**Working Range:** 0° to 90°

**Power Supply:** 3 "AAA" alkaline batteries (included)

**Working Temperature:** 14° to 113°F (-10° to 45°C)

Item	Description
352-240	Magnetic Digital Level

## LEVEL DIGITAL - DUAL/SINGLE AXIS PROTRACTOR WITH MAGNETIC BASE



- Radiation Therapy 2 axis table tilt
- High accuracy 0° ±20° (±0.05°), high resolution 0.01°
- Dual and Single axis with LCD back lighted angle display
- V Shape case to fit on pipe
- 5 Side Magnetic base
- Audible alarming at settable angle range, any angle measurement
- Rechargeable by connecting the USB cable to level and a computer's USB port

The level is used in Radiation therapy on the 2 axis treatment table tilt, gantry rotation and collimator rotation. The level provides a digital readout of angle in the X and Y axis simultaneously. Gyro technique are used for measurements of any angle.

Includes: Digital Protractor and USB cable for charging battery.

### Specifications

#### Accuracy:

0° ±20°: ± 0.05°

20° to 70°: ± 0.1°

90° ±20°: ± 0.05°

**Measuring Range:** Single axis: 360° , Dual axis: ±40°

**Resolution:** 0.01°

**Response time:** <0.4 second

**Audio Sound:** 60db @ 30cm

**Zero Offset Drift Angle Per °C:** 0.0058° (typical)

**Operating Temperature:** 0 to 50°C

**Storage Temperature:** -10 to 60°C

**LCD with backlight**

**Supply Power:** Rechargeable Li-Polymer 3.7V

**Charger Port:** 5V 500mA Mini type-B USB port

**Power Consumption:** Standby: 200uA, Operation: 20mA

**Standby Battery Life:** 4000 hours

**Operating Battery Life:** 40 hours

**Dimensions:** 2.8" x 2.8" x 0.9" (70 L x 70 W x 23 mm H)

**Magnetic Base:** Affix at 4 corner

**Magnetic Force:** N48

**Weight:** 4.2 oz (120 gram)

Item	Description
352-245	Level Digital, Dual/Single Axis Protractor w/Mag.Base

# MEASURING DEVICES & BAROMETERS/THERMOMETERS

## SELF LEVELING 5 BEAM DOT LASER LEVEL



- Lock that turns laser off and secures mirrors for handling
- Self-leveling laser
- Laser projects five self-leveling beams simultaneously
- Audible alarms when beyond leveling range
- Laser can be rotated 360°

This 5 Beam Laser Level projects a vertical beam straight up and straight down to easily transfer a point from the floor to the ceiling plus will project 3 horizontal beams, one from left, one from right and one straight on to give you a perfect 90° angle in a room. This level is self-leveling with accuracy of 1/8" at 50 feet, plus has locking compensators so the laser level won't shake or be damaged while not in use.

### 710-851 Includes

- Multi-functional magnetic base
- 3 "AA" alkaline batteries
- Mounting strap
- Magnetic target
- Tinted glasses
- Instruction manual with warranty card
- Soft-sided carrying case

### Specifications

**Number of Beams:** 5

**Leveling Method:** Self-Leveling (Pendulum)

**Laser Wavelength:** 650nm ± 10nm (Red)

**Laser Classification:** Class IIIa

**Maximum Power Output:** <=5mW

**Accuracy:** ± 1/8"/50ft. (± 2mm/10m)

**Interior Range:** Up to 200ft. (60m) depending on light conditions

**Self-Leveling Range:** ± 4.5°

**Power Supply:** 3 "AA" alkaline batteries (included)

**Battery Life:** Approximately 20 hours with alkaline batteries

**Dimensions:** 3.15" x 3.858" x 4.0" (80 x 98 x 101.6mm)

**Weight:** 1.1 lb (0.5 kg)

**Working Temperature:** 14°F to 113°F (-10°C to +45°C)

**Center Screw Thread:** 5/8"-11, 1/4"-20

**IP Protection Class:** 55

Item	Description
710-851	Self-Leveling Laser Level with 5 Beam Dot Laser

## TRACEABLE JUMBO DIGIT STOPWATCH



Largest stopwatch digits ever developed (0.5" or 1.3 cm high) provides ease in reading. Times to 24 hours. Unit features single-action, time-out, cumulative-split, and continuous timing. Timing resolutions is 1/100 of a second for the first 30 minutes, continues timing to 23 hours, 59 minutes, 59 seconds with a 1-second resolution.

Accuracy is 0.001%. To assure accuracy an individually serial-numbered Traceable Certificate is provided from our ISO 17025 calibration laboratory accredited by A2LA. It indicates traceability to standards provided by NIST (National Institute of Standards and Technology). Water-resistant, O-ring sealed, and shock resistant ABS plastic case has non-slip rubber sides. Supplied with a detachable clip for clipping onto notebooks or clipboards. Also comes with Velcro™ for vertical mounting anywhere.

As a chronograph, the unit displays time of day in hours, minutes, seconds, AM/PM, date, and day of the week. It also has a time-of-day alarm. Supplied with Traceable Certificate, 2-year, "always-on" battery, lanyard, and clip.

### Specifications

**Size:** 3" x 2.5" x 7/8" (7.65 x 6.37 x 2.24 cm)

**Weight:** 2.5 oz (70.9 g)

Item	Description
469-510	Traceable Jumbo-Digit Stopwatch

# MEASURING DEVICES & BAROMETERS/THERMOMETERS

## THERMOMETERS

470-207



470-052



Thermometers are accurate to within N.I.S.T tolerances and are individually serialized.

Item #	Thermometer	Length	Degrees	Accuracy	Graduations	Fill	Immersion
470-207	Pocket Test	165 mm / 6.5"	+30°F to 120°F	±2.0°F	1.0°F	Spirit	Total
470-052	Room	300 mm / 11.8"	-35°C to 50°C	±1.0°C	1.0°C S/B 0.5°C	Enviro-Safe <sup>(R)</sup>	Total
470-133	Room	460 mm / 18"	-1°C to 51°C	±0.3°C	0.1°C	Blue Organic	Total

## THERMOMETER ARMORS

The thermometer armors are Nickel Plated Brass. They are open cases that have a screw cap with ring and small openings around bulb for circulation.



Item	Thermometer Armor
470-075	for 12" (305 mm) Thermometer
470-077	for 15.9" (405 mm) Thermometer
470-079	for 18" (460 mm) Thermometer

## DIGITAL LOLLIPOP™ THERMOMETERS



- **Water-Resistant**
- **Shockproof**
- **Max/Min Temperature Memory**

The new heads-up Lollipop™ Traceable® Water-Resistant/Shockproof Thermometer replaces hazardous mercury units. Stainless-steel probe is resistant to most laboratory chemicals.

### Records minimum/maximum reading

At the touch of a button, memory recalls highest and lowest temperature readings over any time period. Solid-state construction eliminates dangers inherent in breakable glass and toxic mercury thermometers.

### All-weather compatible

Operates without fail in any lab condition-outdoors too. Water-Resistant construction is ideal for wet labs, wash-down areas, and virtually all field applications. Engineered to be shockproof in drop tests up to 5 feet. Bright 1/4" (0.635 cm) high display is easy to view.

### Traceable to NIST for accuracy

To assure accuracy an individually serial-numbered Traceable® Certificate is provided from an ISO 17025 calibration laboratory accredited by A2LA. It indicates traceability to standards provided by NIST (National Institute of Standards and Technology).

Supplied complete with stainless-steel probe, probe cover, and silver-oxide battery (runs continuously for one year).

### Specifications

**Range:** -58 to 572°F and -50 to 300°C

**Resolution:** 0.1° from -20 to 200°; 1° outside this range

**Stem Diameter:** 0.14"

**Stem Length:** 8"

**Overall Size:** length: 1 3/4" W x 10 1/4"L x 1/2" D

**Weight:** 7/8 oz (0.03 kg)

Item #	Description	Accuracy
470-350	Thermometer, Digital Lollipop, Water-Resistant	±1°C
470-351	Thermometer, Digital Ultra Lollipop, Water-Resistant	±0.4°C

# MEASURING DEVICES & BAROMETERS/THERMOMETERS

## TRACEABLE WORKHORSE THERMOMETER WITH TYPE-K PROBE



High accuracy meter.

Thermometer offers sharp readout in dim or bright light and covers a wide temperature range. Compatible with all Type-K probes.

### Includes

- Type-K probe
- Bench stand
- 9V Battery with 150 to 200 hours continuous-use life span
- Carrying case

### Specifications

- Front-panel adjustable offset allows setting of temperature, in-house calibration, or particular sensor for increased accuracy
- HOLD button freezes display to capture current reading
- Range:  $-58^{\circ}$  to  $+2372^{\circ}\text{F}$  ( $-50^{\circ}$  to  $+1300^{\circ}\text{C}$ )
- Accuracy:  $\pm 1^{\circ}\text{C} + 0.75\%$  between  $0^{\circ}$  and  $500^{\circ}\text{C}$ ;  $\pm 1^{\circ}\text{C} + 1\%$  between  $500^{\circ}$  and  $750^{\circ}\text{C}$ ;  $\pm 1^{\circ}\text{C} + 2\%$  between  $750^{\circ}$  and  $1000^{\circ}\text{C}$ ;  $\pm 3^{\circ}\text{C} + 4\%$  between  $1000^{\circ}$  and  $1200^{\circ}\text{C}$ ;  $\pm 2^{\circ}\text{C}$  at  $-20^{\circ}$ ;  $\pm 3^{\circ}\text{C}$  at  $-40^{\circ}$ ;  $\pm 4^{\circ}\text{C}$  at  $-50^{\circ}$
- Resolution:  $0.1^{\circ}$  between  $-50^{\circ}$  and  $+200^{\circ}$ ; (otherwise  $1^{\circ}$ )
- Dimensions: 2.75" x 5.5" x 1.25" (69 x 138 x 31mm)
- Weight: 6 oz. (0.2kg)
- Probe dimensions: 1/8" dia. x 5" overall length (0.32 x 12.7 cm)
- Cable Length: 40" (101.6 cm)
- Stainless Steel probe is waterproof

### Certifications

Certificate of traceability to NIST\* standards. Calibrated by an ISO 17025 calibration laboratory accredited by A2LA\*.

Item	Description
470-315	Traceable Workhorse Thermometer w/Type-K Probe

## DIGITAL THERMOMETER



For those applications where only one temperature is read at a time, the Digital Thermometer is an industry standard. It features Min/Max memory, hold, auto shut-off. It is housed in a rugged polyethylene storage case with a sealed membrane and has a backlight for dark environments. This handheld thermometer is a battery powered unit with a detachable immersion probe. Temperature readings appear in Centigrade or Fahrenheit with  $\pm 0.2^{\circ}\text{C}/0.3^{\circ}\text{F}$  or  $\pm 0.5\%$  of reading, whichever is greater. The LED display eliminates problems that can result from the misreading of stem-type thermometers.

Detachable immersion probes are time savers for x-ray departments that have several film processors. The use of multiple probes, each remaining in a specific tank, also eliminates the possible cross-contamination of chemicals. You can quickly and easily display the lowest and highest temperatures measured by the probe since the unit was turned-on. Our digital thermometer also enables you to "freeze" the current temperature reading on the display. The thermometer display can be easily illuminated, making it perfect for use in the darkroom. You can also program the Digital Thermometer for auto or manual shut-off.

The Digital Thermometer is a shock resistant, solid-state unit that needs no adjustments to maintain accuracy. Calibration is traceable to the National Institute of Standards and Technology (NIST). The unit includes a high-impact plastic case with a recess for storing one probe, and is equipped with a power jack that will accept the optional AC power supply. The jack should be used when the unit will be in use for extended periods of time (in order to prevent battery failure).

### Item 470-320 Digital Thermometer includes

- Thermometer
- General purpose probe
- Carry case

### Specifications

#### Instrument

**Display:** Four-digit LED, plus decimal point

**Auto Shut-Off:** After 5 minutes of non-use (can be disabled)

**Switchable  $^{\circ}\text{F}/^{\circ}\text{C}$**

**Temperature Range:**  $-40^{\circ}$  to  $302^{\circ}\text{F}$  /  $-40^{\circ}$  to  $150^{\circ}\text{C}$

**Temperature Accuracy:**  $\pm 0.3^{\circ}\text{F}/0.2^{\circ}\text{C}$  or  $\pm 0.5\%$  of Reading whichever is greater

**Resolution:**  $0.1^{\circ}\text{F}/^{\circ}\text{C}$

**Battery Type:** 9v (2) AAA

**Battery Life:** 1800 hrs

**Housing Material:** ABS plastic

**Dimensions:** 5" x 2" x 10" (12.75 x 5.1 x 25.5 cm)

**Weight:** 5oz (without probe)

**Warranty:** 5 year instrument warranty

**Certifications:** CE, Rohs, NIST, WEEE

#### Probe

**Temperature Accuracy:**  $\pm .4^{\circ}\text{F}$

**Max Tip Temperature:**  $300^{\circ}\text{F}$  ( $149^{\circ}\text{C}$ )

**Max Cable Temperature:**  $200^{\circ}\text{F}$  ( $93^{\circ}\text{C}$ )

**Response Time:** 6 seconds in liquid

**Shaft Length:** 3.75" (9.525cm)

**Shaft Diameter:** 0.140" (.356cm)

**Cable Length:** 6' (1.8 m) uncoiled

**Cable Material:** Polyurethane

**Dimensions:** 7.1" x 1" x 0.7" (18.1 x 2.5 x 1.8 cm)

**Weight:** 1.764 oz (50 g)

**Warranty:** 1 year probe warranty

Item	Description
470-320	Digital Thermometer

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## TRACEABLE® THERMOMETER/BAROMETER PEN



- Measures temperature, humidity, barometric pressure, and dew point
- Portable - Easy Operation
- Quick Response
- Minimum and Maximum readings recalled at press of a key
- Lightweight and compact

Compact design features an electronic capacitance polymer film sensor not affected by condensation. Tough ABS plastic housing and water-resistant design with O-ring seal and membrane keypad assure a long life in severe lab or harsh plant environments. HOLD button freezes the reading on the display. High contrast LCD digits are easy to read. At the press of a button, unit recalls minimum/maximum readings.

User selectable dual display shows humidity/temperature, humidity/dew point, barometric pressure/temperature, or barometric pressure/humidity.

### Tracable® Certificate

Multi-point calibration on an individually-numbered Traceable® Certificate which assures accuracy from our ISO/IEC 17025:2017 (1750.01) calibration laboratory accredited by A2LA. It indicates traceability of measurements to the SI units through NIST or other recognized national measurement institutes (NMI) that are signatories to the CIPM Mutual Recognition Agreement.

### Specifications

**Temperature range:** 32.0 -122.0°F (0.0 - 50.0°C), resolution of 0.1°; accuracy of ±1°C.

**Relative humidity range:** 10.0 - 95.0%, resolution of 0.1% ; accuracy of ±3% RH mid-range to ±4% RH elsewhere.

### Barometer measures pressure in 3 different units:

**Inches of mercury (inHg):** 0.29 to 32.48, resolution of 0.01

**Millibars (hPa):** 10.0 to 1100, resolution of 0.1 to 999.9, 1 over 999.9

**Millimeters of mercury (mmHg):** 7.5 to 825.0, resolution of 0.1 mmHg.

**Accuracy:** ±4 hPa between 550 to 1100 hPa.

**Dew point range:** 13.5 to 120.1°F (-25.3 to 48.9°C), resolution of 0.1°.

**Power:** 4 AAA batteries

**LCD digits:** 3/8" H (0.97 cm)

**Size:** 1.5" diameter x 8" L (3.82 x 20.39 cm)

**Weight:** 5 oz (142 g)

Item	Description
469-007	Traceable Thermometer/Barometer Pen

## PRECISION ANEROID BAROMETER



The Precision Aneroid Barometer features a 5-inch open face, stainless steel case, temperature-compensated movement, and a 360° dial with dual-scale ranging from 920 to 1080 mb and 700 to 819 mmHg. Linearity is ±1.3 mb between 980 and 1030 hPa. Screw adjustment compensates for altitude and ensures reading accuracy.

### Specifications

**Range:** 920 to 1080 mb and 700 to 819 mmHg

**Resolution:** 1 mb / 0.75 mmHg

**Accuracy:** ±1.3 mb

**Altitude:** Usable up to 300 meters (1,000 feet) for absolute pressure reading, up to 1000 meters (3280 feet) with compensation

**Dimensions:** 5.2" x 5.27" x 1.5" (133 x 133 x 37 mm)

**Weight:** 15.9 oz (451 g)

Item	Description
469-131	Precision Aneroid Barometer

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## TRACEABLE® HANDHELD DIGITAL BAROMETER



The Handheld Digital Barometer measures altitude, temperature, and barometric pressure. It also has a stopwatch/time-of-day clock and graphically displays the barometric pressure trend. A Traceable Certificate is provided to indicate instrument traceability to NIST (National Institute of Standards and Technology).

### BAROMETER

Measures barometric pressure from 15.90 to 31.01 in inches of mercury (inHg) with a resolution of 0.03 inHg and from 400 to 1070 millibars (mbar) with a resolution of 1 mbar. Accuracy is  $\pm 0.1477$  inHG ( $\pm 5$  mbar). Display may be switched to inHg or mbar.

Barometric pressure trend shows present readings and previous 2, 4, 6, 8, 10, and 12 hours in bar-chart format. Barometric pressure reading is updated every 15 minutes.

### ALTIMETER

The handheld digital unit measures altitude from -500 to 7000 meters and -1640 to 22,965 feet, with a resolution of 1 meter from -500 to 1000 meters and a resolution of 2 meters from 1001 to 7000 meters. Altitude is displayed in meters or feet. Reading is updated every 2 seconds. Features a minimum maximum memory for the altitudes reached during any time period, and the altitude trend shows present reading and previous 2, 4, 6, 8, 10, and 12 hours in bar-chart format.

### THERMOMETER

Thermometer displays from -4.0 to 158.0°F and -20.0 to 70.0°C with a resolution of 0.1°, accuracy is  $\pm 1^\circ\text{C}$ . Temperature display is updated every 10 seconds.

### STOPWATCH AND CLOCK

Stopwatch times events from 1 second to 99 hours, 59 minutes, 59 seconds. Resolution is 1 second and accuracy is 0.01%. Clock displays the time of day to the minute, and shows the day and month. The clock also features a format of 12-/24 hour timing and an alarm.

Rugged shock-resistant case, compact size (4" x 2.5" x 0.75" or 10.2 x 6.4 x 1.9 cm), and lightweight (3.7 oz or 105 g) make this the perfect portable unit. Supplied complete with lanyard, batteries, and instructions.

Item	Description
469-005	Traceable® Handheld Digital Barometer

## PRECISION DIGITAL BAROMETER / THERMOMETER



- Employs the latest in pressure and temperature sensor technology
- Wide Range: 300 mbar to 1100 mbar
- $\pm 0.5$  mbar accuracy
- $\pm 0.2^\circ\text{C}$  accuracy
- Lightweight, rugged, hand-held design
- NIST Traceable

Item 469-200 is a portable digital barometer/thermometer possessing a combination of handheld calculator size, digital display, high accuracy and wide choice of units, making it ideal as a portable absolute pressure reference. It operates on two 9-Volt alkaline batteries for 100 hours. The TOGGLE UNITS button allows the user to choose mmHg or mbar. The rugged, ABS molded case has been designed for handheld use in field applications.

Both the probe and 2 meter cable are waterproof

Item 469-210 features a variety of pressure scales to enable the operator to display the atmospheric pressure in units of mmHg or mbar, as the most widely used units in radiation therapy. It also displays ambient temperature in  $^\circ\text{C}$  with 0.1 degree resolution. A wall adapter is also included with this unit. It is enclosed in a sturdy metal enclosure for bench top application.

### Specifications

**Display:** 16 x 2 LCD, 0.2" high segments

**Selectable units:** mmHg or mbar,

**Range, Resolution:** 600 to 790 mmHg, 0.1mmHg, 800 to 1050mbar, 0.1 mbar, 0 -  $70^\circ\text{C}$ ,  $0.1^\circ\text{C}$

**Accuracy:**  $\pm 0.5$  mbar, includes non-linearity, hysteresis, and repeatability;  $\pm 0.2^\circ\text{C}$ , includes non-linearity

**Altitude Range:** infinite

**Operating Range:**  $-9$  to  $49^\circ\text{C}$

**Power:** Two 9.0 Volt alkaline cells (469-200 only), 9 Volt wall adapter (Included with 469-210)

**Battery Life:** 100 hours of use (469-200 only)

### Dimensions:

**Item 469-200:** 8" L x 4.6" W x 2.1" H (20.3 x 11.7 x 5.3 cm)

**Item 469-210:** 3.6" L x 4.5" W x 2.0" H (9.1 x 11.4 x 5.1 cm)

### Weight:

**Item 469-200:** 1.1 lb (0.5 kg)

**Item 469-210:** 1.1 lb (0.5 kg)

Item	Description
469-200	Handheld Precision Digital Barometer/Thermometer
469-204	Case for Digital Barometer/Thermometer
469-210	Bench Top Precision Digital Barometer/Thermometer

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## TRACEABLE® DIGITAL BAROMETER



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The 469-150 Digital Barometer is the perfect unit for plants, labs, and all other environments where there is a need to monitor conditions of environmental air parameters. A four-line LCD continuously and simultaneously shows barometric pressure, temperature, relative humidity, barometric pressure trend and time-of-day. Minimum/Maximum readings for barometric pressure, temperature and relative humidity are stored every hour for the last 24 hours and are available for recall at the touch of a button. HI/LO alarms can be set for barometric pressure, temperature, and relative humidity.

- **A four-line LCD continuously and simultaneously shows barometric pressure, temperature, relative humidity, barometric pressure trend and time-of-day.**
- **Minimum/Maximum readings for barometric pressure, temperature and relative humidity are stored every hour for the last 24 hours and are available for recall at the touch of a button.**
- **Computer output allows unit to be connected to a computer using the accessory Computer Data Acquisition System to permanently capture readings.**

### Measuring Ranges

Barometric pressure range from 500 to 1030 millibars (mbar) with a resolution of 1 mbar. Accuracy is  $\pm 4$  mbar. Barometric pressure trend shows in bar-chart format the current and past 1-, 3-, 6-, 12- and 24-hour readings. Switching permits viewing in millibars (mbar), inches of mercury (inHg), or hectopascals (hPa). Altitude compensation is  $-100$  to 2500 meters.

Temperature range is 32 to 131°F and 0 to 55°C. Resolution is 0.1° and accuracy is  $\pm 0.4$ °C. Relative humidity range is 5 to 95%. Resolution is 1% RH and accuracy is  $\pm 3$ % RH between 5 to 75%, otherwise  $\pm 5$ % RH.

Computer output allows unit to be connected to a computer using the accessory Computer Data Acquisition System to permanently capture readings.

### Traceable® Certificate

Multi-point calibration on an individually-numbered Traceable® Certificate which assures accuracy from our ISO/IEC 17025:2017 (1750.01) calibration laboratory accredited by A2LA. It indicates traceability of measurements to the SI units through NIST or other recognized national measurement institutes (NMI) that are signatories to the CIPM Mutual Recognition Agreement.

Supplied With Traceable® Certificate, wall mount, flip open stand and batteries.

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### Item 469-152 Computer Data Acquisition System

- **Allows up to eight unique Traceable® meters to simultaneously capture data and send it directly to email to any smartphone or computer**
- **Readings are saved to a file that can be viewed, printed as-is, or merged in a report or spreadsheet format**
- **Data continues to be collected in background even when user works on other software programs**
- **24/7 audible/visual alarm reminds user to check on data**

Powerful and easy to use computer data capture program works with Traceable® Instruments with computer output. Records interval readings from 1 to 10,000 seconds; displays minimum/maximum readings; and utilizes an alarm mode that permits the user to be notified visually, audibly, and by email when an alarm is triggered. Networking server/client capability allows the captured data to be monitored on a remote workstation. Readings may be streamed to cell phones or anywhere via email every minute or in any time interval. 24/7 notification of audible/visual alarms are sent to user's computer, remote computer, via email anywhere, and by email to cell phones. Program automatically installs in less than two minutes. Absolutely no user programming, no user keystrokes, no user entries are required. Simply connect the cable to the instrument and to a USB port (or serial port) and data is captured. Operation is straight forward plug and play. It is that easy. It is designed to work with Windows® 98 / Me / NT / 2000 / XP / Vista / Windows 7 / Windows 8 / Windows 10. Includes a CD, a 6-foot cable (supplied USB, serial, and instrument connections) cable plugs into the instrument and computer.

### Specifications

#### Item 469-150

**Temperature Range:** 32 to 131°F (0 to 55°C)

**Temperature Resolution:** 0.1°

**Temperature Accuracy:**  $\pm 0.8$ °F ( $\pm 0.4$ °C)

**Humidity Range:** 5 to 95% RH

**Humidity Resolution:** 1% RH

**Humidity Accuracy:**  $\pm 3$ % RH (5 to 75% RH), otherwise  $\pm 5$ % RH

**Pressure Type:** Absolute

**Barometric Press. Range:** 500 - 1030 mbar (14.77 - 30.41 inHg)

**Barometric Press. Resolution:** 1 mbar (0.01 inHg)

**Barometric Press. Accuracy:**  $\pm 4$  mbar ( $\pm 0.12$  inHg)

**Altitude Compensation:** -100 to 2500 meters

**Temp MIN/MAX Memory:** Yes

**Data Logging:** Yes

**Exportable Data:** Yes

**Size:** 4" x 3" x 1" (10.16 x 7.62 x 2.54 cm)

**Weight:** 7 oz

Item #	Description
469-150	Traceable® Digital Barometer
469-152	Computer Data Acquisition System



## DPI800 PRESSURE INDICATOR



### All-Inclusive Accuracy

Can be relied on from one year to the next, even in tough environmental conditions

### Advanced Features

Hold, maximum/minimum/average, alarm, and tare facilitate troubleshooting

Each unit is supplied with batteries, calibration certificate and user guide.

### Accessories

Item 469-255 is a soft fabric carrying case with accessory pocket

### Specifications

**Display:** Graphic LCD with backlight. Resolution 99999

**Units:** 25 selectable including mmHg

**Pressure Range:** 30psi (2 bar)

**Range:** Ranges from 10 in H<sub>2</sub>O to 10,000 psi (25 mbar to 700 bar)

**Accuracy:** 0.075% FS accuracy

**Pressure connection:** 1/8 NPT female

**Altitude range:** Infinite

**Operating Temperature:** 14°F to 122°F (-10°C to 50°C)

**Storage Temperature:** -4°F to 158°F (-20°C to 70°C)

**Humidity:** 0% to 90% non-condensing, Def Stan 66-31, 8.6 Cat III

**Power:** 3 AA alkaline

**Battery life:** >50 hours measure, >10 hours 24V source

**Dimensions:** 3.3" x 7.1" x 2" (8.5 x 18.0 x 5.0 cm)

**Weight:** 18 oz (500 g)

### Safety

**Shock and Vibration:** BS EN61010:2001, Def Stan 66-31, 8.4 Cat III

**EMC:** BS EN61326-1:1998 + A2:2001

**Safety:** Electrical BS EN61010:2001. Pressure Equipment Directive (PED), Class SEP. CE marked

- Includes Calibration Certificate
- CE marked
- Large backlit display, menu driven interface
- Compact, simple to use, easy to carry
- Convenient, one-handed operation
- Secure grip, impact resistant, elastomer protected

Item #	Description
469-250	DPI800 Pressure Indicator
469-255	DPI800 Carrying Case

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## HANDHELD DIGITAL BAROMETER-ALTIMETER



This instrument measures atmospheric pressure very accurately, to within 0.015" Hg. The 316 stainless steel pressure sensor has extremely low sensitivity to shock, vibration, acceleration, and changes in orientation or temperature, yet features high sensitivity to pressure variations. The device is temperature compensated over its operating temperature range. Each unit comes with a certificate of calibration traceable to NIST.

### Specifications

Units	Full Scale	Accuracy	Resolution
<b>Pressure</b>			
mm Hg	1000	± .15	.1
in Hg	39.37	± .01	.001
mb	1333	± .2	.1
kPa	133	± .02	.01
psi	19.33	± .01	.001
<b>Altitude</b>			
feet	36,000	± 9	1.0
meters	10,973	± 3	1.0

**Approvals:** CE compliant

**Display:** 5 significant digit LCD (0.25" high) 2 line x 16 alphanumeric characters

**NIST traceability:** NIST certificate supplied

**Power:** 4 AA alkaline batteries (included) with user enabled automatic shut-off

**Temperature:**

Storage: -40° to +140° F (-40° to +60° C)

Operating: 23° to +122° F (-5° to +50° C)

**Process connections:** 1.8" female NPT, 316SS

**Enclosure:** 14 ounce (6.5" x 3.6" x 2.25") ABS plastic case

**Media compatibility:**

Isolated Al sensor for fluids compatible with 316SS

Pressure Limits: 77 PSIA (4,000 mm Hg Abs)

**Tare:** Nulls applied pressure to allow measurement of vacuum, gauge pressure, or change in pressure or altitude from a reference point

**Min/Max Capture:** Capture speed is equal to the selected damping rate

**Damping rates:** User selectable from 0.1 to 25 seconds

**Backlight:** Green, changes to Red for over pressure

**Engineering unit selection:** mm Hg, PSI, in Hg, mbar, bar, kPa, Torr

**Altitude:** Displayed in feet or meters. Can be set by user based on map or trig marker information or standard altitude uses U.S. Standard Atmosphere of 1962 data

**Contrast Adjustment:** Adjusts display for best viewing

**Accuracy:** (Full Scale = 38.674 PSIA or 2,000 mm Hg Abs)

± 0.015% F.S. from 0-1,000 mm HgA

± 0.025% F.S. 0-1,000 - 2,000 mm HgA

**Field recalibration:** Supported through firmware feature

**Weight / Shipping:** 1.6 lb / 3 lb

Item #	Description
469-455	Handheld Digital Barometer - Altimeter

- Easy to use
- Rugged and sensitive
- Highly accurate
- Ideal portable pressure reference for weather station site certification and production process monitoring
- Displays station or sea level pressure
- Altitude in feet or meters
- NIST certificate included
- CE compliant

The Handheld Digital Barometer-Altitude combines accurate pressure sensing with the power of microprocessor-based computations to provide instantaneous pressure and altitude readings. A combination of small size, digital display, versatility, and high accuracy make it ideal for field measurements or as a portable pressure reference.

Keypad controls provide access to the operating functions. Pressure or altitude may be displayed in a variety of units. The LCD display shows the data output and operating mode. Data logging mode stores up to 240 readings for future recall. The unit is powered by four AA alkaline batteries (included) which provide approximately 100 hours of continuous use.

The Barometer - Altimeter includes features for minimum and maximum (Min/Max) value capture, tare readings, and user selectable engineering units. A selectable altitude function allows users to enter site altitude above sea level in order to display local barometric pressure or barometric pressure corrected to sea level. User referenced altitude (referenced to map or trig markers) or altitude based on US Standard Atmosphere of 1962 can be selected for display. Using the altitude function with the Min/Max and Tare features makes this Barometer - Altimeter very useful for accurately measuring changes in altitude.

# MEASURING - CALIPERS, BAROMETERS AND THERMOMETERS

## DPI 705E HANDHELD PRESSURE INDICATOR



Compact and robust, the DPI 705E Series is designed for single handed operation and provides many essential features required for routine maintenance and system troubleshooting.

- 48 pressure ranges from  $\pm 25$  mbar to 1,400 bar ( $\pm 1.69$  psi to 20,000 psi / 2.5 KPa to 140 MPa)
- Total 1 year uncertainty down to 0.05% full scale (FS) over temperature range of  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
- Integral calibration record with calibration due count-down display
- Rugged, handheld design with backlit high-contrast display
- Leak test, tare, maximum/minimum and filter

### DPI 705E Improves Test Efficiency

- Power on and use. No warm up time required.
- 19 pressure measurement units
- 1, 3 or 5 minute leak test
- Impact resistant, sealed to IP54
- Large digit high-contrast LCD with backlight
- Optional carrying case with belt loop
- Long battery life
- Integral desk stand and hanger

**Calibration Certificates:** Supplied as standard with bar, psi and kPa

**Leak Test:** Used to determine if there is a leak in the system by recording the pressure change over of time. User defined 1, 3 or 5 minute leak test.

**Maximum/Minimum:** Captures both maximum and minimum readings in peak-hold mode.

**Tare:** 0 to 100% FS temporary zero offset capability by subtracting the current reading from subsequent measurements.

**Filter:** Enables a filtered pressure reading by showing a rolling average of the last 10 measurements. Providing a more stable reading of a noisy measurement.

**Alarm:** User adjustable; high and low pressure alarms with visual (Bell Icon, Pressure Reading and Backlight flash) and audible warning for 60 seconds.

**Item 469-108** is the optional Carrying Case for the DPI 705E.

### Specifications

**Pressure Units:** mbar, bar, Pa, hPa, Pa, MPa, psi, lb/ft<sup>2</sup>, kgf/cm<sup>2</sup>, kgf/m<sup>2</sup>, mmHg(0°C), mHg(0°C), inHg 0, mmH<sub>2</sub>O, cmH<sub>2</sub>O, mH<sub>2</sub>O, inH<sub>2</sub>O (4°C, 20°C), ftH<sub>2</sub>O (4°C, 20°C)

**Sealing:** IP54

**Working Pressure:** 110% FS (alarm active beyond this range)

**Operating Temperature:** 14°F to 122°F ( $-10^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ )

**Storage Temperature:**  $-4^{\circ}\text{F}$  to  $158^{\circ}\text{F}$  ( $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ )

**Humidity:** 0 to 90% RH non condensing

**Accuracy:**

**469-105:**  $\pm 0.1\%$  FS NLH&R over temperature, including non-linearity, hysteresis and repeatability.

**469-106:**  $\pm 0.05\%$  FS NLH&R over temperature, including non-linearity, hysteresis and repeatability.

**Display:** 16mm LCD with  $\pm 99999$  readout

**Audio:** Turn audio on or off

**Auto Shutdown:** Enable or disable auto-shutdown

**Shock and Vibration:** MIL-PRF-28800F for Class II equipment. 1 m Drop Tested @  $-4^{\circ}\text{F}$  ( $-20^{\circ}\text{C}$ )

**Battery:** 4 x AA (supports Alkaline, lithium, Ni-Cd, Ni-MH)

**Battery Life:** Power efficient design, can be used 8 hrs/day, 6 days/week for 1 year using single set of batteries

**Battery Low Indicator:** Display symbol

**Altitude Range:** Infinite

**Pressure Connection:** 1/8" NPT female adaptot

**Includes:** User guide and calibration certificate

**Safety Conformance:**

**EMC:** BS EN 61326-1

**Electrial Safety:** BS EN61010-1, UL61010-1

**Pressure Safety:** Pressure equipment directive class SEP. UL61010 Safe to 2xFS

**Approval:** CE marked, RCM

**RoHS:** Compliant

**Dimensions:** 3.7" W x 7.9" L x 1.7" D (9.5 x 20.0 x 4.3 cm)

**Weight:** 1.2 lb (0.563 kg)

Item	Description
469-105	DPI 705E Handheld Pressure Indicator, Std Accuracy
469-106	DPI 705E Handheld Pressure Indicator, High Accuracy
469-108	Carrying Case for DPI 705E (469-105/469-106)

P

## ALRA THERAPY LOTION



**Alra Therapy Lotion offers reliable and calming relief from dermatitis, itching, and redness caused by radiation and chemotherapy.**

Radiation treatment leaves skin irritated, highly sensitive and reddened. Alra Therapy Lotion has been specially formulated to take care of your skin during and after cancer treatment. Our skin care lotion is used and recommended in many of the nation's finest cancer treatment centers. When individuals use Alra Therapy Lotion early in their treatment, it can minimize skin sensitivity and prevent irritation for many patients, without interfering with treatment.

The following key ingredients are used to make Alra Therapy Lotion therapeutic.

- 100% Aloe Vera Gel. Aloe Vera is known to help relieve pain, burning and itching sensations. It is also used for accelerated healing of skin.
- Lanolin: Lanolin is a natural moisturizer and skin conditioner. The distinctive form of Lanolin used in Alra Therapy Lotion is extremely mild and soothing.
- Soluble Collagen: This is a very effective moisturizer that binds and retains many times its own weight in water.
- Allantoin: Allantoin helps burned skin to regenerate itself by promoting and stimulating new and healthy tissue growth.
- Vitamin E: This acts as an anti-oxidant helping prevent the release of free radicals that cause cell damage. In addition, Vitamin E is a natural, mild preservative to stabilize the liquid base.

What's also important is what is NOT in our lotion: Our lotion is free of any metals which might interfere with treatment, and is perfume-free, reducing the irritation that often follows using a perfumed solution.

The effective, gentle formula has the following benefits:

- Promotes the skin's natural renewal and healing processes
- Does not Interfere with ongoing cancer treatment
- Is gentle, non-greasy and deeply moisturizing
- Has soothing and restoring properties
- Is free of fragrance, added colorants and parabens
- Is self-preserving thanks to innovative formulation and Vitamin E

Ingredients:

100% Aloe Vera Gel; Lanolin Oil and Acetylated Lanolin and Isopropyl Lanolate; Glyceryl Stearate (and) PEG-100 Stearate; Soluble Collagen; Tocopherol (Vit. E); Allantoin, Stearic Acid, Cetyl Alcohol, Stearyl Alcohol, Tocopheryl Acetate, Methylpropanediol, Tetrasodium EDTA, Caprylyl Glycol, Potassium Sorbate, Phenylpropanol, Triethanolamine.

Item #	Description	Quantity
125-001	Alra Therapy Lotion, 4 oz.	12
125-003	Alra Therapy Lotion, 1 oz.	12

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## ALRA NON-METALLIC DEODORANT



Two key ingredients are:

- Lichen extract - with its active ingredient Deo-Usnate - is a natural, mild bactericide and fungicide which reduces odor-causing microbes.
- Cypress oil is a powerful botanical that has astringent, capillary-constricting properties to control sweating. The tannins in Cypress oil provide a fresh, natural and pleasant scent.

You will enjoy protection from odor and sweat with this gentle, yet effective deodorant.

Our Non-Metallic Deodorant:

- Provides effective protection against body odor and underarm wetness
- Uses Oil of Cypress, which acts as a fragrant astringent
- Also uses Alpine Lichen Extract, which is a natural bactericide and fungicide
- Contains no aluminum, metallic salts, alum, or crystals which can interfere with your treatment.

Ingredients:

Propylene glycol; Water; Sodium Stearate; Deo-Usnate (Lichen Extract); Cypress Oil; Aloe Vera Gel.

**Alra Non-Metallic deodorant offers odor protection without any aluminum or metallic ingredients that may interfere with radiation therapy or irritate skin.**

Alra Non-Metallic Deodorant is a unique, safe formulation of Lichen extract and Cypress oil, especially designed for individuals undergoing cancer treatment.

Item #	Description	Quantity
125-006	Alra Non-Metallic Deodorant	12

## ALRA MILD CONDITIONING SHAMPOO



Our shampoo has three key components:

- Rosemary oil stimulates blood circulation in the scalp to promote hair re-growth.
- Panthenol, also known as Pro Vitamin B5, helps moisturize and smoothen the hair
- Aloe Vera Gel soothes and conditions the scalp.

Our extra mild shampoo is free of harsh chemicals, alcohol, artificial fragrances, or added colorants.

Alra Mild Conditioning Shampoo:

- Cleanses hair and scalp gently and thoroughly through amphoteric surfactants
- Helps relieve itching and soothes dry, irritated scalp
- Rosemary oil stimulates scalp circulation and hair growth
- 100% free of added fragrances, colorants and parabens
- Bio-degradable and ph-balanced

Ingredients:

Water, Sodium Cocoyl Isethionate, Cocamidopropyl Hydroxysultaine, Cocamidopropyl Betaine, Aloe Barbadensis (Aloe Vera) Leaf Juice, Sodium Lauroyl Sarcosinate, Panthenol, Rosmarinus Officinalis (Rosemary) Leaf Oil, Polyquaternium 7, Benzyl Alcohol, Dehydroacetic Acid, Tetrasodium EDTA, Ascorbic Acid, Citric Acid

**Alra Mild Conditioning Shampoo is a gentle cleanser + conditioner combo that provides relief from irritated, dry and itching scalp during and after cancer treatment.**

A compromised immune system due to radiation or chemotherapy may result in hair loss (alopecia), sensitive scalp, or hair that is brittle and dry. Gentle care and conditioning is very important. Our unique shampoo not only cleanses effectively, it also works as a conditioner, leaving fine hair shiny and healthy looking.

Item #	Description	Quantity
125-011	Alra Mild Conditioning Shampoo, 16oz Bottle	12

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## MY GIRLS™ SKIN CARE CREAM



125-050



125-056



125-052 & 125-054

- Natural plant-based creamy formula spreads easily over compromised, dry and skin exposed to repeated radiation therapy
- Key ingredients of Calendula & Rose naturally reduce redness associated with burns, chafed skin, acne, rosacea, eczema, sunburns, windburns, and dry, cracked red skin

My Girls™ Skin Care cream is a plant-based, calendula and rose petal skin care cream made with natural oils including coconut, olive, jojoba and avocado oil plus Vitamin E and Vitamin B5 (known for its benefits of plumping mature skin). Paraben-free, fragrance-free, dye-free formula is specially made for people who prefer less toxins in their environment and who suffer from skin irritation.

Creamy, plant-based formula spreads easily over delicate, dry, compromised skin with a whipped cream-like texture.

**Item 125-056** My Guys Skin Care cream -is a 3.4 oz travel size that fits easily into your carry-on or briefcase when travelling. This is the same formula as My Girls™ Skin Care yet packaged for men

**Caution should be used in individuals having known allergies to plants. For topical use only.**

Item #	Description	Quantity
125-050	My Girls™ Skin Care Cream, 6.8 oz Tub	12
125-052	My Girls™ Skin Care Cream, 5 oz Tube	38
125-054	My Girls™ Skin Care Cream, 5 oz Tube	16
125-056	My Guys™ Skin Care Cream, 3.4 oz Tub	22

- 100% Paraben-free, Fragrance-free, Dye-free Calendula Cream
- Absorbs quickly, non-greasy, non-staining
- Water-based vs. petroleum based
- Non-irritating, Non-GMO, Non-steroidal
- Calms and soothes radiation-induced dermatitis
- Vitamin B5 adds moisture and plumping effect to dry or mature skin
- 10% Calendula - more than homeopathic creams and less expensive per ounce
- Recommended at U.S. radiation therapy treatment centers and hospitals for maintaining healthy appearance of the skin

## MY GIRLS™ SKIN CARE DEODORANT



Our all natural My Girls™ Skin Care calendula deodorant is free of aluminum and bactericides and won't stain your clothes. 2.25 Oz slide-up wand spreads easily without residue.

Ingredients: \*Sunflower oil infused with \*Calendula, \*Coconut, Beeswax, Shea Butter, \*Cocoa Butter, Magnesium, Arrowroot, Kaolin clay, Sodium Bicarbonate, Rosemary Spearmint essential oil blend.

**Caution should be used in individuals having known allergies to plants. For topical use only.**

Item #	Description	Quantity
125-065	My Girls™ Skin Care Deodorant, 2.75 oz	6

- 100% Paraben, Fragrance, Dye-free, Aluminum-free, Antiperspirant-free
- Certified organic ingredient
- Glides on easily without residue, Non-GMO, Non-Staining, No animal testing
- Natural ingredients may vary in color and consistency

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## MY GIRLS™ CALENDULA SKIN RELIEF SPRAY



The Calendula Skin Relief Spray may be used refrigerated or at room temp to cool and relieve sensitive, red skin due to burns, acne, skin irritations and medical treatments such as radiation therapy and chemotherapy that may overly compromise and dry the skin. It can also be used to prep the skin for moisturizer or as a setting mist for makeup. Invigorate and cool sensitive skin.

Ingredients: \*Rosemary hydrosol, \*Green Tea Hydrosol, \*Calendula Officianalis Extract, \*Aloe Vera Extract, Panthenol, Hyaluronic Acid, \*Manuka Honey Extract, \*Hibiscus, \*Rose Petal and \*Calendula Extracts, Potassium Sorbate.

**Caution should be used in individuals having known allergies to plants. For topical use only.**

Item #	Description	Quantity
125-060	My Girls™ Calendula Skin Relief Spray, 2 oz	6
125-062	My Girls™ Calendula Skin Relief Spray, 2 oz	12

- Q**
- 100% Paraben, Fragrance, Dye-free
  - Cools and refreshes irritated skin and soothes overly compromised skin
  - Certified organic ingredient\*
  - Non-GMO, No animal testing
  - Natural ingredients may vary in color and consistency

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## Blood Pressure Monitor



The professional stethoscope can be used for other diagnostic procedures. The self-taking method is easily adapted with the D-Ring cuff. Arm size: 9" to 13".

### Item 288-200 Blood Pressure Monitor Includes

- Gauge
- D-ring cotton cuff with chest piece
- Bladder
- Bulb and air release valve
- Binaural and eartips
- Y-tubing
- Vinyl storage case
- User manual
- Record chart
- 1 year warranty (limited, see manual for details)

Item #	Description
280-200	Blood Pressure Monitor

Q



# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## FLEXBAK®



**Q** Flexbak® helps reduce back stress and strain with a design so unique its patented. Its three-part support is the key to a system that provides maximum back support with ease of movement. The 9" medical-style truss uses two internal support panels above and below the waist surrounded by an elastic third panel. These combine to produce maximum bracing without pinching or riding up.

To determine size, measure around abdomen at the navel.

Item #	Description	Size
280-11501	Flexbak® - Small	26" - 36"

## MAXRIST®



MaxRist® offers a restrictive metal spoon stay that fits in the palm to eliminate the symptoms of CTS and other repetitive strain injuries. The lightweight flexible material does not hinder finger movement.

To determine size, measure around the wrist for correct size.

Item #	Description	Size
280-10902	MaxRist® Right	Medium (6 1/2" to 7 1/2")
280-11002	MaxRist® Left	Medium (6 1/2" to 7 1/2")

## FLEXRIST®



FlexRist®, the comfortable all around support made of Neoprene is the best defense against Carpal Tunnel Syndrome. One design can be adapted to any wrist, right or left. It washes easily, is comfortable, extremely lightweight and versatile.

Item #	Description
280-11101	FlexRist® Regular

## RIST RITE®



The Rist Rite® is a neoprene support that is reinforced with Cordura nylon across the palm for long wear. It has one strap that stops short of the hand.

To determine size, measure around the wrist.

Item #	Description	Size
280-11202	Rist Rite® Right	Medium (6 1/2" to 7 1/2")
280-11203	Rist Rite® Left	Medium (6 1/2" to 7 1/2")

## ACTICUF™ COMPRESSION POUCH FOR MALE URINARY INCONTINENCE



The breakthrough ActiCuf™ Compression Pouch for Male Urinary Incontinence, Dripping and Leaking is a disposable, undetectable pouch designed to help men manage light to moderate urinary incontinence. When placed on the penis, the padded closure gently presses down on the urethra to control urinary flow. Any leakage is immediately absorbed by the ActiCuf™, so you can take charge of your day and enjoy life on your terms.

Men who have undergone surgery for prostate disease or prostate cancer or have an enlarged prostate may experience urinary incontinence as a result of their condition. The ActiCuf™ Compression Pouch for male incontinence is unlike pads, disposable diapers, or washable briefs. It offers a new solution for men with light to moderate urinary incontinence. Due to its slim design ActiCuf™ is undetectable under clothing and can easily and discreetly be changed whether you are at home or on the road. It's entirely non-metallic and will not alert airport metal detectors as some other similar products might do. The unique absorbent pouch immediately catches and absorbs any urine leaks. The ActiCuf™ incontinence bag is padded and gently closes to apply pressure on the urethra to control urinary flow.

### Warnings/Precautions

Do not wear while sleeping. Remove and discard when saturated. Re-position every 3-4 hours. Discontinue use if skin breakdown is detected. Always check with your Healthcare Provider before using a device of this nature.

ActiCuf™ is a trademark of Community Medical Products, LLC. All rights reserved. US Patents apply.

HCPCS code A4356.

Item #	Description
467-495	ActiCuf™ Compression Pouch - 10/package

Q

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## EASY WRAP APRON

The Easy Wrap Apron is easy to put on, adjust and take off. The Easy Wrap Apron features two side velcro closures so you can adjust the fit more evenly and includes a breast pocket.



### Specifications

**Size:** 24" x 42" (61 x 107 cm)

**Protection:** 0.5 mm

### Colors:

- |               |                 |                        |                              |
|---------------|-----------------|------------------------|------------------------------|
| 11 - Rose     | 20 - Royal Blue | 34 - Dog Paw Print     | 39 - Shimmering Elec. Blue   |
| 12 - Purple   | 22 - Navy Blue  | 35 - Red               | 40 - Shimmering Navy Blue    |
| 14 - Teal     | 23 - Beige      | 36 - Hunter Green      | 41 - Shimmering Tan          |
| 16 - Med Blue | 25 - Black      | 37 - Shimmering Bronze | 42 - Antimicrobial Navy Blue |
| 18 - Burgundy | 30 - Tie Dye    | 38 - Shimmering Green  |                              |

Item	Description
120-002-__	Easy Wrap Apron

Specify Color # When Ordering

Q

## RADIATION CAUTION SIGNS



### Specifications

**Material:** Plastic, Expanded PVC

**Size:** 8" W x 10" H (20.3 x 25.4 cm)

**Thickness:** 3 mm Thick

**Mounting:** Four 0.25" (0.64 cm) Diameter Holes

Item	Description	Size
009-673	"Caution: Radioactive Material"	8" x 10"
009-675	"Caution: Radiation Area"	8" x 10"
009-677	"Caution: High Radiation Area"	8" x 10"
009-679	"Grave Danger: Very High Radiation Area"	8" x 10"
009-680	"Caution: Radiation Area" Spanish/English	8" x 10"
009-682	"Danger: Very High Radiation Area"	8" x 10"
009-683	"Danger: High Radiation Area"	8" x 10"

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## CHEESECLOTH MINI-WIPES



### Reagent-grade quality

New wipes are certified to be 100% pure cotton of reagent-grade quality and purity. They meet all lab requirements for cleanliness, softness, absorbency, and strength.

### Lint-free

Cheesecloth Wipes absorb six times their own weight of both solvents and aqueous solutions. Soft and pliable cloth is lint-free. It never scratches surfaces or falls apart like paper towels.

### Excellent filtering material

Because they are inert to even harsh solvents, they are ideal as a filtering material. Certified cheesecloth wipes meet cleanliness specifications of USP. (United States Pharmacopoeia) and Federal Specification (CC-G-101c).

### Specifications

**Size:** 4" x 4" (10 x 10 cm) 8 ply pad unfolds to approximately 12" x 12" (30.5 x 30.5 cm)

**Color:** White

Item	Description	Quantity
119-100	Cheesecloth Mini-Wipes	200

Q

## TEXWIPE® ALL-PURPOSE COTTON WIPERS



Strong, highly absorbent, 100% cotton wipers woven from high-quality, long-staple cotton fibers and finished using a proprietary process that greatly reduces lint, particles, and extractables.

Twill patterned surface on both sides of the cloth traps and removes contaminants from the cleaned surface. Wiper is cut at 45° angle to ensure that edges will resist generation and release of fibers. Its uniform surface texture, strength, heat resistance, absorbency, and inherent anti-static characteristics at 40 to 60% relative humidity makes it suitable for a wide range of critical applications. Basis weight: 175g/cm<sup>2</sup>.

Item	TexWipes® Cotton Wipers	Quantity
119-610	6" x 6" (15.25 x 15.25 cm)	600
119-612	9" x 9" (22.86 x 22.86 cm)	300
119-614	12" x 12" (30.5 x 30.5 cm)	150

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## ONE TOUCH PUMP SOLVENT DISPENSERS



Eliminate evaporation, dripping and spilling! Dish-type pump dispensers allow one hand operation. Stainless steel pumps are attached to square, high-density polyethylene (HDPE) bottles. A set of chemical labels comes with each bottle. One touch pump handles aqueous or alcohol-based liquids that require cotton or pad application.

Item	One Touch
119-720	Pump Dispenser, 6 oz.
119-721	Pump Dispenser with Locking Top, 6 oz.

## PDI® SANI-CLOTH® PLUS DISINFECTANT Bactericidal, Tuberculocidal and Virucidal



- Pre-measured and pre-moistened
- Accurate strength every time

Kills Influenza A2/HK, Herpes Simplex Type II and HIV-1 in just 30 seconds. Effective against Staphylococcus aureus, Salmonella choleraesuis and Pseudomonas aeruginosa in five minutes. Kills Myobacterium bovis (TB) in five minutes. Effective against E coli. Safe on most hard, non-porous surfaces. 15% alcohol.

**Compliance:** EPA registered and approved

Item	Sani-Cloth Plus Wipes
466-320	Large 6" x 6.75" (15 x 17 cm), 160 Wipes
466-321	X-Large 7.5" x 15" (19 x 38 cm), 65 Wipes

## CAVICIDE™ DISINFECTANT AND CLEANER No Residue



Cavicide™ Disinfectant and Cleaner is biodegradable and contains no phenols. Cavicide™ Disinfectant and Cleaner cleans manual and ultrasonic instruments and acts as a decontaminates for medical instruments. Safe on all inanimate surfaces.

Use Cavicide™ wherever environmental infection control is needed. Non caustic formula is tuberculocidal, virucidal, fungicidal, bacteriocidal and kills HIV/HBV. Also effective against MRSA and VRE. Contains no dangerous phenols that would require the use of skin, eye or respiratory protection. Strong enough to kill on contact, yet fully biodegradable.

**Compliance:** EPA registered. Exceeds OSHA standard.

Item	Description
466-330	Cavicide Spray, 8 oz. Bottle
466-332	Cavicide Spray, 24 oz. Bottle
466-334	Cavicide Wipes, 6" x 6.75", Canister of 160

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## CIDEX® OPA



### Proven Efficacy

CIDEX® OPA Solution has been tested and cleared as a high-level disinfectant for use with the most widely used endoscopes.

- Designed for either manual or automatic reprocessing
- Manufactured to the highest standards for purity
- Effective against a wide array of microorganisms

### Proven Safety

CIDEX® OPA Solution protects both patients and technicians, with a demonstrated safety profile that is backed by the heritage of Advanced Sterilization Products (ASP).\*

- Safe to use for patients, healthcare professionals and instruments
- Low vapor pressure for minimal inhalation exposure risk
- No need for special ventilation
- Near-neutral pH level ensures compatibility with endoscopic instruments

### Proven Value

CIDEX® OPA Solution is the number-one product in high-level disinfection, offering more ways to make the most of your budget.

- Rapid disinfection improves productivity, allowing more endoscopes to be processed in less time<sup>2</sup>
- Noncorrosive formula protects your investment in instrumentation<sup>2,3</sup>
- Long-lasting efficacy allows reprocessing of more devices per gallon than with glutaraldehyde<sup>2</sup>

\*Please read and follow the Instructions For Use prior to using CIDEX® OPA Solution for important information, including contraindications, warnings and proper directions for use.

### Rapid Action, Reliable Disinfection

Multiple studies have shown the efficacy of CIDEX® OPA Solution against bacteria, fungi, and viruses.<sup>4, 5</sup> CIDEX® OPA Solution works within minutes and provides broad spectrum killing power—even in the presence of human serum.<sup>2</sup>

CIDEX® OPA Solution can be used straight from the bottle for extra efficiency.

- Requires no activation or mixing
- 5-minute soak time at 25°C in automatic endoscope reprocessors\*
- 12-minute soak time at 20°C for manual reprocessing

### Long Life, Lasting Power

A long shelf life and high reusability make CIDEX® OPA Solution a great value.

- 2-year unopened shelf life
- 75-day shelf life after opening the bottle

Using CIDEX® OPA Solution in an automatic reprocessor can mean 20% more cycles in a 14-day reuse cycle, compared with other solutions.<sup>5</sup>

- Sensitive test strips make it easy for you to test the minimum effective concentration (MEC) of ortho-phthalaldehyde, the active ingredient in CIDEX® OPA Solution

\*When used or reused in a legally marketed automatic endoscope reprocessor that can be set to a minimum of 25° C.

### Microbicidal Activity

The following table indicates the spectrum of activity as demonstrated by testing of CIDEX® OPA Solution using prescribed test methods.

Viruses Non-Enveloped		
Poliovirus Type 1	Rhinovirus Type 42	Adenovirus Type 2
Vaccinia (Wyeth)	Coxsackievirus Type B-3	
Viruses Enveloped		
Coronavirus HIV-1	Cytomegalovirus	Influenza Virus [Hong Kong]
	Herpes simplex Types 1,2	
Vegetative Organisms		
<i>Staphylococcus aureus</i>	<i>Salmonella choleraesuis</i>	<i>Pseudomonas aeruginosa</i>
<i>Mycobacterium bovis</i>		
Fungi		
<i>Trichophyton mentagrophytes</i>		

### Materials Compatibility

Metals		
Aluminum	Anodized aluminum	Brass
Carbon steel	Chrome-plated brass	Chrome-plated steel
Copper	Nickel-plated brass	Nickel-silver alloy
Stainless steel	Titanium	Tungsten carbide
Vanadium steel		
Plastics		
Acetal	Acrylonitrile-butadiene-styrene (ABS)	Nylon
Polyamide	Polycarbonate	Polyethylene
Polyethylene terephthalate (polyester)	Polymethylmethacrylate (acrylic)	Polypropylene
Polystyrene	Polysulfone	Polyvinylchloride (PVC)
PTFE		
Elastomers		
Kraton G	Natural rubber latex	Polychloroprene (Neoprene)
Polyurethane	Silicone rubber	
Adhesives		
Cyanoacrylate	EPO-TEK 301 epoxy	EPO-TEK 353 epoxy
Polyether Polysulfide		

### Testing CIDEX® OPA Solution

To verify the efficacy of CIDEX® OPA Solution, ASP recommends testing for the minimum effective concentration (MEC) prior to each use. ASP offers test strips designed specifically for use with CIDEX® OPA Solution. Easy to use and read, CIDEX® OPA Test Strips are the most reliable means to verify that CIDEX® OPA Solution will effectively destroy microorganisms, including the highly resistant *Mycobacterium*.

#### References

1. 2008 Healthcare Products Information Services (HPIS) data, HLD Market Assessment. 2. Hession SM. Endoscope disinfection by ortho-phthalaldehyde in a clinical setting: an evaluation of processing time and costs compared with glutaraldehyde. Poster presented at: Society of Gastroenterology Nurses and Associates; May 18-23, 2001; Tampa, FL. 3. Vollmer C. New high-level disinfectant reduces equipment-repair costs. Infect Control Today, August 2002. 4. Akamatsu T, Minemoto M, Uyeda M. Evaluation of the antimicrobial activity and materials compatibility of orthophthalaldehyde as a high-level disinfectant. J Int Med Res. 2005;33:178-187. 5. Rutala WA, Weber DJ. New disinfection and sterilization methods. Emerg Infect Dis. 2001;7:348-353.

Item	Description
466-401	Cidex OPA, 1 gal
466-403	Cidex OPA Solution Test Strips, 60 strips/bottle

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## DRY HEAT STERILIZER



- Precision thermostat, signal light, thermometer
- Rapid heat-up time with safety limit control
- Heating elements cannot burn out
- Two hour timer with "HOLD" position
- Finest hospital grade stainless steel
- Glass wool insulation for minimum heat loss
- Convenient instrument tray handle
- Accommodates most instrument trays
- Meets all electrical standards
- FDA registered

The Dry Heat Sterilizer is a fine precision instrument utilizing all the improved techniques developed in the designing, engineering and manufacturing of dry heat sterilizers. Only the best hospital grade material and scientifically proven components are used and rigid quality control during manufacture assures you of an instrument that will perform satisfactorily for many years.

This sterilizer operates at 320 - 360°F (160 - 180°C) automatically. Simply place unsterile items in the trays (plus small needle tray), and set the timer.

### Specifications

**Operating Temperatures:** 320 - 360°F (160 - 182°C)

**Outside Dimensions:** 15.5" W x 10.5" H x 9.5" D  
(39.4 x 26.7 x 24.1 cm)

**Inside Dimensions:** 11.5" W x 5" H x 7.5" D  
(11.5 x 12.7 x 19 cm)

**Weight:** 17 lb (7.8 kg)



Nylon Dry Heat Sterilizing Pouches

### Nylon Dry Heat Sterilizing Pouches

These self-sealing pouches are available in three sizes. For use in dry heat sterilization process only.

### Dry Heat Indicator Strips

These 4" (10.16 cm) strips are for use in dry heat processes up to 420°F. The indicator turns from green to brown. Insert in package or outside of package.



Dry Heat Indicator Strips



Spore Test Kits

### Spore Test Kits

Testing kits are for use in steam, chemical vapor, dry heat and EO gas sterilization processes. CDC states that sterilizers should be biologically monitored with a spore test at least weekly, and every load that contains an implant.

Item	Description	
936-700	Sterilizer, Dry Heat, 320 to 360°F, 115VAC	
936-700-230	Sterilizer, Dry Heat, 160 to 182°C, 230VAC	
Item	Accessories	Quantity
936-701	Nylon Dry Heat Sterilizing Pouch 2" x 10" (5.08 x 25.4 cm)	100
936-702	Nylon Dry Heat Sterilizing Pouch 4" x 10" (10.16 x 25.4 cm)	100
936-703	Nylon Dry Heat Sterilizing Pouch 7" x 10.5" (17.78 x 26.67 cm)	100
936-708	Dry Heat Indicator Strips, 4" (10.16 cm)	100
936-710	Sterilizer Spore Test Kit	12
936-711	Sterilizer Spore Test Kit	52

## SANICLAVE-AUTOCLAVE 200

### Steam with Dry Mode



- Stainless steel chamber - will not corrode like aluminum
- Printer access port (for optional printer or computer connection)
- Under and over temperature alarms
- Insufficient water alarm
- Silicone rubber gasket, assures a long life.

#### Optional:

Sterilizer Spore Test Kits are available in packs of 12 or 52 (936-710 or 936-711)

#### Specifications

**Power Requirements:** 120 VAC, 700 W, grounded cord

**Safety Approvals:** FDA approved (K112811), IEC compliant, CE marked and ANSI / AAMI - ST55 Standard Approved, ST79 approved sterilization cycle.

**Chamber Capacity:** 10.5L

**Chamber Dimensions:** 9" wide x 10.5" deep (22.9 x 26.7 cm)

**Net weight:** 20 lb (9.07 kg)

**Overall Dimensions:** 16" tall x 13.5" wide x 21" deep (40.6 x 34.3 x 53.3 cm)

**Maximum Instrument Size:** 12" (30.5 cm)

Item	Description
936-720	Saniclave-Autoclave 200, 115 VAC, 500 Watt

- Lightweight and portable
- Robust
- Built in America out of stainless steel and rugged ABS.
- Simple one-button automatic operation
- ST79 approved sterilizing cycle
- Dry mode allows you to sterilize and dry wrapped instruments
- Temperature, time and pressure on digital display



Spore Test Kits

#### Spore Test Kits

Testing kits are for use in steam, chemical vapor, dry heat and EO gas sterilization processes. CDC states that sterilizers should be biologically monitored with a spore test at least weekly, and every load that contains an implant.

Item	Description
936-710	Sterilizer Spore Test Kit, 12/Pkg
936-711	Sterilizer Spore Test Kit, 52/Pkg

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# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## ALUMINUM HALF VALUE LAYER ATTENUATOR SET



Determining the Half Value Layer (HVL) of the x-ray beam is the standard method for specifying the quality of the x-ray beam. For a given kVp, a measurement of the HVL gives information on the total filtration in the x-ray beam. Too little filtration results in unnecessary radiation to the patient and too high of a HVL may require increased kVp and mAs, increasing tube loading and reducing tube life.

Half Value Layer Attenuator Set contains nine (9) sheets of 1100 Aluminum Alloy ranging in thicknesses from 0.1 to 2.0 mm. For your convenience these sheets come in a plastic storage case to help maintain flatness and for ease of storage and transportation.

### Specifications

**Construction:** 1100 Aluminum Alloy (99.0% Pure)

**Size:** 4" x 4" (10x10 cm)

**Weight:** 0.4 lb (0.2 kg)

**Nine (9) Individual Aluminum Sheets:** (3) 0.1 mm, (1) 0.2 mm, (2) 0.5 mm, (2) 1.0 mm and (1) 2.0 mm

Item	Description
115-500	Aluminum Half Value Layer Attenuator Set

- Easy to use and customize in thicknesses for specific tasks
- Easy to store
- Economical
- Compact

## COPPER HALF VALUE LAYER ATTENUATOR SET



Regulatory test protocols for fluoroscopic systems increasingly specify copper attenuators to simulate heavier patients. When doing these tests, it is often useful to apply additional copper to drive the systems to maximum output. Copper filters are still used for specifying the Half Value Layer (HVL) of x-ray beams generated between 140 and 400 kVp.

The Pure Copper Half Value Layer Attenuator Set is comprised of nine sheets, 10x10 cm in thicknesses ranging from 0.1 mm to 2.0 mm. A plastic storage case is provided to protect and to help maintain flatness of the filters.

### Specifications

**Construction:** Pure copper

**Size:** 4" x 4" (10x10 cm)

**Weight:** 1.1 lb (0.55 kg)

**Nine (9) Individual Aluminum Sheets:** (4) 0.1 mm, (1) 0.25 mm, (1) 0.5 mm, (2) 1.0 mm and (1) 2.0 mm

Item	Description
116-000	Copper Half Value Layer Attenuator Set

- Copper attenuators to simulate heavier patients
- Wide range of thicknesses for different testing conditions
- Satisfy regulatory requirements for fluoroscopic systems

## BLOOD IRRADIATION BOX



The blood irradiation box is made of acrylic and has a latch on the front of the box. A 12" (30.5 cm) piano hinge runs along the back of the box. A cable is attached to the cover and box to allow the cover to go past vertical so it will not fall backward. The bottom and cover are each 1.9 cm thick and the sides are 5.5 cm thick. Three central axis markers are centered on the top and sides of the box.

Optional filler pieces are available. These are custom made per customer specifications.

### Specifications

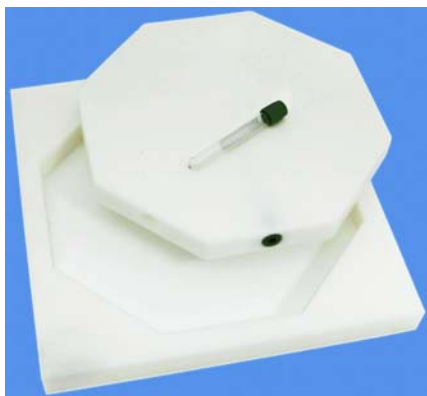
**Material:** Acrylic

**Inside Dimensions:** 25 x 25 x 5.5 cm H

**Outside Dimensions:** 36 x 36 x 9.3 cm H

Item	Description
005-001	Blood Irradiation Box

## IRRADIATION PHANTOM FOR VIALS



005-020 Shown with a 6 ml vial on top and in a cavity

### Item 005-020, Irradiation Phantom for 8-6ml Vials

The irradiation phantom is octagonal shaped and has eight (8) cavities for 6 ml vials in the center of each side of the octangle. The cavities are centered at midplane of the phantom.

The base of these phantoms serves as a holder for the phantom and also prevents a vial from falling out if phantom is tipped. The base consists of 0.635 cm plate attached to the 2.5 cm slab that has been cut for the phantom.

The cavities of both phantoms can be custom drilled to meet your needs.

### Specifications

**Material:** Polystyrene

**Base Size:** 30 cm<sup>2</sup> x 3.17 cm Thick

**Insert Size:** 26.2 cm across the flat sides x 2.5 cm Thick

Item	Description
005-010	Irradiation Phantom for 7-4ml Vials and Farmer Chamber
005-020	Irradiation Phantom for 8-6ml Vials

**Other Vial Sizes and Vial Quantities Available**

### Item 005-010, Irradiation Phantom for 7-4ml Vials and Farmer Chamber

The irradiation phantom is octagonal shaped and has seven (7) cavities for 4 ml vials and one cavity for Farmer Chamber in the center of each side of the octagon. The cavities are centered at mid-plane of the phantom.

# MISC - PATIENT PRODUCTS, RADIATION SIGNS

## PEN LIGHT



Item	Description	Quantity
1006-00	Pen Light	6

## ARTICULATING ARM, STAINLESS STEEL, 11.3" ARMS

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The Articulating Arm has two arms that can rotate 360°. The end of each arm has a cutout swivel that houses a 1 cm diameter ball stud and allows for another 360° of rotation. A 2.24" W x 1" tall wing knob in the center of the arms locks the position of both arms and the swivel ball studs. The studs have a 1/4" - 20 thread x 1/4" long for connection.

### Specification

**Arm length including Ball Stud:** 11.3" (28.7 cm)

**Overall Size:** 22.6" L x 2.75" H (54.7 x 6 cm)

**Material:** Stainless Steel

Item	Description
978-6025	Articulating Arm

# MRI PRODUCTS - STRETCHER & ACC., PHANTOM

## BED, MANUAL, MR/TBI/HDR WITH 0-60° FOWLER POSITIONING



Shown with Optional Items (not included)

- MR Conditional to 3T
- Made from only Non-Ferromagnetic Materials
- Collapsible Guard Rails
- Slots for Attaching Straps
- Easy to Maneuver

This treatment bed is MR conditional to 3T and can also be used for TBI or HDR treatment.

The Slessinger board (Item 946-004) will work with this bed and can also go into an MR suite. When using the Slessinger board with the bed, a stop mounted into the keyhole slots at the foot end of the bed will prevent the Slessinger board from sliding.

This all aluminum, non-magnetic bed has an adjustable backrest for fowler positioning at 15°, 30°, 45° and 60° angles. The backrest can be adjusted to the angle needed by raising the backrest to the desired position. To lower the backrest, raise the backrest a little and pull knob at the end of the bed to lower. The flat, fixed end of the bed is 52" long and the adjustable backrest is 27" long. There are four slots on each side of the bed to allow for up to four sets of the optional 4" Universal Velcro Straps.

Three removable aluminum plates, with Velcro attached, fit into the keyhole slots on the bed. These removable plates are used when the optional Treatment Bed Cushions (Item 182-310) are being used and will prevent cushion movement. The optional Treatment Bed Cushions have Velcro mounted to the bottom of the cushions which attaches to the Velcro on the removable plates.

The collapsible guard rails are 11" high from the top of the bed and 36" long and can be locked in the up or down position.

The bed height can be set at 28", 29" or 30" with the four locking pins. With the optional Caster Leg Extensions (Item 182-304), the bed height can be set from 46" to 48".

The 5" non-magnetic, lockable casters make this unit easy and convenient for one person to maneuver.

### Specifications

**Frame Material:** Aluminum  
**Bed Size:** 80"L x 25" W x 28"-30"H  
**Bed Height in 3 positions:** 28", 29" and 30"  
**Caster Size:** 5" Non-Magnetic with lock  
**Paint:** Precision Tan  
**Anodized Aluminum:** Blue  
**Weight Capacity:** 350 lbs  
**Shipping Weight:** 95 lbs via truck

### Optional Accessories

Item 182-304 - Caster Leg Extension 4/Set  
 Item 182-310 - Treatment Bed Cushions  
 Item 182-320 - IV Pole 5/8" x 32", MRI Conditional, Non-Ferromagnetic  
 Item 253-204 - 4" Universal Straps for 18" to 30" Wide Tables  
 Item 946-004 - CT/MR Slessinger Board for HDR Brachytherapy

Item #	Description
182-300	Bed, Manual, MR/TBI/HDR with 0-60° Fowler Positioning
182-304	Caster Leg Extensions 4/Set
182-310	Treatment Bed Cushions
182-320	IV Pole 5/8" x 32", MRI Conditional, Non-Ferromagnetic
253-204	Straps, 4" Universal for 18" to 30" W. Tables (Pair)
946-004	CT/MR Slessinger Board V2.0 for HDR Brachytherapy

# MRI PRODUCTS - STRETCHER & ACC., PHANTOM

## LEG STAND

For use in CT, MR, Radiation Therapy and Diagnostic Radiology

This leg Stand will support one leg in a cushioned cradle. The cradle swivels to allow for a comfortable position. The cradle height can be adjusted in 1" increments. The telescoping cradle post has 7 holes at 1" spacing to accommodate the locking rod.

The 10" square aluminum base has the cradle post welded to it and also includes rubber pads to minimize movement.

### Specifications

#### Cradle

**Width:** 5.1" (13 cm)

**Length:** 6.8" (17.5 cm)

**Pad:** 0.25" (0.635 cm) Blue Foam

**Base:** 0.25" (0.635 cm) White PVC

#### Base

**Base size:** 10" x 10" x 0.25" Thick (25.4 x 25.4 x 0.635 cm)

**Cradle Post Height:** 9" (22.86 cm)

**Minimum Height from Couch Top:** 7.1" (18.03 cm)

**Maximum Height from Couch Top:** 16.6" (42.16 cm)

**Base Material:** Aluminum



- For use in CT, MR, Radiation Therapy and Diagnostic Radiology

Item	Description
250-100	Leg Stand

## MRI STEP STOOL WITH HANDRAIL

- Has a green rubber tread to distinguish them from similar stools that may not be safe near the magnet
- Made of heavy-duty stainless steel

### Specifications

**Handrail:** 41" H

**Step Platform:** 16" W x 8.5" H x 12" D

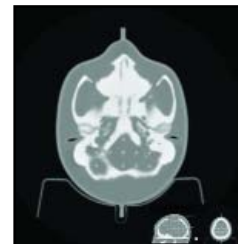
**Weight:** 11 lbs with handrail



Item	Description
250-150	MRI Step Stool with Handrail

## MRI DISTORTION PHANTOM FOR SRS

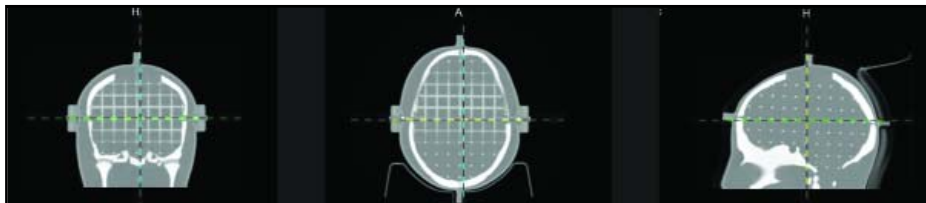
For Assessment of Image Distortion in Treatment Planning Systems



CT

MRI

CT Showing Ear Canals



CT Reconstruction

- Provides a realistic anthropomorphic scenario for CT and MR imaging
- Unique inter-cranial 3D grid design allows assessment of spatial distortion
- Special pads enable use with all fixation frames
- CT/MR markers facilitate positioning and image registration
- 335 control points
- Works with Distortion Check Software

CIRS Model 603A was designed for assessment of MR image distortion in Stereotactic Radiosurgery Planning. It is also a useful tool for verifying image fusion and deformable image registration algorithms used in various treatment planning systems. The tissue equivalent, anthropomorphic design provides the closest conditions to a clinical imaging scenario. The phantom can be imaged using X-ray, Computed Tomography and Magnetic Resonance. It images well with all MRI sequences tested to date, including T1 weighted, T2 weighted, 3D Time of Flight, MPRAGE and CISS.

The skull is manufactured from a plastic-based bone substitute, and the interstitial and surrounding soft tissues are made from a proprietary signal generating water-based polymer. The entire phantom is encased in a clear plastic shell to protect gel from desiccation. The phantom is supplied with specially designed pads that allow fixation with any stereotactic frame or mounting for end-to-end testing. The phantom is also suitable for frameless SRS QA.

The entire inter-cranial portion of the skull volume is filled with an orthogonal 3D grid of 3 mm diameter rods spaced 15 mm apart. Five extended axis-rods intersect at the reference origin of the grid. The end of each extended axis is fitted with CT/MR markers allowing for accurate positioning with lasers and co-registration of CT and MR image sets.

The phantom includes right and left air voids, 3 mm in diameter by 17 mm long to simulate each ear canal for evaluation of potential distortions commonly found in clinical settings.

### 682-825 Includes

- (1) 3D Anthropomorphic Skull Phantom
- (1) ABS Cradle
- (1) Complimentary 90 day license for 5 successful analyzed scans using Distortion Check Software
- (1) SRS Frame Support Cups (Set of 4)
- (1) Custom Carry Case
- (1) User Guide
- (1) 48-Month Warranty

### Specifications

**Overall Dimensions:** 32 cm x 24 cm x 18 cm

### Materials

**Skull:** Plastic-based bone substitute

**Interstitial/Soft Tissues:** Water-base polymer

**Grid:** Reinforced nylon

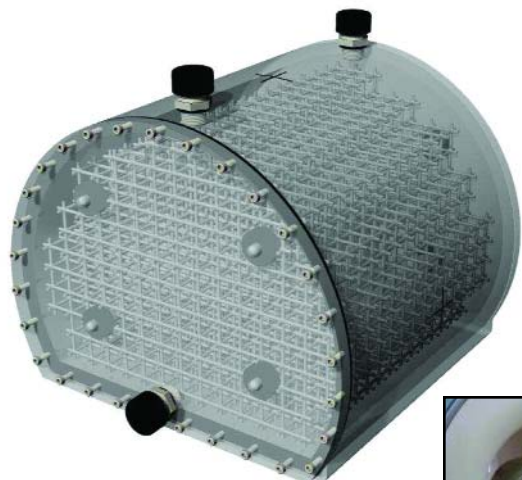
**Weight:** 12 lbs (5.5 kg)

Item	Description
682-825	MRI Distortion Phantom for SRS

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# MRI PRODUCTS - STRETCHER & ACC., PHANTOM

## LARGE FIELD MRI DISTORTION PHANTOM



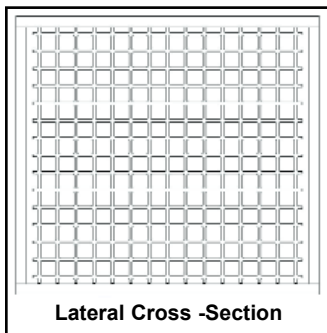
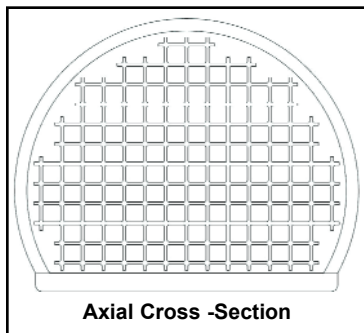
The phantom's 3D grid of large size and equal spacing in all three orthogonal dimensions makes it suitable for distortion QA of large bore MRI and CT scanning for distortion-free imaging. It can be filled with various signal-generating solutions for use in magnetic resonance imaging. Contrast of the grid-liquid interface varies under computed tomography depending on the liquid used for generating MRI background signal. When empty, the grid-air interface provides good contrast under CT. The phantom images well with all CT techniques and MRI sequences tested to date, including T1 weighted, T2 weighted, 3D Time of Flight, MPRAGE and CISS sequences.

The phantom is comprised of a leak-proof PMMA cylinder and measures 330 mm in diameter by 300 mm long. The entire volume is filled with a unique orthogonal 3D grid of 3 mm diameter rods to provide complete geometric data throughout the imaging volume. The phantom is marked for ease of alignment to positioning lasers and is designed for use with both curved and flat gantry tables.

Patient induced magnetic inhomogeneity occurs when a patient is placed in the scanner due to magnetic susceptibility, which causes the tendency of a material to magnetize in the presence of a magnetic field. Regions of abrupt change in tissue density or voids between tissue and air are prone to high magnetic susceptibility which disturbs the magnetic field. Distortions due to susceptibility and smaller distortions due to chemical shifts are better qualified by a phantom that presents such distortions caused throughout the entire field of view (FOV).

Phantoms with MR signals suspended in foam, PMMA or other plastics or phantoms with MR signals only at the phantom's outer boundaries mainly characterize only B0 and Gradient Inhomogeneity related distortions. Such distortions are typically addressed by manufacturer correction algorithms.

CIRS phantoms are filled entirely with 3D orthogonal grids surrounded by background signal generating liquids to mimic distortions due to susceptibility and chemical shifts that are most likely to occur when a patient is scanned. All the components of distortion are thereby observed in MRI images and taken into account



### ASSESS IMAGE DISTORTION IN LARGE-BORE MRI

- Large FOV distortion evaluation
- Unique orthogonal grid with equal 3D spacing
- Leak-proof design
- Sub-millimeter precision
- Easy integration and laser alignment
- Ground truth files for grid available in various digital formats
- 2152 control points
- Works with Distortion Check Software

The Large Field MRI Distortion Phantom is designed for assessment of magnetic resonance imaging distortion caused mainly by the nonlinearity of the magnetic gradients. It can also help quantify MRI image distortion due to chemical shifts and susceptibility due to density differences common in Diagnostic and RT treatment planning.

### 682-840 Includes

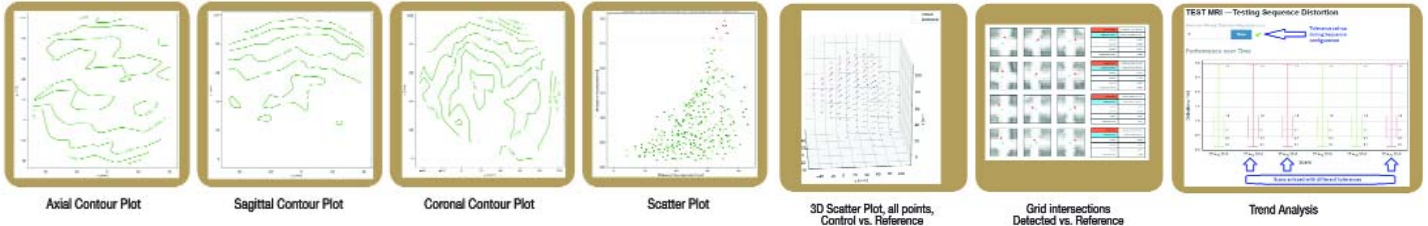
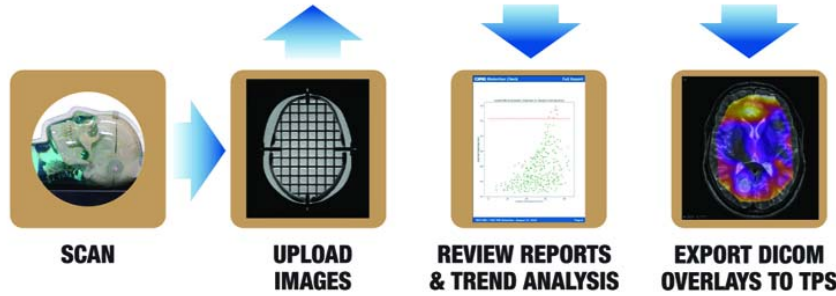
- (1) Large Field MRI Distortion Phantom
- (1) 3/4" garden hose filling tube (USA)
- (1) Complimentary 90 day license for 5 successful analyzed scans using Distortion Check Software
- (1) Foam-lined Carry Case
- (1) User Guide
- (1) 48-Month Warranty

### Specifications

**Overall Dimensions:** 30 cm L x 27.6 cm H x 33 cm Dia.  
**Material:** PMMA  
**Weight (Dry):** 17 lbs (7.7 kg)  
**Weight (Filled):** 62 lbs. (28.1 kg)

Item	Description
682-840	Large Field MRI Distortion Phantom

## DISTORTION CHECK SOFTWARE



- Quickly & automatically analyze complete MR data sets
- Unique grid phantoms provide physical control points through out entire 3D image volume
- Density of control points optimized to bring interpolation close to linearity
- CIRS materials simulate distortion due to susceptibility and chemical shifts typical to clinical patient scans
- Cloud based solution frees user of operating system and hardware constraints
- Online deployment facilitates collaboration and easy review and portability of results

- Simple, user friendly web interface
- Detect physical control points thru out the 3D image volume
- Web based pdf report in summary or detailed format to NEMA MS 12 standard recommendations.
- Output raw data or DICOM overlay files for use with 3rd party software
- Establish multiple user accounts with different permissions
- Easily analyze and track multiple machines, imaging sequences and phantoms
- Establish distortion tolerance thresholds specific to different imaging sequences
- Re-compute any scans acquired for different tolerance thresholds

Distortion Check is a cloud-based solution designed to quickly and automatically quantify distortion in MRI images. Used in conjunction with CIRS MRI Grid phantoms, the software provides the capability to quickly and accurately measure distortion through out the entire image volume.

Distortion Check Software is an online application. It does not require any installation on a user's PC. Once a User Account is created the software can be accessed from any device that is connected to internet.

After automatically detecting all grid intersections, the software registers either a CAD or CT scan ground truth to these MR detected control points. An interpolation is then performed to generate 3D distortion vector fields.

Distortion Check Software is a licensed product. The licensing of this product is based on the number of scans successfully analyzed by the end user within a period of time. For licensing purposes, a successful analyzed scan is defined as follows: more than 50% of the grid intersections are matched to a gold standard point for Item 682-825, The license will expire based on which terms of the license expire first (time or number of scans).

Results can be reported in a variety of output formats including scatter plots, contour plots, box and whisker plots and DICOM overlays that can be imported to TPS or other 3rd party software. The software algorithms will work with any grid configuration and CIRS employs proprietary 3D printing techniques that enable easy modification of grid phantoms to meet customer requirements.

Item #	Description	License or Scans
682-860	Distortion Check Software	2 years or 25
682-862	Distortion Check Software	2 years or 50
682-864	Distortion Check Software	2 years or 100
682-866	Distortion Check Software	2 years or 200
682-868	Distortion Check Software	2 years or 500

- 1) License is for time or number of scans successfully analyzed, whichever expires first.
- 2) Phantom serial number is Required

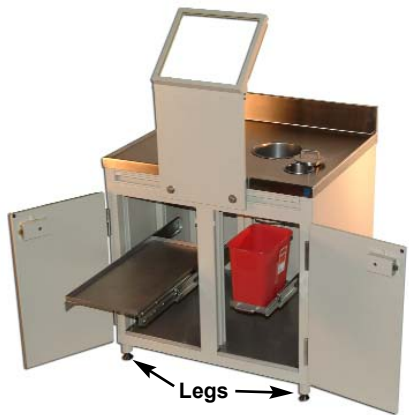
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## LEAD CABINET FOR NUCLEAR MEDICINE



955-036



955-037



955-037

The cabinet is 1/2" (1.27 cm) thick lead encased in steel, so there is no exposed lead. The work surface is stainless steel with a 5" (12.7 cm) tall backsplash and 1/2" (1.27 cm) beveled edge on the other three sides to prevent any spills from draining off the top. The vertical supports of the cabinet are steel filled with lead. There is a 4" (10.16 cm) diameter chute to dispose of used syringes into a Sharps container (not included) that sits on a sliding pullout shelf in the cabinet. The chute has a stainless steel encased 1/2" (1.27 cm) lead cover.

The unit includes a well for the dose calibrator well chamber.

The two stainless steel shelves are height adjustable and have a 5/8" (1.59 cm) spill lip on all four sides. A fixed shelf below the Sharps container does not pull out but is height adjustable. The other shelf can be pulled out 18" (45.7 cm) and is also height adjustable. The floor surface inside the cabinet is stainless steel.

The two doors on the cabinet open from center to 180°. Both are 1/2" (1.27 cm) lead encased in steel and have an L-handle with a key lock. The latching feature on the L-handle allows closing the door when it is locked. The doors have a 7/8" (2.2 cm) overlap on the cabinet openings.

The L-block is also made of 1/2" (1.27 cm) lead encased with steel and a steel framework around the 1/2" (1.27 cm) thick leaded glass. The viewing window is bent to a 45° angle from the front of the L-block. The L-block is attached to the cabinet with two bolts that screw into mounting plates that are adjustable left and right.

The cabinet is painted with tan textured paint except for the stainless work surface, shelves and inside cabinet floor.

Two base options are available. It can sit on a 3" (7.6 cm) steel frame base that provides a toe kick (Item 955-036) or it can have four (4) 3" (7.6 cm) high adjustable leveling legs (Item 955-037).

An optional Side Shield System is available for the top of the cabinet. The Side Shield System is 1/2" (1.27 cm) lead covered with stainless steel. It fits together using "L" brackets and vertical corner gussets (included).

### Specifications

#### Cabinet Dimensions

**Work Surface:** 36" L x 30" D x 36 1/8" H (91 x 76 x 91.8 cm)

**Top of Backsplash:** 41 1/8" H (104.5 cm)

**Cabinet Openings:** 14.25" W x 24.5" H (36.2 x 62.2 cm)

#### Shelf Sizes

**Container Shelf:** 5.5" W x 8.5" D x 15/16" H (14 x 21.6 x 2.4 cm)

**Pullout Shelf:** 12.25" W x 25.25" D x 5/8" H (31.1 x 64.1 x 1.6 cm)

**Fixed Shelf:** 13.75" W x 25.25" D x 5/8" H (35 x 64 x 1.6 cm)

**Well for Dose Calibrator:** 8.0" Dia. x 9.5" D (20.3 x 24 cm)

#### L-Block Dimensions

**Front Size:** 14.625" W x 18.5" H x 0.75" Thick (37.2 x 47 x 1.9 cm)

**Window Viewing Area:** 13.5" W x 12" H (34.3 x 30.5 cm)

**Overall Height:** 28.5" H (72.4 cm)

**Window Angle:** 45°

**Lead Glass Thickness:** 0.5" (1.27 cm)

**Lead Equivalency of Glass:** 1/8" (0.32 cm)

#### Optional Side Shield System

**Each Side:** 27" L x 18.5" H x 0.5" T (68.6 x 47 x 1.27 cm)

**Back:** 30" L x 18.5" H x 0.5" T (76.2 x 47 x 1.27 cm)

**Material:** 1/2" (1.27 cm) Lead covered with Stainless Steel and framed in stainless steel channels

Item #	Description	Lead Thickness	Size
955-036	Cabinet for Nuclear Medicine with 3" (7.6 cm) Steel Base	0.5" (1.27 cm)	36" L x 30" D x 41 1/8" H (91 x 76 x 104.5 cm)
955-037	Cabinet for Nuclear Medicine with Four 3" (7.6 cm) Legs	0.5" (1.27 cm)	36" L x 30" D x 41 1/8" H (91 x 76 x 104.5 cm)
995-012	Optional Side Shield System	0.5" (1.27 cm)	(2) 27" L x 18.5" H x 0.5" T (68.6 x 47 x 1.27 cm) (1) 30" L x 18.5" H x 0.5" T (76.2 x 47 x 1.27 cm)

## PET WORKSTATION



**L-Block sold separately**



**994-036**

### Options for PET Workstation

**Item 990-488:** 2" (5.08 cm) Thick lead L'Block with a 8" W x 8" L x 4" thick (20.3 x 20.3 x 10.2 cm) lead glass window.  
**L-Block Dimensions:** 14" W x 17.5" D x 24.75" H (35.6 x 44.5 x 63 cm)

**Item 994-036 and 994-036-1:** Stainless steel tray that holds the dose calibration display unit.

**Item 994-021:** Pair of steel channels that distribute the heavy weight of this workstation over a large floor area.

**Item 994-020-21:** 2.5" Thick (6.35 cm) Leaded Rotating Well Top Cover

### Specifications

#### Workstation:

**Overall Dimensions:** 27.75" W x 35.75" L x 61" H (70.5 x 90.8 x 155 cm)

**Table Top Dimensions:** 23.25" W x 31.25" L x 34.75" H (59 x 79 x 88 cm)

**Side/Back Wall Height:** 16" (40.6 cm)

**Color:** Durable tan textured polyurethane enamel paint

**Approximate Weight:** 2,650 lb (1205 kg)

**Note:** The workstation can be manufactured to fit other dose detector chambers. When placing an order please specify manufacturer of dose calibrator detector, model, outside diameter and height.

Item #	Description
994-020	PET Workstation w/ Drawer, Container Well & Side Shields
994-020-21	2.5" (6.35 cm) Thick Leaded Rotating Well Top Cover
994-021	Floor Channels for Weight Distribution - 2/Set
994-036	Tray for Dose Calibrator, 10.75" Square (27.3 cm)
994-036-1	Tray for Dose Calibrator, 12" Square (30.5 cm)
990-488	"L" Block - 2" Thick (5.08 cm) Lead
990-900	Stainless Steel Tray for "L" Block

The PET Workstation consists of a steel table with a drawer, lower shelf, container well, and side and back shields. The L-Block must be ordered separately.

The workstation table is made of 2" (5.08 cm) steel tubing. The sides and back walls are 2" (5.08 cm) thick lead bricks covered with steel panels on both sides. The four corner posts are filled with lead.

The container well is 19.5" (49.5 cm) from the front of the table and has 2.5" (6.35 cm) thick lead walls for the detector chamber to be placed into. The 2.5" (6.35 cm) leaded bottom of the container well rotates to accommodate the insertion of the detector chamber from the bottom. The container well bottom then rotates back and is bolted in place. The container well rises 4" (10.16 cm) above the table top and is 16" (40.64 cm) deep. The overall diameter of the container well is 13.5" (34.29) with an inside diameter of 7" (17.8 cm). This size container well accommodates the Capintec CRC®-15PET detector chamber.

The workstation has 4 heavy duty casters. The two rear casters are fixed and the two front casters are swivel and locking. Each caster is rated at 2,000 lb (909 kg).

## DUAL WORKSTATION

### with Lead Side Shields



**Lead Walls:** 2" thick (5.08 cm)

**Frame:** 2" (5.08 cm) steel tubing

**Overall Size:** 64" W x 36" D x 50.25" H (162.6 x 91.4 cm x 127.6)

**Side Shields:** 2" thick x 16 7/16" H (5.1 x 41.8 cm)

**Work Surfaces:** 28" W x 34" D (71.1 x 86.4 cm) and 30" W x 34" D (76.2 x 86.4 cm)

**Work Surface Height:** 34 1/8" (86.7 cm) from floor

**Drawer Inside Size:** 20" W x 20" D x 5" H (50.8 x 50.8 x 12.7 cm)

**Clearance Under Drawer to Bottom Shelf:** 15 1/8" (38.4 cm)

**Bottom Shelf:** 32" W x 36" D (81.2 x 91.4 cm), 9 5/8" (24.5 cm) from floor

**Casters:** Four rear fixed 6" (15.24 cm) diameter, two front swivel 6" (15.24 cm) diameter, two front swivel 6" (15.24 cm) diameter w/brakes

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 475 lb (216 kg)

Item #	Description
992-140	Dual Workstation with Lead Side Shields (Made from Items 992-138 and 992-139)
992-138	Workstation with 3 Side Shields
992-139	Workstation with 2 Side Shields

## STEEL TABLE



This steel table has smooth, round edges and the top shelf will support both a Storage Safe and a L-Block Shield (Item 990-488). The table has a locking storage drawer and a heavy duty lower shelf for storing radiation pigs and supplies. The support frame of the table is tubular steel with welded joints for maximum strength. The table is welded to four 6" (15.24 cm) diameter swivel locking casters rated at 1,200 pounds (545 kg) each.

### Specifications

**Dimensions:** 28" W x 36" D x 33.75" H (71.1 x 91.4 x 85.7 cm)  
**Inside Drawer Size:** 20" W x 20" D x 5" H (50.8 x 50.8 x 12.7 cm)  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 150 lb (68.2 kg)

Item #	Description
992-020	Steel Table with Drawer and Shelf

## STEEL TABLES



These Steel Tables are made with a 2" (5.08 cm) square steel tubing framework and Stainless Steel shelves. The two front legs have adjustable leveling feet. The two back legs are a fixed length.

Item	Steel Table, 2 Shelves
992-060	36" W x 24" D x 36" H (91.44 x 60.96 x 94.44 cm)
992-147	48" W x 24" D x 36" H (121.92 x 60.96 x 94.44 cm)

## CABINET 6mm (1/4") LEAD-LINED



The cabinet is made of 0.25" (6.37 mm) sheet lead and covered on both sides with steel. The doors are also 0.25" (6.37 mm) sheet lead covered with stainless steel and have a key lock handle on each door. The outside of the cabinet and the interior walls are painted with a tan textured polyurethane enamel paint. A toe kick at the bottom prevents anything from sliding underneath the cabinet.

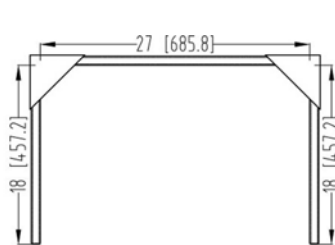
### Specifications

**Overall size:** 40" W x 24" D x 28" H (102 x 61 x 71 cm)  
**Finish:** Durable tan textured polyurethane enamel paint  
**Approximate weight:** 1200 lb (545.5 kg)

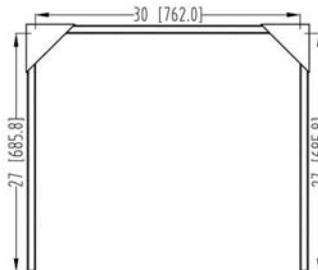
Item #	Description
955-041	Stainless Steel Covered Lead Cabinet

# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

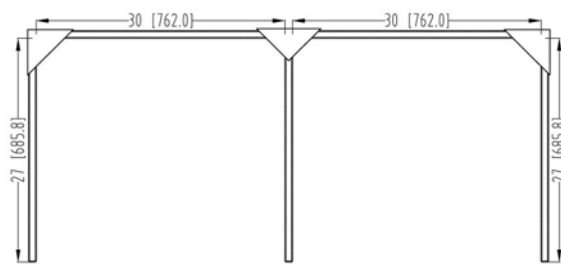
## STAINLESS STEEL COVERED SIDE SHIELD SYSTEMS FOR CABINET TOP OR TABLE



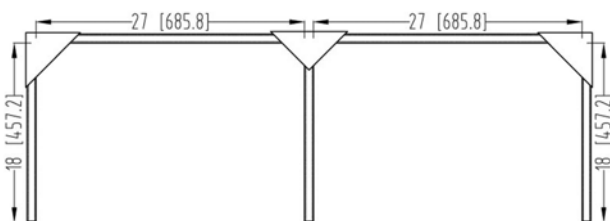
995-011



995-012



995-013



995-014

Side Shield Systems are available for the top of a cabinet, counter or table. The Side Shield Systems are 1/2" (1.27 cm) lead covered with stainless steel. It fits together using "L" brackets and vertical corner gussets (included).

**Material:** 1/2" (1.27 cm) Lead covered with Stainless Steel and framed in stainless steel channels

Item	Description	Lead Thickness	Dimensions	Weight
995-011	Side Shield System, Single	0.5" (1.27 cm)	Each Side: 18" L x 18.5" H x 0.5" T (45.7 x 47 x 1.27 cm) Back: 27" L x 18.5" H x 0.5" T (68.6 x 47 x 1.27 cm)	125 lb (57 kg)
995-012	Side Shield System, Single	0.5" (1.27 cm)	Each Side: 27" L x 18.5" H x 0.5" T (68.6 x 47 x 1.27 cm) Back: 30" L x 18.5" H x 0.5" T (76.2 x 47 x 1.27 cm)	355 lb (162 kg)
995-013	Side Shield System, Double	0.5" (1.27 cm)	Each Side: 27" L x 18.5" H x 0.5" T (68.6 x 47 x 1.27 cm) Each Back: 30" L x 18.5" H x 0.5" T (76.2 x 47 x 1.27 cm)	595 lb (271 kg)
995-014	Side Shield System, Double	0.5" (1.27 cm)	Each Side: 18" L x 18.5" H x 0.5" T (45.9 x 47 x 1.27 cm) Each Back: 27" L x 18.5" H x 0.5" T (68.6 x 47 x 1.27 cm)	475 lb (216 kg)

## L-BLOCK LEAD SHIELD

### With Wide View Window



Shown with Optional  
Stainless Steel Tray (Item 990-900)

The L-Block Lead Shield's tilted wide view leaded glass window provides easy viewing of the radiation loading area. 3" (7.6 cm) of lead on each side of the viewing window give maximum protection to the head. The 8" (20.3 cm) square window is made of 4" (10.2 cm) thick leaded glass that has a density of 5.2 g/cm<sup>3</sup>. The L-Block is made of sheet steel with 2" (5.08 cm) of lead shielding inside. Two holes are provided for lifting the unit.

### Specifications

**Leaded Glass Dim:** 8" Sq. x 4" T (20.3 x 10.2 cm)

**Lead Glass Density:** 5.2 g/cm<sup>3</sup>

Tenth Value Thickness (Cesium<sup>137</sup>) = 4.8 cm leaded glass

4" T (10.2 cm) leaded glass = 4 cm lead equivalence

**Overall Dim:** 14" W x 17 1/2" D x 24 3/4" H x 2" T

(35.6 x 44.5 x 62.9 x 5.08 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 450 lb (205 kg)

Item #	Description
990-488	L-Block Lead Shield
990-900	Stainless Steel Tray

## LEAD "L" BLOCK SHIELD

With Extra Wide View



The 1 1/2" (3.8 cm) thick Lead "L" Block Shield provides protection to the clinician when working with 511 KeV nuclides.

The face shielding is made of optically clear 12" W x 8" L x 2" thick (30.5 x 20.3 x 5.08 cm) lead glass, cantilevered for unimpaired viewing of the work area. The leaded glass has a density of 5.2 g/cm<sup>3</sup> to give maximum eye and face protection.

### Specifications

**Leaded Glass Dim:** 12" W x 8" H x 2" T (30.5 x 20.3 x 5.08 cm)

**Lead Glass Density:** 5.2 g/cm<sup>3</sup>

**Lead Glass:** 2 cm lead equivalent (<sup>137</sup>Cs energy)

**Lead Thickness:** 1 1/2" (3.8 cm)

**Lead Density:** 11.35 g/cm<sup>3</sup>

**Overall Dim:** 12 3/8" W x 13 1/2" D x 16 7/8" H (31.5 x 34.3 x 42.9 cm)

**Front Shield Dim:** 12 3/8" W x 11 1/8" H (31.5 x 28.3 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 210 lb (95.5 kg)

Item #	Description
989-415	Lead L-Block Shield

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## PET WASTE WELL



The PET Waste Well stores used syringes and vials used in PET applications until proper disposal.

The Waste Well has 2" (5.08 cm) thick lead brick walls covered with steel panels on the outside and inside. The bottom is lead covered with stainless steel. The frame of the waste well is 2" (5.08 cm) square steel tubing welded together.

**Optional:** Half cover made of stainless steel filled with lead. The cover has rollers that allow the user to easily roll the cover forward or backward using the handle.

**Note:** The Waste Well can be custom made to your specifications.

### Specifications

**Overall Dimensions:** 24" W x 24" L x 51.5" H (61 x 61 x 131 cm)

**Inside Well Dimensions:** 20" W x 20" L x 16" Deep (51 x 51 x 41 cm)

**Wall Thickness:** 2" (5.08 cm) Lead

**Weight:** Approx 1,250 lbs (569 kg)

**Color:** Durable tan textured polyurethane enamel paint.

Item #	Description	Lead Thickness
994-010	PET Waste Well	2" (5.08 cm) Lead Walls and 1/2" (1.27 cm) Lead Floor
994-011	Half Cover for PET Waste Well	1/2" (1.27 cm) Lead
994-012	PET Waste Well	2" (5.08 cm) Lead Walls and 1" (2.54 cm) Lead Floor
994-013	Half Cover for PET Waste Well	1" (2.54 cm) Lead

## ADJUSTABLE HEIGHT ROLLING RADIATION SHIELD FOR PET

2" (5.08 cm) Thick Lead



- Only adjustable shield with 36" W x 24" H (91 x 61 cm) lead
- Easy-to-adjust

The Adjustable Lead Shield can be moved over a 9" (23 cm) height range by using a screw jack. The jack is operated by a hand crank or a flat blade (both included) for a 3/8" Drill. The shield is set in a metal frame and mounted on a base with four 6" (15.24 cm) diameter swivel, locking, ball bearing casters that provide easy mobility.

### Specifications

**Lead Size:** 36" W x 24" H x 2" T (91 x 61 x 5.08 cm)

**Overall Size:** 42.5" W x 24" D (108 x 61 cm)

**Base Height:** 10.5" (26.7 cm)

**Casters:** Four 6" (15.24 cm) dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 850 lb (387 kg)

Item #	Description
964-030	Adjustable Height Rolling Radiation Shield Height Adjusts 39" to 48" (99 to 122 cm)

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## INTERLOCKING RADIATION SHIELDS FOR PET

2" (5.08 cm) Thick Lead

These radiation shields for PET are made of 2" (5.08 cm) thick lead with lead-filled posts. The base of each shield has four 6" (15.24 cm) diameter swivel locking ball bearing casters. The base of the bed end shield is higher for placement over the base of the side shield. This allows the shields to abut to each other. Each shield has handles on both sides and both ends.



### Specifications

**Lead Size:** 36" W x 24" H x 2" T (91 x 61 x 5.08 cm)

**Overall Size:** 40" W x 45" H x 24" D (102 x 114 x 61 cm)

**Casters:** Four 6" (15.24 cm) diameter swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Approximate Weight:** 850 lb (387 kg)

Item #	Description
964-340	Interlocking Bed End Shield 40" W x 40" H x 24" D (101.96 x 101.96 x 61.18 cm)
964-342	Interlocking Bed End Shield 40" W x 42" H x 24" D (101.96 x 107.06 x 61.18 cm)
964-345	Interlocking Bed End Shield 40" W x 45" H x 24" D (101.96 x 114.71 x 61.18 cm)
964-348	Interlocking Bed End Shield 40" W x 48" H x 24" D (101.96 x 122.35 x 61.18 cm)
964-355	Interlocking Bed End Shield 40" W x 55" H x 24" D (101.96 x 140.2 x 61.18 cm)
964-930	Optional Two Lead-Filled Posts
964-940	Optional Shield Interlock, 1.75" (4.5cm) Lead Thickness

## RADIATION SHIELDS FOR PET

2" (5.08 cm) Thick Lead

These radiation shields for PET are made of 2" (5.08 cm) thick lead with lead-filled posts. The base of each shield has four 6" (15.24 cm) diameter swivel locking ball bearing casters.



### Specifications

**Lead Size:** 36" W x 24" H x 2" T (91 x 61 x 5.08 cm)

**Base Height:** 10.5" (26.7 cm)

**Casters:** Four 6" (15.24 cm) dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Approximate Weight:** 850 lb (387 kg)

Item #	Description
964-240	Fixed Rolling Radiation Shield 40" W x 40" H x 24" D (101.6 x 101.6 x 61 cm)
964-242	Fixed Rolling Radiation Shield 40" W x 42" H x 24" D (101.6 x 106.7 x 61 cm)
964-245	Fixed Rolling Radiation Shield 40" W x 45" H x 24" D (101.6 x 114.3 x 61 cm)
964-248	Fixed Rolling Radiation Shield 40" W x 48" H x 24" D (101.6 x 121.9 x 61 cm)
964-255	Fixed Rolling Radiation Shield 40" W x 55" H x 30" D (101.6 x 139.7 x 76 cm)
964-940	Optional Shield Interlock, 1.75" (4.5cm) Lead Thickness

Custom Size Shields Available

## ABSORBENT PADS FOR PET SHIPPING SYSTEMS



Absorbent Sheets for Nuclear Medicine PET Shipping Systems.

These sheets can be cut with scissors for size. Material is layered for thickness or use individually to make thinner separate layers.

### Specifications

**Size:** 10" W x 13" L

Item #	Description
994-731	Absorbent Pads f/ PET Shipping Systems,100/Pkg

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# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## LEAD LINED STORAGE CONTAINER



The Lead Lined Storage Container can be used to store radioactive materials that require lead shielding of 1/8" (0.3 cm) or less. The container is made of steel and has 1/8" (0.3 cm) thick lead on all sides, top and bottom. Two latches secure the lid shut and allow for the use of locks for security. The container has a bail handle on the lid for lifting the lid and two bail handles on the sides to carry the container.

### Specifications

**Material:** Steel and 1/8" (0.3 cm) thick lead  
**Inside Dimension:** 9.5" L x 9.5" W x 9.5" H (24.1 x 24.1 x 24.1 cm)  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 44 lb (20 kg)

Item #	Description
929-200	Lead Lined Storage Container

## UNIVERSAL 511 T-VIAL SHIELD



The Universal 511 "T" Vial Shield is made entirely of Tungsten to provide the best protection for the user. The shield offers 1" (2.54 cm) lead equivalent on all sides. "T" lifting handle is removable. The Universal 511 "T" Vial Shield holds 10, 20 and 30 cc vials.

### Specifications

**Dimensions:** 3.1" Dia. x 4.7" H (8 x 12 cm)  
**Weight:** 16 lb (7 kg)

Item #	Description
994-041	Universal 511 "T" Vial Shield - 10, 20 and 30 cc Vials

## PIG - 30 AND PIG - 50



Pig 30 inside Pig 50

These lead Pigs for PET store vials of radiotracers for daily use, ensuring staff safety and reducing background levels. Built with 2.38" (60 mm) lead shielding. Pig-30 holds vials up to 30 ml; PIG-50 holds vials up to 50 ml.

### Specifications

**Item 994-066 PIG-30**  
**O.D.:** 6.4" dia x 8" H (16 x 20 cm)  
**I.D.:** 1.65" dia x 3" H (4.2 x 7.6 cm)  
**Weight:** 109 lb (50 kg)

**Item 994-068 PIG-50**  
**O.D.:** 6.75" dia x 9.75" H (17 x 25 cm)  
**I.D.:** 2.0" dia x 5" H (5.08 x 12.7 cm)  
**Weight:** 148 lb (68 kg)

Item #	Description
994-066	PIG - 30
994-068	PIG - 50

## ROTUND LEAD CONTAINER 1" (2.54 cm) Lead Wall



The Rotund Container with 1" thick (2.54 cm) Lead Wall, can be used to store syringes or vials that contain or have residue radiopharmaceuticals. This container is for use in nuclear medicine and PET departments. The container has a 1" (2.54 cm) lead wall with a 4" (10.16 cm) inside diameter. The lid has a 1 1/16" x 4" dia. (2.7 x 10.2 cm) center that protrudes into the container which prevents the lid from sliding and firmly seats the lid on the container.

### Specifications

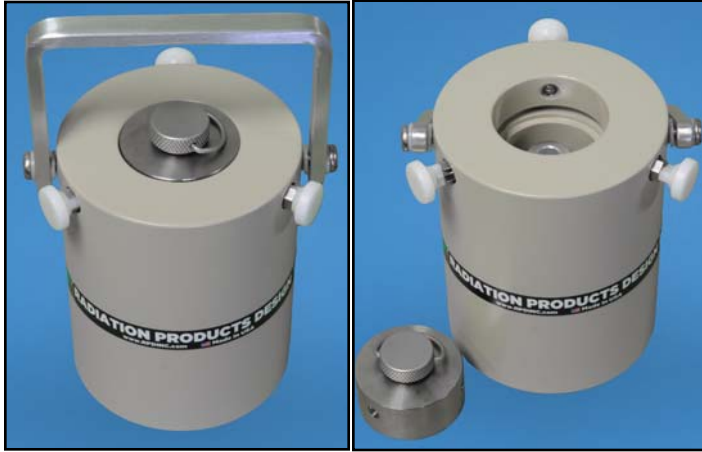
**Inside Dimensions:** 4" dia. x 5.5" D (10.2 x 14 cm)  
**Outside Dimensions:** 6" dia. x 7.5" H (15 x 19 cm), not including handle  
**Lead Wall:** 1" thick (2.54 cm)  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 60 lb (27.3 kg)

**Note:** The Rotund container can be custom made to any size per customer's specifications. Please call Radiation Products Design for more information on custom sizes.

Item #	Description
994-070	Rotund Lead Container

# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## CONTAINER LEAD AND TOP TUNGSTEN, 50cc VIAL, 11 GA ACCESS



The Lead Shielded Container with Tungsten Cover was designed to hold radioactive isotopes in vials up to 50cc. In the center of the tungsten cover is a needle access channel to the vial. A Stainless Steel screw knob with a silicone O-ring seal and a tungsten rod plugs the needle access channel when not in use. When the tungsten cover is inserted into the container an O-ring seals the cover. The lead container has a foldable handle to make it easier to carry or take in and out of a Cart.

The container is made of 1 1/8" (2.9cm) thick lead (Density: 11 g/cm<sup>3</sup>) with a drop in 1" (2.54cm) thick tungsten (Density: 17 g/cm<sup>3</sup>) cover that is secured using three spring plungers that go into the tungsten cover.

The vial cavity of the container includes a 1/8" (0.3cm) thick foam on the bottom to protect the vial.

### Specifications

**Lead Thickness:** 1 1/8" (2.85cm)

**Lead Density:** 11 g/cm<sup>3</sup>

**Tungsten Thickness:** 1"

**Tungsten Density:** 17 g/cm<sup>3</sup>

**Inside Container Size:** 1.75" Dia. X 3.062" Deep (4.5cm x 7.8cm)

**Outside Container Size:** 4.050" Dia. X 5.25" H (10.3cm x 13.3cm)

**Finish:** Durable tan polyurethane enamel paint

**Weight:** 33 lb (15kg)

### Optional Items

**Item #949-523:** DOT Shipping Container.

**Item #949-500:** Lead Shielded Cart w/ Cover

The Shielded Cart w/ Cover is designed to transport vial pigs used with PET radionuclides. This cart will accommodate the following items: 994-205 (30ml Vial Pig).



949-523



949-500

Item #	Description
949-524	Container Lead & Top Tungsten, 50cc Vial, 11 ga Access
949-523	DOT Shipping Container
949-500	Shielded Cart w/ Cover, 1" Lead, 5.5" ID. 8.5" Depth

## SPATIAL REGISTRATION SOURCE HOLDERS



994-248 - Top View

994-248 - Bottom View



994-2481

The Spatial Registration Source Holders are designed to hold a 10 cc or 3 cc vial of radionuclide to test the spatial registration of a nuclear medicine camera. The holders are made of lead and have a 5mm diameter hole at the bottom of each holder. Two thumb screws tighten the cover.

### Specifications

#### Item 994-248 for 10cc Vial

**Overall Size:** 5.3 cm diameter x 9.5 cm H

**Cavity Size:** 2.8 cm diameter x 5.7 cm D

**Cover thickness:** 1.27 cm

**Bottom thickness:** 2.54 cm

**Material:** Lead

**Finish:** Tan textured polyurethane paint

#### Item 994-2481 for 3cc Vial

**Overall Size:** 4.5 cm diameter x 7.9 cm H

**Cavity Size:** 1.8 cm diameter x 4.0 cm D

**Cover thickness:** 1.27 cm

**Bottom thickness:** 2.54 cm

**Material:** Lead

**Finish:** Tan textured polyurethane paint

Item	Description
994-248	Spatial Registration Source Holder for 10cc Vial
994-2481	Spatial Registration Source Holder for 3cc Vial

## COUNT RATE CALIBRATOR SOURCE HOLDER



Shown with Optional Handle  
(Item 994-249-5)



This is a source holder for multiple spatial window registration measurements. The holder and cover are made of 1" lead painted with a smooth tan polyurethane. Three (3) copper plates are included with the source holder. One copper plate is 1.59 mm thick and two (2) plates are 2.38 mm thick. Two (2) Pan head screws hold the copper plates and cover on the holder. An allen wrench is also included.

The handle is optional and ordered separately.

### Specifications

**Overall Dimensions:** 3.14" Diameter x 4.2" H  
(7.98 cm diameter x 10.67 cm H)

**Inside Hole dimensions:** 1.075" Diameter x 2.2" H  
(2.73 cm diameter x 5.59 cm H)

**Lead Thickness:** 1" Lead

**Finish:** Tan polyurethane paint

#### Copper Plates:

**One (1) Plate:** 7.98 cm diameter x 1.59 mm T

**Two (2) Plates:** 7.98 cm diameter x 2.38 mm T

**Weight:** 12.8 lb (6 kg)

Item	Description
994-249	Count Rate Calibrator - Source Holder
994-249-5	Optional Handle

## LEAD STORAGE CONTAINER FOR GE-68 PHANTOM 1" (2.54 cm) Lead Walls



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The Lead Storage container was designed as a storage holder for the Precision Ge-68 Phantom for PET camera quality assurance.

The container has an outside wall of 1/4" (.64 cm) steel with 1" (2.54 cm) lead shielding on the inside and the chamfer top allows for the cover to sit snugly on top. Two (2) U-handles welded to the side of the container allow for easy movement. The cover is 1" (2.54 cm) lead with a chamfer bottom to fit into the container. Two (2) U-handles welded to the cover allow for easy removal. The container is welded to the 16" (40.6 cm) diameter steel base plate. Easy mobility is achieved by the five (5) 3" (7.6 cm) non-locking swivel casters that are bolted to the base plate.

Optional: An optional "Stay Anywhere" Handle can be welded to the base plate of Item 994-073. The "Stay Anywhere Handle" is friction held in any position and allows for easy steering and pulling.

### Specifications

**Overall Dimensions:** 16" Dia. x 19 1/4" H (49 x 40.6 cm)

#### Container Dimensions

**Outside:** 12" Dia. x 13" H (30.5 x 33 cm)

**Inside:** 9 5/16" Dia. x 11 1/2" Deep (23.6 x 29.2 cm)

**Container Wall Material:** 1" Thick Lead (2.54 cm) and 1/4" Steel (.64 cm)

**Container Cover:** 1" Thick Lead (2.54 cm)

**Container Bottom:** 1" Thick Lead (2.54 cm)

**Base Plate:** 16" Dia. x 1/4" Thick Steel (40.6 x .64 cm)

**Casters:** Five (5) 3" (7.6 cm) Swivel casters, non-locking

**Finish:** Outside-Tan Textured Polyurethane

Inside-Tan Smooth Polyurethane

**Weight:** 288 lb (131 kg)

Item #	Description
994-073	Lead Storage Container for GE-68 Phantom
950-020	Optional "Stay Anywhere" Handle System

# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## 1" LEAD SHIELDED CART WITH COVER FOR 30 ml PET VIALS



994-205



- Lockable

The 1" lead shielded cart with cover is designed to transport the 30 ml vial pig (Item 994-205) used with PET radionuclides.

The cart container is constructed of 0.25" (0.6 cm) thick steel and shielded with 1" (2.54 cm) lead. The cover is also steel and has a 1" (2.54 cm) thickness of lead with a bayonet latch to hold the cover tight on the cart container. The cart container and cover can be locked using the provided pad lock. The cart has two 8" (20 cm) diameter, roller bearing rear wheels and a 5" (13 cm) diameter, swivel, locking ball bearing front caster. The 36" (91.5 cm) long 'Stay Anywhere Handle' is friction held at any position.

An optional removable paper and forceps holder (Item 949-312) attaches to the cart on the rear axle.

This cart will accommodate Item 994-205, the 30 ml Vial Pig

### Specifications

**Inside Cart Container Size:** 4.25" dia. x 8.0" D (10.8 x 20.3 cm)  
**Outside Cart Container Size:** 7.0" dia. x 9.32" D (17.8 x 23.7 cm)  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 133 lb (61 kg)

### Item 994-205 30 ml Vial Pig, 1" (2.54 cm) Lead

**Outside Dimensions:** 4.15" Dia. x 6.63" H (10.5 x 16.8 cm)  
**Inside Dimensions:** 1.51" Dia. x 2.76" H (3.8 x 7 cm)  
**Lead Shielding Sides and Bottom:** 1" thick (2.5 cm)  
**Lead Shielding Top:** 1.75" (4.4 cm)  
**Weight:** 21.3 lb (9.7 kg)

Item #	Description
949-320	1" Lead Shielded Cart With Cover for 30 ml PET Vials
994-205	30 ml Vial Pig, 1" (2.54 cm) Lead
949-312	Optional Paper Forceps Holder for Item 949-320

## WIRE SECURITY SEAL PET SHIPPING SYSTEM



### Specifications

**Material:** Lead

Item #	Description
994-733	Wire Security Seal f/ PET Shipping System- 25/Pkg

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# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## 511 TRANSPORT CONTAINER FOR 30 CC VIAL AND TRANSPORT CART



994-060



994-059

### Item 994-060 511 Transport Container for 30 cc Vial

- Fits in Transport Cart, Item 994-059
- Designed with over 1.5" (3.8 cm) of lead shielding
- Lift rings for easy removal of lid
- Slotted handle fastens to secure top

The 511 Transport Container for 30 cc vial of 511 emitters is designed to fit into the Transport Cart (Item 994-059). The Transport Cart will accommodate two (2) 511 Transport Containers.

### Specifications

- **Inside Dimensions:** 1.5" Dia. x 3" D (3.8 x 7.6 cm)
- **Outside Dimensions:** 5" Dia x 6.5" H (13 x 16.5 cm)

### Item 994-059 Transport Cart

- Long, "Stay Anywhere" handle
- Low center of gravity for stability
- Will fit in automobile trunk
- Locking front caster
- Container Box Sizes are 6" square

The High Radiation Transport Cart is a safe way to transport heavy lead containers within your facility without risk of the cart turning over or struggling with a container too heavy to carry safely. The cart has two sections that measure 6" W x 6 1/8" L with three sides that are 3 5/8" High. To handle weighty loads the unit has heavy duty roller bearing rear wheels and a locking front caster. The "Stay Anywhere" handle is held by friction in any position. Weighing only 36 pounds (16.4 kg) and with a small footprint, the unit is easily lifted in and out of a vehicle and stored in a small space.

### Overall Transport Cart Dimensions (without handle):

12.5" W x 9.5" D x 7.9" H

Item #	Description
994-060	511 Transport Container for 30 cc Vial
994-059	Transport Cart for Radiation Container 994-060

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## 511 C-TEC™ SYRINGE SHIELDS



This special Syringe Shield is manufactured to provide shielding for 511 keV nuclides. The 511 Syringe Shield is made of Tungsten with a 0.5" (12.7 mm) lead equivalency.

It has a viewing area of 0.75" (19 mm) thick lead glass surrounded by a rubber grommet to prevent damage to the glass. Fluorescent gold glass covers the interior of the syringe shield for exceptional visibility of the syringe contents.

Item #	Description
994-045	511 C-Tec™ Syringe Shields, 5 cc
994-046	511 C-Tec™ Syringe Shields, 10 cc
994-047	511 C-Tec™ Syringe Shields, 20 cc

## 511 DOSE-DRAWING SYRINGE SHIELDS



The 511 Dose Drawing Syringe Shields are constructed with the same featured shielding as the 511 C-Tec™ Syringe Shields. The needle end of the syringe shield has a Tungsten disc that protects the user's hands during the dose drawing procedure.

There are 2 pins in the end disc that secure the shield to the Drawing Station. This allows the user to withdraw a dose using only one hand.

Item #	Description
994-050	511 Dose Drawing Syringe Shield - 5 cc
994-051	511 Dose Drawing Syringe Shield - 10 cc
994-052	511 Dose Drawing Syringe Shield - 20 cc

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## PET STAINLESS STEEL SYRINGE CARRIER

Lead Lined With Handle

- **Constructed of Stainless Steel Inside and Out**
- **All Lead is Enclosed by Stainless Steel, Not Painted**

The PET Syringe Carrier is designed to store and transport syringes or vials of PET radionuclides. The top, bottom and sides are 1/4" thick (0.64 cm) lead. The ends are 1/2" thick (1.27 cm) lead. This unit is constructed of stainless steel **inside** and **out**, with **ALL** lead enclosed, not painted. The double thickness shielding at the ends provides increased protection during transport of a filled syringe with a syringe shield. The lid opens 180° for easy access. There are four (4) rubber feet attached to the bottom of the carrier.

**Note:** Some Manufacturers just paint the lead.

### Specifications

**Overall Size with Handle:**

10.9" L x 3.4" W x 6.7" H (27.7 x 8.6 x 17 cm)

**Carrier Size:** 10.35" L x 2.9" W x 2.76" H (26.3 x 7.4 x 7 cm)

**Inside Dim:** 9" L x 2" W x 2" H (22.9 x 5.1 x 5.1 cm)

**Material:** Lead Enclosed with Stainless Steel

**Lead Shielding Top, Bottom and Sides:** 1/4" T (0.64 cm)

**Lead Shielding Ends:** 1/2" T (1.3 cm)

**Weight:** 16 lb (7.3 kg)



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Item #	Description
994-065	PET Stainless Steel Syringe Carrier



# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## SHARPS CONTAINER SHIELD, 1/8" LEAD SHIELDED WITH KEY LOCK



929-150 shown with 929-1502



929-150 shown with 929-1502

The Sharps Container Shield is used in facilities that generate low-energy radiation waste.

The interior of the container is constructed of .063" steel (1.6 mm) and .125" lead (3 mm). The top front access door is spring-loaded and has a magnetic catch to ensure it is securely closed. Specially designed interior shielding around the access door protects the user from the radioactive contents in the container even while open. The convenient swing side opening door with key lock allows easy access to empty the decayed contents in the 3 Gallon Red Plastic Container with Counterbalance Lid. (Item No. 929-1502). Sleek and sturdy, the exterior is constructed of steel, with a textured painted finish.

### Item 929-150 Includes

- (1) Sharps Container Shield
- (1) 3 Gallon Red Plastic Container with Counterbalance Lid (Item No. 929-1502)
- (2) Door Lock keys
- (1) Caution Radioactive Label
- (1) Biohazard Label

### Specifications

**Shielding:** 0.125" Lead (3mm)

**Overall Dimensions:** 15" W x 8.5" D x 19" H (38 x 21.6 x 48.3 cm)

**Door Opening:** 9" W x 3.875" H (22.8 x 9.8 cm)

**Weight:** 83 lb (37.6 kg)

Item #	Description
929-150	Sharps Container Shield, 1/8" Lead & Key Lock

## SHARPSAFETY™ CONTAINERS FOR ITEM 929-150



929-1501



929-1502

SharpSafety™ Sharps containers in clear or red with counterbalance Lid.

### Specifications

**Size:** 3 gallon

**Overall dimensions:** 13.75" W x 6" D x 16.5" H

Item #	Description
929-1501	SharpSafety™ Container, Clear
929-1502	SharpSafety™ Container, Red

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# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## STORAGE CONTAINER, SHIELDED, 1/8" THICK LEAD AND LOCKABLE



The Lead Shielded Storage Container can be used to store radioactive materials that require lead shielding of 1/8" (0.3 cm) or less. The container is made of .063" steel (1.6 mm) and .125" lead (3 mm) on all sides and door. Convenient swing side opening door with key lock allows easy access to empty decayed contents.

The exterior is constructed of steel, with a textured painted finish.

Item 929-110 Includes

- (1) Storage Container
- (2) Door Lock keys
- (1) Biohazard Label

### Specifications

**Material:** 16ga Steel and 1/8" (0.3 cm) thick lead

**Outside Dimension:** 11.8" x 11.8" x 11.8" (30 x 30 x 30 cm)

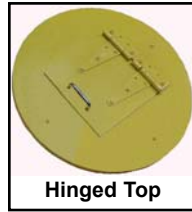
**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 65 lb (29.48 kg)

Item #	Description
929-110	Storage Container, Shielded, 1/8" Thick Lead & Lockable

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## LEAD-LINED DRUMS (STEEL)



Hinged Top

- Free - wheeling mobility using dolly
- Completely shielded with 1/8" or 1/4" lead
- Hinged or Solid top
- Available in 15, 30 or 55 gallon sizes

Add convenience and total reliability to your radioactive waste disposal. This 1/8" or 1/4" lead shielded drum provides safe handling and storage of radioactive waste material. This lead-lined steel drum is lined with 1/8" or 1/4" of overlapping lead sheets to provide shielding in all directions. The removable lead-lined overlapping top is available with a hinged or solid top. The hinged top opens over an 8" x 8" access hole in the drum top. The outside of the drum is painted yellow. Two (2) drums can be used for a rotation system, one for current use and one for decaying material.

### Optional Accessories

**Items 929-518, 929-538 and 929-558:** For ease of moving an optional 4-wheel dolly is available for each size of lead-lined drum.

**Items 929-519, 929-539 and 929-559:** Also available are optional size specific poly bags for lining the drums for ease of waste removal.

### Specifications

**Lead Walls:** 1/8" thick or 1/4" thick

**Finish:** Yellow

**Inner Dimensions (15 gal):** 12 7/8" diameter x 22 1/2" tall  
(56.85 kg): 32.7 cm diameter x 57.15 cm tall

**Inner Dimensions (30 gal):** 17 1/2" diameter x 26 7/16" tall  
(113.7 kg): 44.45 cm diameter x 67.15 cm tall

**Inner Dimensions (55 gal):** 21 3/8" diameter x 32 5/8" tall  
(208.45 kg): 54.29 cm diameter x 82.87 cm tall

### Weights (empty):

929-510 & 929-516: Approximately 85 lbs (38.55 kg)

929-511 & 929-517: Approximately 150 lbs (68.03 kg)

929-530 & 929-536: Approximately 159 lbs (72.12 kg)

929-531 & 929-537: Approximately 320 lbs (145.15 kg)

929-550 & 929-556: Approximately 200 lbs (90.71 kg)

929-551 & 929-557: Approximately 375 lbs (170. kg)

Description	15 Gallon	30 Gallon	55 Gallon
1/8" Pb Hinged Top	929-510	929-530	929-550
1/4" Pb Hinged Top	929-511	929-531	929-551
1/8" Pb Solid Top	929-516	929-536	929-556
1/4" Pb Solid Top	929-517	929-537	929-557
Dolly	929-518	929-538	929-558
Poly Bag	929-519	929-539	929-559

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# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## MULTI-MODALITY MARKERS



- No tissue indentation
- No artifacts
- Clear, accurate reference point identification
- Visible in all modalities
- Does not melt or leak
- Size and shape are ideal for small area
- Disposable

The Multi-Modality Markers provide a clear and accurate reference point on any type of scan. Made of a hydrogel component with a medical grade adhesive, they appear as a bright object on CT, MRI, nuclear medicine, PET and x-Ray scans and can be seen on all MRI sequences. These versatile markers attach securely and detach easily. Our Radiology/Radiation Therapy Marker has an inner center hole that permits hypodermic needle passage, while our Nuclear Med/PET Marker has a well-used for injecting a radionuclide with a conventional hypodermic needle.

**Item 462-029** Multi-Modality Markers, Radiation/Radiology have a 2 mm inner center hole for hypodermic needle passage.

**Item 462-030** MultiModality Markers for NucMed/PET have a Liquid-containing center well for injection of short-life radionuclide.

**Item 462-031** MultiModality Markers for MRI/CT are a 15mm disc shaped marker.

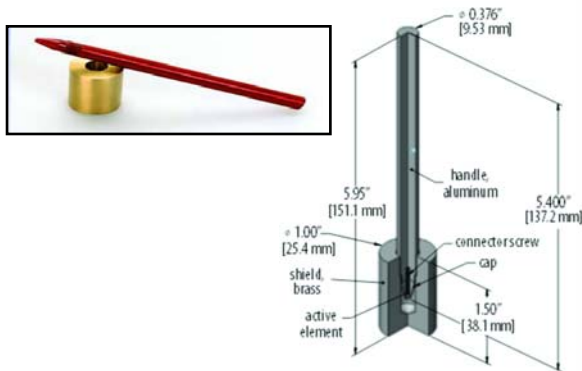
### Specifications

- 15mm outer diameter
- 3.5mm thick
- 50 markers per jar

Item #	Description	Quantity
462-029	Multi-Modality Markers, Radiation/Radiology	50
462-030	Multi-Modality Markers, Nuc Med/PET	50
462-031	Multi-Modality Markers, MRI/CT	50

## PEN POINT MARKERS

Written Verification of Radioactive Materials License is Required When Placing an Order



The Pen Point Marker is used to mark a point or region of interest during a camera study. The Pen Point Marker contains Co-57 in a resin matrix at the end of a 5.4" (13.7 cm) anodized aluminum rod. The pen-shaped rod screws into a brass cap which shields the active point. The Pen Point Marker is used in tracing the outlines of anatomical features on a patient. The trace appears almost instantly on the camera display. Contained activity is supplied as a nominal value  $\pm 15\%$ .

Item #	Nuclide	Activity ( $\mu\text{Ci}$ )	Activity (MBq)
680-260	Co-57	100	3.7
680-265	Co-57	200	7.4
680-268	Co-57	250	9.25

## FEATHERLITE™ FLOOD SOURCE

NRC Radioactive Materials License Required



- FeatherLite™ Co-57 flood sources consist of cobalt chloride uniformly dispersed onto a thin substrate which is then placed in an ABS encapsulation and ultrasonically welded.
- FeatherLite™ is even easier to handle saving strain on your back.
- Manufactured according to the following specifications:  $CV \leq 1.0\%$   $INU \leq 3.6\%$ .
- Many circular and rectangular flood sources are in stock and ready for fast delivery.
- Each source is carefully measured for activity and analyzed to ensure a homogenous distribution with a standard deviation of less than 1%.
- All sources are shipped with a certificate of calibration that highlights specifications of the flood source.
- Flood Sources are available with or without a Lead Lined Case.
- Lead Line Case is an additional cost. If a new case is not needed the source will ship in a 6-sided lead-lined cardboard box.

- “Large Field of View” Sources marked with an \* are shipped with the new ProKase or Pb Shipper.
- A Return Kit is provided at No Charge for your spent source “One for One”. Spent sources must be returned within 6 months of receipt of the new source.

Item	FeatherLite™ Co-57 Flood Source
680-500	*16.5" x 24", For Millenium MPR, VG & MG, GE Hawkeye, Infinia, Myosite, Philips Argus, Forte, Skylight, Symbia & Siemens E-Cam, Optima NM/CT 640 <b>Specify Activity:</b> 5 mCi, 10 mCi, 15 mCi, or 20 mCi
680-505	*14" x 18", For SMV-DST, Multispect 3, Millenium MPS & DSTi/Dsi <b>Specify Activity:</b> 5 mCi, 10 mCi, 15 mCi, or 20 mCi
680-510	10" x 16", For CardioMD, Siemens C-Cam, GE Ventri & GE Optima <b>Specify Activity:</b> 5 mCi, 7.5 mCi or 10 mCi
680-515	10" x 10", For Digirad Cardius, Dilon & GVI Clear Vision <b>Specify Activity:</b> 5 mCi or 10 mCi
680-520	*16.6" x 13.2", For Digirad Ergo <b>Activity:</b> 10 mCi
680-525	*18.5" Round, For GE Starcam XCT, ACT, Adac ARC 3000, Cirrus, Siemens Orbiter <b>Specify Activity:</b> 5 mCi or 10 mCi
680-530	10" x 10", For GE Discovery GE530c, NM/CT570 <b>Activity:</b> 20 mCi
<b>ProKase or Lead-Lined Case is additional</b>	

## PERFLEXION™ FLEXIBLE CO-57 FLOOD SOURCES

NRC Radioactive Materials License Required



- Perflexion flood source eliminates bulk and weight with its unique flexible design and tungsten composite WolfGuard™ shield.
- Perflexion has superior source uniformity, low impurities, and excellent durability.
- Perflexion is the world's only flexible flood source.
- Perflexion lays flat for calibration use, but rolls into a compact cylinder for storage.
- Perflexion provides the most convenient, ergonomic flood source and case with optimum shielding protection.

- Perflexion can be folded, bent, crushed and pulled without the material deforming, damaging, creasing, cracking, flaking or tearing over time.
- Perflexion polymer “memory” ensures that the source will return to flatness even after being stored in a rolled configuration.
- Lightest weight—weighs less than 29 lbs including the tungsten shield and hard case.
- Smallest form factor—source rolls to fit in a 6"x6"x22" tube for convenient storage
- Best shielding—5-10x better than lead cases
- A Return Kit is provided at No Charge for your spent source “One for One”. Spent sources must be returned within 6 months of receipt of the new source.

Item	Perflexion Co-57 Flood Source
680-540	9" x 9" Square, forGVI Clear Vision, <b>Activity:</b> 10 mCi
680-545	10.5" x 16", For CardioMD, Siemens C-Cam, GE Ventri & GE Optima <b>Specify Activity:</b> 5 mCi, 7.5 mCi or 10 mCi
680-550	16.5" x 24", For Millenium MPR, VG & MG, GE Hawkeye, Infinia, Myosite, Philips Argus, Forte, Skylight, Symbia & Siemens E-Cam, <b>Specify Activity:</b> 5 mCi, 10 mCi, 15 mCi , or 20 mCi
680-555	18.5" Round, For GE Starcam XCT, ACT, Adac ARC 3000, Cirrus, Siemens Orbiter, <b>Specify Activity:</b> 5 mCi, 10 mCi, 15 mCi, or 20 mCi
<b>Lead-Lined Case is additional</b>	

# PET & NUC. MEDICINE-WORKSTATIONS, CARTS & PIGS

## C-THRU™ FLOOD SOURCES

NRC Radioactive Materials License Required



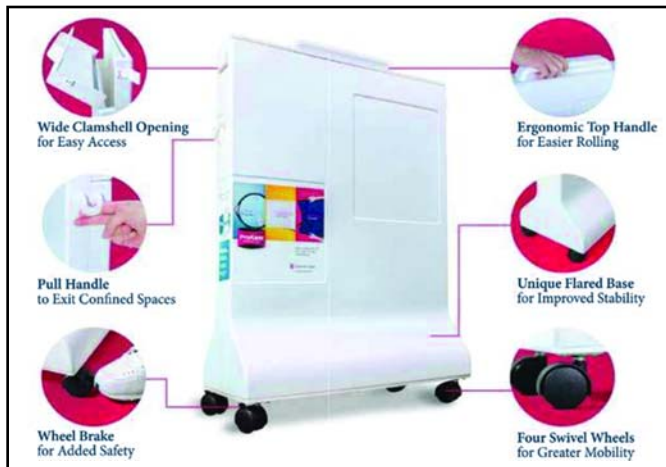
- C-Thru source holder is made of transparent, durable plastic.
- The radioactive area is clearly visible, enabling the C-Thru source to be easily positioned on the camera head.
- The manufacturing process ensures that Nuclear Medicine customers will receive the highest quality flood source available to perform quality control on gamma cameras.
- Flood sources are scanned using a gamma camera. The camera images each flood source for parameters including differential and integral non-uniformity in accordance with ANSI N42.27.
- Visual checks are performed to detect any distortions of the active element and the outside capsule. A leak test is performed on all sources prior to shipment.

- Flood Sources are available with or without a Lead Lined Case.
- Lead Lined Case is sold separately. If a new case is not needed the source will ship in a 6-sided lead-lined cardboard box.
- "Large Field of View" Sources marked with an \* are shipped with the new ProKase or Pb Shipper.
- A Return Kit is provided at No Charge for your spent source "One for One". Spent sources must be returned within 6 months of receipt of the new source.

Item	C-Thru Co-57 Flood Source
680-570	8.9" x 8.9" Square, For Digirad Cardius, Dilon & GVI Clear Vision <b>Activity:</b> 10 mCi
680-575	*10" x 16", For CardioMD, Siemens C-Cam, GE Ventri & GE Optima <b>Specify Activity:</b> 10 mCi, 15 mCi or 20 mCi
680-580	*16.5" x 24.4", For Millenium MPR, VG & MG, GE Hawkeye, Infinia, Myosite, Philips Argus, Forte, Skylight, Symbia & Siemens E-Cam, <b>Specify Activity:</b> 5 mCi, 10 mCi, 15 mCi, or 20 mCi
680-585	*18.5" Round, For GE Starcam XCT, ACT, Adac ARC 3000, Cirrus, Siemens Orbiter, <b>Specify Activity:</b> 5 mCi, 10 mCi, 15 mCi, or 20 mCi <b>ProKase or Lead-Lined Case is additional</b>

## PROKASE

For Large Field of View Featherlite® and C-Thru® Flood Sources



- Wide clamshell opening for easier access to your Flood Source
- Unique flared base for improved stability
- Ergonomic top handle for easier rolling
- 4 swivel wheels for greater mobility
- Wheel brake for added safety

## PB SHIPPER



Save time and money with the "hassle-free" Pb Shipper. With a lead-lined sleeve covering all 6 sides, the new Pb Shipper is designed to qualify as an UN2910 "Excepted Package" when the surface reading for your Co-57 flood source  $\leq 0.5\text{mRem/hr}$ .

Pb Shipper is the convenient and effective alternative for returning and receiving your flood source when a new case is not needed.

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## COUCH TABLE PADS



**Polyfoam:** High density foam that is supportive and comfortable for use in short duration procedures.

**Density:** 0.0288 gm/cm<sup>3</sup>

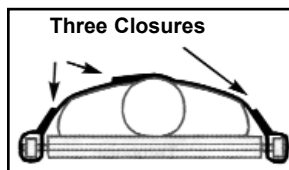
**Color:** Blue

**Covering:** Non-slip, long wearing nylon - water resistant seams.

Item #	Treatment Table Pad	Size
192-219	Polyfoam	19" x 72" x 1"
192-224	Polyfoam	24" x 72" x 1"

Custom Sizes are Available

## UNIVERSAL STRAPS



The two piece side rail Universal Straps are strong, durable and flexible. The end of each strap loops around the side rails and fastens to itself with a powerful new Velcro® hook. The two free ends are then overlapped onto one another to complete the strap. The Universal Straps will fit tables 18 - 30" wide.

Item #	Description	Width	Length
253-202	Universal Straps	2"	47" - 76"
253-204	Universal Straps	4"	47" - 76"
253-206	Universal Straps	6"	47" - 76"

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## SMOOTH MOVER™ PATIENT MOVER



The Smooth-Mover™ Patient Mover is an economical ultra smooth patented board which is capable of safely moving even extremely large patients with minimal staffing requirements. It is radio-translucent and can be left in place during x-ray procedures. It is lightweight, yet durable. Perfect for daily patient moving needs.

### Specifications

**Dimensions:** 3/16" x 22" x 72" (0.5 x 56 x 183 cm)

**Weight:** 9 lb (4.1 kg)

**Color:** Royal Blue

Item #	Description
268-000	Smooth Mover™ Patient Mover
268-030	Wall Hanger for Smooth-Mover™ Patient Mover

## I.V. POLE

Attaches To The Treatment Couch Rails



The I.V. Pole has an adjustable locking ring to prevent the post from dropping if the rail holder loosens. Rail block must be ordered separately.

### Specifications

**Material:** Stainless Steel

**Length:** 48"

**Hooks:** 2 ram horn type hooks

**Mount:** Rail accessory or RPD accessory rail blocks

Item #	Description
255-302	I.V. Pole, Varian, Post Size: 3/4" Dia. x 48" L
255-303	I.V. Pole, Siemens, Post Size: 5/8" Dia. x 48" L
255-290	Rail Block, Varian, Rail Size: 0.375" x 1 1/8"
255-291	Rail Block, Siemens, Rail Size: 0.375" x 1"
255-292	Rail Block, Philips, State Rail Size
255-293	Rail Block, Oldelft, State Rail Size
255-294	Rail Block, Theratron-Equinox 0.250" x 1"

Other Manufacturers Available

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# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## ADJUSTABLE KNEE CRUTCHES

### Attach To The Treatment Couch Rails



The heavy duty steel post provides sturdiness and has an adjustable locking ring to prevent the post from dropping if the rail holder loosens. Rail block must be ordered separately.

Item #	Description
255-201	Knee Crutches, Varian, Post Size: 3/4" Dia.
255-220	Knee Crutches, Siemens, Post Size: 5/8" Dia.
255-290	Rail Block, Varian, Rail Size: 0.375" x 1 1/8"
255-291	Rail Block, Siemens, Rail Size: 0.375" x 1"
255-292	Rail Block, Philips, State Rail Size
255-293	Rail Block, Oldelft, State Rail Size
255-294	Rail Block, Theratron-Equinox 0.250" x 1"

Other Manufacturers Available - Sold in Pairs

The aluminum Adjustable Knee Crutches are covered with 3/16" beige, vinyl material. The Knee Crutch rotates to ensure patient comfort and a locking handle then secures the crutch in place.

## ARM BOARD / COUCH WIDTH EXTENDER

### For Attaching to Treatment Couch Rail



Item #	Description
255-002	Varian Spine Style Arm Board
255-003	Varian ETR Style Arm Board
255-008	Varian Ximatron Arm Board
255-020	Siemens Z-II Arm Board
255-022	Siemens Z-IV or Z-XT Arm Board
255-024	Siemens Mevasim "S" Arm Board
255-027	Siemens TEM Simulator Arm Board
255-030	Philips SL75 or SL25 Arm Board
255-060	Oldelft Simulator Arm Board

This clear lexan Arm Board (1/2" x 5" x 19") attaches to the treatment or simulator couch side rail and is used to support the arm or shoulder.

Other Manufacturers Available

## HAND GRIPS

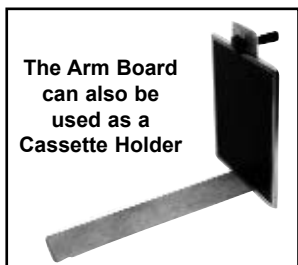
### Attach To Treatment Couch Rails



Item #	Description
255-101	Varian Hand Grips
255-120	Siemens Hand Grips
255-122	Siemens Mevasim "S" Hand Grips
255-130	Philips Hand Grips
255-160	Oldelft Hand Grips

Other Manufacturers Available

## ALUMINUM ARM BOARD

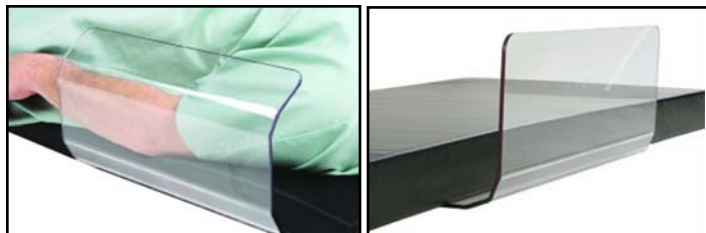


The Aluminum Arm Board is constructed of 3/16" (0.48 cm) thick aluminum. The arm rest is 5 3/4" (14.66) wide. The horizontal portion is approximately 28" (71.37 cm) long and the vertical portion is approximately 19" (48.43 cm) high. The handle can be adjusted over a range of 9 1/4" (23.58 cm).

Item	Description
250-000	Aluminum Arm Board
252-020	Replacement Knob for Arm Board
252-030	Replacement Handle for Arm Board



## TOBOGGAN ARM/LEG GUARDS



255-500

255-504

- Keep arms/legs on the table
- Help prevent accidental dislodgment of IV and arterial lines
- Help shield ulnar nerve against excess pressure

Toboggan Arm/Leg Guards are easy-to-clean radiolucent shields made of Vivak®, a crystal clear, extremely strong, and radiolucent material. Slide the toboggan under the pad and the patient's weight holds it in place. Top is curved on Items 255-500 through 255-503. Item 255-504 does not curve.

**Small:** Great for upper body procedures; use when a shorter height or length is required. Also offers a better fit for pediatric, adolescent, and small patients. Smaller size reduces interference with overhead cameras and other surgical equipment.

**Medium (Standard):** Fits most average size patients' extremities. Available individually or in pairs.

**Large:** Accommodates larger arms and legs

**Extra Large:** Is 24" (60.96 cm) long to provide extra support and protection

Item	Toboggan Arm/Leg Guards	Size
255-500	Small, Pair	10" L x 6" H x 10.25" D (25.4 x 15.24 x 26.03 cm)
255-501	Medium, Single	15.75" L x 8" H x 10.25" D (40 x 20.32 x 26.03 cm)
255-502	Medium, Pair	15.75" L x 8" H x 10.25" D (40 x 20.32 x 26.03 cm)
255-503	Large, Pair	15.75" L x 10.5" H x 10.25" D (40 x 26.7 x 26.03 cm)
255-504	Extra Large, Pair	24" L x 9.5" H x 10.25" D (60.96 x 24.13 x 26.03 cm)

## NON-MAGNETIC SANDBAGS



Item	Description	Quantity
259-025	Sandbag, 7"x12" (17.8 x 30.5 cm)	5 lb (2.3 kg)
259-030	Sandbag, 7"x20" (17.8 x 50.8 cm)	10 lb (4.5 kg)
259-035	Sandbag, 11"x15" (27.9 x 38.1 cm)	15 lb (6.8 kg)
259-040	Sandbag, 8.5"x22" (21.6 x 55.9 cm)	20 lb (9.1 kg)

## GRIP RINGS™



The circular design of Grip Rings™ allows pressure to be evenly distributed, preventing harsh marks on the skin. The attractive and smooth outer skin becomes an integral part of the cushion through a high strength bond to the foam core. Only high tech, non-absorbing, closed cell cushioning mediums are encapsulated to ensure the highest measure of quality. The outer skin of tough vinyl is smooth and easy to wipe clean with most anti-bacterial solutions, and free of surface textures that trap and hold bacteria

from soil and body fluids. If the outer skin is cut or torn the inner cushion will not "sponge-up" liquids/fluids as some products that utilize conventional upholstery materials.

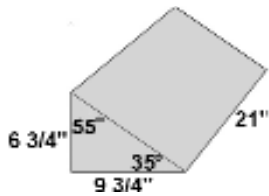
Grip Rings™ are blue in color, have a wall thickness is 1" (2.54 cm) and are virtually tear resistant.

Item	Description
253-115	Grip Ring, 3" I.D.
253-116	Grip Ring, 4.25" I.D.
253-117	Grip Ring, 6" I.D.
253-118	Grip Ring, 10" I.D.
253-119	Grip Ring Set of 3, Includes 3", 4.25" and 6" I.D.
253-120	Grip Ring Set of 4, Includes 3", 4.25", 6" and 10" I.D.

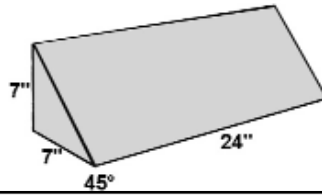
# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## FOAM POSITIONERS

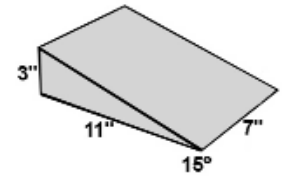
These foam positioners are made of a high density polyurethane foam covered in a durable, blue Sure-Check Microvent material. The fabric is whisper soft and comfortably quiet. It provides silent protection for both patient and pillow. It also contains thousands of microscopic air vents providing the ultimate in patient comfort. The fabric is fluid resistant and contains a unique antimicrobial system to protect the pillow fabric



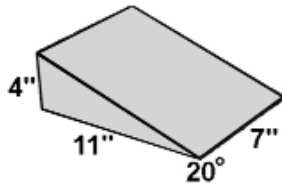
Item #	Description
258-100	Wedge 35/55° Angle



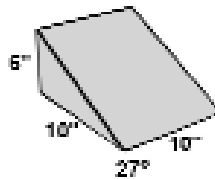
Item #	Description
258-102	Wedge 45° Angle



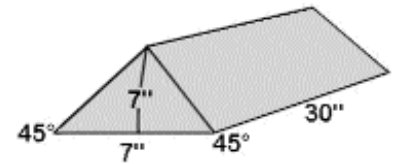
Item #	Description
258-104	Wedge 15° Angle



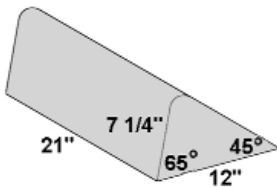
Item #	Description
258-106	Wedge 20° Angle



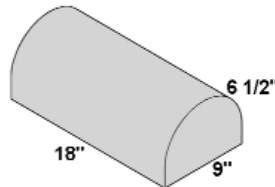
Item #	Description
258-108	Wedge 27° Angle



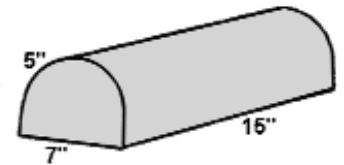
Item #	Description
258-110	Wedge 45° Angle



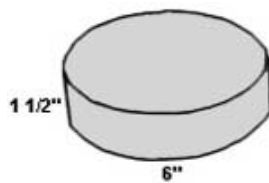
Item #	Description
258-112	Bolster 45/65° Angle



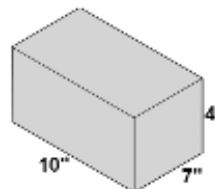
Item #	Description
258-114	Bolster



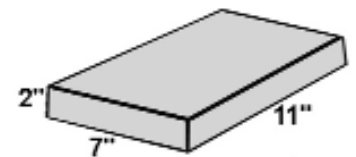
Item #	Description
258-116	Knee Bolster



Item #	Description
258-118	Circle

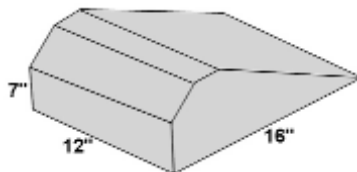


Item #	Description
258-122	Rectangle 10" x 7" x 2"

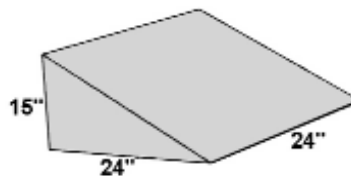


Item #	Description
258-120	Rectangle

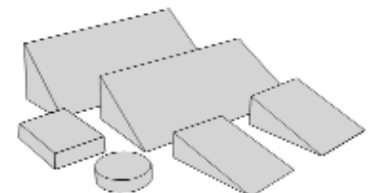
258-124	Rectangle 10" x 7" x 3"
258-126	Rectangle 10" x 7" x 4"



Item #	Description
258-128	Torso Block



Item #	Description
258-130	Chest/Leg Elevator

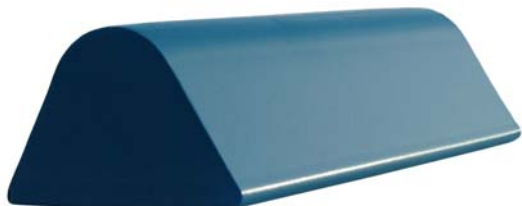


Item #	Description
258-135	Standard 6 Piece Set

### Item 258-135- 6 piece set includes:

- 258-104 (15° Angle)
- 258-100 (35°/55° Angle)
- 258-106 (20° Angle)
- 285-102 (45° Angle)
- 258-118 (Circle)
- 258-120 (Rectangle)

## COVERED FOAM WEDGE



**Cover:** Blue, anti-skid coating  
**Size:** 7 5/8" W x 17 3/4" L x 4 7/8" H (19.4 x 45.1 x 12.4 cm)

Item	Description
258-950	Blue Coated Foam Triangular Wedge

## LEG REST WITH KNEE CUT-OUTS

258-054



258-055



258-056



- Provides leg/knee support while maintaining hip flexion
- Relieves lower back stress and pain
- Stain-resistant coating is easily cleaned
- Knee cut-outs are 6" W x 2" D (15.24 x 5.08 cm) on all sides

### Specifications

**Color:** Black

Item #	Leg Rest with Knee Cut-Outs
258-054	Small, 18" W x 15" L x 5" H (45.7 x 38.1 x 12.7 cm)
258-055	Medium, 13" W x 17.5" L x 7" H (33.0 x 44.5 x 17.8 cm)
258-056	Large, 18" W x 24" L x 10" H (45.7 x 61.0 x 25.4 cm)

## ABDUCE KNEE POSITIONER SET



The purpose of this product is to arrange patients in an abduction pelvic position with maximum comfort.

This blue, vinyl-coated, semi-firm sponge can be very useful for treatment of the pelvis, hip and vulva/scrotum areas.

Place the sponge(s) under the femur/knee area with the lower side of the sponge, a ten-degree slant, toward the patient's trunk. The knee(s) are seated into the sponge's concave area.

The patient's feet can be held together with the grip ring. The set includes two positioners and one 6" (15.24 cm) grip ring.

Item	Description
258-300	Abduce Knee Positioner Set

## LEG IMMOBILIZER



Excellent to add comfort for patients treated in the prone position. Constructed of foam, covered with black vinyl.

### Specifications

**Size:** 16" L x 14" W x 6" to 11" H (40.6 x 35.5 x 15.2 to 27.9 cm)

Item #	Description
258-345	Elevated Leg Immobilizer

## DISPOSABLE FOAM HAND RING



### Benefits

- Patient Comfort
- Increased Immobilization
- Optimal Image Quality
- Disposable - Prevents Cross Contamination
- Non-Absorbent, Chemical Resistant
- 100% MRI Safe and Radiolucent

The Foam Hand Ring is designed to maintain patient comfort and support throughout radiation therapy treatments, MRI and CT scans, or any procedure requiring complete patient immobilization for a quality treatment, image, or scan. Often, patients struggle to keep their arms still for a long period of time. This foam hand ring allows them to rest with ease.

The Hand Ring is made of a closed-cell polyethylene. It can be cleaned and wiped down, as it is a non-absorbent foam and therefore does not require a cover or coating, which can crack and become damaged. The ring is intended to be used per patient, or daily, and then thrown away.

### Specifications

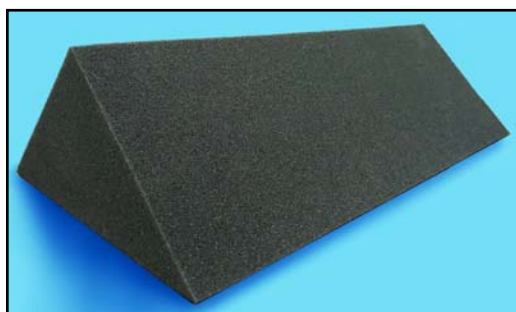
**Outside Diameter:** 6"

**Inside Diameter:** 4"

**Thickness:** 1"

Item	Description	Quantity
258-400	Disposable Foam Hand Ring	50/Box

## DISPOSABLE FOAM WEDGE



### Benefits

- Patient Comfort
- Disposable - Prevents Cross Contamination
- Extra Support
- Prevents Tech from holding a patient
- Non-Absorbent, Chemical Resistant
- 100% MRI Safe and Radiolucent

The Foam Wedge is designed to maintain patient comfort and support throughout MRI or CT scans and X-ray procedures. The wedge is 45° which allows for total support of various patient positions. This wedge can be used for knee support during scans or therapy treatments, support for oblique positioning of the patient or even under a backboard for X-rays if needed. This wedge is convenient for trauma cases when disposal is necessary. The Knee Wedge is aimed for use in patients that should have their own accessories or in cases that a wedge needs to remain with a setup for a specific patient.

This wedge was developed for an ER department for trauma cases so it does not have a coating as it is intended for disposal after single patient use. This wedge has been found to have several uses in Radiation Therapy as well.

### Specifications

**Dimensions:** 20" W x 7" H

Item	Description	Quantity
258-420	Disposable Foam Wedge	5/Box
258-425	Disposable Foam Wedge	10/Box
258-430	Disposable Foam Wedge	20/Box

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## POSITIONING WEDGES



258-450



258-452



258-460



258-462



258-454



258-456

All of these positioning wedges are covered in polyurethane with an anti-bacterial coating. They can be cleaned with any standard cleaning wipes.

Item	Description	Size
258-450	Tri-Wedge, Short	7" x 7" x 20"
258-452	Tri-Wedge, Long	7" x 7" x 25"
258-454	Lateral Wedge	10" x 10" x 16"
258-456	30/60/90 Wedge	10" x 12" x 13" x 20"
258-458	Incline Wedge	3" x 18" x 24"
258-460	Roll Wedge	3" x 12" x 18"
258-462	XL Knee Wedge	18" x 30" x 8"

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## LEG STAND

For use in CT, MR, Radiation Therapy and Diagnostic Radiology



This leg Stand will support one leg in a cushioned cradle. The cradle swivels to allow for a comfortable position. The cradle height can be adjusted in 1" increments. The telescoping cradle post has 7 holes at 1" spacing to accommodate the locking rod.

The 10" square aluminum base has the cradle post welded to it and also includes rubber pads to minimize movement.

### Specifications

#### Cradle

**Width:** 5.1" (13 cm)

**Length:** 6.8" (17.5 cm)

**Pad:** 0.25" (0.635 cm) Blue Foam

**Base:** 0.25" (0.635 cm) White PVC

#### Base

**Base size:** 10" x 10" x 0.25" Thick (25.4 x 25.4 x 0.635 cm)

**Cradle Post Height:** 9" (22.86 cm)

**Minimum Height from Couch Top:** 7.1" (18.03 cm)

**Maximum Height from Couch Top:** 16.6" (42.16 cm)

**Base Material:** Aluminum

Item	Description
250-100	Leg Stand

- For use in CT, MR, Radiation Therapy and Diagnostic Radiology

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## ATTENUATE ARMS POSITIONER™

Includes One set of ComforCleers™ and Grip Ring



258-320



258-325

258-320 and 258-325

- CT Compatible
- Washable Blue Vinyl Covering

The Attenuate Arms Positioner is constructed of high density foam, soft, yet firm. A polyethylene base helps maintain rigidity and the handle on the base makes for ease in handling or hanging on wall. For head support use a Silverman head and neck Support.

Patients may be positioned with proper head support, arms extended above their head and placed onto the foam positioner. A slightly elevated angle allows the arms to rest, with an additional angle for the wrist area. Patients can hold onto the soft "Grip Ring" or just relax.

The Attenuate Arms Positioner includes the Positioner, one set of Head Supports and a 4 1/4" (10.8 cm) Grip Ring.

The Accessory Set is two blue vinyl coated foam positioners for under the upper arms. These provide additional support to the arms.

The Positioner and Accessory Set can also be used for supporting the lower legs when additional support is needed

### Specifications

**Size:** 20" W x 9.5" H (50.8 x 24.13 cm)

Item #	Description
258-320	Attenuate Arms Positioner
258-325	Attenuate Arms Positioner Accessory Set

## PRON PILLO®



The slight contour to the front of the Pron Pillo® gives comfort to the forehead. The open space for the eyes and nose puts less pressure near the eye area. The elevated base allows the patient to breath freely while being in a comfortable position. The slight taper allows for the natural contour of most face sizes. The Pron Pillo® supports the head and shoulders. The shoulder support design provides comfortable space for the patient's chest area.

The Pron Pillo® is radiolucent but not artifact free, therefore, it is not recommended for inclusion in films. It is totally waterproof, has an easy to clean smooth finish, and is now made of a softer foam.

### Specifications

**Size:** 21" L x 18" W x 6" H (53.3 x 45.7 x 15.2 cm)

**Weight:** Less than 1 lb (0.45 kg)



Item	Description
256-000	Pron Pillo®

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## LUNG COMPRESSORS

### Air Compression Belt with Pressure Gauge and Tape Measure



The Lung Compressor is designed to put pressure just below the lungs to limit lung movement with respirations.

The Lung Compressor includes the Air Compression Belt that has an attached measuring tape with both centimeter and inch markings and the pressure gauge. The air bladder with a cotton cover is Velcro attached to a 60" (152.4 cm) long Velcro belt which is wrapped snugly around the patient just below the sternal notch. Once the belt and air bladder are in position on the patient, the air bladder is manually inflated with a hand pump. The included pressure gauge is used to record the amount of pressure used to achieve the desired limits of lung movement. This allows for reproducibility of the same amount of pressure for each treatment fraction.

These items can be cleaned by hand using a cloth dampened with a mild detergent dissolved in water. DO NOT SOAK MATERIAL. For stubborn spots or stains, use a soft brush and the solution. Allow material to air dry fully before reuse.

**Note:** Over inflation of the air bladder can cause seaming of the cover to rip, to prevent this from occurring re-tighten the belt.

These items can be cleaned by hand using a cloth dampened with a mild detergent dissolved in water. DO NOT SOAK MATERIAL. For stubborn spots or stains, use a soft brush and the solution. Allow material to air dry fully before reuse.

### Specifications

#### Item 260-301

**Material:** Velcro Hook and Loop, Cotton, Rubber

**Bladder Size:** 8.5" W x 4.5" H (21.5 x 11.4 cm)

**Compression Area:** 11" x 5.5" (28 x 14 cm)

**Belt Size:** 4" W x 60" L (10.1 x 152.4 cm)

#### Item 260-302

**Material:** Velcro Hook and Loop, Blue Nylon, Rubber

**Bladder Size:** 12.25" W x 5.5" H (31.1 x 14 cm)

**Compression Area:** 14" x 7" (35.5 x 17.8 cm)

**Belt Size:** 6" W x 60" L (15.2 x 152.4 cm)

Item	Description
260-301	Lung Compressor, Air Compression 4" Belt w/Gauge, Small
260-302	Lung Compressor, Air Compression 6" Belt w/Gauge, Large



# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## BREATH HOLD ES™ Proactively Manage Respiratory Motion



### Base Unit with Remote Displays

The Base Unit connects to the bellows belt to measure air pressure and enable LED light display. The base unit also serves as a charger for the three Remote Displays.

The Wireless LED Display visualizes the air pressure as a series of lights to guide the patient through pre-selected breath-holds or reproducible shallow breathing.



### Measurement Tool

The Measurement Tool quantifies expansion of the bellows belt to enable reproduction of settings from SIM to treatment and between treatment days.



### Bellows Belt

The bellows belt contracts and expands on the abdomen with patient breathing.



### Clamp/Gooseneck

The Gooseneck holds the remote display, providing a flexible positioning for easy patient viewing. Various mounting options accommodate all table designs.



### Wireless Repeater Kit

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# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## Effective and Convenient Respiratory Motion Control for Radiation Therapy Procedures

The Breath Hold ES. is a motion management/ biofeedback device helping patients breathe in a consistent manner or breath hold at a particular point time. It allows for these breathing patterns or breath holds to be reproducible in a variety of procedures.

Highly effective, easy and convenient, Breath Hold ES™ delivers new precision for radiation therapy procedures involving the lungs and upper abdomen, where respiratory motion is an ongoing problem. Breath Hold ES™ combines an expandable bellows system, pressure-sensitive transducer tube that wraps around the patient's chest, and an LED display. During both planning and treatment, the device visualizes the respiratory cycle as a pattern of lights. This feedback effectively guides the patient towards a consistent pre-selected breath-hold position or a reproducible, shallow respiratory pattern.

### The Breath Hold ES. can be used in the following applications

- Radiation Therapy
- Left Breast Treatment (spare the heart)
- Imaging during Radiation Therapy Planning using CT or MR (Managing Motion during Imaging)
- Interventional Radiology (Biopsy of the lung)
- MRI Cardiac Imaging
- Lithotripsy (Treatment of kidney stones with sound waves)

### Make Respiratory Motion Control a Reality for Your Radiation Therapy Program Today

- Supports consistent breathing for imaging for therapy planning.
- Supports consistent breath-holds for RT delivery.
- Accelerates treatment time compared to gating.
- Greater comfort than compression devices.
- Easy patient set-up.

Medspira Breath Hold ES™ has been successfully used in radiation therapy (RT) programs nationwide for procedures involving the chest and upper abdomen. Breath Hold ES™ helps patients achieve the reproducible breath-hold points and the consistent shallow breathing that can potentially enable greater precision in targeting treatment areas as well as enhanced imaging for therapy planning.

### Integrate Respiratory Control into Your Program Today

If your facility relies on free breathing for challenging RT procedures, Medspira Breath Hold ES™ provides an important new option, making it easier than ever before to integrate respiratory control into your RT program. The device is simple to use and affordable - many patients report feeling empowered through their active involvement in breathing control and the therapy process. Lightweight and portable, Breath Hold ES™ can be shared among therapy suites. Technologists learn to use the device in a matter of minutes.

### Benefits Over Gating and Compression

If your facility currently uses gating technologies to compensate for breathing motion, Breath Hold ES™ may significantly accelerate procedure time - benefitting both workflow and patient care - while supporting a highly consistent and predictable breathing pattern for most patients. Additionally, compared to respiratory compression devices, Breath Hold ES™ provides a high degree of patient comfort and reliability.

## Enhanced Precision for Left Side Breast Cancer Therapy

Numerous studies have shown that during radiation therapy for left side breast cancer, reproducible breath-hold techniques support consistent positioning of the tumor to minimize radiation dose to the heart. With Breath Hold ES™, every radiation therapy site can help provide these patients with the carefully targeted treatment they need.

### Innovative Biofeedback-Based Control

For radiation therapy involving the chest and upper abdomen, including the lungs and left breast.

- Restricts tumor mobility and potentially minimizes treatment margins through consistent breath-holds or controlled shallow breathing.
- Relies on biofeedback for proactive patient breathing control
- Greater patient comfort than other motion control technologies
- Portable, standalone system, with easy patient set-up
- Compatible with any LINAC and CT system
- Simple and intuitive operation
- Developed by physicians at the Mayo Clinic
- Affordable pricing

### Keeping Technicians Informed in Real Time

A remote Breath Hold ES™ display that operates through protective bunkers enables technicians in the control room to follow the patient's breathing motion in real time.

### The system includes

- 1 - Base Unit / Docking Station
- 1 - Clamp/Gooseneck
- 3 - Remote Displays
- 1 - Wireless Extender Kit
- 1 - Power Supply
- 1 - Radiation Therapy Quick Reference Guide
- 1 - Measurement Tool
- 2 - Bellows Belt with Measuring Tape and Bellows Pads
- 1 - General Demonstration Video

### Warnings

- This product contains natural rubber latex in the bellows belt which may cause an allergic reaction.
- This system is not suitable for use in the presence of flammable anesthetics in combination with air, oxygen, or nitrous oxide.
- This equipment is not protected against ingress of water.

### Specifications

#### Power Requirements

**Remote Unit:** Battery 2 cell 7.4V, 2.4A

**Base Unit:** Battery 6 cell 12.0V, 5A

**Charger Input:** 100-240V, 2A, 50/60Hz

**Charger Output:** 12V, 5A

#### Operating Temperature Range

**0 to 3,000 ft (914 m):**

50° - 95°F (10° - 35°C): 101kPa to 91 kPa

**3,000 to 7,000 ft (2,134 m):**

50° - 89.6°F (10° - 32°C): 91kPa to 78 kPa

**Operating and Non-Operating Humidity Range:**

10% to 80% RH, non-condensing

**Shipping/Storage/Non-Operating Temperature Range:**

32° - 122°F (0° - 50°C)

**Shipping/Storage Humidity Range:**

10% to 90% RH, non-condensing

Item	Description
261-000	Breath Hold ES™ System

## CHILD CHIN SUPPORT with Angle Indicator



- Can be used in CT scans
- Useful for head stability when treating in a prone position
- Does not interfere with lateral brain and spinal fields
- Adjustable with angle indicator
- Comfortable for the patient
- Made of rigid plastic and aluminum
- Easily cleaned

Item	Description
257-201	Child Chin Support

## IMPROVED DUNCAN HEAD HOLDER



The Improved Duncan Head Holder offers head support for maintaining a patient's head in a proper, relaxed, comfortable alignment in the prone position. The Improved Duncan Head Holder doubles the thickness of the Plexiglas cradle for increased strength while adding rubber channeling to the rocker legs to help avoid slippage.

### Sanitary

Disposable, absorbent pre-cut tissue is available to place over the facemask, providing an barrier between the head holder and patient's face.

### Economical

The Plastic head holder can be reused with different patients. Simply purchase replacement polyfoam pads which affix to head holder using supplied double face tape.

### Specifications

**Size:** 8" W x 7.75" L x 5" H

**Weight:** 1.75 lb



248-201



248-202

Item	Description	Quantity
248-200	Improved Duncan Head Holder	
248-201	Disposable Paper Covers	100/Box
248-202	Replacement Foam Pads	6/Box

## HEAD SUPPORT SYSTEM



The Looking Forward Head Support System™ helps to provide head support to those suffering from symptoms and problems related to:

- Dropped Head (Dropped Head Syndrome)
- Tired Neck Muscles
- Poor Posture

The Looking Forward Head Support Band™ is a comprehensive device that will enable the wearer to lift their head with less effort, into a more upright and comfortable position. Activities such as eating and socializing are made more enjoyable and natural and a greater sense of freedom and independence is achieved.

There is no need to be confined to a chair or sitting position to wear the Looking Forward Head Support Band. A person is able to walk around freely and a better sense of balance may also be felt while wearing this system. Looking Forward Head Support Band is easy to use and comfortable to wear for hours at a time.

The Looking Forward Head Support Band™ is a one piece, comfortable stretch fabric with a hook and loop fastener.

To determine the size needed measure the person around the chest/torso under the breast but above the waist while wearing normal clothing.

Small: fits chest measurements 30"-36"

Medium/Large: fits chest measurements 37"-42"

Custom Extra Large: fits chest measurements 42" - 48"

Custom XX-Large: for chest measurements 49" or larger. Custom sizes are made to order - chest measurement must be specified.

### Disclaimer

The Looking Forward Head Support System™ is not intended to treat, diagnose or cure medical problems.

Please consult with your physician before using.

Looking Forward Head Support™ All Rights Reserved.

### Return Policy

For simple health and hygiene reasons the Looking Forward Head Support System is non-returnable.

### Patent no. US 9,198,794 B2

Item #	Description
253-890	Head Support System, Small, 30" - 36"
253-895	Head Support System, Medium / Large, 37" - 42"
253-900	Head Support System, Custom Extra Large, 42" - 48"
253-905	Head Support System, Custom XX-Large, 49" or more Custom Made to Order - Specify Size

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## TIMO FOAM HEAD-NECK SUPPORTS



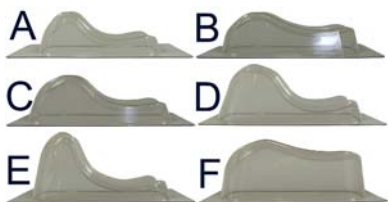
Item	Timo Head/Neck Support	Size in mm
248-000	Set, A thru F	
248-001	A, Red	125 W x 200 L
248-002	B, Green	120 W x 225 L
248-003	C, Blue	120 W x 235 L
248-004	D, Brown	125 W x 235 L
248-005	E, Yellow	125 W x 225 L
248-006	F, Gray	125 W x 235 L

### Specifications

**Material:** Coated urethane foam

## SILVERMAN HEAD-NECK SUPPORTS

Standard Trim - No Peg Holes



Item #	Silverman Head/Neck Supports
249-030	Set, A thru F
249-031	A
249-032	B
249-033	C
249-034	D
249-035	E
249-036	F

### Specifications

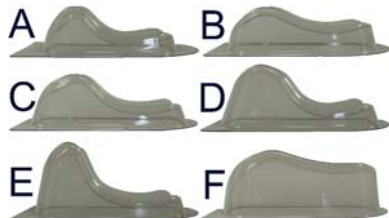
**Material:** Clear PETG

**Flange:** Rectangle

**Size:** 7" x 11.2" L (180 x 285 mm)

## SILVERMAN HEAD-NECK SUPPORTS

With Rounded End and Peg Holes



Item #	Silverman Head/Neck Supports with Peg Holes
249-050	Set, A thru F
249-051	A
249-052	B
249-053	C
249-054	D
249-055	E
249-056	F

### Specifications

**Material:** Clear PETG

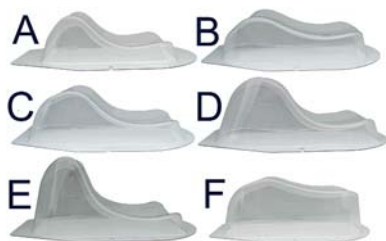
**Flange:** Rounded End

**Will fit Qfix/WFR boards**

**Does NOT Fit Bionix or CIVCO boards**

## SILVERMAN (BIONIX) HEAD-NECK SUPPORTS

With Peg Holes for Bionix Devices



Item #	Silverman (Bionix) Head/Neck Supports
249-021	A
249-022	B
249-023	C
249-024	D
249-025	E
249-026	F

### Specifications

**Material:** Clear PETG

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## MOLDCARE® CUSHIONS



262-174



262-1753



262-175



262-176



262-177



262-178



262-179



262-180

The MOLDCARE® cushions are customized head supports composed of a soft fabric bag containing expanded polystyrene beads coated in a moisture-cured resin. When activated with water, the pillow becomes rigid, conforming to the contours of the patient's head and neck. It can be used alone or on a Silverman Head Support to create the most comfortable and repeatable head support available.

Since MOLDCARE® has a low specific gravity (0.01) with a CT value less than -800, the device can be used in treatment with a CT simulator.

MOLDCARE® cushions are also MR compatible.

Item	MOLDCARE®	Size
262-174	Small Head Cushion	15 x 20 cm
262-175	Head Cushion	20 x 25 cm
262-1753	U Head Cushion	20 x 35 cm
262-176	Trapezoid Head & Shoulder Cushion	58 x 65 cm

Easy to use

1. Remove MOLDCARE® Cushion from package.
2. Fill spray bottle with room temperature or lukewarm water (up to 40°C/105°F).
3. Push spray bottle nozzle slightly against the cushion and spray a shot of water into the cushion. Repeat about 12 times approximately every 10 cm to ensure uniform dampening.
4. Place MOLDCARE® Head Cushion over head support.
5. Place patient's head on cushion, ensuring frame clears cushion, and form as desired.
6. Wait 5 to 10 minutes until pillow sets (once patient exits cushion, cushion continues the hardening process for another 10 minutes).

Item	MOLDCARE®	Size
262-177	Medium Cushion	20 x 45 cm
262-178	Large Cushion	40 x 60 cm
262-179	X-Large Cushion	60 x 60 cm
262-180	Spray Bottle for Moldcare Cushions	

## KLARITY™ CUSHIONS

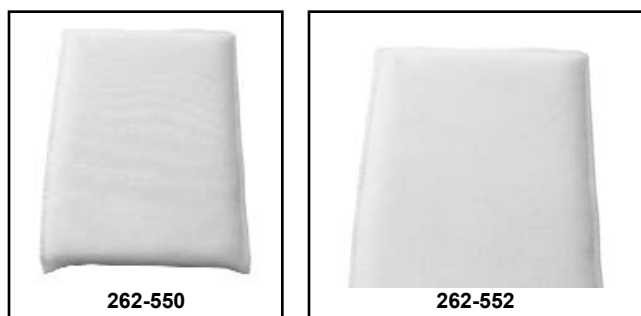
- 100% nontoxic and odorless
- Can be reheated and reshaped
- Increased control of cervical spine area with low attenuation
- Comforting and calming for patients
- Preferred by therapists and clinics worldwide

Klarity Cushions are advanced indexing tools that provide secure, customized head and neck support for patients. These cushions are made from low-density thermoplastic-based materials that become soft and pliable when heated in an oven or water bath. After heating, Klarity Cushions offer warm and comforting support that has a calming effect on most patients.

Once cool, Klarity Cushions become firm and rigid, ensuring excellent reproducibility and precise placement for highly accurate treatment. Klarity Cushions can be used with Silverman headrests, and they also fit under a thermoplastic mask to create 360-degree custom support and immobilization. New Klarity Cushions with a Neck Insert can be used without a Silverman headrest, enabling optimal cervical spine support and immobilization.

The inner cushion contains a proprietary mix of high-quality, lightweight polystyrene surrounded by a thin layer of thermoplastic. The soft and stretchable outer covering is made of simple nylon fabric. All Klarity Cushions are 100% nontoxic, with minimal shrinkage and no odor. Klarity Cushions are one-patient, but they can be reheated and reformed if needed.

### Standard Klarity Cushions™



**Item 262-550** - a smaller version Item 262-552 is appropriate for patients with smaller head sizes, including pediatric and adolescent patients.

**Item 262-551** - is a standard Klarity Cushion with a little neck bump

**Item 262-552** - the standard Klarity Cushion is designed to fit over a Silverman for customized immobilization.

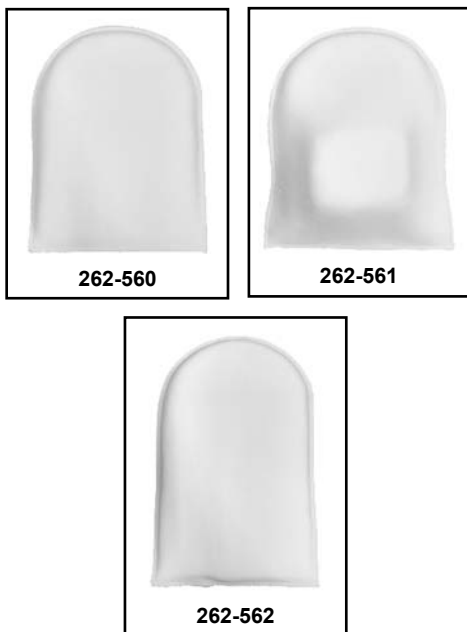
**Item 262-553** - has a slightly wider base of support for greater support under the head and neck as well as improved indexing. and works well on the Q1 headrest or a standard Silverman headrest.

**Item 262-554** - is a long, versatile Klarity Cushion that offers multiple types of custom support. It can be used to mold around the arm and wrist as well as other extremities that require customized positioning. This cushion can also be used under the head and neck with a standard Silverman headrest, providing a long line of support that extends from the C-spine to the crown of the head.

**Item 262-555** - the largest Klarity Cushion adapts well in situations requiring a large support base. The cushion can be molded around the extremities, or it can be used for full-torso support or extra pelvic cushioning.

Item	Klarity Cushions™	Size in cm
262-550	Standard Small	15 x 20
262-551	Standard with Neck Bump	15 x 25
262-552	Standard	20 x 25
262-553	Standard with Wider Base	23 x 30
262-554	Standard Large	20 x 40
262-555	Standard Largest	40 x 60

## Klarity U-Cushions™



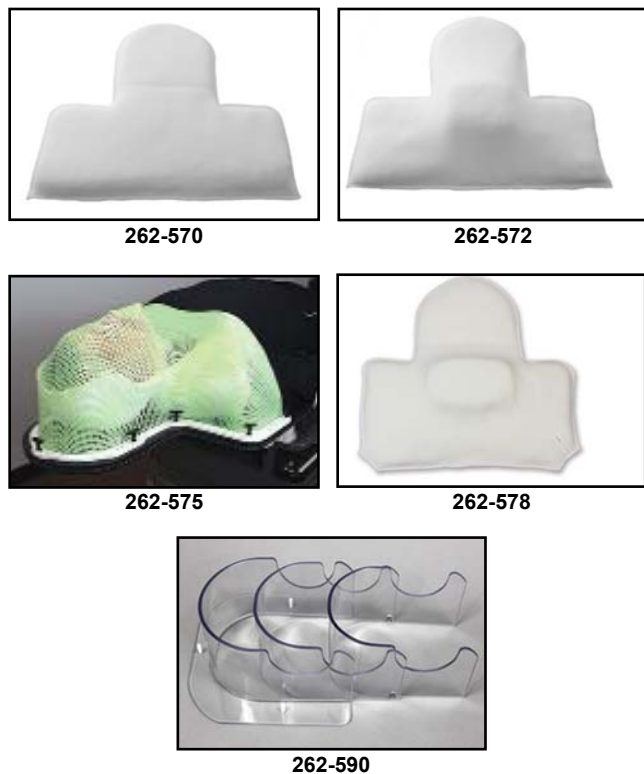
**Item 262-560** - features a curved top that allows the cushion to be patient with minimal adjustment. This eliminates the need to tuck away corners and enables the mask frame to come down evenly and securely. The U-Cushion indexes to both the crown of the head and the Silverman headrest, reducing pitch and providing even greater precision.

**Item 262-561** - has extra fill in the neck. This allows the cushion to be indexed without a silverman. It can also be used to provide custom pitch, and works well with deeper head cups that require thicker cushioning under the neck.

**Item 262-562** - is slightly longer, the additional length is excellent for deeper headrests or for customized positioning.

Item	Klarity Cushions™	Size in cm
262-560	U-Cushion	23 x 30
262-561	U-Cushion with Extra Neck Fill	23 x 30
262-562	U-Cushion, Longer	23 x 35

## Head and Shoulder Klarity Cushions™



**Item 262-572** - With extra fill in the neck area, it is ideal for situations requiring customized tilt and pitch of the head and neck, or when a large amount of build-up is needed under the C-spine. This cushion is designed for use without a Silverman headrest and indexes directly to the overlay or baseplate.

**Item 262-575** - provides the same head and neck support as Item 262-570 but extends further under the patient's back. This cushion sits underneath the scapula and wraps over the top of the shoulders. For optimal reproducibility, it should be used with a Head & Shoulder Mask.

**Item 262-578** - this is the most comprehensive Klarity Cushion. Designed for use without a Silverman headrest, this cushion indexes directly to the baseplate or overlay. The extra fill in the neck allows for custom positioning for precise tilt and pitch. The sides of the cushion wrap up and around the sides and crown of the head, creating a 360-degree shell around the patient. For optimal reproducibility, it can be used with a Head & Shoulder Mask.

**Item 262-590** - the Shell Mold is a reusable frame for molding Item 262-578. Once the cushion cools within the frame, the Shell Mold is removed before a mask is used. Includes three sizes.

Item	Klarity Cushions™	Size in cm
262-570	Head & Shoulder	46 x 41
262-572	Cushion Plus Head & Shoulder w/Neck Support	46 x 41
262-575	Head & Shoulder Extended	46 x 46
262-578	Cushion Plus Head & Shoulder Extended Shell w/Neck Support	46 x 50
262-590	Shell Mold f/S-Type & U-Frame Baseplates	3/Set

**Item 262-570** - provides the same head and neck support as standard Klarity Cushions, but it also extends down to sit underneath the scapula and wraps up over the shoulders for custom shoulder suppression. It fits over a Silverman headrest. For optimal reproducibility, it should be used with a Head & Shoulder Mask.

Others Cushions Available



## Klarity Cushion™ for Elekta Icon™ System



**Item 262-580** - designed for Elekta's Gamma Knife® Icon system, this cushion should be used with an Icon mask to provide precise fixation and comfortable support.

Item	Klarity Cushions™	Size in cm
262-580	Elekta Gamma Knife Icon System	17.5 x 35

## Klarity Cushion™ for Qfix® BoS™ System



**Item 262-585** - features an extended head portion to fit into the head cup and the extra fill in the neck area allows for customized support around the C-spine. The cushion wraps up over the shoulders to provide comfortable but firm shoulder suppression. When used with a Head & Shoulder Mask, this cushion enables indexing for the whole chest and shoulder girdle.

Item	Klarity Cushions™	Size in cm
262-585	Head & Shoulder f/Qfix BoS Proton System	46 x 45

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# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## DISPOSABLE PLASTIC HEAD HOLDERS



Item #	Description	Diameter	Quantity
246-000	Plastic Head Holders	7.25" (18.4 cm)	50
244-000	Plastic Head Holders	6" (15.2 cm)	50

## TENSION BOARD

### Arm to Foot Adjustable



A 'D' style handle is connected to a spring and then to an adjustable leather strap. For easy adjustment, the leather strap has holes every inch and is numbered every fifth hole. The leather strap simply slips over a pin on each side of the foot board.

Item#	Description
253-100	Arm to Foot Tension Board

## BITE BLOCK SYSTEM



A fast set-up can be accomplished by using the Nasal or Bridge Trays. Rest the patient's head in the correct head-neck support, adjust the head, lower the nasal or bridge tray and lock to the desired position.

### Specifications

**Size:** 17" vertical post welded to a 10" x 13" base plate  
**Aluminum Base Plate has an Anti-Skid Rubber Base**

**Three Lock System:** Vertical, horizontal and tray angle

**Scales:** 15cm Vertical, 15cm horizontal and 180° tray angle

### Bite Block System Includes

- |   |  |
|---|--|
| (1) Adjustable Base Plate                   | (1) Tongue Tray  |
| (6) Head-Neck Supports with plastic bottoms | (1) Chin Tray  |
| (5) Adult Bite Tray                         | (1) 20 cm white plastic rule                               |
| (1) Child Bite Tray                         | (1) Cork Screw Tray w/four sample corks (one of each size) |
| (1) Nasal Tray                              |  |
| (1) Bridge Tray                             |  |

Item	Description
260-000	Bite Block System

Item	Accessories
260-008	Pediatric Adj Base Plate for Bite Block
260-010	Adult Bite Tray
260-011	Child Bite Tray
260-012	Nasal Tray
260-014	Bridge Tray
260-018	Tongue Tray
260-020	Chin Tray
260-022	Cork Screw Tray

The Bite Block System is a stand alone patient head immobilizer system that needs no fixing to a treatment table and can be moved from room to room. The aluminum base plate has protruding pins which fit into the holes of the attached plastic bottom of six different size head-neck supports, thus, locating it in a fixed position every time it is used. In some treatment set-ups it may be necessary to angle the head to the right or left. For these treatments, place the horizontal adjustable base plate on the base plate and lock in position with two thumb screws. The head-neck supports also fit onto protruding pins located on the horizontal adjustable base plate or the pediatric adjustable base plate.

A three lock system allows for easy adjustment and reproducibility. Vertical and horizontal adjustment is accomplished using 15 cm scales and two locking knobs. The bite block tray angle is adjustable using a 180° scale and is locked with a knob.

An easy to remove individualized bite tray uses dental impression material. The impression procedure takes ten minutes using Caulk Reprosil® Impression Material (Item 266-100), which must be ordered separately.

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## CAULK REPOSIL® IMPRESSION MATERIAL

For Use with Bite Trays



Caulk Reposil® Impression Material provides excellent dimensional accuracy and stability. This material is applied to the bite tray and a dental impression is made. One package will make 20 - 25 impressions. Note: Does not include mixing pad or caulk tray adhesive. Tray adhesive not recommended for bite trays that will be reused.

Item #	Description
266-100	Caulk Reposil® Impression Material

## CORKS



Sold 10 per package.

Item #	Top Diameter	Bottom Diameter	Length
274-812	2.8 cm	2.25 cm	3.0 cm

## BITE WEDGE



- Hygienic wrapping tears off easily for immediate access
- Sanitary, high-density polyethylene pad provides a firm protective cushion
- Pad is bonded to a tough but flexible double strength hardwood, assuring durability
- Wedges can be notched for the teeth (see picture above)

Item	Description	Quantity
274-100	Bite Wedge	12
274-100-1	Bite Wedge	144

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## PRONE BREAST SYSTEM - BASELESS

Created with a focus on ensuring patient comfort, re-positional accuracy and simplicity in use, the Bionix Prone Breast System reduces irradiation to the chest wall, healthy cardiac tissue and lungs. As the new generation of patient positioning, the system allows for even weight distribution and the accommodation of a diverse variety of patient sizes onto the system.

### Ease of Use

- Lightweight therapist-friendly device
- Locks down onto most treatment couches

### Dose Delivery

- Clinically enhanced design provides an unobstructed lateral field; the only thing between you and your target is the table
- Proprietary multi-layered variable density foam pad set makes setup accurate and reproducible, while keeping patients comfortable

### Comfort

- Dual foam, massage-style face cushion aides in patient comfort
- 15 degree contralateral wedge, to assist with patient tilt
- System includes one standard (small) opening breast bridge
- Optional large opening breast bridge is available
- **Made in the USA**

### This Prone Breast System Includes

- Prone Breast Pad Set
- Face cushion
- 15° Contralateral Wedge
- Handles
- Standard Opening Breast Bridge

Item #	Description
269-601	Prone Breast System-Baseless
269-602	Large Opening Breast Bridge - Optional
269-604	15° Contralateral Breast Wedge - Optional
269-461	Disposable Face Covers, 50/pkg

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## THE TREATMENT BRASSIERE

### A Treatment Brassiere to Improve Breast Radiation Therapy



Complete Treatment Brassiere



- Reshapes the ipsilateral breast more favorably for radiation treatments.
- Eliminates inframammary folds
- Reduces dose to the lungs, heart and ribs
- Both shape and position are accurately repeatable, treatment after treatment
- More uniform dose
- Reshapes the contralateral breast to move it away from the beams
- Simplifies application of IMRT to breast treatments

The Treatment Brassieres are breast cups formed of a transparent, semi-rigid plastic material.

Data on increased skin dose due to ipsilateral cup were submitted to the FDA. These data provided a comparison of skin dose increased by the Treatment Brassiere with the increase found for various thermoplastic positioning devices on the market. The skin dose due to the cup material (0.50 mm thick for small cups to about 0.63 mm thick for very large cups) was found to be substantially less than for other positioning devices. The FDA has issued a 510 (k) marketing clearance for the Treatment Brassiere.

#### Cup Selection

Cups are divided into four groups corresponding to small thoraxes (chest breadths from 27 to 32 cm), medium thoraxes (32 to 36 cm), large thoraxes (36 to 42 cm), and extra large thoraxes (over 42 cm).

Cup selection begins by measuring a patient's chest breadth when supine and wearing her clothing brassiere. This measurement indicates the size group (S, M, L, XL) containing the correct cup. Left and right cups are not interchangeable.

The ipsilateral cup is positioned repeatedly on the patient by markings made on the patient's skin through small holes at the medial, lateral and superior aspects of the cup flange.

Each cup is labeled to identify size group (S, M, L, XL), body Side (R or L), and breast volume.

**Item 674-100 Complete Brassiere Library Includes:** 20 Left and 20 Right Complete Treatment Brassiere

**Item 674-TBC** Portable 2 Tier, 8 post Storage Caddy with dust cover.

**Item 674-100-TBC** Includes 40 Cup Library and Caddy

#### Specifications

**Material:** Clear PETG Plastic

**Density:** 1.27 g/cm<sup>3</sup>

**Thickness Range:** .50 mm for smaller cups to .63 mm for extra large cups.

Item #	Description
674-100	Treatment Brassiere Library w/o Caddy, 40 Cups
674-TBC	Treatment Brassiere Caddy
674-100-TBC	Treatment Brassiere Library w/Caddy, 40 Cups

Item # - Patient Left	Item # - Patient Right	Volume	Treatment Brassiere Size	* Approx. Cup Size
674-100SL-200	674-100SR-200	200 ml	Small - Chest Breadth 27 - 32 cm	A / B
674-100SL-300	674-100SR-300	300 ml	Small - Chest Breadth 27 - 32 cm	B / C
674-100SL-400	674-100SR-400	400 ml	Small - Chest Breadth 27 - 32 cm	B / C
674-100SL-500	674-100SR-500	500 ml	Small - Chest Breadth 27 - 32 cm	C
674-100SL-600	674-100SR-600	600 ml	Small - Chest Breadth 27 - 32 cm	C / D
674-100ML-250	674-100MR-250	250 ml	Medium - Chest Breadth 32 - 36 cm	B
674-100ML-500	674-100MR-500	500 ml	Medium - Chest Breadth 32 - 36 cm	C
674-100ML-750	674-100MR-750	750 ml	Medium - Chest Breadth 32 - 36 cm	C / D
674-100ML-1000	674-100MR-1000	1000 ml	Medium - Chest Breadth 32 - 36 cm	D / DD
674-100ML-1250	674-100MR-1250	1250 ml	Medium - Chest Breadth 32 - 36 cm	DD
674-100LL-500	674-100LR-500	500 ml	Large - Chest Breadth 36 - 42 cm	C
674-100LL-750	674-100LR-750	750 ml	Large - Chest Breadth 36 - 42 cm	C / D
674-100LL-1000	674-100LR-1000	1000 ml	Large - Chest Breadth 36 - 42 cm	D / DD
674-100LL-1250	674-100LR-1250	1250 ml	Large - Chest Breadth 36 - 42 cm	DD
674-100LL-1500	674-100LR-1500	1500 ml	Large - Chest Breadth 36 - 42 cm	DD / DDD
674-100XLL-1000	674-100XLR-1000	1000 ml	X-Large - Chest Breadth 42 cm - Over	D / DD
674-100XLL-1500	674-100XLR-1500	1500 ml	X-Large - Chest Breadth 42 cm - Over	DD
674-100XLL-2000	674-100XLR-2000	2000 ml	X-Large - Chest Breadth 42 cm - Over	DD / DDD
674-100XLL-2500	674-100XLR-2500	2500 ml	X-Large - Chest Breadth 42 cm - Over	DDD
674-100XLL-3000	674-100XLR-3000	3000 ml	X-Large - Chest Breadth 42 cm - Over	DDD

\* Breast Sizes (volumes) correlate poorly with clothing brassiere cup sizes.

## COSMAS CUP



- Minimizes breakdown under the breast
- Daily setup for reproducibility is quick and precise
- Comfortable for patient
- Small and non-constricting
- Longer strap goes around patient's neck and attaches to shorter strap using hook and loop closure

The Cosmas Cup is a customized device that provides lift to the patient's breast and helps eliminate unwanted folds during radiation therapy treatment.

### Specifications

**Material:** Thermoplastic

**Thickness:** 2.4 mm



Item #	Cosmas Cup	Size	Quantity
674-200	Size B	5 cm x 22 cm	5/pkg
674-203	Size C	8 cm x 25 cm	5/pkg
674-204	Size D	10 cm x 28 cm	5/pkg

## MT SPANDAGE™ TUBLAR NET

### Latex Free Elastic Retainer Net



Tubular elastic stretch net can accommodate a wide variety of medical needs involving virtually every part of the body. Size should be determined by patient's shirt size.

Item #	Size	Length Stretched
674-308	Medium Chest	10 yards
674-309	Large Chest	10 yards
674-310	XL-Large Chest	10 yards
674-311	XX-Large Chest	10 yards
674-312	3X-Large Chest	10 yards

Others Sizes Available

## SUPER-ADHESIVE NYLON HOOK AND LOOP



An extra-strong, pressure-sensitive adhesive backing sticks where others fail. Adheres to most metals, plastics and painted surfaces.

### Specifications

**Temperature Range:** 0° to 120°F

**Color:** White

Item #	Super-Adhesive	Size
253-210	Hook	15' L x 1" W (38 x 2.54 cm)
253-211	Loop	15' L x 1" W (38 x 2.54 cm)
253-215	Hook	15' L x 2" W (38 x 5.08 cm)
253-216	Loop	15' L x 2" W (38 x 5.08 cm)

## TREATMENT CHAIR



This versatile Treatment Chair provides upright positioning for specialty treatment cases of head, neck, thorax, breast, and lung or for patients who have difficulty lying supine for treatments. The seated patient has improved comfort, increased lung volume and reduced respiratory motion.

The Treatment Chair has an open grid back that allows for posterior treatment of the breast, lung and thorax. Patient safety features for the treatment chair include a seat belt and a Velcro® chest belt with three vertical position locations. Patient comfort is enhanced with a vinyl covered foam seat cushion which is tapered lower at the back to prevent the patient from sliding forward and giving more support under the thigh. Velcro® tabs attached to bottom of the seat cushion make it non-slip and easily removable from the chair when installing on the treatment table.

The Treatment Chair Base attaches to the front or side of the couch. The carbon fiber couch uses four plastic blocks using t-bolts and wing nuts, or to couch rails using four plastic rail blocks specific to the couch with t-bolts and wing nuts. The chair front is designed to be referenced to the table edge or to the table rail for reproducibility. The chair back is then secured to the chair base with a knob. Once the chair back is secured to the base the chair back can recline to five positive-locking positions between -5°, 0° and 20° (85° to 110°). The chair back has a carbon fiber grid treatment window with 0.007" thick polyester covering to prevent skin protrusion through the grid. Under the carbon fiber and polyester the dose rate is less than 1 mm of water equivalent build-up.

The Treatment Chair includes a Baseplate with a Round Head Cup and Straps. The straps can be mounted in three different positions over the head (Forehead, Nose or Chin). The Baseplate is typically mounted on the Treatment Chair Back in positions A to M. Positions N to Z are used when the Baseplate is rotated 180 degrees for taller patients. A notch in the Baseplate references the Baseplate location on the Treatment Chair. The Baseplate has two location pins and is secured to the Chair Back with a knob when the location is determined.

The Treatment Chair includes the Arms Down Assembly that consists of two stainless steel L-Bars and Arm Cradles. The L-Bar has vertical markings of 1-15 cm and slides into a locking clamp with rotation indexing of 1-12 locations. The horizontal leg of the L-Bar has 4 hole locations, A-D, for placement of the Arm Cradle. The Arm Cradle is lined with a foam pad.

### Optional Items

**Item 254-050** The Baseplate for a U-Frame Head Mask accommodates a Silverman Head and Neck Support and a Standard U-Frame Thermoplastic Head Mask. A Spacer is also included if needed. This Baseplate is also notched for position location and has two location pins and is secured to the Chair Back with a knob. The Baseplate is typically mounted to the chair back in positions A to M. Positions N to Z are used when the Baseplate is rotated 180 degrees for taller patients. The Baseplate also has two positions, A and B, for the U-Frame Clamps. 'A' is used when the Baseplate is in the A-M position and 'B' is used when the Baseplate is used in the N to Z positions. Use standard procedure for forming head mask.

**Item 254-070** The Arms Up Assembly includes two vertical black posts, adjustable elbow support and handles. Each post is marked R or L indicating chair or patient right or left. Each post has a keyhole slot at the bottom which fits over a pivot pins located at the bottom center on each side of the chair. The post is then secured with a knob into an adjustable sliding lock. The Arm posts can be positioned in any of 6 anterior positions, indicated by the markings of 1-6 on the side of the chair and locked with a knob. The elbow support and handles can be moved vertically to fit the patient. The elbow support can be indexed from 0-33 cm and the handles can be indexed from 1-35 cm.

### Specifications

**Back Opening:** 20" Wide x 24.5" High (508 x 622 mm)

**Polyester covering Thickness:** 0.007" (0.1778 mm)

**Surface Exposure at 6 MV:** No reading was obtained under the polyester only. Under the carbon fiber and polyester the dose rate is less than 1mm of water equivalent build-up.

**Seat Size:** 25" Wide x 17.5" Deep (635 x 444 mm)

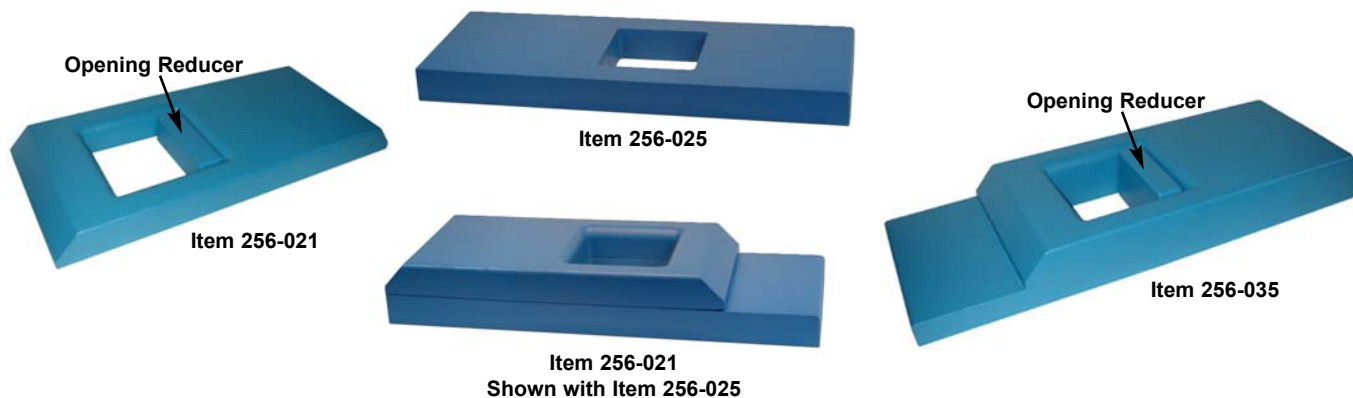
**Chair Base Weight:** 28 lb (12.7 kg)

**Weight with Chair Back and Arm-Down Supports:** 47 lb (21.3 kg)

**Total Weight with All Parts:** 57 lb (25.9 kg)

Item #	Description
254-000	Treatment Chair
Item #	Optional Accessories
254-050	Baseplate for U-Frame Head Mask
254-070	Arms Up Assembly

## BELLY BOARDS



A Belly Board is used to allow the intestinal tract to drop out of the treatment field. Treatment through the foam material has a low absorption of the beam. This unit is made of lightweight, non-breakable high density foam and is coated with a durable blue finish for easy cleaning. The light weight allows for easy handling of the Belly Board. The soft flexible surface provides patient comfort and helps retain excellent body positioning. The bottom surface is anti-skid on treatment and simulator couches. The Belly Board includes one opening reducer that when placed in the opening makes the size of the opening smaller.

A new option is Item 256-025, the Belly Board Thickness Inserter. This Belly Board Thickness Inserter can be placed under the Small Belly Board, Item 256-021; to increase the thickness of the combined Belly Boards to 8" (20.3 cm) The Belly Board Thickness Inserter has the same size opening as the Small and Large Belly Boards and has the same width and length as the Large Belly Board.

When the EXACT Enhance Bar (Item 244-250) is attached to the Belly Board with the Glue Dots (Item 244-256), the belly board can then be indexed using a Lock-Bar or a similar bar. This will allow positioning the belly board in the same position daily.

**Cleaning Instructions:** Soap and Water, 50/50 Bleach / Water or an ammonia solution can be used.

Efficacy of a Belly Board device with CT-Simulation in Reducing Small Bowel Volume Within Pelvic Irradiation Fields. By Indra J. Das, Ph.D., Int. J. Radiation Oncology Biol. Phys..., Vol. 39, No. 1, pp 67-76, 1977

### Specifications

#### Item 256-021 Belly Board, Small

**Material:** Foam  
**Density:** 0.03g/cm<sup>3</sup>  
**Opening:** 12 1/4" W x 13 3/8" L (31 x 34 cm)  
**Blue Reducer:** 11.8" W x 3.23" L x 4" T (30 x 8.2 x 10 cm)  
**Overall Size:** 20" W x 46" L x 4" T (50.8 x 117 x 10 cm)  
**Weight:** 6 lb (2.7 kg)

#### Item 256-025 Belly Board, Thickness Inserter

**Material:** Foam  
**Density:** 0.03g/cm<sup>3</sup>  
**Opening:** 12 1/4" W x 13 3/8" L (31 x 34 cm)  
**Overall Size:** 20" W x 58" L x 4" T (50.8 x 147 x 10 cm)  
**Weight:** 8 lb (3.6 kg)

#### Item 256-035 Belly Board, Large

**Material:** Foam  
**Density:** 0.03g/cm<sup>3</sup>  
**Opening:** 12 1/4" W x 13 3/8" L (31 x 34 cm)  
**Blue Reducer:** 11.8" W x 3.23" L x 7" T (30 x 8.2 x 17.8 cm)  
**Overall Size:** 20" W x 58" L x 7" T (50.8 x 147 x 17.8 cm)  
**Weight:** 14 lb (6.4 kg)

Item #	Description
256-021	Belly Board, Small
256-025	Belly Board, Thickness Inserter for 256-021
256-035	Belly Board, Large
244-250	EXACT Enhance Bar
244-256	Glue Dots, 60/Pkg



## PELVIS BELLY PLUS SYSTEM



269-655

The new generation of the Pelvis Belly Plus System comfortably positions patients, while achieving greater bowel displacement. The system is also easily transportable and provides every patient with the highest level of comfort.

### Ease of Use

- **Lightweight radiolucent T-form multi-treatment base**
- **Single lower extremity pad, with sculpted leg and thigh cushioning, provides greater support and comfort**
- **Therapist-friendly device, which makes it easy to transport from the simulation room to the treatment room**

### Dose Delivery

- **Proprietary multi-layered variable density foam pad set makes setup accurate and reproducible, while keeping patients comfortable**

### Comfort

- **Dual foam, massage-style face cushion aides in patient comfort**
- **Small and medium abdominal inserts accommodate a wide range of patient sizes, with an optional large abdominal insert package**

The Prone Belly Plus System will not accommodate thermoplastics.

### System includes

- Multi-treatment Base
- Pelvis Belly Pad Set
- Prone Face Cushion
- Handles
- Small Abdominal Insert
- Medium Abdominal Insert

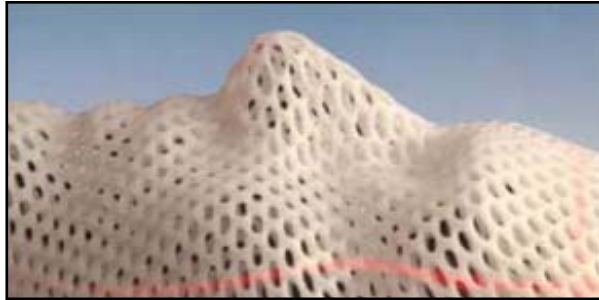
Made in the USA

Item #	Description
269-650	Pelvis Belly Plus System
269-461	Disposable Face Covers, 50/pkg
269-655	Large Abdominal Insert

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# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## AQUAPLAST RT®

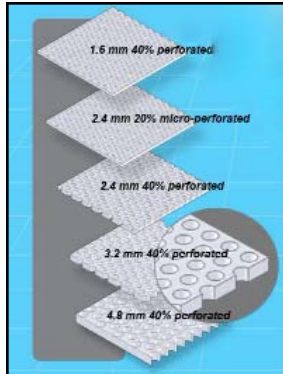


Aquaplast is available in two thicknesses (2.4 mm and 3.2 mm), and a variety of perforation patterns. The standard perforation pattern has a 40% open area. Also available is a 20% open (micro-perforated) pattern for certain applications. These percentages are approximate and vary based on sheet thickness.

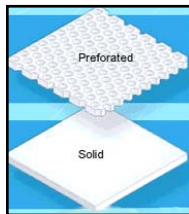
The consistent perforation pattern without solid areas results in a uniform shrinkage, forming a snug but comfortable mask without the bolus effect often associated with solid thermoplastics.

### Specifications

Color: Ivory

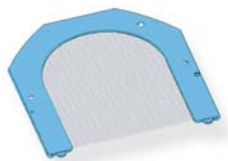


Item	Perforated Aquaplast Sheets	Size	Thickness	Quantity
RT-1781P	Prepunched on 9" (23 cm)	9" x 10" (23 x 25.5 cm)	2.4 mm	5
RT-1782	Unpunched	18" x 24" (46 x 61 cm)	2.4 mm	5
RT-1783P3	Prepunched on 12" (30.5 cm)	12" x 18" (30.5 x 46 cm)	2.4 mm	5
RT-1784	Unpunched	24" x 36" (61 x 91.75 cm)	2.4 mm	5
RT-1788	Unpunched	9" x 12" (23 x 30.5 cm)	2.4 mm	5
RT-1788P	Prepunched on 9" (23 cm)	9" x 12" (23 x 30.5 cm)	2.4 mm	5
RT-1892	Unpunched	18" x 24" (46 x 61 cm)	3.2 mm	5
RT-1896	Unpunched, Less stretch	24" x 36" (61 x 91.75 cm)	3.2 mm	5

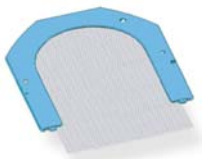


Item	Solid Aquaplast Sheets	Size	Thickness	Quantity
RT-1722	Unpunched	18" x 24" (46 x 61 cm)	2.4 mm	5
RT-1724	Unpunched	24" x 36" (61 x 91.75 cm)	2.4 mm	5
RT-1822	Unpunched	18" x 24" (46 x 61 cm)	3.2 mm	5

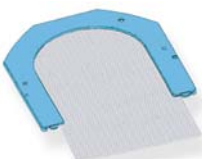
## AQUAPLAST TRADITIONAL U-FRAMES



Traditional Standard Mask



Traditional Extended Mask



Traditional Long Mask

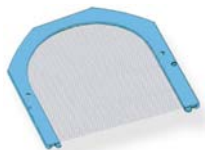
Item	Traditional U-Frames	Thickness	Quantity
RT-1779	Standard Mask	2.4 mm	5
RT-1889	Standard Mask	3.2 mm	5
RT-1989	Standard Mask	4.8 mm	4

Item	Traditional U-Frames	Thickness	Quantity
RT-1779X	Extended Mask	2.4 mm	5
RT-1889X	Extended Mask	3.2 mm	5

Item	Traditional U-Frames	Thickness	Quantity
RT-1779L	Long Mask	2.4 mm	5
RT-1889L	Long Mask	3.2 mm	5

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

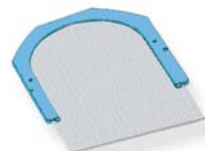
## AQUAPLAST SLIMLINE U-FRAMES



Slimline Standard Mask



Slimline Extended Mask



Slimline Long Mask



Slimline Open Eye & Mouth Mask

Item	Slimline U-Frames	Thickness	Quantity
RT-1779S	Standard Mask	2.4 mm	5
RT-1889S	Standard Mask	3.2 mm	5
RT-1989S	Standard Mask	4.8 mm	4

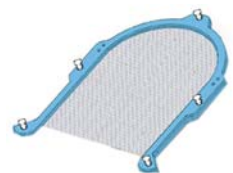
Item	Slimline U-Frames	Thickness	Quantity
RT-1779SX	Extended Mask	2.4 mm	5
RT-1889SX	Extended Mask	3.2 mm	5

Item	Slimline U-Frames	Thickness	Quantity
RT-1779SL	Long Mask	2.4 mm	5
RT-1889SL	Long Mask	3.2 mm	5

## AQUAPLAST OPEN EYE & MOUTH SLIMLINE U-FRAME

Item	Slimline U-Frame	Thickness	Quantity
RT-1889YSR	Open Eye & Mouth - Variable Perf	3.2 mm	5

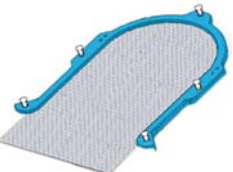
## AQUAPLAST HEAD ONLY S-FRAMES



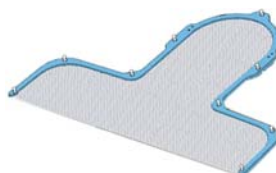
Head Only Standard Mask



Head Only Extended Mask



Head Only Long Mask



Head and Shoulder Standard Mask

Item	Head Only S-Frames	Thickness	Quantity
RT-1779SD	Standard Mask	2.4 mm	10
RT-1889SD	Standard Mask	3.2 mm	10

Item	Head Only S-Frames	Thickness	Quantity
RT-1779SDX	Extended Mask	2.4 mm	10
RT-1889SDX	Extended Mask	3.2 mm	10

Item	Head Only S-Frames	Thickness	Quantity
RT-1779SDL	Long Mask	2.4 mm	10
RT-1889SDL	Long Mask	3.2 mm	10

## AQUAPLAST HEAD AND SHOULDERS S-FRAMES

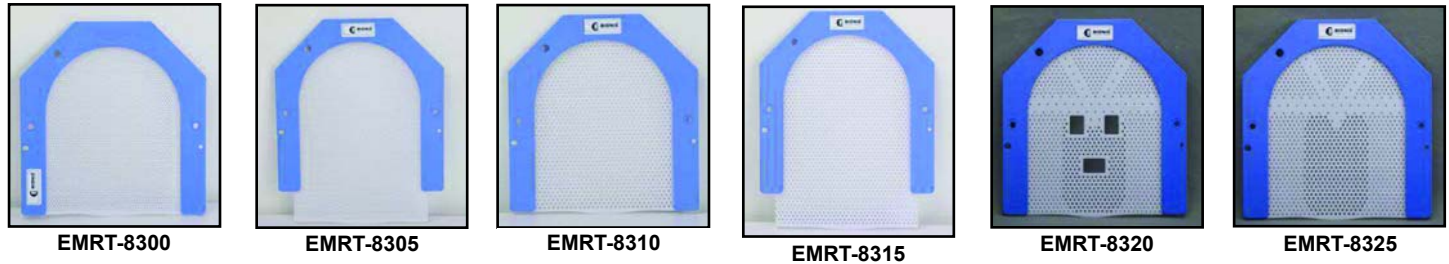
Item	Head and Shoulders S-Frames	Thickness	Quantity
RT-1782SD	Standard Mask	2.4 mm	10
RT-1882SD	Standard Mask - Less Stretch	3.2 mm	10
RT-1892SD	Standard Mask	4.8 mm	10

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## BIONIX® THERMOPLASTIC MASKS

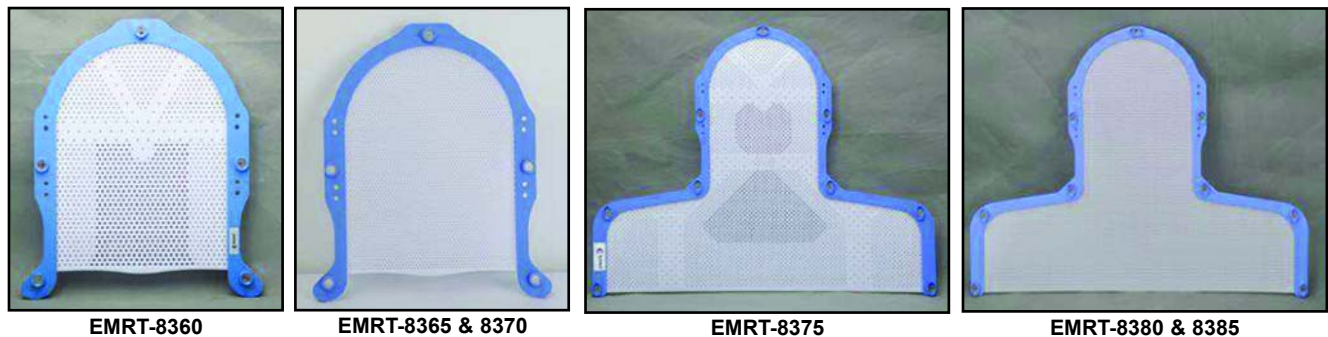
- Non-stick material provides improved patient comfort
- Pins smoothly lock and unlock, helping to keep the patient at ease
- Minimal shrinkage for continuous use
- Dry Oven and Waterbath compatible

Our newly enhanced, non-stick thermoplastic masks offer superior positioning, ease of use and provide improved patient comfort. The masks also feature convenient pins that are quiet and easy to use, enhancing patient and clinician satisfaction.



Item	Bionix® Standard U-Frames	Thickness	Quantity
EMRT-8300	10" x 10", Standard U-Frame	2.4 mm	10/Box
EMRT-8305	10" x 12", Extended U-Frame	2.4 mm	10/Box
EMRT-8310	10" x 10", Standard U-Frame	3.0 mm	10/Box
EMRT-8315	10" x 12", Extended U-Frame	3.0 mm	10/Box
EMRT-8320	10" x 10", Reinforced Claustrophobic U-Frame	2.4 mm	10/Box
EMRT-8325	10" x 12", Reinforced Extended U-Frame	2.4 mm	10/Box

Fits Most Head Boards Industry Wide

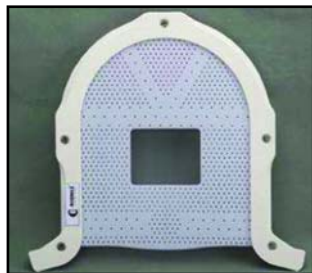


Item	Bionix® S-Type Frames	Thickness	Quantity
EMRT-8360	Head Only Reinforced S-Type	2.4 mm	10/Box
EMRT-8365	Head Only S-Type	2.4 mm	10/Box
EMRT-8370	Head Only S-Type	3.0 mm	10/Box
EMRT-8375	Head & Shoulder Reinforced S-Type	2.4 mm	10/Box
EMRT-8380	Head & Shoulder S-Type	2.4 mm	10/Box
EMRT-8385	Head & Shoulder S-Type	3.0 mm	10/Box

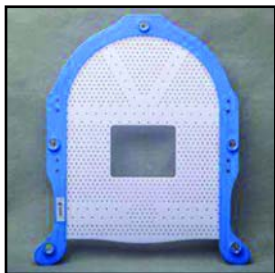
Fits S-Type System

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## BIONIX® FREEVIEW™ OPEN FACE MASKS



EMRT-8331



EMRT-8361

Bionix® FreeView™ Open Face Masks are designed with patient comfort in mind, while maintaining setup efficiency. The masks offer a light and smooth feeling creating a positive treatment experience for patients experiencing claustrophobia or anxiety.

Item	Embrace™ Thermoplastic Masks	Thickness	Quantity
EMRT-8331	FreeView™ Head Only Reinforced VersaFrame	2.4 mm	10/Box
EMRT-8361	FreeView™ Head Only Reinforced S-Type	2.4 mm	10/Box

Fits S-Type System & VersaBoard System

## BIONIX® THERMOPLASTIC MASKS FOR VERSABOARD™



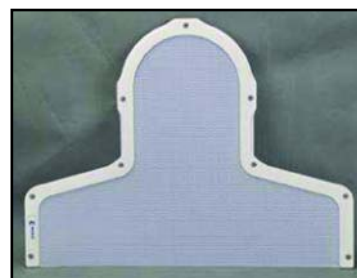
EMRT-8330



EMRT-8335 & EMRT-8340



EMRT-8345



EMRT-8350 & EMRT-8355

Item	Bionix® VersaBoard™ Masks	Thickness	Quantity
EMRT-8330	Head Only Reinforced VersaFrame	2.4 mm	10/Box
EMRT-8335	Head Only VersaFrame	2.4 mm	10/Box
EMRT-8340	Head Only VersaFrame	3.0 mm	10/Box
EMRT-8345	Head and Shoulder Reinforced VersaFrame	2.4 mm	10/Box
EMRT-8350	Head and Shoulder VersaFrame	2.4 mm	10/Box
EMRT-8355	Head and Shoulder VersaFrame	3.0 mm	10/Box

Used with Bionix VersaBoard & Max 3™ Plus Breast System

## BIONIX® VERSABOARD ULTRA MASK SET



Anterior Mask



Posterior Mask

Item	Description	Quantity
EMRT-8741	VersaBoard™ Ultra Thermoplastic Set	10/Box

Fits Bionix VersaBoard Ultra™

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## TRUGUARD™ Custom Tongue and Jaw Positioner



- Helps protect oral cavity from backscatter radiation by sparing surrounding soft tissue
- Reproducible, passive positioning of the tongue to separate sensitive, healthy tissue
- Compatible with all thermoplastic masks
- Advanced, custom positioning aid
- Quickly created within department
- Easy to assemble, clean and store

Bionix® TruGuard™ helps radiation therapy departments position and protect sensitive oral tissue with an easy to fit, custom device for head and neck external beam radiation therapy treatments.

Bionix® TruGuard™ is an advanced, customizable tongue and jaw positioner. It passively positions the tongue and jaw separating sensitive healthy tissue in a reproducible way. TruGuard also helps to improve patient care by protecting dental work from radiation helping to reduce backscatter. TruGuard™ is designed to be easily formed within the department during initial set up. It eliminates the time and hassle associated with “homemade” devices and eliminates the need to send the patient for an expensive prosthodontic.

One complete TruGuard includes the following components:

- (1) Dental Tray
- (1) Indexing Tab
- (1) Tongue Depressor
- (1) Spacer
- (2) Thumb Fasteners

Item 274-205, the standard TruGuard™ is ideal for patients with normal to small mouths.

Item #	Description	Quantity
274-205	TruGuard™ - Standard	5/Box

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# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## BITELOK®

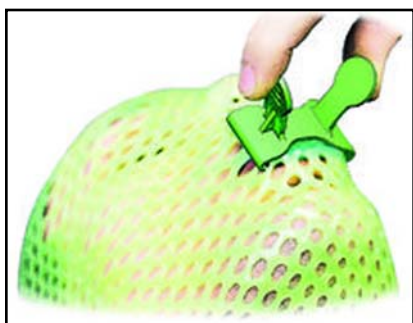
Higher Precision for Treatment Accuracy



The Klarity BiteLok is an improved, innovative design for increased head and neck immobilization. It is made of a rigid, breathable mouthpiece and indexes to the patient's mouth using fast-setting dental putty. No water or warming is needed to activate the putty. The BiteLok features a smaller profile than any other mouthpiece, and the wide airway passage allows for better breathability. The BiteLok is a significant advancement in comfortable, accurate positioning for head and neck treatments.



Once the BiteLok is indexed to the patient's mouth, a thermoplastic mask is placed overtop. While the mask is still warm, a hands-free QuickFit™ tool forms the mask around the edges of the BiteLok mouthpiece. The result is a secure, reproducible mouthpiece that indexes to both patient and mask, that can also be removed for cleaning. Once the mask has fully cured, the BiteLok can be removed from the mask by pushing the corner of the mask inward to release the mouthpiece.



Optional use tongue depressors and diverters allow for additional conformability and stabilization.

The BiteLok can be equipped with a tongue depressor for additional mouth placement options. The Tongue Depressors come in two different sizes (short and long), both offering a comfortable fit that keeps the tongue in a down position without obstructing the airway. The tongue depressors securely snap into the BiteLok. A removal tool is included if the tongue depressor needs to be removed or changed.

The BiteLok comes with a Right and Left Tongue Diverter. Each diverter is marked with "up", for easy placement. The Diverters securely snap into the BiteLok, and can be removed with a tongue device removal tool (included with package).

Each BiteLok includes:

- BiteLok
- Dental Putty
- QuickFit tool
- Tongue Depressors (long and short)
- Tongue Diverters (right and left)
- Tongue Device Removal Tool

\*US and International patents pending



Item#	Description
274-220	BiteLok

## KLARITY WHITE™ U-FRAME MASKS

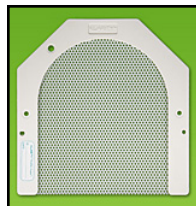
- **Low Melt Temperature:** Reduces set-up time and shrinkage for maximum patient comfort
- **Extended Molding Time:** Allows for longer manipulation time
- **Smooth Edge Comfort Design:** Reduces discomfort around the neck line

- **Low Profile Frame:** More beam angles can be utilized
- **ID Label**
- **Fit most head and neck boards in the industry**



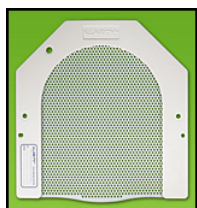
**Item KLRT-450U Klarity ContourFrame™**  
(9" x 10", 2.4 mm)

- Reinforced nose for added rigidity
- Contoured, perforated patch pattern for easier breathing and increased comfort for the eyes and mouth



**Item KLRT-430W Klarity ProfileFrame™**  
(10" x 10", 3.2 mm, 42% Perforation)

- Narrow frame and more thermoplastic



**Item KLRT-430UC Klarity EzeFrame™**  
(9" x 10", 3.2 mm)

- Thicker for a more rigid mold
- Smooth edge comfort design exclusively



**Item KLRT-431W Klarity ProfileFrame™**  
(10" x 12", 3.2 mm, 42% Perforation)

- Narrow frame and more thermoplastic
- Extended length

Item #	Klarity White Masks	Thickness	Size	Perforation	Quantity
KLRT-420W	ProfileFrame	2.4mm	10" x 10"	36%	12
KLRT-421W	ProfileFrame Extended Length	2.4mm	10" x 12"	36%	12
KLRT-450U	ContourFrame	2.4mm	9" x 10"		12
KLRT-430UC	EzeFrame	3.2mm	9" x 10"		12
KLRT-430W	ProfileFrame	3.2mm	10" x 10"	42%	12
KLRT-431W	ProfileFrame Extended Length	3.2mm	10" x 12"	42%	12

Used with All Bionix Standard Headboards and Most Other Headboards

## KLARITY WHITE™ S-TYPE MASKS



**Item KLRT-461S**  
S-Frame, Head/Shoulder

- **Transmission factor is less than carbon fiber**
- **Easy-to-use push/pull expansion knob system**
- **Thermoplastic has minimal shrinkage**
- **Will not stick to the board or patients' clothes**
- **Low melt temperature**
- **Long melting period**

The S-Type thermoplastic line was designed to offer dependable immobilization for the S-Type system. Includes Push Pins.

Item #	Klarity White S-Type Masks	Thickness	Perforation	Quantity
KLRT-461S	Head & Shoulder	3.2 mm	42%	6
KLRT-461SH	Head	3.2 mm	42%	6
KLRT-464S	Head & Shoulder with IMRT AccuPerf	3.2 mm		6
KLRT-464SH	Head with IMRT AccuPerf	3.2 mm		6

Used with the S-Type Boards for Head and Neck IMRT



# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

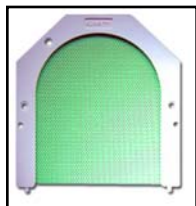
## KLARITY GREEN® THERMOPLASTIC MASKS

- Least shrinkage of all leading thermoplastic masks
- Longer working time for detailed, better-fitting masks
- 100% non-stick surface when heated
- Low working temperature 160°-165° F
- Stronger than traditional RT thermoplastics
- Ultra-secure reinforcing perforation pattern
- Use with standard U-Frame systems from CIVCO, Klarity, WFR/Qfix, Bionix and others

The Karity Green thermoplastic masks fit on most major manufacturer's headboards and S-frame systems. Klarity Green thermoplastic material does not stick to itself and has a longer working time than other thermoplastic material.

The IMRT AccuPerf™ has higher fixation strength, minimal bolus effect, and better patient comfort.

### KLARITY ProfileFrame™ U-Frame Masks with KLARITY GREEN® Thermoplastic



KLRG-420W

- Superior U-Frame Head Mask for Standard Headboards
- Lowest shrinkage of all leading thermoplastic masks
- Wider Clearance for all head sizes
- 100% non-stick surface when heated
- Fits All Standard U-Frame BasePlates
- Stronger than traditional RT white thermoplastics

Item #	Klarity Green® ProfileFrame™ U-Frame	Thickness	Size	Perforation	Quantity
KLRG-420W	ProfileFrame	2.4 mm	10" x 10"	36%	12
KLRG-421W	ProfileFrame, Extended Length	2.4 mm	10" x 12"	36%	12
KLRG-430W	ProfileFrame	3.2 mm	10" x 10"	42%	12
KLRG-431W	ProfileFrame, Extended Length	3.2 mm	10" x 12"	42%	12

Used with All Standard Headboards

### KLARITY GREEN® ProfileFrame™ Masks with IMRT AccuPerf™



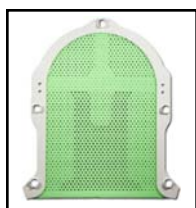
KLRG-430-1W



KLRG-464-1W

Item #	Klarity Green® ProfileFrame™ with IMRT AccuPerf™	Thickness	Quantity
KLRG-430-1W	ProfileFrame	3.2 mm	12
KLRG-464-1W	ProfileFrame, Extended Length	3.2 mm	12

### KLARITY S-Type Masks with IMRT AccuPerf™



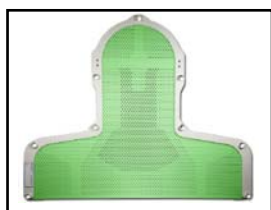
KLRG-461-4SHT



KLRG-461-5SHT

- T-Lok™ pin design for easy on/off and less breakage
- Use with standard S-Frame systems from CIVCO, Klarity, WFR/Qfix and others
- Includes Push Pins

Item #	Klarity Green® S-Type with IMRT AccuPerf™	Thickness	Quantity
KLRG-461-4SHT	S-Type Head	3.2 mm	6
KLRG-461-4ST	S-Type Head/Shoulder	3.2 mm	6
KLRG-461-5SHT	S-Type Head, Extended Length	3.2 mm	4



KLRG-461-4ST



KLRG-461-8SHTM



KLRG-461-8STEM

Item #	Klarity Green® S-Type with IMRT AccuPerf™	Thickness	Quantity
KLRG-461-8SHTM	Open Eye & Mouth Head	3.2 mm	6
KLRG-461-8STEM	Open Eye & Mouth Head & Shoulders	3.2 mm	6

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## UNLIMITED SCISSORS



The Unlimited Scissors cuts through softened or unsoftened thermoplastics with powerful leverage. The flexible, non-slip handles provide a comfortable grip for right or left hands.

Item #	Description
RT-4932	Unlimited Scissors

## THERAMARK



Designed specifically for use on radiation therapy immobilization masks, Suremark TheraMark is a precision label that allows technologists to accurately mark specific points for radiation treatment.

NOTE: Contains Natural Rubber Latex



Item	Description	Quantity
462-200	Suremark TheraMark	110/Box

## SOFTSTRIPS™ COVERS



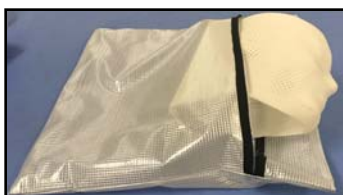
- Split backing for quick and easy applicaion
- 0.5" (1.27 cm) separated lateral slits for curved edges
- Cushioned for patient comfort and safety
- Rugged for use during entire duration of treatment

SoftStrips™ Covers are cushioned 1" wide (2.54 cm) adhesive tape designed to bring comfort to the patient from the sharp jagged edges created from holes cut out of thermoplastic masks. SoftStrips™ Covers have a convenient split backing enabling therapists to easily apply this cushy tape to the thermoplastic mask.

SoftStrips™ Covers have lateral slits every 0.5" (1.27 cm) to allow for easy adhesion around bends and curves. The SoftStrips™ adhesive is designed to remain on the thermoplastic mask for the duration of treatment, up to 8 weeks. They are perfect for covering the area around the holes for eyes, nose, and mouth

Item #	Description	Size
253-300	SoftStrips™ Covers	144" L x 1" W (366 x 2.54 cm)

## ANTIMICROBIAL STORAGE BAG FOR PATIENT TREATMENT DEVICES

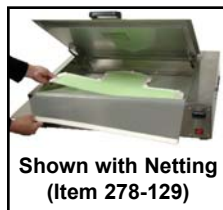


- Antimicrobial to prevent growth of microorganisms
- Self-deodorizing
- Approximately 20"x 20"
- Zipper to contain all contents safely
- Completely sealed to prevent cross-contamination between masks that may touch
- Can be given to the patient (since a lot of patients take their mask home with them) once treatment is completed

This storage bag was designed to contain a patient's individual treatment devices for the course of treatment. This storage bag will prevent cross-contamination to prevent infections. This bag also makes transport from CT Sim to treatment room easy and allows for easy organization in the treatment room. This storage bag is a per patient use and disposable.

Item #	Description	Qty
253-400	Antimicrobial Storage Bag f/Patient Treatment Devices	20/Box
253-405	Antimicrobial Storage Bag f/Patient Treatment Devices	50/Box
253-410	Antimicrobial Storage Bag f/Patient Treatment Devices	100/Box

## DIGITAL THERMOPLASTIC WATER BATH



- Largest pan on the market
- Capable of holding the largest head & shoulder masks
- 3-position lid for use under existing cabinetry
- Temperature controller precise within  $\pm 1^\circ\text{F}$
- UL, CSA, CE Marked

The Digital Thermoplastic Water Bath is capable of handling the largest head and shoulder masks in the industry. The water bath features a hinged lid opening in four positions. This design is ideal when the unit is placed on a counter and under overhead cabinets. The Digital Thermoplastic Water Bath delivers precise temperatures within  $\pm 1$  degree.

All water baths must be plugged into a G.F.C.I. (Ground Fault Circuit Interrupter) protected AC electrical receptacle.

An optional item for the water bath is the Lifting Net for Thermoplastic Water Baths (Item 278-129). This net allows for lifting the frame out of the water without reaching into the water or using tongs.

### Specifications

**Inside Dimensions:** 26" W x 22" L x 5" H (66 x 55.9 x 13 cm)

**Overall Dimensions:** 33" W x 26" L x 8" H (83.8 x 66 x 20.3 cm)

**Material:** Stainless Steel

**Temperature Range:** 155°F to 175°F or 68°C to 79°C)

**Electrical:** Item 278-247: 120 VAC, 15 Amps, 50/60 Hz

Item 278-248: 200-240 VAC, 8 Amps, 50/60 Hz

**Plug:** Hospital Grade Power Cordset

**Weight:** 42 lbs (19 kg)

**UL, CSA and CE Marked**

**Note:** This unit ships on a skid via truck

Item	Description
278-247	Digital Thermoplastic Water Bath, 120 VAC
278-248	Digital Thermoplastic Water Bath, 220 VAC
278-129	Lifting Net for Thermoplastic Water Baths 22"x25-7/8"
878-160	Scotch-Brite Cleaning Pads, 10/Pkg

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# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## THERMOPLASTIC ELECTRIC HEATING PAN



- Tempered glass cover
- Cast aluminum base
- Nonstick surface, inside & out
- Fully immersible and dishwasher safe with heat control removed
- One year limited warranty

### Specifications

**Overall Dimensions:** 23" W x 13" D x 9" H (58.4 x 33 x 22.9 cm)

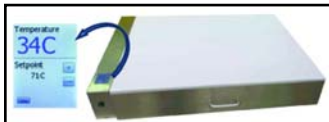
**Inside Dimensions:** 16" W x 12" D x 2" H (40.6 x 30.5 x 5 cm)

**Power:** 120 VAC, 1500 Watts

**UL Listed**

Item #	Description
278-051	ThermoPlastic Electric Heating Pan

## THERMOPLASTIC WARMING OVEN



This single-rack thermoplastic oven softens thermoplastic material used for immobilization during radiation therapy. This dry-heat system meets today's need for universal precautions to reduce cross-contamination that can occur in water baths and is a space-saving alternative to bulkier double-rack ovens.

Digital temperature control makes the process easy and intuitive to heat thermoplastic material to the proper consistency. Thermoplastic will be ready to use in 8-15 minutes (depending on the size of the material and whether it is framed or unframed).

The easy-sliding drawer opens fully to provide maximum access to the material.

### Specifications

**Outside Dimensions:** 31" W x 22" D x 5" H (79 x 56 x 13 cm)

**Rack Dimensions:** 26" W x 19.5" D (66 x 49.5 cm)

**Voltage:** 115 V 50-60Hz, 1350W

**Finish:** White baked enamel on cold rolled steel, stainless steel trim

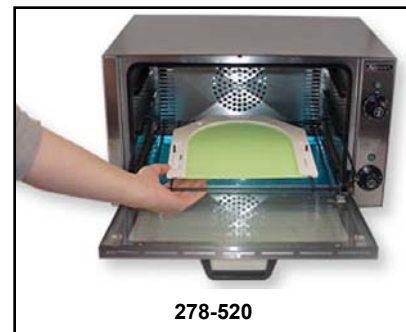
**Weight:** 46 lb (21 Kg)

Item #	Description
278-007	ThermoPlastic Warming Oven

- Space-saving
- Non-stick surface
- Insulated case
- Easy to use digital temperature setting
- Auto shut-down
- Touch Display
- Convection heat circulation
- Dry-heating eliminates risk of cross-contamination and disease transmission
- Single-rack oven is space-saving, compact
- Large capacity will fit head and shoulder masks or large thermoplastic sheets

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## KLARITY OVENS FOR THERMOPLASTIC MASKS



- Simple and easy to use
- Significantly reduced risk of bacterial infection
- Oven warms up quickly
- Non-stick surface
- Easy to clean

Klarity ovens are a simple and easy to use heating method for all thermoplastic masks, Klarity Cushions™ and other thermoplastic devices. Klarity dry-heat systems meet today's need for extra precautions to reduce cross-contamination during patient care. By using convection heat to prepare thermoplastics, we have removed the need for water baths, mitigating the risk of bacterial infection. The result is a safer, more effective heating method.

The Klarity AirFlow™ oven heats up in 6 minutes, and can be used with all standard thermoplastics. Non-stick Teflon racks allow masks to be placed directly on the rack for easy preparation. A simple interface automatically sets the oven to 165°F, and can be manually adjusted as well. The AirFlow Oven heats masks in 3-5 minutes and is the fastest oven available today.

Thermoplastics come out of the oven completely dry and ready to be formed. Klarity ovens remove unnecessary patient discomfort caused by water, allowing you to provide a better care experience for your patient.

### Item 278-513 and 278-514 Klarity AirFlow Ovens

These Klarity AirFlow Ovens are our most advanced and efficient dry heating option. The oven features two shelves allowing multiple thermoplastic devices to be prepared simultaneously. Ovens are equipped with cordset and NEMA plug.

#### Specifications

**Inner Dimensions:** 25" W x 19" D x 10.5" H (64 x 48 x 27 cm)  
**Outer Dimensions:** 31.5" W x 34.5" D x 16" H (80 x 88 x 41 cm)  
**Finish:** Stainless Steel  
**Weight:** 88 lb (40 Kg)  
**Voltage:** 110V

### Item 278-516 Stainless Steel Klarity AirFlow Oven Cart

The Klarity Stainless Steel AirFlow Oven Cart is a sturdy and flexible option for oven placement. The stainless steel cart is easy to assemble and is secure and durable. It supports the Klarity AirFlow Oven and comes with an additional shelf for storage.

#### Specifications

**Outer Dimensions:** 36" W x 30" D x 28" H (91.5 x 76 x 71 cm)  
**Weight:** 50 lb (22.7Kg)

### Item 278-517 Klarity AirFlow Oven CounterMount

The AirFlow CounterMount is a space-saving countertop extender for the AirFlow oven. The two HDPE plastic bars attach to your existing countertop and extend off the edge to support the oven feet. The AirFlow CounterMount comes with a template for installation, all hardware, and two lengths of bolts for different countertop thicknesses.

#### Specifications

Each mount is 3" W x 26" D x 1" H (7.6 x 66 x 2.5 cm)

### Item 278-520

The Klarity Mini Oven is an economical and easily transportable dry heat option. For Head Mask preparation and Small and Medium AccuCushion™ preparation only.

#### Specifications

**Inner Dimensions:** 15" W x 12" D x 10" H (38 x 30.5 x 25 cm)  
**Outer Dimensions:** 21" W x 19" D x 13" H (53 x 48 x 33 cm)  
**Finish:** Stainless Steel  
**Weight:** 34 lb (15.5 Kg)  
**Voltage:** 110V

Item #	Description
278-513	Klarity AirFlow Oven, 120 V
278-514	Klarity AirFlow Oven, 220 V
278-516	Stainless Steel Klarity AirFlow Oven Cart
278-517	Klarity AirFlow Oven Counter Mount
278-520	Klarity Mini Oven, 110V

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## SECUREFOAM™



SecureFoam™ is a two-part foaming agent developed to immobilize patients during radiation therapy treatment. SecureFoam™ offers the ability to quickly create an inexpensive, customized positioning device.

SecureFoam™ is available in three sizes to meet all of your needs: small, for pediatrics and small anatomical areas; medium, “ideal size” for breast and lung set-ups; and large, for large anatomical areas.

Each package contains:

- (1) 2 part foaming agent (A & B)
- (1) Large containment bag

Shelf Life: 6 Months

Item	SecureFoam™	Quantity
244-500	Small	10/Pkg
244-502	Medium	10/Pkg
244-504	Large	10/Pkg

- Maintains shape longer than the other two-part foams.
- Reimbursable as a complex treatment device.
- Simple & cost effective method of customized repositioning.
- Patient comfort liners are also available.
- Available in 3 volumetric sizes to meet your patient positioning needs.

## SECUREVAC™ CUSHIONS



244-404

SecureVac™ Cushions are customizable devices designed for long-term, multi-patient use. The SecureVac™ Cushions are constructed from a durable nylon material in our signature navy color, with an unparalleled one year warranty. The SecureVac™ Cushions maintain their shape during the course of treatment and can be used with a variety of Bionix Radiation Therapy adapters to reproduce patient setup.

Item #	SecureVac™	Size	Liter Fill
244-404	Cushion	70 x 50 cm	15
244-406	Cushion	70 x 70 cm	20
244-410	Cushion	100 x 70 cm	35
244-412	Cushion	100 x 100 cm	50
244-414	Cushion	150 x 70 cm	55
244-416	Cushion	150 x 100 cm	80
244-395	Cushion	80 x 150 cm	35
244-396	Cushion	80 x 150 cm	47
244-397	Cushion	80 x 150 cm	55
244-398	Cushion	80 x 150 cm	70
244-442	Repair Kit		

- Manufactured from thick nylon for a durable, rigid mold
- Includes dual check valve and hose clamp to reduce leakage
- Holds form for an entire treatment cycle (6 - 8 weeks)
- Adaptable to industry standard pumps
- Locks down to a variety of tabletops

## MULTI-CHAMBER SECUREVAC™ CUSHIONS



244-420

244-422

### Item 244-420

#### SecureVac™ Tri-Vac, 3 Chambered Cushion

The Tri-Vac Cushion is designed for full body immobilization. The cushion has three separate chambers:

- Upper Chamber 60 L x 100 W cm, 28L Fill
- Middle Chamber 65 L x 70 W cm, 20L Fill
- Lower Chamber 90 L x 70 W cm, 35L Fill

### Item 244-422

#### SecureVac™ T-Vac, 2-Chambered Cushion

The T-Vac cushion has two separate chambers and is shaped like the letter "T". The shape allows the SecureVac™ Cushion to be a popular choice for immobilizing upper extremities. It works extremely well when utilized with a Butterfly Board.

- Upper Chamber 60 L x 100 W cm, 28L Fill
- Lower Chamber 100 L x 70 W cm, 30L Fill

Item #	SecureVac™
244-420	Tri-Vac, 3 Chambered Cushion
244-422	T-Vac, 2-Chambered Cushion

The Multi-Chamber SecureVac Cushions are produced using an innovative, patented design that provides therapists with the ability to easily create large full body molds.

Each sequential chamber is formed independently from the other to ensure a custom mold is formed around each patient's anatomical contours. The multi-chamber design also makes it easy to recreate a section without losing the entire mold.

## SECUREVAC™ PUMP & ACCESSORIES



244-430

The dual action pump easily inflates and deflates SecureVac Cushions for easy molding. An optional foot switch, Item 244-433 is available. A hose adapter must be ordered separately to connect the pump to a cushion.

Item #	Description
244-430	SecureVac Dual Action Pump, 110V
244-431	SecureVac Dual Action Pump, 220V

Item #	Pump to Cushion Hose Adapter	Length
244-440	Bionix Pump to Bionix Cushion	8' (2.4 m)
244-444	Bionix Pump to VacFix Cushion	8' (2.4 m)
244-446	Bionix Pump to CIVCO Cushion	8' (2.4 m)
244-448	CIVCO Pump to Bionix Cushion	6" (15 cm)
244-450	Central Vac Pump to Bionix Cushion	8' (2.4 m)



The foot switch connects to the Bionix SecureVac pump and inflates and deflates SecureVac cushions for easy molding.

Item #	Description
244-433	SecureVac Foot Switch
244-447	Hose Adapter, Bionix Foot Switch for CIVCO Cushion



The SecureVac Bar Adapter offers two points of localization to index your cushions to the treatment couch.

Item #	Description
244-432	SecureVac™ Bar Adapter



The T-Form SecureVac Box Adapter is radiolucent and offers four points of localization. The Box Adapter will create a reliable mold to ensure accurate patient setups.

Item #	Description
244-434	T- Form SecureVac™ Box Adapter

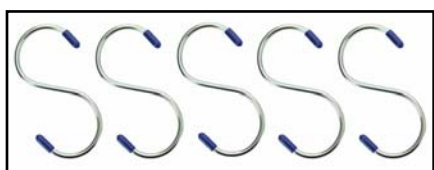


The Rolling Storage Cart safely and conveniently stores 7-10 SecureVac Cushions

### Specifications

**Size:** 61" L x 23" W x 65" H (155 x 58.5 x 165 cm)

Item #	Description
244-436	Rolling Storage Cart for Vacuum Cushions



S Hooks are available to hang your bags. They include plastic-covered tips which protect the bags.

Item #	Description
244-438	"S"- Hooks for Storage Cart, 5/Pkg

T



# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## VACFIX VACUUM CUSHIONS



- Reuseable
- Precise
- Comfortable
- Non-toxic
- Fast and easy to use
- Maintains shape throughout the 6 week treatment period
- Custom shapes and sizes available
- Cushions are MRI compatible
- Grommet may be added to any cushion to enable cushion to hang

VacFix Vacuum Cushions are the original, high quality reliable vacuum fixation cushions. They are engineered with the thinnest plastic foil available to eliminate the build-up effect while remaining extremely rigid and resistant towards foil rupture. The ability to mold very fine structures and thereby include the highest number of fixation points provides the optimal reproducibility - an issue that has become vital in modern radiotherapy and diagnostic procedures.

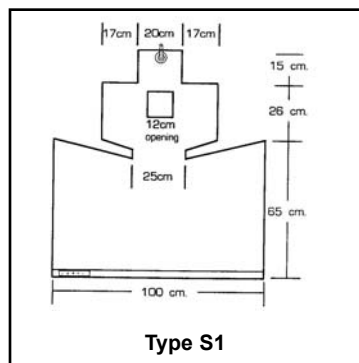
Item	VacFix Cushion	Size (W x L)	Liter Fill
244-108	Pelvic & Whole Body	100 x 150 cm	65
244-109	Pelvic & Whole Body	100 x 150 cm	70*
244-110	Pelvic & Whole Body	100 x 150 cm	75
244-111	Thorax	100 x 100 cm	35
244-112	Thorax	100 x 100 cm	40*
244-113	Thorax	100 x 100 cm	45
244-114	Thorax	100 x 100 cm	50
244-115-20	Breast	70 x 100 cm	20
244-116	Breast	70 x 100 cm	25
244-117	Breast	70 x 100 cm	30*
244-118	Breast	70 x 100 cm	35
244-119	Breast	70 x 100 cm	40

Item	VacFix Cushion	Size (W x L)	Liter Fill
244-120	Extremity	70 x 70 cm	15
244-121	Extremity	25 x 100 cm	6.5*
244-122	Extremity	25 x 100 cm	7.5
244-131	Extremity	25 x 50 cm	1.75
244-132	Extremity	25 x 50 cm	2*
244-133	Extremity	25 x 50 cm	2.25
244-140	Extremity	60 x 70 cm	12
244-142	Extremity	50 x 70 cm	12.5
244-143	Extremity	50 x 70 cm	15
244-144	Extra Large	100 x 50 cm	20

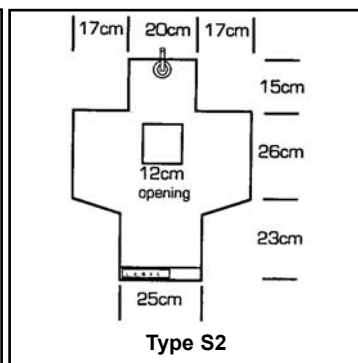
Specify if a Grommet is needed to Hang the Cushion. \*Suggested Liter fill for 1st order. Special sizes, shapes, and liter fill available.

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

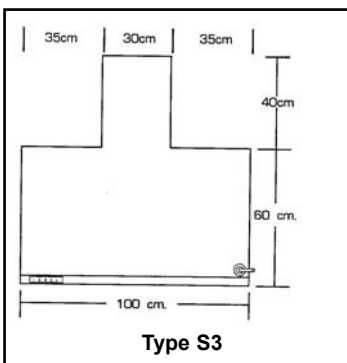
## VACFIX VACUUM CUSHIONS



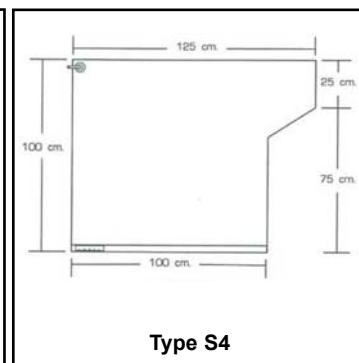
Type S1



Type S2



Type S3



Type S4

Item	Vac Fix Cushion	Size	Liter Fill
244-150	Head / Neck / Upper Thorax	Type S1	15
244-151	Head / Neck / Upper Thorax	Type S1	17.5*
244-152	Head / Neck / Upper Thorax	Type S1	20
244-153	Head / Neck / Upper Thorax	Type S1	25
244-160	Head / Neck / Upper Thorax	Type S2	3*
244-161	Head / Neck / Upper Thorax	Type S2	4
244-162	Head / Neck / Upper Thorax	Type S2	5

Item	Vac Fix Cushion	Size	Liter Fill
244-163	Head / Neck / Upper Thorax	Type S2	6
244-171	Head / Neck / Upper Thorax	Type S3	22.5*
244-172	Head / Neck / Upper Thorax	Type S3	25
244-173	Head / Neck / Upper Thorax	Type S3	30
244-188	Breast	Type S4	27
244-189	Breast	Type S4	30
244-190	Breast	Type S4	50

Specify if a Grommet is needed to Hang the Cushion. \*Suggested Liter fill for 1st order. Special sizes, shapes, and liter fill available.

## VACFIX VACUUM STATION AND ACCESSORIES



Item 244-220 VacFix Pump



Item 244-230 VacFix Air Hose Assembly

The VacFix Vacuum Station ensures ideal vacuum for firm and stable cushions. A tone sounds when the correct vacuum has been reached so there is no need to guess when a complete vacuum has been achieved. The station's lightweight design (just 25 lb or 11.3 kg) and handles for easy carrying make it ideal for the most crowded department.

When the right side of the foot pedal (vacuum side) is depressed once, the station will start and evacuate the air. When it is depressed again the station will stop.

When the left side (inflate side) is pressed, the system will force air into the bag as long as the pedal is pressed down.

### Using an existing form of vacuum

Your wall vacuum connection or an existing pump must be able to pull down to approximately 23" of mercury. If an in house vacuum system is to be used an adapter can be supplied upon request. This adapter will enable an existing 1/4" ID air hose to mate with the VacFix valve.

### Item 244-220 VacFix Vacuum Station

The VacFix Vacuum Station was designed to leave your hands free to mould the VacFix Cushions quickly and efficiently.

Includes: VacFix Vacuum Pump, VacFix Foot Pedal, VacFix Hose

Item	Accessories
244-195	VacFix Valve Clamp, 10/Pkg
244-214	VacFix Cushion Repair Kit
244-220	VacFix Vacuum Station
244-230	VacFix Air Hose Assembly for Hospital Central Vacuum

## VACUUM CUSHION STORAGE RACK



- Keeps molded cushion safe and clean for increased cushion life
- Suitable for space limited treatment areas
- Hooks allow for quick, easy removal and hanging
- Highly mobile rack can go just about anywhere
- Supports any size of vacuum cushion
- 4-inch casters for easy movement over a variety of surfaces
- Folds flat for storage when not in use

The Storage Rack, together with the VacFix Hooks, safely stores and organizes the molded cushions, keeping them off the floor and within easy reach. The rack also ensures that the cushions remain clean and are protected from damage, thereby extending cushion life.

### Specifications

**VacFix Hooks:** 10 per unit, steel

**Dimensions:** 48" L x 22" W (122 x 56 cm) with two 12" (30.5 cm) extensions, Height Adjustable to 55, 60, or 65" (140, 152.5, 165 cm)

**Weight:** 35 lb (16 kg)

**Caster Set:** 4" (10.2 cm), ball-bearing

**Construction:** Chrome-plated, one-inch steel tubing.

Item	Description
244-348	VacFix Storage Rack
244-349	Additional VacFix Hooks, 10 /Pkg

## VACUUM CUSHION STORAGE SHELVING



- Convenient storage for all sizes of vacuum cushions
- 4 inch casters provide mobility
- No hooks necessary
- Easy to assemble
- Adjustable rail height and straps

The Vacuum Cushion Storage Shelf was made to meet the need of storing the vacuum cushions used in radiation oncology departments. The shelves allow the molded cushions to be stored flat and off the floor, which prolongs the life of the cushions.

### Specifications

**Material:** PVC and Nylon Straps

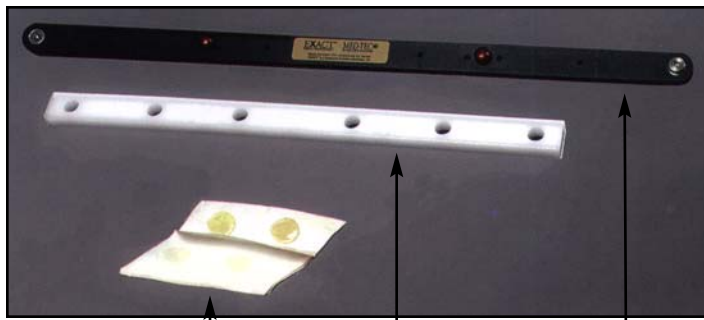
**Casters:** 2" (5.08 cm) Swivel

**Dimensions:** 88" W x 24" D x 75" H (223.5 x 61 x 190.5 cm)

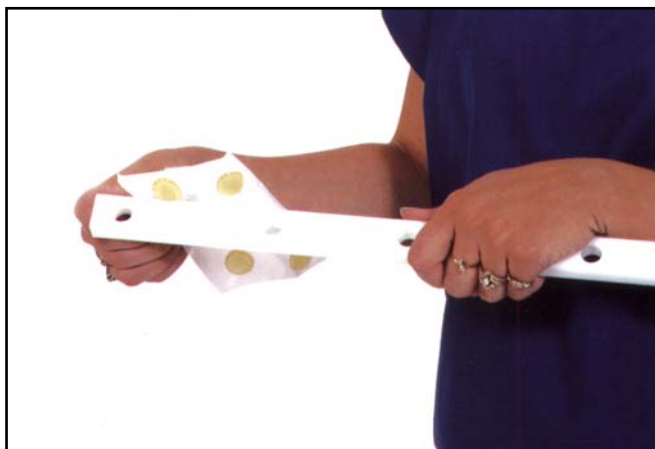
Item	Description
244-360	Vacuum Cushion Storage Shelving

# POSITIONING & IMMOBILIZATION, MASKS, CUSHIONS, CHAIR

## EXACT ENHANCE BAR



Glue Dots      Exact Enhance Bar      Varian Exact Lok Bar



This product was designed to “ENHANCE” the EXACT BAR used with the Varian Accelerator Exact Treatment Couch. The EXACT BAR can be adapted to the vacuum bags, 2 part foam cushions, bellyboards or any number of body support cushions with the use of the Glue Dots™.

The Enhance Bar is made of high-density polyethylene material. Measurements are 1" W x 16" L and 0.5" T (2.5 x 40.6 x 1.3 cm).

There are 6 holes drilled in the enhance bar. You have the choice of centering or shifting laterally 2.75" (6.9 cm) in either direction.

- Consistent in accurate positioning
- Easier location of “EXACT Bar” and vacuum bags, foam or support cushions
- Replacement guarantee against chipping, breaking or warping.

### Preparation of the EXACT Enhance Bar

1. Seat your Varian EXACT Lok-Bar or similar bar in a “notch” along the length of the couch/table top.
2. Place the EXACT Enhance Bar onto the Lok-Bar matching the “two pegs” or similar design unit.
3. Now use “Glue Dots” to adhere the EXACT Enhance Bar to your immobilization form. This is done by taking two or three “Glue Dots” and pressing the open side into the EXACT Enhance Bar. Remove the wax paper and repeat for each glue dot.
4. Place the patient immobilization form on top of the Bar/Glue Dots. When your form is completed, the EXACT Enhance Bar will be attached to your form and can easily be removed and resealed onto the Lok-Bar when needed.

The EXACT Enhance Bar can be used repeatedly. The Glue Dots are easily replaced by simply “rolling” them off the bar or form and discarding them.

Item #	Description
244-250	Exact Enhance Bar

## GLUE DOTS™



- Permanent
- Certified AP Nontoxic
- FDA Compliant

Bond instantly to most clean, dry surfaces Double-sided and pressure-sensitive bonding. Cleaner and safer than liquid glues or hot glue guns. Clear, perforated liner for easy dispensing and placement.

Item #	Description
244-256	Glue Dots, 60/Pkg

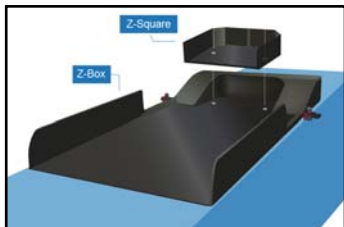
## Z-SYSTEM FOR PROTON THERAPY POSITIONING



290-000 Z-Box



290-005 Z-Square



290-000 Z-Box and  
290-005 Z-Square

### Improve efficiency during simulation process

The Z-System, which is the **Z-Box** and **Z-Square** allows one therapist to create immobilization devices, saving time and money. The Z-System is a comprehensive solution to patient positioning and immobilization in both proton and conventional radiation therapy clinics.

- Simple, straightforward positioning method
- Quick fabrication of patient immobilization
- Proven accuracy in treatment reproducibility
- Universal to all CT and XRT treatment couches
- Make Better Molds Faster
- Superior Treatment Positioning
- Lightning Quick Indexing
- Simple, Interlocking Parts
- Fits All Standard Treatment Tables
- Light & Durable Carbon Fiber

Item	Description
290-000	Z-Box
290-005	Z-Square

### Item 290-000

The Z-Box creates the custom mold in simulation and is removed for treatment.

- Integral component of Z-System
- Ensures exactness in size and shape of foam mold
- Firmly secures foam mold with unique ridged feature
- Limits rotation and movement during patient set-up
- Fits universal CT and XRT table tops
- Simplifies foam mold making
- Increases reproducibility
- Matches any comfortable patient position
- Works with all body types
- Indexes to treatment table
- Holds Z-Square, foam mold and patient
- Simple Adjustments, maximum support

### Specifications

**Size:** 20" W x 40" L x 4" H (50.8 x 101.6 x 10.2 cm)

**Weight:** < 8 lb (3.63 kg)

### Item 290-005

The Z-Square, the foundation of the Z-System, is a patient-positioning device designed specifically for applications within Proton Therapy, also precisely compatible with conventional Radiation Therapy. The Z-Square is used to index a custom treatment mold back to the table. It is lightweight, yet strong and secure. Fully carbon fiber and universal to Proton and Conventional table tops. Provides secure indexing, within 2mm, using a standard index bar. Remains completely out of the way to prevent interference with beams in the treatment area.

- Strong and Secure
- Slim Unique Universal Indexing System
- Allows repositioning of foam mold to within 2mm
- Firmly locks mold to treatment couch
- Uses standard index bar
- Can be used with expandable foam or vacuum cushions
- Used alone or with Z-Box
- Indexes to Z-Box for simulation
- Indexes to table for accurate treatment
- Ensures lock-tight mold positioning

### Specifications

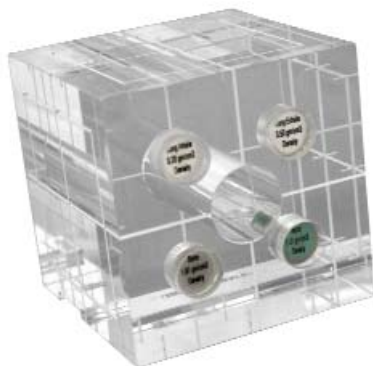
**Size:** 10" W x 10" L x 3" H (25.4 x 25.4 x 7.62 cm)

**Weight:** < 2 lb (0.91 kg)

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# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISIS QA-1 GEOMETRIC QA PHANTOM



### Geometric Accuracy for all QA Steps

- Room Lasers
- Patient Marking Laser
- CT Simulator Conventional
- Simulator
- Treatment Delivery System

### Ensure Data Transfer

- From Scanned Images
- Density Checks
- Anatomical Structures
- Isocenter + Central Axis
- Planned Beams for Patient Marking

The ISIS QA-1 Phantom provides “Machine to Machine” geometric QA for Treatment Machines, CT Simulator, and Conventional Simulators.

The ISIS QA-1 Phantom was designed to provide an easy low cost approach to the daily, monthly, and annual QA tasks for the Physicist and Therapists. The ISIS QA-1 phantom will aid in verifying the geometric laser position accuracies with multiple laser systems within your department. Further the ISIS QA-1 provides the Physicist and Dosimetrist the ability to verify electron beam density values produced by your CT / CT-Simulator. Your staff scans the four unique density value inserts then transfer this image to the RTP system for verification of the electron density values of the Bone, Water, Inhale and Exhale Lung density inserts. Comparing the individual value for each known density value the user can quickly verify CT image electron density values for treatment planning image QA.

Additionally, the ISIS QA-1 provides an internal known object insert that is scanned with the CT / CT-Simulator. With this multiple image slice set you can create a Treatment Plan / Virtual Simulation plan of the known object for size and location verification through your RTP and Virtual Simulation system. Then the ISIS QA-1 goes one step further to use these known geometric phantom positions for verification of the laser positions as verified with the scanned ISIS QA-1 phantom. This QA process provides a geometric QA of the processed RT Plan for use with IMRT treatment machine lasers and mechanical treatment field setup verifications.

The dose chamber insert provided will provide the physicists the ability to quickly measure single point expected dose values without using additional phantom devices.

### CT Simulation RT Field Marking Verification QA

The ISIS QA-1 provides the user the ability to scan, plan, and verify the exported RTP beam designs of the intended treatment field to the lasermarking system for laser point position verification. Additionally this process can be accomplished on the intended treatment machine.

### A sample generic QA process is described as follows

Scan the phantom after you have verified the position of the ISIS QA-1 phantom is centered in the X and Y position of the scan plane. This is accomplished by physically moving the ISIS QA-1 phantom and verifying the placement position with the tool set supplied with the scanner.

Additionally, verify the tilt of gantry is at a “0” degree tilt in respect to center of the ISIS QA-1 phantom. Once alignment is verified correctly you scan the ISIS QA-1 phantom at 1 mm increments throughout the entire phantom body. Then create three 10 cm x 10 cm RTP / Virtual Simulation plans for export to the laser marking system for laser position verification. You then compare the expected field positions with the actual laser field illuminated positions. These positions are viewed on three of the external sides of the ISIS QA-1 phantom.

Additionally the internal object insert positioned in the exact center axis of the ISIS QA-1 phantom provides laser position RTP field verification. When the ISIS QA-1 is setup on your treatment machine table you can verify lasers / field lights and the expected treatment dose by using an electrometer chamber with the ISIS QA-1 dose chamber insert.

### General Benefits of the ISIS QA-1

- Two millimeter wide alignment verification grooves on the surfaces of the ISIS QA-1 provides for easy viewing and quick alignment checks of laser beam positions.
- Multiuse QA machine programs within the therapy department can use the ISIS QA-1 phantom.
- Provides the ability to verify scanned image set position alignment from the radiology department to the radiation therapy department for geometric verifications prior to the laser marking process.
- Precision 10 cm x 10 cm and 5 cm x 5 cm fixed fields on three surfaces of the ISIS QA-1 phantom provide for exact image and beam geometric design QA verification.
- Easy leveling base for setting up an exact level plane for the QA process from machine to machine.
- Single slice check for laser -offset verification with standard CT Scanner and / or CT Simulator. Treatment machine QA for lasers, mechanicals, and beam geometry.

### Electron Density Verification Inserts

The four ISIS QA-1 electron density inserts provide the user with the ability to easily verify the electron density values produced on the CT / CT Simulator. This is of particular benefit when determining the consistency of electron density values from week to week. The four inserts are: Bone (+800), H<sub>2</sub>O (0.0), Inhale Lung (-800), Exhale Lung (-500), and Water (0). This verification is useful in providing a repeatable and dependable QA program for inhouse machine to machine transfer of images. This QA task can be accomplished on a daily, weekly, monthly, and annual by normal radiotherapy staff members.

### Item 681-110 ISIS QA-1 Geometric Phantom Package Includes

- Item 681-100 Phantom Cube with Bone, Water, Lung Inhale and Lung Exhale density plugs
- Item 681-159 Leveling Platform with 20 cm Field
- Item 681-150 Alignment Bar
- Item 681-101 2.54 cm Object Insert
- Item 681-112 Tungsten Pins, 20/Pkg
- Item 681-120 50 cm Ruler
- Item 352-233 Magnetic Gantry Level
- Item 681-121 Round Bubble Level
- Item 681-193 Protective Rolling Case

### Specifications

**Phantom Size:** 5.5" L x 5.5" W x 5.5" H (14 x 14 x 14 cm)

**Electron Density of Acrylic:** 3.847 x 10<sup>23</sup>

**Phantom Surface Tolerance:** .005

**Phantom Weight:** 8 Lb (3.6 kg)

**Rolling Case Size:** 32.5" L x 21.5" W x 11.5" D (82.6 x 54.6 x 29.2 cm)

**Total Shipping Weight:** 45 lb (20.5 kg)

Item #	Description
681-110	ISIS QA-1 Geometric Phantom Package
Specify Ion Chamber: Manufacturer, Model Number and Description	

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## INSERTS FOR ISIS PHANTOM CUBE

- All inserts are 4 cm in diameter and 14 cm long.
- They are made of clear acrylic with a rubber o-ring at one end to keep the insert snug in the phantom cube.
- Each insert is labeled with the item number, description and density.

### INSERT, FARMER STYLE CHAMBER



This insert holds a farmer style chamber (without build-up cap) with the center of the collection volume at the center of the phantom cube.

**The Farmer Chamber Insert accommodates the following chambers:**

PTW: 23333, 30001, 30002, 30004, 30006, 30010, 30011, 30012, 30013

Bicron/NE 2571, 2581, 2505/3 (A or B)

Nuclear Associates 30-351

Capintec PR-06G, PR-06C

Victoreen 580-006

Exradin A19, RMI 448

Item #	Description
681-104	Insert, Farmer Style Chamber

### INSERT WITH 2.54 CM DIAMETER TEFLON BALL



This insert has a 2.54 cm Teflon ball centered in the insert. The teflon ball is used as tumor value to verify measurement accuracy on the CT/CT Simulator and treatment planning system.

#### Specifications

**Density:** 2.13 - 2.2 g/cm<sup>3</sup>

Item #	Description
681-101	Insert with 2.54 cm Diameter Teflon Ball

### INSERT, PTW 31006 CHAMBER



Item #	Description
681-104-31006	Insert, PTW 31006 Chamber

### INSERT, PTW 31016 CHAMBER



Item #	Description
681-104-31016	Insert, PTW 31016 Chamber

### INSERT, EXTRADIN A12 CHAMBER



Item #	Description
681-104-A12	Insert, Exradin A12 Chamber

### INSERT, EXTRADIN A12S CHAMBER



Item #	Description
681-104-A12S	Insert, Exradin A12S Chamber

### INSERT, EXTRADIN A14SL CHAMBER



Item #	Description
681-104-A14SL	Insert, Exradin A14SL Chamber

### INSERT, EXTRADIN A1SL CHAMBER



Item #	Description
681-104-A1SL	Insert, Exradin A1SL Chamber

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## INSERT, STEREOTACTIC TUNGSTEN BALL

This insert has a tungsten ball with a diameter of 5.5 mm (7/32") in the center of the insert.



Item #	Description
681-106	Insert, Stereotactic Tungsten Ball

## INSERT, MULTI-DENSITY HOLDER

The Multi-Density holder insert accommodates 8 density plugs (2.5 cm diameter x 1.5 cm thick). An acrylic end plug and o-ring on each end of the insert holds the density plugs in place. This insert is custom made. The customer must specify Density Plug material needed and the order of placement in the insert when ordering. **Density plugs are sold separately.**



Item #	Density Plug	Physical Density gm/cm <sup>3</sup>	Electron Density cc x 10 <sup>23</sup>	Electron Density Relativeto H <sub>2</sub> O
681-107	Insert, Multi-Density Holder ONLY			
681-107-6	Lung Inhale	0.195 ± 0.20	0.634	0.190
681-107-7	Lung Exhale	0.495 ± 0.20	1.632	0.489
681-107-8	Bone 800 mg/cc	1.609 ± 0.01	4.862	1.456
681-107-9	Water	1.008 ± 0.01	3.346	1.002
681-107-10	Adipose (Fat)	0.967 ± 0.01	3.170	0.949
681-107-11	Breast (50% Gland / 50% Adipose)	0.991 ± 0.01	3.261	0.976
681-107-12	Muscle	1.062 ± 0.01	3.483	1.043
681-107-13	Liver	1.071 ± 0.01	3.516	1.052
681-107-14	*Trabecular Bone - 200 mg/cc	1.161 ± 0.01	3.730	1.117
681-107-15	*Dense Bone - 1000 mg/cc	1.660 ± 0.01	5.243	1.570
681-107-16	*Dense Bone - 1250 mg/cc	1.830 ± 0.01	5.718	1.712
681-107-17	*Dense Bone - 1500 mg/cc	2.000 ± 0.01	6.209	1.859
681-107-18	*Dense Bone - 1750 mg/cc	2.170 ± 0.01	6.698	2.005
681-107-19	*Coritcal Bone	1.930 ± 0.01	5.956	1.780
681-107-20	**Titanium	4.507 ± 0.01	12.475	3.735
681-107-21	***Aluminum	2.718 ± 0.01	-	-

\* All Bone references 10 mm diameter in H<sub>2</sub>O density plug.

\*\* Titanium references 6 mm diameter in H<sub>2</sub>O density plug.

\*\*\* Aluminum references 9.5 mm diameter in H<sub>2</sub>O density plug.

## INSERT, LIQUID FILLABLE

This insert has a 2.5 cm diameter hollow space in the center of the insert. There are two fill holes drilled at an angle into the hollow space. Each fill hole has an o-ring and screw to hold the liquid in the space. The Customer fills the space with a liquid of their choice.



Item #	Description
681-108	Insert, Liquid Fillable

## INSERT, HOLDS ISOTOPE PIN IN CENTER

This insert accommodates a holder the NA-22 Isotope is placed into. The holder of the insert keeps the NA-22 in the center of the insert.



Item #	Description
681-109	Insert, Holds Isotope Pin In Center
681-114	Holder for NA-22 Isotope
710-045-3	NA-22 Isotope

## INSERT, SEED CALIBRATION

This insert has five (5) aluminum pins which are spaced at different levels laterally and longitudinally at specified angles within the insert.



### Specifications

**Aluminum Pin Size:** 1 mm Diameter x 5 mm Long

Item #	Description
681-119	Insert, Seed Calibration

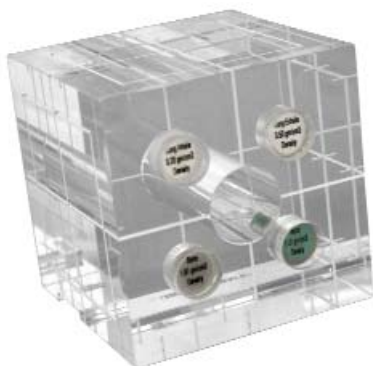
Custom chamber inserts available. Specify the ion chamber manufacturer, model number and description that the insert is to be drilled for.



# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISIS QA-1 GEOMETRIC PHANTOM ACCESSORIES

### ISIS PHANTOM CUBE

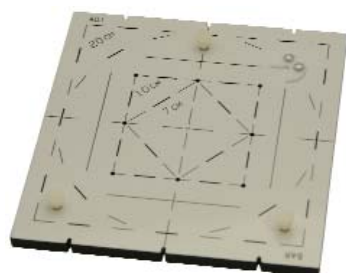


This is a 14 cm cube made of clear acrylic with a 10 cm square scribed on three sides of the cube. The scribes are 2 mm wide and painted in white. Four of the six sides of the cube have nine holes per side for use of tungsten pins. One side has a slot to hold the 50 cm ruler. Crosshair markings are on five sides of the cube. A 4 cm wide hole is drilled through the middle of the cube to accommodate the inserts. The cube also has four fixed density inserts. The density inserts are 2.5 cm in diameter x 1.5 cm thick and correspond in density to water, bone, lung inhale and lung exhale. The inserts are labeled with the material and density.

Density Plug	Physical Density	Electron Density Per cc x 10 <sup>23</sup>	Electron Density Relative to H <sub>2</sub> O
Lung Inhale	0.20	0.634	0.190
Lung Exhale	0.50	1.632	0.489
Dense Bone 800 mg/cc	1.53	4.862	1.456
Water	1.01	3.346	1.002

Item #	Description
681-100	ISIS Phantom Cube

### LEVELING PLATFORM WITH 20CM FIELD



The leveling platform is 1 cm thick black acrylic plate topped with white engraving material and is 22.9 cm wide and 23.2 cm long. The leveling platform has three leveling screws and is engraved with crosshair dashes, a dashed 7 cm square rotated 45° to intersect with a non-rotated dashed 10 cm square, a dashed 20 cm square and a dashed 20 cm diameter circle. The dashes are etched deep and long enough to lay the tungsten pins in the dashes. There is also a 14 cm square for placement of the phantom cube and an adjustable corner guide with two screws at one corner to prevent rotation of the phantom cube. To set corner guide loosen the screws, adjust the corner guide to be snug to the phantom cube when in the correct position then tighten the screws. To connect the leveling platform to the alignment bar or adjustable table centering bar, fit the pin in either bar into a groove on the leveling platform. Two sides of the leveling platform have three alignment grooves, one at center and one on either side at 7 cm from center.

Item #	Description
681-159	Leveling Platform with 20 cm Field

### ALIGNMENT BAR



681-150

The Alignment Bar fits on the couchtop for proper alignment of the ISIS Phantom Cube (Item 681-100). The Alignment Bar is white with engraved black dash lines on the top and all four sides for central axis/laser location. Each end has a 1.5 mm diameter x 12.7 mm tungsten pin in the center. There are seven aluminum balls across the top of the bar, one in the center and three on either side at 13, 14 and 15 cm from center. The three balls on each side are 1/32", 1/16", and 3/32" (0.08, 0.16, and 0.24 cm) in diameter with the smallest ball closest to the center. The overall size of the bar is 56.52 cm wide, 4.47 cm long and 2 cm thick. A pin centered on one side of the alignment bar is used to connect the Alignment Bar to the leveling platform (Item 681-159) for center alignment on the couchtop.

Item #	Alignment Bar
681-150	Varian ETR Couch

### TUNGSTEN PINS

The tungsten pins fit into the 9 holes on 4 sides of the phantom cube or they can be placed in the dashes on the leveling platform.



Item #	Tungsten Pins	Quantity
681-112	1/16" Dia. x 1/2" L (0.16 x 1.27 cm)	20
681-113	3/32" Dia. x 1/2" L (0.24 x 1.27 cm)	20

### 50 CM ALUMINUM RULER

This 50 cm aluminum ruler with mm and cm markings is 3.5 cm wide and 2 mm thick.



Item #	Description
681-120	50 cm Ruler

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISIS QA-1 GEOMETRIC PHANTOM ACCESSORIES

### MAGNETIC GANTRY LEVEL WITH LIGHT



Torpedo level with three vials and a magnetic strip. Length: 9"

Item #	Description
352-233	Magnetic Gantry Level

### ROUND BUBBLE LEVEL



Item #	Description
681-121	Round Bubble Level

### PROTECTIVE ROLLING CASE



This black case has rigid wall construction and reinforced rounded bumper corners. For ease in transport there are two heavy duty urethane wheels and a 7" (17.8 cm) extension handle. The case has seven latches, an o-ring seal and an atmospheric purge valve. The case is airtight, watertight and corrosion proof. The inside has foam padding with cutouts for the components.

#### Specifications

**Outside Dimensions:** 32.5" L x 21.5" W x 11.5" D (82.6 x 54.6 x 29.2 cm)

**Weight:** 30 lb (13.6 kg)

Item #	Description
681-193	Protective Rolling Case with Cut-Outs

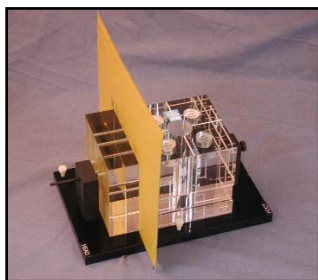
### HOLDERS FOR MARKUS OR ROOS CHAMBER



This holder allows a Farmer Style, Markus or Roos chamber to be held in place with the nylon thumb screw. Different density plugs are placed on top of the chamber and exposed to radiation. This holder works in conjunction with Item 681-107 Multi-Density Insert.

Item #	Description
681-170	Holder, Farmer Chamber / Density
681-171	Holder, Markus Chamber
681-172	Holder, Roos Chamber

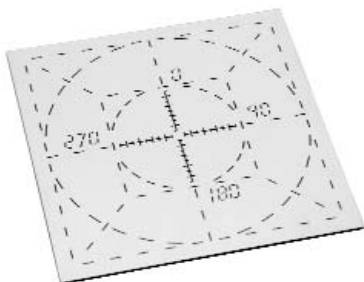
### FILM PHANTOM ASSEMBLY



The film phantom unit includes a film phantom base, 1.5 cm and 5.0 cm acrylic phantom blocks and a steel marker pin. The phantom cube and the 1.5 cm and 5.0 cm phantom blocks are placed on the film phantom base. A ready pack film is placed between the 1.5 cm and 5.0 cm phantom blocks and the steel marker pin is used to mark film for orientation. Once in the correct position, the film is exposed several times at different gantry angles which produces a star pattern on the film for verification of the machine isocenter.

Item #	Description
681-130	Film Phantom Assembly

### ALIGNMENT PATTERN IN TUNGSTEN



Place the alignment pattern over film to check multileaf and field sizes. Circles can be used on simulator tv monitor to set horizontal or vertical adjustments.

Item #	Description
681-158	Alignment Pattern in Tungsten

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISIS QA-1 GEOMETRIC PHANTOM ACCESSORIES

### ADJUSTABLE TABLE CENTERING BAR



This bar is used to properly align the ISIS Phantom Cube (681-100) on a table. The bar is adjustable from 37 cm to 68 cm wide. There is a scale on the bar with zero at center. The scale has mm and cm markings on both sides of zero. T-squares at each end of the bar are placed on the side of the couch and adjusted so each side is equal distance from zero on the scale. Knobs at both ends of the bar are loosened and tightened to make adjustments. There is an alignment pin on one side of the bar to connect it to the leveling plate (681-159). An alignment groove on the other side bar is to connect the Alignment Bar (681-150) to the Adjustable Centering Bar.

Item #	Description
681-162	Adjustable Centering Bar for Tables w/Alignment Bumps
681-1624	Centering Bar, Slotted Ends f/ Civco Couch Align Bumps

### ADAPTER FOR THE CIVCO LOK-BAR



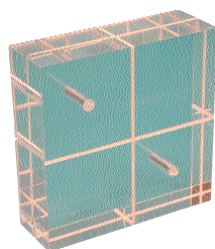
The Adapter for the CIVCO Lok-Bar is designed to be used on the CIVCO Lok-Bar to allow using the ISIS QA-1 Alignment Bar (681-150) and/or the Leveling Platform (681-159) with the CIVCO Lok-Bar. The Adapter has a circular hole on one side and an oval hole on the other which fit on the Lok-Bar pins. The underside of the Adapter has a cutout groove so it hugs the Lok-Bar which allows the Adapter to sit on the couch top, so it is not just sitting on top of the Lok-Bar. The Adapter has an alignment pin and a pin cutout to allow the Alignment Bar and/or Leveling Platform to fit to the Adapter. The centers of the Adapter's Lok-Bar pin holes are 1" (2.54 cm) from the ends of the Adapter.

#### Specifications

**Adapter Size:** 1 5/8" W x 11" L x 3/4" Thick (4.13 x 27.94 x 2 cm)

Item #	Description
681-169	Adapter for the CIVCO Lok-Bar

### MINI PHANTOM



This **Optional** Mini Phantom can be used with the Alignment Bar or the Adjustable Table-Centering Bar to verify the coincidence of the lasers and the crosshairs and to check for gantry sag and optical back pointer position when the gantry is rotated  $\pm 90^\circ$ . The phantom can be used in the flat or vertical position. It has a "L-shaped" pin groove that sits on the alignment pin on either bar. It is scribed on four sides with 2 mm white painted lines. There are holes for tungsten pins on four sides of the phantom. Four 1.5 mm dia tungsten pins are included.

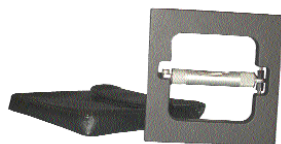
#### Specifications:

**Material:** Clear Acrylic

**Dimensions:** 15cm x 15cm x 5cm thick

Item #	Description
681-180	Mini Phantom

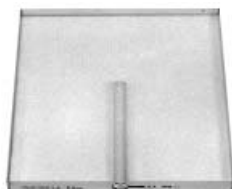
### HIGH PRECISION GANTRY LEVEL



The four-sided Gantry Level is used to check the gantry angle indicators at four locations: 0, 90, 180, and 270 degrees, with accuracy to 1/40 of a degree. Vinyl Case is not included.

Item #	Description
352-200	High Precision Four-Sided Gantry Level
352-201	Vinyl Case for High Precision Gantry Level

### MINI PHANTOM



This is an acrylic phantom with a cavity for a PTW 23333 Ion chamber with a build-up cap.

#### Specifications:

**Material:** Acrylic

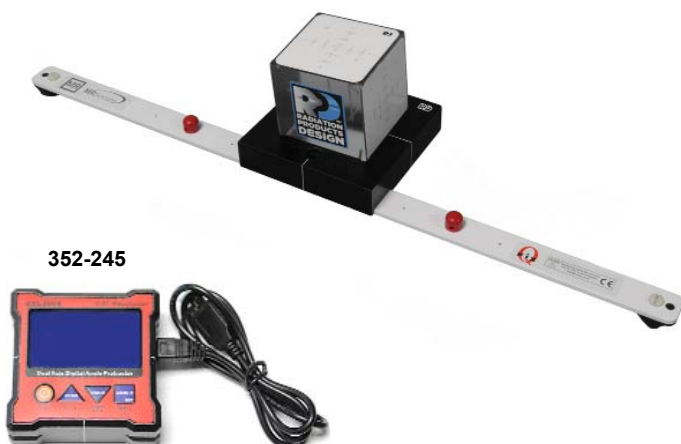
**Dimensions:** 5.5" L x 5.5" W x 1" T (14 x 14 x 2.54 cm)

**Cavity Depth:** 1.5 cm from top surface to center of cavity

Item #	Description
681-2002	Phantom, Constancy, PTW N23333 w/Build-up Cap

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## PERFECTPITCH 6 DEGREES OF FREEDOM QC CUBE



352-245

### Markers

- Three (3) Titanium Balls 2mm for Isocenter and Table Offsets
- Four (4) Aluminum Balls 2.38mm Diameter on four outside sides
- Eight (8) Aluminum Wire Markers 10mm x 2mm diameter set in two rows, which project to Isocenter at 51.9mm on four CBCT axial slices

### Titanium Marker Locations in Cube

- One (1) at Isocenter: X, Y, Z=0
- One (1) located from Isocenter: X: -2cm; Y: -2cm; Z: +2cm
- One (1) located from Isocenter: X: +2cm; Y: +1cm; Z: -1cm

### Varian/Elekta Indexing Bar with two (2) 1.57mm Titanium Balls

This bar can be used to check couch alignment by CT showing the two (2) 1.57mm Titanium Balls and two (2) air holes which are on the center line of the bar. The laser line must pass over all four holes.

### Item 356-210 Includes:

- 356-200 Base, 2.5 Degree Roll-Pitch-Rotation f/ 73mm cube
- 356-205 73mm Cube with 12 Aluminum and 3 Titanium Markers
- 356-203 Varian/Elekta Indexing Bar w/ 2 Titanium Balls
- 352-245 Level, Digital, Dual / Single Axis

Item	Description
356-210	PerfectPitch 6 Degrees of Freedom QC Cube

The accuracy of CBCT alignment and couch shift QA is of fundamental importance in the accuracy of delivered dose in Image Guided Radiation Therapy (IGRT). The 73mm cube has one central axis titanium marker and two offset titanium markers (2mm diameter) for the testing and verification of predetermined measurable couch shifts. This cube can be used to test the accuracy of CBCT alignment and couch shift in a simple and efficient manner. Images can be transferred to the treatment planning system to check coincidence of treatment planning system to couch shifts.

## SELF LEVELING 5 BEAM DOT LASER LEVEL



### 710-851 Includes

- Multi-functional magnetic base
- 3 "AA" alkaline batteries
- Mounting strap
- Magnetic target
- Tinted glasses
- Instruction manual with warranty card
- Soft-sided carrying case

### Specifications

- Number of Beams:** 5
- Leveling Method:** Self-Leveling (Pendulum)
- Laser Wavelength:** 650nm  $\pm$  10nm (Red)
- Laser Classification:** Class IIIa
- Maximum Power Output:**  $\leq$ 5mW
- Accuracy:**  $\pm$  1/8"/50ft. ( $\pm$  2mm/10m)
- Interior Range:** Up to 200ft. (60m) depending on light conditions
- Self-Leveling Range:**  $\pm$  4.5°
- Power Supply:** 3 "AA" alkaline batteries (included)
- Battery Life:** Approximately 20 hours with alkaline batteries
- Dimensions:** 3.15" x 3.858" x 4.0" (80 x 98 x 101.6mm)
- Weight:** 1.1 lb (0.5 kg)
- Working Temperature:** 14°F to 113°F (-10°C to +45°C)
- Center Screw Thread:** 5/8"-11, 1/4"-20
- IP Protection Class:** 55

Item	Description
710-851	Self-Leveling Laser Level with 5 Beam Dot Laser

- Lock that turns laser off and secures mirrors for handling
- Self-leveling laser
- Laser projects five self-leveling beams simultaneously
- Audible alarms when beyond leveling range
- Laser can be rotated 360°

This 5 Beam Laser Level projects a vertical beam straight up and straight down to easily transfer a point from the floor to the ceiling plus will project 3 horizontal beams, one from left, one from right and one straight on to give you a perfect 90° angle in a room. This level is self-leveling with accuracy of 1/8" at 50 feet, plus has locking compensators so the laser level won't shake or be damaged while not in use.

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

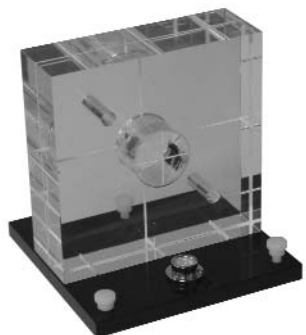
## MINI PHANTOM WITH LEVELING PLATFORM



Mini Phantom  
Item 710-186



Tungsten Ball Mini Phantom  
Item 710-188



5 Seed Calibration Mini Phantom  
Item 710-190

### Leveling Platform for Mini-Phantom

The Leveling Platform for the Mini-Phantom is made of black acrylic that is 15 cm square x 1.0 cm thick. A hole in the center of the Mini-Phantom is for a tungsten pin that goes into the Mini-Phantom. A bubble level and three leveling screws with rubber tips are used to level the platform. The rubber tips help prevent the platform from moving.

### Directions for use in CT or PET/CT

Place the Mini- Phantom on the leveling platform with the pinholes towards the lateral lasers and the 15 cm side with scribe lines towards the foot of the couch. Align the Mini-Phantom to the center of the couch using the sagittal or overhead lasers. Level the platform using the bubble level and three leveling screws. Align the phantom to the CA of the beam by raising or lowering the couch to align the Mini-Phantom with the lateral lasers. A scan through the center of the Mini-Phantom should show the eight 1mm dia pinholes and four 1.5mm dia pinholes. Verify that the CT lasers are on the center scribe line around the phantom. Move the couch out so the lateral and ceiling lasers project onto the phantom. Check the couch movement distance. Verify that the lateral and ceiling lasers are on the center scribe line on the phantom. The movement of the lateral or ceiling lasers can also be checked by raising and lowering the lasers to the scribe lines 5 cm from the center. If present, the sagittal laser should align with the scribe lines on the 15 cm side of the phantom. The couch vertical movement can also be verified by raising and lowering the couch to the 5cm off- center scribe lines on the phantom.

### Directions for use in Accelerators or Conventional Simulators

Insert the four tungsten pins into the four 1.5 mm dia holes in the Mini-Phantom. Place the Mini- Phantom on the leveling platform with the pinholes towards the lateral lasers and the 15 cm side with scribe lines towards the foot of the couch. Align the Mini-Phantom to the center of the couch using the sagittal or overhead lasers. Level the platform using the bubble level and three leveling screws. Align the phantom to the CA of the beam by raising or lowering the couch to align the Mini-Phantom with the lateral lasers and by moving the couch in to align with CA crosshairs. To verify vertical and lateral gantry angles take a radiograph with the gantry in the vertical position and in the lateral position. The tungsten pins should be on top of each other on the radiographs. The lateral lasers should align with the center scribe lines and the sagittal laser should align with the scribed line on the 15 cm side of the mini-phantom. To check the overhead laser rotate the gantry so the overhead laser shows upon the mini-phantom. The overhead laser should align with the center scribed line on the top of the mini-phantom. Raising and lowering the couch to the scribes at 5 cm from center and checking the couch vertical movement indicator can check the couch vertical movement. To check lateral couch movements rotate the mini-phantom so a side with the scribes 5 cm off-center is facing up towards the gantry. Then move the couch left and right to align with the scribes that are 5 cm off-center and check the lateral couch movement indicator.

The Mini-Phantom can be used to check the alignment of the internal and external lasers to the radiographic center of CT and PET/CT units and to verify lateral gantry angle. It can also be used with accelerator units to check vertical and lateral gantry angles, laser alignment and vertical table movement.

The Mini-Phantom is made of clear acrylic measuring 15 cm x 15 cm x 5 cm thick. One 15 cm x 15 cm side has centering scribe lines that go all the way across the phantom. All four of the 5 cm x 15cm sides are scribed through the center and two opposite sides are also scribed at 5 cm from center. The scribe lines are 1.3mm wide and white for ease of viewing the lasers. All four 5 cm x 15 cm sides have three pinholes, one at center and two at 5 cm from center. The center pinholes are 1.5 mm dia to hold a tungsten pin and the other pinholes are 1.0 mm. Four 1.5 mm dia tungsten pins are included with the mini-phantom.

The two large holes are 9.5 mm in diameter and are 10.6 cm apart from center to center. Each hole is in the exact center of a quadrant of the phantom.

### Tungsten Ball Mini Phantom (Item 710-188)

The Mini Phantom, for sterotactic collimator verification, has a 5.5mm diameter tungsten ball in the center. The ball is removable for CT applications.

### 5 Seed Calibration Mini Phantom with Leveling Platform (Item 710-190)

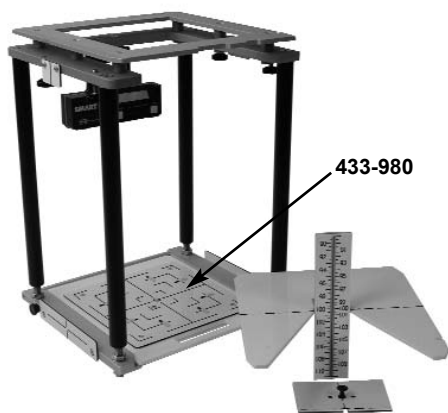
The Mini Phantom CT 5 Seed Calibration has 5 aluminum seeds 1mm diameter x 5mm with a chart indicating center to center spacing between all seeds.

Item #	Description
710-186	Mini Phantom with Leveling Platform
710-188	Tungsten Ball Mini Phantom with Leveling Platform
710-190	5 Seed Calibration Mini Phantom with Leveling Platform

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## GARD™

Designed to Verify Geometric Accuracy of Linear Accelerators and Simulators



### Optical Distance Indicator and Laser Alignment

An acrylic tray with a distance scale is supplied with the GARD™. Simply slide the tray into the accessory mount of the GARD™ and turn on the machine distance indicator. The distance markers from the machine will be visible on the GARD's™ distance indicator and should coincide. The sides of the GARD™ have white acrylic plates on which black vertical and horizontal lines have been engraved. When aligned, the field lasers should coincide with the etched black lines.

### Light and Radiation Field Coincidence

An optional film cassette (8" x 10" or 20.32 x 25.4 cm) is available which fits into the accessory mount of the GARD™. The top is etched with markings of four field sizes. Field size and crosshair position accuracy, as well as light and radiation field coincidence, can be verified.

### Specifications

**Goniometer Accuracy/Resolution:** 0.2°

**Optical Distance Indicator Resolution:** 1.0 mm

**Field Size Indicators:** 5 x 5 cm, 10 x 10 cm, 15 x 15 cm, 20 x 20 cm

**Size:** 13.5" x 13.5" x 14.5" H (34.3 x 34.3 x 36.8 cm)

**Weight:** 9.5 lb (4.4 kg)

- Easy to use
- Provides quick visual verifications
- Helps eliminate errors

The GARD™ is designed to fit into the shadow tray of the therapy machine, providing a fixed reference point for all measurements. This helps to eliminate errors associated with using independent devices for each geometric parameter.

### Gantry and Collimator Angle Indicators

By using a smart tool level, indicators of gantry and collimator angle can be visually verified to 1/16" (0.16 cm) of a degree. The level is mounted so that it can check any gantry or collimator angle.

Item	GARD™
433-411	All Siemens with Digital Coding
433-518	Varian II - 65.4cm, with Standard 11 3/4" Tray
433-522	Varian II - 61.6cm, with Standard 11 3/4" Tray
433-535	Varian III-61.6cm, w/Opt. Coded Tray
433-536	Varian III-65.4cm, w/Optical Coded Tray
433-537	Varian III-65.4cm, MLC w/Optical Tray

Item	GARD™
433-700	Elekta Precise 31.9cm
433-753	Elekta Synergy/Infinty 66.59 cm
433-754	Elekta Synergy/Infinty 65.31 cm
433-755	Elekta Precise 56.23 cm
433-756	Elekta Synergy 52.9 cm
433-980	Optional Film Cassette

Please call regarding other manufacturers

## ROTATING ALIGNMENT PLATE AND STAND



The Rotating Alignment Plate and Stand will allow an easy check of isocenter using the collimator light and lasers. A 1.3 mm diameter tungsten ball located in the center will show up on x-ray or under fluoroscopy.

### Specifications

#### Size

**White Acrylic Plate:** 2.5" x 3" (6.35 x 7.62 cm)

**Steel Base:** 4" x 5" x 0.5" (10.16 x 12.7 x 1.27 cm)

**Stainless Steel Post:** 5.5" (14 cm)

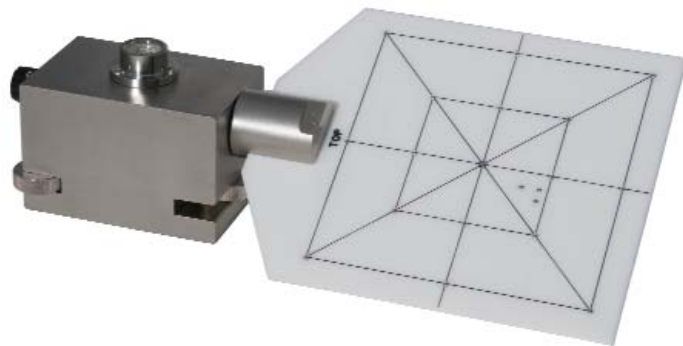
**Color:** Beige base

**Weight:** 3.6 lb (1.64 kg)

Item	Description
710-005	Rotating Alignment Plate and Stand

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISOCENTRIC BEAM CHECKER I



The Isocentric Beam Checker I (IBC I) is used to precisely find the isocenter of any radiation therapy machine. It checks the alignment of side lights or laser beams used for patient set-ups in radiation therapy, conventional tomography and CT scanning.

The Isocentric Beam Checker consists of stainless steel base containing three adjustable rubber-tipped legs and built-in bubble level. Attached to the base is a translucent screen plate which can be rotated 360° in 15° steps. Inscribed on the plate are 3 field sizes; 2 mm x 2 mm, 5 cm x 5 cm and 10 cm x 10 cm. The field sizes are outlined with parallel and diagonal lines. The center of the field and all corners are provided with tungsten markers to project a sharp image of the field on verification films.

### Specifications

**Material:** Stainless Steel and Lucite

**Size:** 9.5" L x 4.7" W x 2.5" H (24.13 x 11.94 x 6.35 cm)

**Weight:** 3 lb (1.4 kg)

Item	Description
710-020	Isocentric Beam Checker I

- Radiation and light-field congruence
- Collimator isocentricity
- Collimator field size accuracy
- Compact and easy to carry
- Laser alignments
- No assembly required
- Gantry isocentricity
- Rugged construction

## ISOCENTER/LASER ALIGNMENT DEVICE



710-030

352-104



352-108

The Isocenter Alignment Device is a simple quality assurance device for testing alignment of isocentric beams. It allows for adjustments to be made by one person. One set-up will permit alignment of the side, overhead and sagittal lasers. It is usable with dot or line lasers.

### Specifications

**Size:** 2" L x 2.25" W x 2" H (5.08 x 5.72 x 5.08 cm)

**Weight:** 0.2 lb (.01 kg)

Item	Description
710-030	Isocenter/Laser Alignment Device
352-104	Bulls Eye Circular Level
352-108	6 cm Level

## ISOCENTER/LASER ALIGNMENT DEVICE WITH 2MM TITANIUM BALL

Check Lasers in Linac, CT and MR Rooms



2 mm  
Titanium Ball



The Isocenter / Laser Alignment Device with 2mm Titanium Ball is a simple quality assurance device for testing alignment of isocentric beams and room lasers. The addition of the 2 mm Titanium Ball at central axis is to allow film or image receptor verification of isocenter with orthogonal films. This device allows for laser adjustments to be made by one person. One set-up will permit alignment of the side, overhead and sagittal lasers and isocenter verification on film. It is usable with dot or line lasers.

### Specifications

**Marker:** 2 mm Titanium Ball

**Size:** 2" L x 2.25" W x 2" H (5.08 x 5.72 x 5.08 cm)

**Weight:** 0.2 lb (.01 kg)

Item	Description
710-029	Isocenter/Laser Alignment Device with 2 mm Titanium Ball

## 73 mm CUBE

### Acrylic Cube with One 2 mm Titanium Ball



This Cube can be used to do a modified Winston-Lutz test for IGRT accuracy. The phantom will provide a means to test the isocenter coincidence from CT scan to treatment planning system to treatment delivery.

The accuracy of radiation isocenter relative alignment and couch shift process is of fundamental importance in the accuracy of delivered dose in Image Guided Radiation Therapy (IGRT). Item 710-032, the 73mm Cube, has one (1) Central axis titanium ball for the testing and verification of predetermined measurable couch shifts. This phantom can be used to test the accuracy of CBCT alignment and couch shift in a simple and efficient manner. Images can be transferred to the treatment planning system to check coincidence of treatment planning system to couch shifts.

It is, therefore, critical to ensure the coincidence of these two coordinate systems for different clinical needs of image-guided radiation therapy procedures. The QA item "imaging and treatment coordinate coincidence" is aimed to test this coincidence and is applicable for each of the imaging systems considered. In addition, each system performing patient positioning and/or repositioning based on in-room imaging systems, either 2D or 3D, relies upon vendor software that compares and registers on-board images and reference images. Quality assurance of this process could be easily done by a phantom study with known shifts and is recommended for each system used clinically. The accuracy of this process should be tested on the daily basis, especially for SRS/SBRT.

Like the original Winston-Lutz test, the *isocenter coincidence* test is an end-to-end QA procedure in that it must start with the planning imaging process and end with the treatment step. In this case the last step is the use of the treatment beam to both irradiate and image the markers using the treatment beam.

The 73mm Cube is made of Acrylic with three (3) sides each having a white vinyl label with the alignment markings as seen above. The titanium ball can be seen on the other three (3) sides.

#### Specifications

**Titanium Ball Location in Cube:** at isocenter: X;Y;Z=0

**Titanium Ball Diameter:** 2mm

#### Alignment Markings

**Central axis:** 4mm long dashes

**X, Y, and Z:** at 1cm and 2cm from central axis, 1cm long dashes

**Material:** Acrylic, White Vinyl and Titanium

**Size:** 2.875 x 2.875 x 2.875 cm (73 x 73 x 73 mm)

Item	Description
710-032	73 mm Cube, Acrylic with One 2 mm Titanium Ball



# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## WINSTON-LUTZ 73MM CUBE WITH CENTRAL BALL MARKER



This Cube can be used to do a modified Winston-Lutz test for IGRT accuracy. The phantom will provide a means to test the isocenter coincidence from CT scan to treatment planning system to treatment delivery.

The accuracy of radiation isocenter relative alignment and couch shift process is of fundamental importance in the accuracy of delivered dose in image Guided Radiation Therapy (IGRT). Item 710-033 has one (1) Central axis 6 mm Tungsten Ball marker and Item 710-034 has one (1) Central axis 6.35 mm Titanium Ball marker for the testing and verification of predetermined measurable couch shifts. These phantoms can be used to test the accuracy of CBCT alignment and couch shift in a simple and efficient manner. Images can be transferred to the treatment planning system to check coincidence of treatment planning system to couch shifts.

It is, therefore, critical to ensure the coincidence of these two coordinate systems for different clinical needs of image-guided radiation therapy procedures. The QA item "imaging and treatment coordinate coincidence" is aimed to test this coincidence and is applicable for each of the imaging systems considered. In addition, each system performing patient positioning and/or repositioning based on in-room imaging systems, either 2D or 3D, relies upon vendor software that compares and registers on-board images and reference images. Quality assurance of this process could be easily done by a phantom study with known shifts and is recommended for each system used clinically. The accuracy of this process should be tested on the daily basis, especially for SRS/SBRT.

Like the original Winston-Lutz test, the isocenter coincidence test is an end-to-end QA procedure in that it must start with the planning imaging process and end with the treatment step. In this case the last step is the use of the treatment beam to irradiate and image the markers using the treatment beam.

The 73mm Cube is made of Acrylic with three (3) sides each having a white vinyl label with the alignment markings as seen above. The Tungsten or Titanium Ball can be seen on the other two (2) sides.

### Specifications

**Ball Marker Location in Cube:** at isocenter: X; Y; Z=0

**Item 710-033 Tungsten Ball Diameter:** 6 mm

**Item 710-034 Titanium Ball Diameter:** 6.35 mm

### Alignment Markings

**Central axis:** 4 mm long dashes

**X, Y, and Z:** At 1 cm and 2 cm from central axis, 1 cm long dashes

**Material:** Acrylic with White Vinyl Label

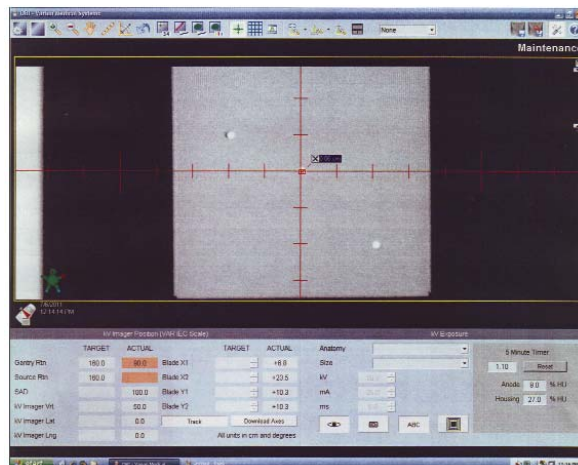
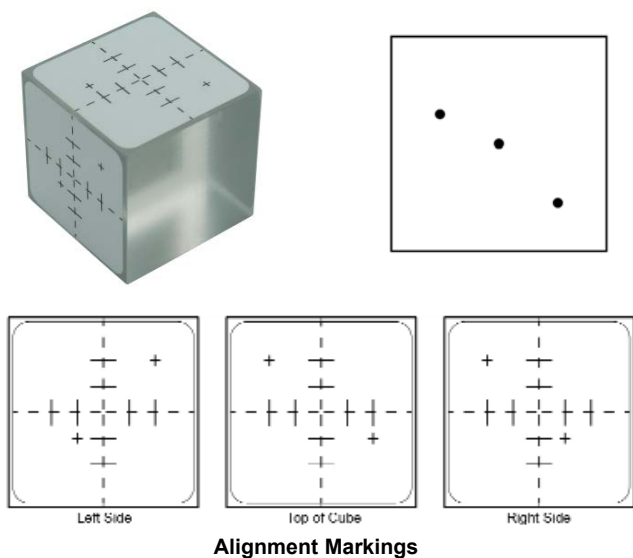
**Size:** 2.875 x 2.875 x 2.875 cm (73 x 73 x 73 mm)

Item #	Description
710-033	Winston-Lutz 73mm Cube with 6mm Tungsten Ball
710-034	Winston-Lutz 73mm Cube with 6.35mm Titanium Ball

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## 73 mm CUBE

### Acrylic Cube with Three 2 mm Titanium Balls



Sample Left Lateral kv Image: Displacement of 1 mm is noted from the crosshair to center of phantom

### Monthly OBI Gantry Rotation and Isocenter Accuracy Test

Place the phantom in the isocenter position (on the center titanium ball) with the aid of the Linac crosshairs. Then acquire a kv image at the four cardinal angles. Using the OBI graticule tool, the displacement of the titanium ball from the graticule crosshair can be tabulated as shown in the worksheet below (this process can also be applied to the MV imaging):

Date	KV Image	Measured displacement (mm)			Limit (cm)	Results
		Sup Inf	Ant Post	L/R		
OBI Gantry Rotation and Isocenter Accuracy	RT Lat		N/A	N/A	1.5	
	AP		N/A	N/A	1.5	
	PA		N/A	N/A	1.5	
	HL		N/A	N/A	1.5	

The 73mm Cube is made of Acrylic with three (3) sides each having a white vinyl label with the alignment markings as seen above. The titanium balls can be seen on the other three (3) sides.

### Specifications

#### Titanium Ball Locations in Cube

- One (1) at isocenter: X;Y;Z=0
- One (1) located from isocenter: X: -2 cm; Y: -2 cm; Z: +2 cm
- One (1) located from isocenter: X: +2 cm; Y: +1 cm; Z: -1 cm

**Titanium Ball Diameter:** 2 mm

#### Alignment Markings

- Central Axis:** 4 mm long marks
- X, Y, and Z:** 1 cm and 2 cm from central axis, 1 cm long marks
- Offset Marker Locations:** Marked with +

**Material:** Acrylic, White Vinyl and Titanium  
**Size:** 2.875 x 2.875 x 2.875 cm (73 x 73 x 73 mm)

Item	Description
710-036	73 mm Cube, Acrylic w/Three 2 mm Titanium Balls

The accuracy of CBCT alignment and couch shift process is of fundamental importance in the accuracy of delivered dose in Image Guided Radiation Therapy (IGRT). Item 710-036, the 73mm Cube, has one (1) Central axis titanium ball and two (2) offset titanium balls for the testing and verification of predetermined measurable couch shifts. This phantom can be used to test the accuracy of CBCT alignment and couch shift in a simple and efficient manner. Images can be transferred to the treatment planning system to check coincidence of treatment planning system to couch shifts.

### General Operation for Daily CBCT Shift Verification

Place the phantom cube on the CT couch. Align the phantom utilizing the positioning lasers on the CT machine and the laser alignment markings on the phantom. An axial CT scan of the phantom is acquired. The reference images are imported into the TPS and a simple plan is generated where the titanium ball is aligned to the isocenter described by the TPS.

Normally one would place the phantom on the Linac couch in a known offset position from isocenter with the use of inscribed markings on the phantom. Then a CBCT scan is acquired in the offset position and the therapist aligns the phantom as one would align the patient using tools on the OBI workstation. The necessary couch shift is applied to move the phantom to the isocenter. After the couch shift is performed, the user can verify the location of the isocenter after the shift and document the deviation from the true isocenter. This test will ensure the CBCT alignment process is performing as intended within the tolerance levels established by the physicist.

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# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## T.A.D. THERAPY ALIGNMENT DEVICE



**U** One simple device can align your Linac, ODI, CT, Lasers and Couch.

### Perform the following tests with just one tool:

- Optical Distance Check Over 20 cm Range
- Collimator 90° Rotation Test
- Lasers Test: Side, Overhead and Sagittal
- Couch Height Test Over 20 cm Range
- Couch Vertical Travel Wander
- Couch 90° Left or Right Rotation
- CT Test Cut for Couch Center Alignment and Height
- CT Side Laser Height Check Over 20 cm
- CT Laser Height Test Over 20 cm
- CT Couch Height Vertical Travel
- CT Couch Height, Vertical Travel, CT Cut Stays on Same Spot to Indicate Gantry Vertical
- Gantry 90° Right and Left Test with Radiation and Gantry Vertical Test Using Film or Image Receptor
- Light Field vs. Radiation Field 10 cm x 10 cm and 20 cm x 20 cm with divergent tungsten pins
- CT Distance Alignment Check Over 0 cm, 8 cm, 13 cm and 21 cm Viewing 0.75 mm Aluminum Balls (Inside Balls 5 cm apart and Outside Balls 21 cm apart)

### Therapy Alignment Device Specifications

#### Leveling Plate Base

- 8.5" x 8.5" x 3/4" thick (21.6 x 21.6 x 1.9 cm) black acrylic with a 1/16" (0.16 cm) white engraving material top
- Three leveling screws with rubber tips to prevent movement
- One bubble level attached to top with screws
- Two half-moon side plates, scribed with black dashes that align to top of leveling plate and center markings on leveling plate

#### Scribing on Leveling Plate

- Central axis to 20 cm
- 10 cm x 10 cm field
- 20 cm x 20 cm field

#### Accelerator Markers in Leveling Plate

- Eight 1.6 mm diameter x 12.5 mm tungsten pins mounted divergently at the four corners of the 10 cm and 20 cm fields
- One removable tungsten pin in the center
- Two 1.6 mm diameter tungsten pins are horizontally half-way embedded in the scribe lines 3 mm from the side plates

#### CT Markers in Leveling Plate

- Four 1/32" (0.08 cm) diameter aluminum balls imbedded flush with surface at 2.5 cm and 10.5 cm from central axis in one plane

**Note:** Tungsten pin must not be in the center hole for CT

### ODI Scale Specifications

#### Base

- 2" x 2" x 0.875" thick (5.08 x 5.08 x 2.22 cm) black acrylic base
- 2" W x 8.125" H x 1/8" thick (5.08 x 20.64 x 0.32 cm) white/black/white engraving material attached to base

#### Scribing on ODI Scale

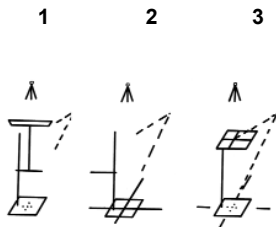
- Vertical dashed line
- Horizontal lines at 5.0 cm, 10.0 cm, 15.0 cm and 20.0 cm from bottom of scale

Item #	Description
710-040	T.A.D. Therapy Alignment Device

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## OPTICAL DISTANCE VERIFICATION AND ALIGNMENT TOOL

### With Isocentric Ball Pointer



#### Step 2

Figure 2 - rotate the white plastic tray around 180° out of the field and adjust the alignment tool so crosshairs align with the black dots on the base plate.

#### Step 3

Figure 3 - raise the white plastic tray up 20 cm. This tray would show field light crosshairs intersecting with 80 cm. The black dots on the base represents the crosshairs and will intersect with 120 cm.

#### Step 4

Adjust the Optical Distance Indicator so that 80 cm and 120 cm are obtained at the same time. When both points are precisely on, linearity can be checked in 5 cm steps by moving the plastic tray down the rod.

This system will calibrate optical distance indicators on accelerators, cobalt units and simulators. The ball pointer is used to determine the rotational isocenter of the treatment machine collimator head and gantry. The ball pointer is also visible in fluoroscopy on simulators.

#### Instructions

##### Step 1

Determine the most useful range (40 cm or less) of the Optical Distance Indicator (ie. 80 cm to 120 cm range with a 100 cm isocenter). Figure 1 - set the white plastic tray five steps (20 cm) down from the top. Use an Accurate Mechanical Distance Rod adjusted for 100 cm isocenter and adjust the couch height until the distance rod just touches the white plastic tray.

#### Specifications

**Optical Distances:** 5 cm steps to 40 cm

**Material:** White plastic w/mat finish and black dots

**Ball Pointer:** 1/16" dia. ball on 12" long rod

**Rod Clamp**

**Base:** 10 cm W x 13 cm L x 1/2" T zinc plated steel w/rubber feet

**Height:** 43 cm

**Weight:** 4 lbs

Item #	Description
710-000	Optical Distance Verification and Alignment Tool

## MAGNETIC FRONT POINTER



The Magnetic Front Pointer provides a mechanical SSD Check, and verification of the Optical Distance Indicator (ODI).

The tray for the magnetic front pointer slides into the block tray slot. The rod is held to the tray by a magnet. Each rod has a 10 cm range with an engraved scale in 2 mm increments. The scale on the Magnetic Front Pointer has an adjustment range of 3.8 mm.

One rod of the customers choice is included with the magnetic front pointer.

When ordering please specify manufacturer and model of machine, tray size, and rod to be included.

Item	Magnetic Front Pointer
701-401	for Varian Clinac 4/80
701-402	for Varian Type II Accessory Mount
701-403	for Varian Type III Accessory Mount
701-407	for Siemens with Coding By-Pass
701-408	for Siemens with Screw Coding
701-409	for Siemens with Digital Coding Plug
701-410	for Siemens with MLC - Digital Coding
701-411	for Siemens Primus with MLC, 56.6 cm
701-420	for Elekta SL20/25
701-426	for GE Saturne 40, 41, 42 or 43
701-428	for ACEL Theratron 780C
701-429	for AECL Theratron Elite 80
701-430	for MDS Nordion / BEST
701-431	for Mitsubishi ML-6M, ML 20M
701-432	for Mitsubishi
701-433	for Siddharth 6MeV Linear Accelerator

Item	Rods
701-400-30	70 to 80 cm
701-400-31	80 to 90 cm
701-400-32	90 to 100 cm
701-400-33	100 to 110 cm
701-400-34	110 to 120 cm

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## X-LITE

### QA Tool for Light Field Alignment Checks



A protective red filter prevents activation of the phosphor by the light field from the gantry head or by ambient light. Irradiation photons and electrons penetrate the filter to activate the plate.

Using X-Lite is easy and alignment checks can be part of the daily routine. With the filter in place, align the light field according to the scale on X-Lite. Put any required build-up material on the plate and irradiate. Remove the filter from X-Lite and check the radiation field alignment.

It is not necessary to wait for the afterglow to fade between irradiations, since the contrast is high as long as the following irradiation uses the same dose or higher

#### Specifications

- Active Area:** 23 x 23 cm
- Field Scale:** 5 x 5 cm, 10 x 10 cm, 15 x 15 cm, 20 x 20 cm
- Deviation Scale:**  $\pm 5$  mm in steps of 1 mm from each field scale.
- Scale Accuracy:**  $\pm 1$  mm
- Maximum Dose:** 6 Gy/exposure
- Radiation Type:** Photons, electrons
- Daylight Filter:** Red, removable
- Material:** Plexiglass / polycarbonate
- Operating Temperature:** 59° - 113°F (15° - 45°C)
- Dimensions:** 10.87" W x 12.6" L x 0.55" H (32 x 27.6 x 1.4 cm)
- Weight:** 3.1 lb (1.4 kg)

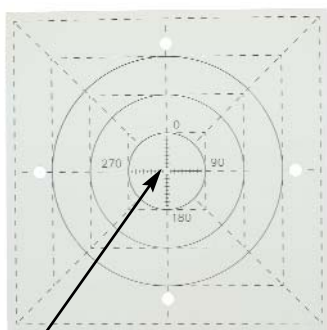
Item	Description
710-705	X-Lite

Correct alignment of the light field with the radiation field is essential for reliable treatment set-up. According to national and international recommendations this alignment should be checked at least once a week and should correspond to within  $\pm 2$ mm at SSD 100cm.

The X-Lite with a fluorescent plate helps you align the accelerator radiation fields on the treatment table quickly and directly. The plate is activated by ionizing radiation, producing a green fluorescence which is clearly visible for a few minutes after the radiation is switched off. The 5x5, 10x10, 15x15 and 20x20 cm<sup>2</sup> active areas are permanently marked with field scales in centimeters.

## TUNGSTEN ALIGNMENT PATTERN PLATE

### For Accelerators and Simulators



4 Posterior Crosshair Line Viewers

Film Verification of light field to radiation field is accomplished by placing a Ready Pack film under the tungsten pattern plate. Tests include the following: collimator zero and rotation verification, field size, gantry sag, collimator filament sag, light field to radiation field with film or image tube, fluoroscopy horizontal and vertical linearity check.

#### Specifications

- Sizes:** 10, 20, 30, and 40 cm squares and circles
- Overall Size:** 16 5/8" sq. x 1/8" T (42.38 x 0.32 cm)

Item	Description
710-713	Tungsten Alignment Pattern Plate

## PLUMB BOB

### Nickel-Plated

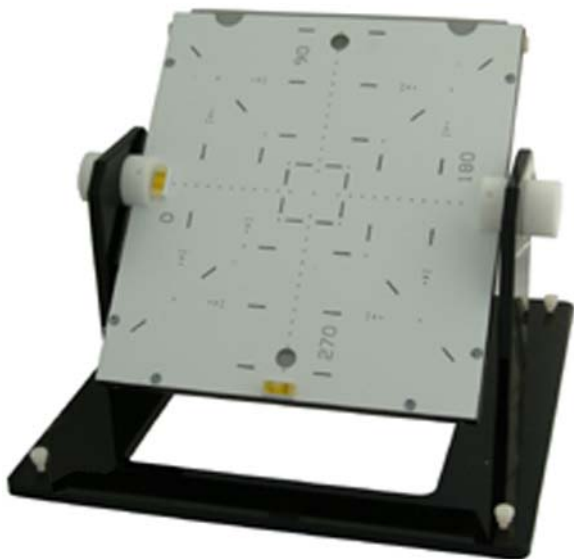


The Plumb Bob can be used to align gantries, couches, laser lights and more. Gantry vertical alignment can be accomplished by marking the cross hair projection spot on the ceiling and floor, then dropping the Plumb Bob line from the ceiling spot to the floor spot. The machine alignment is vertical when the Plumb Bob line intersects with the ceiling and floor spots.

Item	Description
352-120	Plumb Bob, Nickel-Plated

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## TUNGSTEN ROTATING ALIGNMENT PATTERN DEVICE For Ready Pack Film or Imaging Plates for Accelerators and Simulators



Checks the following mechanical and geometrical parameters of accelerators and simulators easily and accurately:

- Accommodates 10"x12" Ready-Pack Film or Imaging Plates
- Radiation / field-light congruence
- Collimator field size accuracy
- Isocenter rotation accuracy
- Collimator, gantry, and table isocentricity
- ODI accuracy
- Laser alignment
- Uses 10"x12" Ready-Pack Film

The Tungsten Rotating Alignment Pattern (TRAP) is an easy to use multi-purpose QA test tool for daily, weekly, monthly, or annual checks of the mechanical and geometric parameters of linear accelerators and simulators.

The TRAP has a 40.5 cm wide x 40.5 cm long black acrylic base with a 25 cm wide x 30 cm long cutout. The base cutout allows for viewing of the central axis on the plate with the gantry at 0°. The base has 5 rubber-tipped leveling screws (3 leveling screws and 2 stabilization screws).

The vertical supports are black acrylic with 1 3/4" (4.46 cm) diameter knobs for rotating the plate. The knobs have indents every 45° for accurate positioning when rotating the plate. The rotating plate consists of two white plates that allow a 10" x 12" ready pack film to be inserted between and secured by a clamp. Two half-moon cutouts on the plates make it easy to grasp the film and pull it out.

On one plate there are 1.6 mm diameter tungsten balls and 1.6 mm diameter x 12.7 mm long tungsten rods embedded with gray epoxy which give a sharper image. The dark markings allow for easy viewing of the field-light and central axis on the plate surface. The 5 cm<sup>2</sup>, 10 cm<sup>2</sup> and 20 cm<sup>2</sup> fields are defined by tungsten balls and rods. The tungsten balls are used to form arrows so film/imaging plate orientation is easily seen and no film pricking is necessary. Tungsten balls are also placed at central axis and every cm from 2 cm to 13 cm and again at 15 cm. Device orientation is accomplished with 0, 90, 180 and 270 markings on the plate. Two bubble levels on this plate ensure level accuracy of the rotating plate.

On the back plate dashed lines are used to correspond to central axis. This allows for verification of lasers to central axis.

### Specifications

**Slot Size:** 27.6 cm W x 32.2 cm L x 0.31 cm Thick

**Field Sizes:** 5 x 5 cm, 10 x 10 cm and 20 x 20 cm

**Rotation:** 360° in 45° increments

**Positioning:** Self-seating indents

**Markers:** 1.6 mm Dia. tungsten balls  
1.6 mm Dia. x 12.7 mm L tungsten rods

**Leveling:** 3-point with 2 bubble levels

**Overall Size:** 40.5 cm W x 40.5 cm L x 36.7 cm H

**Material:** Black acrylic; White and clear engraving material

**Weight:** 9 lb (4.09 kg)

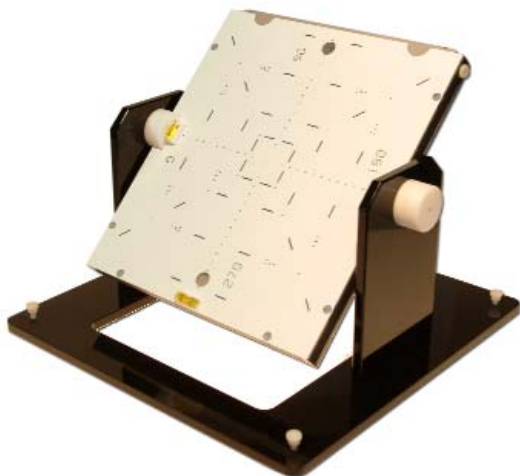
**NOTE: Film is not included**

Item	Description
710-720	Tungsten Rotating Alignment Pattern Device for Film or Imaging Plates

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## TUNGSTEN ROTATING ALIGNMENT PATTERN DEVICE

For CR Cassette For Accelerators and Simulators



The vertical supports are black acrylic with 1 3/4" (4.46 cm) diameter knobs for rotating the plate. The knobs have indents every 45° for accurate positioning when rotating the plate. The rotating plate consists of two white plates that allow a standard CR Cassette to be inserted between and secured by thumb screws. Two half-moon cutouts on the plates make it easy to grasp the cassette and pull it out.

On one plate there are 1.6 mm diameter tungsten balls and 1.6 mm diameter x 12.7 mm long tungsten rods embedded with gray epoxy which give a sharper image. The dark markings allow for easy viewing of the field-light and central axis on the plate surface. The 5 cm<sup>2</sup>, 10 cm<sup>2</sup> and 20 cm<sup>2</sup> fields are defined by tungsten balls and rods. The tungsten balls are used to form arrows so orientation is easily seen. Tungsten balls are also placed at central axis and every cm from 2 cm to 13 cm and at 15 cm. Device orientation is accomplished with 0, 90, 180 and 270 markings on the plate. Two bubble levels on this plate ensure level accuracy of the rotating plate.

On the back plate dashed lines are used to correspond to central axis. This allows for verification of lasers to central axis.

### Specifications

**Cassette Slot Size:** 28.0 cm W x 32.5 cm L x 1.4 cm Thick

**Field Sizes:** 5 x 5 cm, 10 x 10 cm and 20 x 20 cm

**Rotation:** 360° in 45° increments

**Positioning:** Self-seating indents

**Markers:** 1.6 mm Dia. tungsten balls  
1.6 mm Dia. x 12.7 mm L tungsten rods

**Leveling:** 3-point with 2 bubble levels

**Overall Size:** 40.5 cm W x 40.5 cm L x 36.7 H cm

**Material:** Black acrylic; White and clear engraving material

**Weight:** 14 lb (6.36 kg)

Item	Description
710-721	Tungsten Rotating Alignment Pattern Device for CR Cassette

Checks the following mechanical and geometrical parameters of accelerators and simulators easily and accurately:

- Uses a Standard CR Cassette
- Radiation / field-light congruence
- Collimator field size accuracy
- Isocenter rotation accuracy
- Collimator, gantry, and table isocentricity
- ODI accuracy
- Laser alignment

The Tungsten Rotating Alignment Pattern (TRAP) is an easy to use multi-purpose QA test tool for daily, weekly, monthly, or annual checks of the mechanical and geometric parameters of linear accelerators and simulators.

The TRAP has a 40.5 cm wide x 40.5 cm long black acrylic base with a 25 cm wide x 30 cm long cutout. The base cutout allows for viewing of the central axis on the plate with the gantry at 0°. The base has 5 rubber-tipped leveling screws (3 leveling screws and 2 stabilization screws).

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISOCENTRIC BEAM CHECKER II



- Radiation / light-field congruence
- Collimator isocentricity
- Collimator field size accuracy
- Isocenter rotational stability
- Accepts 10" x 12" Ready Pack Films
- Laser alignments
- ODI accuracy
- Gantry isocentricity
- Table isocentricity

The IBC II, a "multi-purpose" precision quality assurance tool, is an easy to use test device for daily, weekly or monthly quality assessments of all mechanical and geometrical treatment parameters of linear accelerators or teletherapy units.

The Multifunctional Isocentric Beam Checker, IBC II, consists of a large opaque acrylic screen backed by a secondary plate, both supported by two lateral uprights. The screen is inscribed with lines precisely defining corners, edges and center of the screen's 2 mm square, 5 cm square, 10 cm square, 15 cm square and 20 cm square fields. Intersecting center lines are inscribed with short lines spaced 1 cm apart. The screen can rotate about its axis in increments of 45°.

Tungsten markers of 2 mm diameter are embedded in the center and corners of the fields. A 10" x 12" ready-pack film can be sandwiched between the two plates. When exposed, the tungsten markers project a sharp image on the film. The necessity of pricking holes into the film is therefore eliminated.

**Caution:** Although provided with non-slip rubber-tipped adjustment thumb screws, care must be taken not to displace the IBC during rotation of the screen plate. The screen plate can be rotated in 45° increments. To rotate the screen plate it is best to grab both left and right knobs together while turning them simultaneously. When turned 45°, the screen seats itself accurately and automatically thus repositioning is accomplished easily and quickly.

### Specifications

**Field Sizes:** 2 mm, 5 cm, 10 cm, 15 cm and 20 cm

**Rotation:** 360° in 45° increments

**Positioning:** Self-Seating

**Markers:** All intersecting corners: 2 mm O.D. dia. tungsten balls

**Leveling:** 3-point w/bubble level

**Size:** 20.3 W x 45.7 L x 33 H cm

**Screen Size:** 30.5 x 30.5 cm

**Materials:** White and clear plexi and tungsten

**Weight:** 6.1 lb (2.8 kg)

**Shipping:** Fully assembled

**NOTE: Film is not included**

Item #	Description
710-730	Isocentric Beam Checker II

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# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## REINSTEIN EZ CUBE PHANTOM



The Reinstein EZ Cube Phantom is a radiation oncology QA phantom that provides rapid and reproducible ion chamber positioning from 1 cm to 12 cm depth at 0.5 cm intervals. Its unique design allows placement of the ion chamber through a range of depths, without ever having to readjust the phantom position with respect to the central axis or its TSD. This can save substantial amounts of time and reduce misalignment. The Reinstein EZ Cube Phantom is designed to simplify testing of beam output plus energy constancy at three gantry angles: 90 degree, 180 degree and 270 degree.

The EZ-Cube is machined from white acrylic, and contains 3 leveling feet and highly visible cross hair alignment marks on its anterior and lateral faces for precision setup. A channel is milled into the acrylic cube and contains a set of inserts of varying thicknesses which are stacked to fill the channel. A single 2-cm thick plastic insert contains a custom hole to fit a thimble-type ionization chamber. The ion-chamber can be easily positioned along the LINAC central axis from depth of 1 cm to depth of 12 cm by arranging the plastic inserts in different order. Also note that full scatter conditions are maintained at all depths.

- Output constancy measurements for photon and electron beams
- Depth dose constancy measurements for photon and electron beams
- Superior phantom alignment stability and ion chamber positioning reproducibility
- Rapid, precise and reproducible ion chamber depth changes (from 1 cm to 12 cm depth at 0.5 cm intervals) while maintaining constant TSD.
- Easily readable and unambiguous ion chamber depth scale.
- Output plus depth dose constancy measurements at 90°, 180°, 270° gantry angles.
- One phantom setup for all output and energy constancy measurement depths.

### Specifications

**Material:** White acrylic

**Size:** 6" x 6" x 6" (15 x 15 x 15 cm)

**Adjustable:** Three (3) Leveling feet and Bubble Level

**Overall Weight:** 8 lb (3.7 kg)

Item	Description
682-450	Reinstein EZ Cube Phantom

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## DAILY ISO PHANTOM AND PACKAGES



Affordable "TurnKey" Solution for daily machine QA

### CAPABILITIES

- Analyze RT and CR images
- Utilize same image sequences for different ISO center analysis
- Automatically sorts RT images
- Analyze multiple LINACs with single package
- Check laser alignment; light field size; radiation vs. light field alignment; kV, MV and CBCT isocenter coincidence.
- Export results as PDF for convenient electronic filing

Target positioning through imaging guidance is critical for the accurate delivery of radiation treatment. Verifying that all of the imaging, localization and targeting systems are aligned with the true radiation isocenter is crucial. The CIRS ISO Phantom Package provides a cost-effective, fast and accurate means of testing radiation isocenter coincidence with the isocenters of the image guidance systems.

The ISO Phantom contains a center and offset target. Both targets measure 6.35 mm in diameter and are made of ceramic. Together, the center target and engraved external concentric circles provide greater accuracy when localizing the center of the phantom to the center of the radiation field. The offset target is used to ensure the table offset coordinates generated by kV/MV imaging are accurate.

The ISO Base™ is used to position and level the ISO phantom on the treatment couch. It contains integrated pixel calibration targets recognized by ISO Analyze™.

6DOF ISO Base™ is designed for positioning and leveling of ISO phantom and quick calculation of complex 3D shifts of RT treatment systems with an integrated robotic couch. 6DOF ISO Base integrates with ISO Analyze™ and maintains all functionality of ISO Base™.

ISO OPT Frameless Adaptor mechanically registers any frameless SRS, RF or optical tracking target array to the ISO Cube. Users can mount the target array via adhesive or mechanical fasteners of their choosing.

ISO Analyze™ integrates with the ISO phantom, ISO Base™ and 6DOF ISO Base™ enabling user-friendly quality control of the LINAC isocenters by analyzing DICOM images acquired with the EPID and CBCT. Controls are run automatically, analyzing images of the phantom and quantifying a large number of evaluation parameters. The software allows users to easily generate, save and print a report for each preceding control.

The phantom, base and software were designed specifically for daily system checks. Results from ISO Analyze can be used to determine the adjustments necessary to align LINAC laser and light fields to the true radiation isocenter. The light field and radiation field alignment can be checked using the phantom's built-in radiographic markers. More importantly, the isocenters of both the CBCT and the EPID can be checked for true spatial alignment and coincidence with that of the treatment beam.

### Item 710-323 ISO Cube Daily QA Phantom Includes

- Daily ISO Phantom
- User Guide

### Item 710-324 ISO Cube™ Daily QA Package 1 Includes

- Daily ISO Phantom
- ISO Analyze™ Software
- ISO Base™ Alignment Platform
- User Guide

### Item 710-3251 ISO Cube™ Daily QA Package 3 Includes

- Daily ISO Phantom
- ISO Analyze™ Software
- 6DOF ISO Base™
- User Guide

### Optional Items

**710-331** ISO Analyze™ Software Sister License

**710-332** ISO Opt Frameless SRS Fiducial Array Frame Adapter

Item	Description
710-323	Daily ISO Phantom
710-324	Daily ISO Phantom Package 1
710-3251	Daily ISO Phantom Package 3

Item	Accessories
710-3281	6DOF ISO Base™
710-329	ISO Base™ Alignment Platform
710-3301	ISO Analyze™ Software
710-331	ISO Analyze™ Software Sister License
710-332	ISO Opt Frameless SRS Fiducial Array Frame Adapter

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

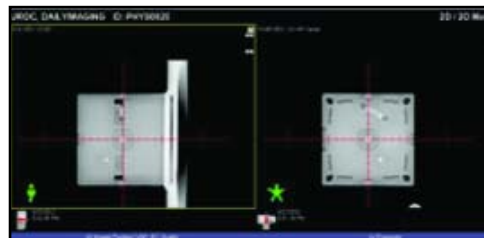
## DAILY ISO PHANTOM



710-323 Daily ISO Phantom

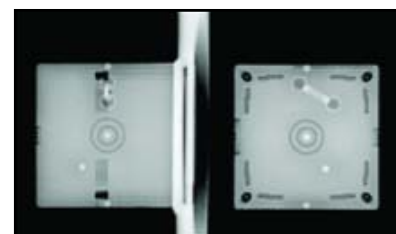
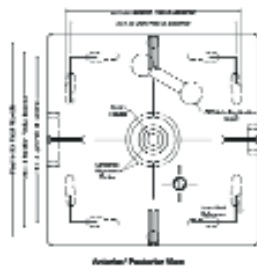
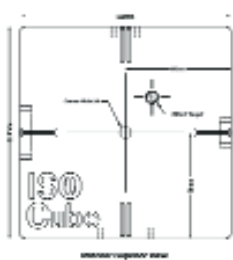
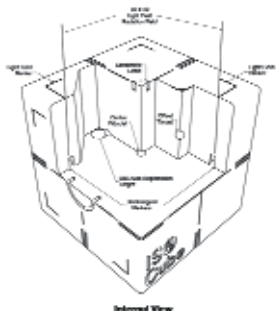


ISO Phantom Cutaway and 710-329 ISO Base with Tungsten Spheres



2D/2D match of kV and DRR

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Concentric circles verify accurate alignment of ISO Cube and establish true position of the kV radiation isocenter

- **Fast and easy to use**
- **Unique fiducials produce sharp clear images in EPID, kV and CBCT imaging**
- **Offset fiducial to check accuracy of couch corrections**
- **Check**
  - **Laser alignment**
  - **Light field size verification**
  - **kV and MV imager coincidence**
  - **CBCT process accuracy**
  - **ODI accuracy**
  - **Table height accuracy**
  - **Radiation field/light field alignment**

### Phantom Body

**Material:** Plastic Water®

**Size:** 4.75" x 4.75" x 4.75" (12 x 12 x 12 cm)

**Weight:** 3.9 lb ( 1.7 kg)

### Fiducials

**Quantity:** Four (4) - (1) Center Fiducial, (1) Offset Target, (2) Magnification check Fiducials

**Material:** Ceramic

**Diameter:** 6.35 mm

### OBI Auto-Registration Target

**Quantity:** One (1)

**Material:** Aluminum

The ISO Phantom is designed specifically for daily system checks. LINAC lasers and light field can be "tuned" to the true radiation isocenter using the engraved markings on the exterior of the ISO Phantom. The light field and radiation field alignment can be checked using built-in radiographic markers. More importantly the isocenters of both the OBI and the EPID can be checked for true spacial alignment and coincidence with that of the treatment beam.

The ISO Phantom contains a unique center point fiducial and an offset target. The offset target is used to ensure the table offset coordinates generated by kV/MV imaging are accurate by locating the target, moving the table the determined amounts and verifying that the offset target has been positioned at the isocenter. The center fiducial and off-set target measure 6.35 mm in diameter and are made of ceramic. The exterior is machined with concentric circle targets to allow user to objectively assess all setup errors, including rotations, and to easily align the phantom to the true radiation isocenter. ISO Phantom is manufactured with machining tolerance of  $\pm 0.02$  mm. Target positioning accuracy is  $\pm 0.1$  mm.

Item #	Description
710-323	Daily ISO Phantom

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## 6DOF ISO BASE™



710-3281



There are two milled pockets on the 6DOF ISO Base. The ISO alignment pocket can be used to position and level the ISO phantom on the treatment couch. It contains a set of four Tungsten spheres that are used by ISO Analyze™ Software to calculate the actual Pixel Size for both the MV and kV image detectors.

When positioned in the shifted 6DOF pocket, internal structures of the ISO phantom allow for the calculation of rotation and translation shifts. The shifted 6DOF pocket is machined with the mechanical limits of commercially available couches in mind, which can correct for Pitch, Roll and Yaw of  $\pm 3$  degrees of rotation. The 6DOF pocket is rotated within the IEC 61217 Coordinate System,  $+1.5^\circ$  about X-axis,  $+2.0^\circ$  about Y-axis and  $+2.5^\circ$  about Z-axis and translated -15 mm on X-axis, +25 mm on Y-axis. The translations about the X and Y-axes are applied with respect to the ISO center of ISO phantom. Having rotational shifts smaller than the mechanical limits of the robotic couches allows the user to determine if there are errorson either side of the induced shift

Both the ISO alignment pocket and the 6DOF pocket are CNC machined in a single setup. The 6DOF ISO Base is also assembled as a single piece to minimize cumulative assembly errors.

Item #	Description
710-3281	6DOF ISO Base™

### Quickly Assess Rotation and Translation Shifts

#### Benefits:

- Fully compatible with all ISO phantom and ISO Analyze Software
- 6DOF ISO Base pockets allow easy position of ISO phantom for ISO Center and Couch shift checks
- Compute kV and MV pixel size with embedded BBs
- Machined in single set up to minimize setup errors
- Integrated leveling feet allow fine alignment adjustments
- Milled slot enables indexing with most localization bars

The 6DOF ISO Base™ is designed for positioning and leveling of the ISO phantom and quick calculation of complex 3D shifts of RT treatment systems with an integrated robotic couch.

## ISO BASE™ ALIGNMENT PLATFORM



710-329

The ISO Base™ Alignment Platform is used to position and level the ISO phantom on the treatment couch. It contains a set of four Tungsten spheres that are used by ISO Analyze™ Software to calculate the actual Pixel Size for both the MV and kV image detectors. The Tungsten spheres are positioned such as that they do not interfere with the alignment of the ISO phantom nor do they interfere with the X-ray projections of the ISO phantom internal and external features, which are used for alignment and isocenters calculations. The platform is also equipped with leveling legs.

Item #	Description
710-329	ISO Base™ Alignment Platform

## ISO OPT FRAMELESS SRS FIDUCIAL ARRAY FRAME ADAPTER



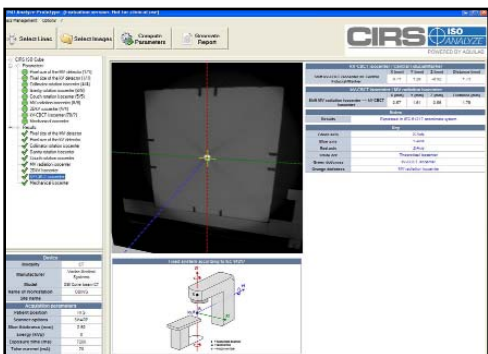
710-332

An optional optical target frame adapter is available that mechanically registers any frameless SRS RF or optical tracking target array to the ISO phantom in a simple and repeatable manner. Users can mount the target array via adhesive or mechanical fasteners of their choosing.

Item #	Description
710-332	ISO Opt Frameless SRS Fiducial Array Frame Adapter

# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## ISO ANALYZE™ SOFTWARE



710-3301

### ISO Analyze™ Sister License

ISO Analyze™ Software can only be installed on a single computer. From this workstation, customers can perform QA for any LINAC in the same network by accessing images acquired from these machines through the network connection. For larger hospital systems looking to install ISO Analyze Software on multiple computers, a sister license is available for purchase. The ISO Analyze Sister License has all of the same functionality as the full ISO Analyze Image Analysis Software, but will only be available to customers who have already purchased at least one ISO phantom and full ISO Analyze license.

### ISO Analyze™ Software System Requirements Include:

Windows XP® / Vista / Windows 7 / 8 / 8.1 / 10 (32 or 64 bit)  
 Intel i3 CPU or above (or equivalent AMD)  
 4 MB RAM and 2 GB of available disk space

Item	Accessories
710-3301	ISO Analyze™ Software
710-331	ISO Analyze™ Software Sister License

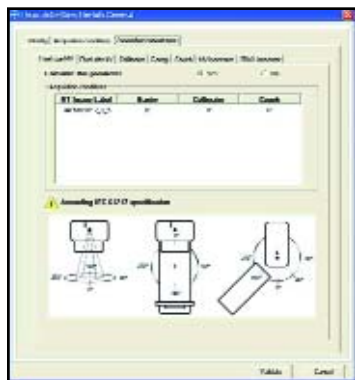
ISO Analyze™ Software integrates with the ISO Phantom, ISO Base™ and 6DOF ISO Base™ enabling user-friendly quality control of the LINAC isocenters by analyzing DICOM images acquired with the EPID, kV and CBCT. Controls are run automatically, analyzing images of the phantom and quantifying a large number of evaluation parameters. The software allows users to easily generate, save and print a report for each preceding control.

### System Analysis in 5 Easy Steps

#### Define

One time setup for each LINAC requires:

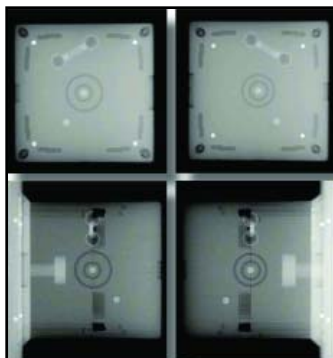
- LINAC Identity
- Acquisition Conditions
- Acquisition Sequences



#### Acquire

ISO Analyze™ Software provides suggested image sequences for each parameter

Acquire images for analysis of all parameters.



#### Select

Select acquired DICOM images to use in each parameter calculation

Select images are automatically validated for each parameter.



#### Calculate and Analyze Results

ISO Analyze™ quickly calculates parameters and displays detailed results

Detailed results can be manipulated for in-depth analysis



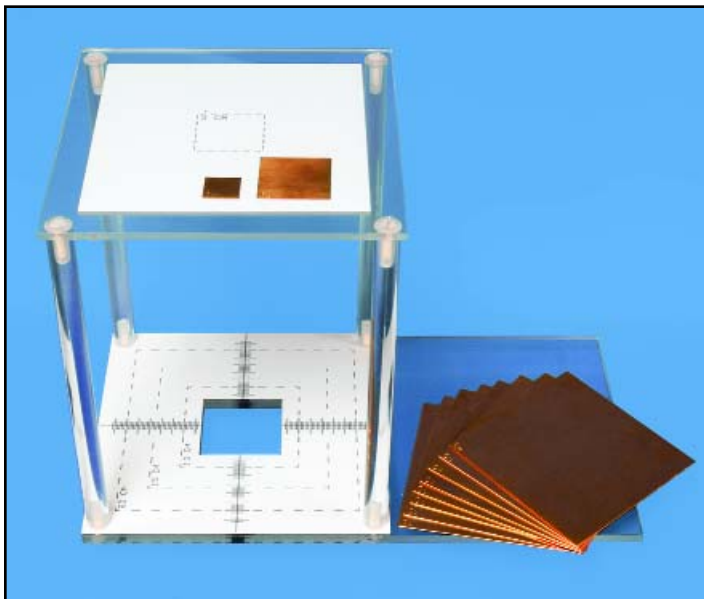
#### Report

Summary report is displayed and PDF document may be printed and saved



# QUALITY ASSURANCE-GEOMETRIC ALIGNMENT, LASER

## DIAGNOSTIC ACCURACY AND CALIBRATION PHANTOM TG190



The Diagnostic Accuracy and Calibration Phantom was designed based on the recommendations of the AAPM Task Group 190, "Accuracy and Calibration of Integrated Radiation Output Indicators in Diagnostic Radiology". This phantom follows the recommendations of incorporating a field size measurement plate, attenuators, geometric test objects, stand and copper sheets for determination of the focal spot location all in one phantom.

The top is a 25 cm square 1/4" thick clear acrylic plate. A white adjustable plate that is 20 cm square and 1/8" thick with a 5 cm square radiopaque field marked in the center is placed on top of the clear acrylic plate.

The bottom plate is 45.7 cm wide and 25 cm deep 3/8" clear acrylic with a 25 cm square white material secured to the bottom plate. There is a 7 cm square cut-out in the center of the field for an ion chamber. The cut-out is surrounded by a 10, 15 and 20 cm square radiopaque markings. The central axis markings are 10mm wide every 2mm and 20 mm wide every 1 cm.

The top and bottom plates are spaced at a 30 cm distance from the top of the top plate to the top of the bottom plate. Eight (8) nylon screws are used to attach the top and bottom plates to the vertical posts.

Copper plates included are:

- 1 - 1"(± 0.005") square x 0.04" thick (25.4 x 1 mm)
- 1 - 2"(± 0.005") square x 0.04" thick (50.8 x 1 mm)
- 8 - 5.9" square x 0.04" thick (150 x 1 mm)

### Specifications

**Adjustable White Plate Size:** 20 cm square

**Adjustable White Plate Engravings:** 5 cm square

**White Bottom Plate Size:** 25 cm square

**White Bottom Plate Engravings:** 10, 15, and 20 cm squares and central axis markings, 10 mm wide every 2 mm and 20 mm wide every 1 cm

**Overall Dimensions:** 18"W x 9.8"L x 12.3"H (45.7 x 25 x 30.1 cm)

**Top Material:** 1/4" thick Clear Acrylic

**Bottom Material:** 3/8" thick Clear Acrylic and 1/8" thick White Material

**Marking Material:** Tungsten

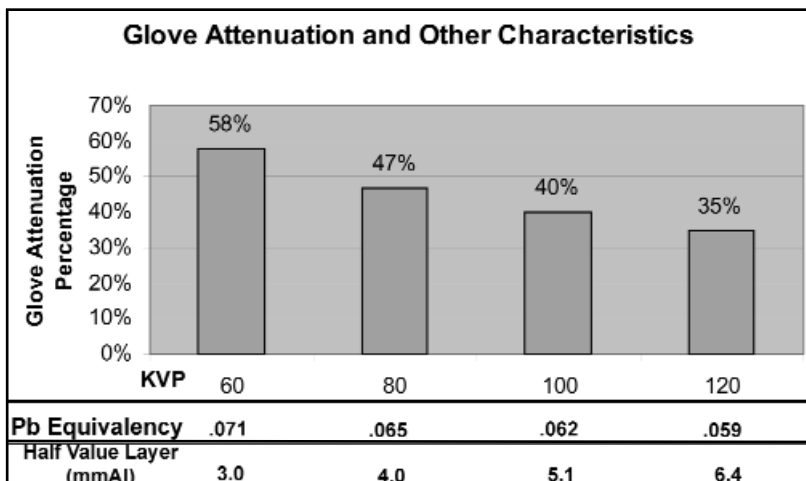
**Posts:** 3/4" Acrylic Rod

Item #	Description
202-001	Diagnostic Accuracy and Calibration Phantom, TG190

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# SEED IMPLANT PRODUCTS & EYE PLAQUES

## STERILE ATTENUATING GLOVES Fluoroscopic Protection and Touch Sensitivity



Test Method: ASTM F2547-06

### Thickness:

Only 9 mils in thickness, Attenuating Gloves offer excellent flexibility, dexterity, and touch sensitivity. The thinness of the Attenuating Glove also helps reduce finger fatigue.

### Lead-Free, Synthetic Rubber Composition:

Our synthetic rubber formulation avoids the proteinaceous sensitivities associated with natural latex. The lead-free composition of Attenuating Gloves eliminates EPA heavy-metal toxicity disposal concerns.

### Sterile:

Each pair of Attenuating Gloves comes in a sterile package.

Item #	Description	Size
906-800	Attenuating Gloves	6 1/2
906-801	Attenuating Gloves	7
906-802	Attenuating Gloves	7 1/2
906-803	Attenuating Gloves	8
906-804	Attenuating Gloves	8 1/2
906-805	Attenuating Gloves	XL

## SEED LOADING VACUUM TWEEZERS KIT

The Seed Loading Vacuum Tweezers Kit consists of a compact vacuum pump with a line switch, 5 feet of clear tubing, a vacuum line filter, a quick disconnect assembly, a vacuum pen and a 19 Ga. x 24 cm long vacuum needle (with a 130° bend).

### Optional Accessories:

- Remote Foot Switch
- Vacuum Needle 19 Ga. x 24 cm L

### Specifications

**Vacuum:** 14 Hg

**Air Flow:** 125 in<sup>3</sup>/min

**Power:** 115 VAC., 60 Hz, 2 Watts

**Foot Switch Power:** 125 VAC, 7 Amps

Item #	Description
906-001	Seed Loading Vacuum Kit (115 Vac)
906-002	Optional: Remote Foot Switch
162-000-01	Vacuum Pump, 115 Volts
162-000-04	Vacuum Line Filter Complete
906-008	5' Long Vacuum Hose
906-012	Quick Disconnect for Vacuum Hose
906-014	Vacuum Pen with Insulators
906-020	Optional: Vacuum Needle 19 Ga. x 24 cm Long
906-022	Vacuum Needle 19 Ga. x 24 cm Long w/ 130° Bend
455-050	50 S.S. Makers - 0.8 mm Dia. x 5 mm L (used for practice)



# SEED IMPLANT PRODUCTS & EYE PLAQUES

## MINI BETA SHIELD

For <sup>125</sup>Iodine or <sup>103</sup>Palladium

The free standing Mini Beta Shield is made of 1/8" thick stainless steel and specifically designed to protect personnel when handling beta-emitting isotopes. The shield easily fits on a bench top or cart. The shield is ideal for protection against <sup>125</sup>Iodine and <sup>103</sup>Palladium. A 8 mm thick x 10 " square lead glass viewing area. The bottom of the shield has a 3/4" lip to contain any dropped seeds.



Arm Rest Optional

The optional arm rest is made of clear acrylic and has rubber pads to cushion the arms. The arm rest is 29" wide and 3 1/2" deep. The optional arm rest can be easily mounted to the stainless steel shield with two bolts into pre-drilled holes. The arm rest can be mounted in two different positions to the front of the shield, with arm rest forwards or backwards.

### Specifications

- Viewing Area:** 10 1/4" Sq.
- Material:** 1/8" thick stainless steel
- Stainless Steel Density:** 7.916 g/cm<sup>3</sup>
- Leaded Glass Density:** 2.0 mm lead equivalency
- Lead Glass:** 4.8 g/cm<sup>3</sup>
- Lead Density:** 11.35 g/cm<sup>3</sup>
- Shielding Equivalency:**  
1/2 Value Layer (<sup>125</sup>Iodine) = .025 mm lead
- Size:** 12" W x 12" D x 20 1/2" H
- Sterilization:** Gas
- Weight:** 20 lbs

Item #	Description
906-081	Mini Beta Shield
906-082	Arm Rest for Mini Beta Shield

## VERTICAL / HORIZONTAL NEEDLE BOX

For Iodine<sup>125</sup> and Palladium<sup>103</sup>



The Vertical / Horizontal Needle Box is made of stainless steel with a delrin needle top and a protective cover. The delrin needle top is scribed with an alphanumeric grid pattern, which can be customized. The standard alphanumeric grid pattern is Aa to G across the top and bottom and 7 to 1 in 0.5 increments along the sides from the top down. The needle box will accept a needle length of 25 cm. There are 169 needle holes, 13 horizontal and 13 vertical rows. The needle box fits into and latches to a removable bottom, for easy retrieval of loose seeds. The box has 2 side handles for easy mobility. The protective cover has a handle on top and latches to the needle box when not in use. The needle box can be used vertical or at a 60° slope when the legs are locked.

**Note:** The Grid Pattern can be custom scribed to customer's specifications.

### Specifications

- Material:** 11 Ga. Stainless Steel with 1/2" thick Delrin top
- Density of Stainless Steel:** 7.95 g/cm<sup>3</sup>
- Density of Delrin:** 1.415 g/cm<sup>3</sup>
- Overall Size:** 9 1/4" Sq. x 16 5/8" H
- Needle Box Size:** 9 1/4" Sq. x 11" H
- Weight:** 25 lbs
- Sterilization:** Gas or autoclave

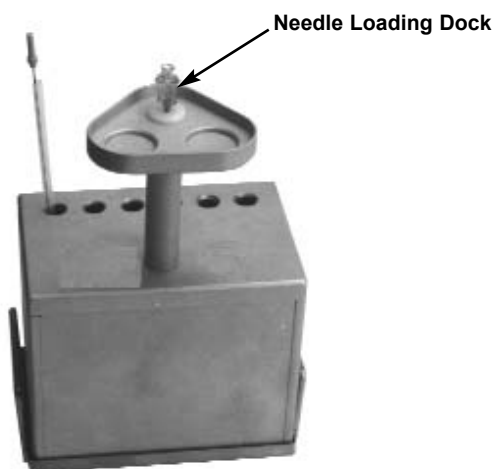
Item #	Description
906-110	Vertical / Horizontal Needle Box



# SEED IMPLANT PRODUCTS & EYE PLAQUES

## NEEDLE LOADING BOX

For Iodine<sup>125</sup> and Palladium<sup>103</sup>



The needle loading box is made of 1/4" thick aluminum. The box has a removable bottom with handles for easy retrieval of dislodged bone wax and radiation seeds from needles. The box has 6 needle tubes that are 9 mm in diameter. The rotating seed tray screws to the box and has seed and spacer holding areas (2.5 cm diameter x 3 mm deep) with a side rail to catch a seed/spacer not inserted into needle. Use the Seed Loading Vacuum Tweezers (Item 906-001) to insert seeds and spacers into needles.

### Specifications

**Overall Size:** 4" W x 6" L x 9 1/4" H

**Box Size:** 4" W x 6" L x 5" H

**Density:** 2.7 g/cm<sup>3</sup>

**Sterilization:** Gas or Autoclave

Item #	Description
906-108	Needle Loading Box

## STERILIZATION VIAL FOR RADIOACTIVE SEEDS



The Sterilization Vial is made of 1/8" stainless steel. Inside is a 1" diameter stainless steel mesh basket with the bottom of the basket made of 1/8" stainless steel. The basket bottom is shielded where the vial bottom is open. The vial bottom has a 2 cm diameter opening, which allows the gas or steam to go around and enter the mesh basket. The top has a screw on stainless steel cap with a Teflon® seal.

### Specifications

**Container Material:** 1/8" Stainless Steel

**Container Dimension:** 1 5/8" Dia. x 2 7/8" H

**Basket Material:** 100 Mesh Stainless Steel

**Basket Dimension:** 1" Dia. x 1 7/8"

**Sterilization:** Autoclaved or Gas

Item #	Description
906-060	Sterilization Vial for Radioactive Seeds, Stainless Steel

## DIDDLER



The Diddler is a device to adjust the position of transperineal needles as they are implanted through the templates. The Diddler is constructed of stainless steel and consists of a slender tip and knurled handle. This tip is constructed such that needles can be adjusted up, down, and sideways, even if there is a needle right next to it.

**Sterilization:** The Diddler can be Autoclaved.

Item #	Description
906-230	Diddler

## SPRING LOCK FOR PROSTATE NEEDLES



This spring lock can be used to tighten the needles used in prostate implants.

Item #	Description
906-290	Spring Lock for Prostate Needles

# SEED IMPLANT PRODUCTS & EYE PLAQUES

## PROSTATE MARKER IMPLANTER WITH ADJUSTABLE STOP



### Specifications

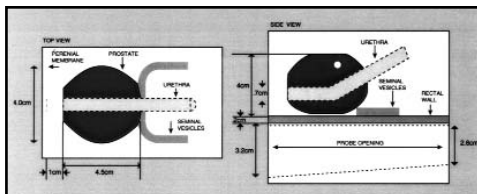
**Material:** Stainless Steel  
**Point Angle:** 30° Beveled  
**Overall Length:** 26.3 cm  
**Outside Diameter:** 1.47 mm  
**Inside Diameter:** 1.07 mm  
**Stylet Diameter:** 0.89 mm

Item	Description
455-005	Prostate Marker Implanter with Adjustable Stop
455-009	Adjustable Stop for 17ga. Needle for Cervix/Prostate

**Implanter MUST be Sterilized Before Use**

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## ULTRASOUND PROSTATE TRAINING PHANTOM



### Specifications

**Container:**  
**Material:** Clear acrylic  
**Dimensions:** 11.5 cm x 7.0 cm x 9.5 cm  
**Front Probe Opening:** 3.2 cm diameter  
**Rear Probe Opening:** 2.6 cm diameter

**Perineal Membrane:**  
 3 mm thick urethane

**Background Gel:**  
 Similar to water with very little backscatter attenuation

**Urethra:**  
**Dimensions:** 0.7 cm diameter  
**Material:** Zerdine®<sup>(1)</sup>, low scatter

**Seminal Vesicles:**  
**Dimensions:** 7 mm diameter x 10 mm long  
**Material:** Zerdine, high scatter

**Prostate:**  
**Dimensions:** 4 cm x 4.5 cm x 4.0 cm  
**Material:** Zerdine, low scatter

**Rectal Wall:**  
**Dimensions:** 6 cm x 11 cm x .2 cm  
**Material:** Zerdine, high scatter

**Note:** This phantom is not intended to ultrasonically mimic the human prostate.

**Other Features:**  
 Removable pubic arch

(1) US Patent # 5196343

Item	Description
906-400	Ultrasound Prostate Training Phantom

- Perineal membrane for needle insertion with realistic resistance
- Assess image fusion algorithms
- Test new equipment
- Optimize imaging protocols
- Improve performance of freehand abdominal biopsies

The Ultrasound Prostate Training Phantom is a disposable phantom developed for practicing permanent seed implantation procedures. It contains several unique features to assist the teaching and learning process.

The simulated perineal membrane permits needle insertion with realistic resistance. In addition, the area below the rectal wall is a clear gel to permit visualization of probe orientation. The prostate is transparent to allow visual verification of seed placement. The phantom also includes a removable pubic arch simulation.

This modification was developed with Dr. Peter Grimm and his associates at the Seattle Prostate Institute.

# SEED IMPLANT PRODUCTS & EYE PLAQUES

## EYE PLAQUES



971-XXX-01



971-XXX-05



971-XXX-10



971-XXX-15



971-XXX-20



971-XXX-25

The eye plaques are solid 18 kt. gold. Each eye plaque has 6 suture tabs. The eye plaques can be ordered with or without a notch for the optic nerve. The clear template metal ring is made of a high nickel alloy (78%).

**Note:** Silicone seed carrier must be ordered separately and is not returnable.

### Specifications

**18 Kt Gold Density:** 15.58 g/cm<sup>3</sup>

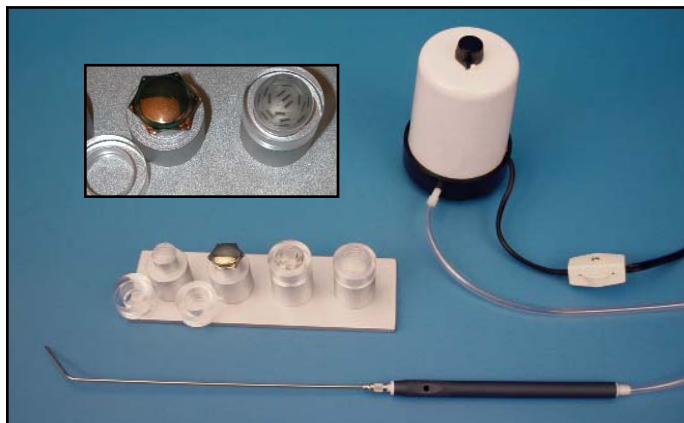
**Nickel Density:** 8.912 g/cm<sup>3</sup>

Item	Description	Size
971-010-01	Gold Eye Plaque	10 mm
971-010-05	Gold Eye Plaque, Notched	10 mm
971-010-10	Clear Template Eye Plaque	10 mm
971-010-15	Clear Template Eye Plaque, Notched	10 mm
971-010-20	Silicone Seed Carrier	10 mm
971-010-25	Silicone Seed Carrier, Notched	10 mm
971-012-01	Gold Eye Plaque	12 mm
971-012-05	Gold Eye Plaque, Notched	12 mm
971-012-10	Clear Template Eye Plaque	12 mm
971-012-15	Clear Template Eye Plaque, Notched	12 mm
971-012-20	Silicone Seed Carrier	12 mm
971-012-25	Silicone Seed Carrier, Notched	12 mm
971-014-01	Gold Eye Plaque	14 mm
971-014-05	Gold Eye Plaque, Notched	14 mm
971-014-10	Clear Template Eye Plaque	14 mm
971-014-15	Clear Template Eye Plaque, Notched	14 mm
971-014-20	Silicone Seed Carrier	14 mm
971-014-25	Silicone Seed Carrier, Notched	14 mm
971-016-01	Gold Eye Plaque	16 mm
971-016-05	Gold Eye Plaque, Notched	16 mm
971-016-10	Clear Template Eye Plaque	16 mm
971-016-15	Clear Template Eye Plaque, Notched	16 mm
971-016-20	Silicone Seed Carrier	16 mm
971-016-25	Silicone Seed Carrier, Notched	16 mm
971-018-01	Gold Eye Plaque	18 mm
971-018-05	Gold Eye Plaque, Notched	18 mm
971-018-10	Clear Template Eye Plaque	18 mm
971-018-15	Clear Template Eye Plaque, Notched	18 mm
971-018-20	Silicone Seed Carrier	18 mm
971-018-25	Silicone Seed Carrier, Notched	18 mm
971-020-01	Gold Eye Plaque	20 mm
971-020-05	Gold Eye Plaque, Notched	20 mm
971-020-10	Clear Template Eye Plaque	20 mm
971-020-15	Clear Template Eye Plaque, Notched	20 mm
971-020-20	Silicone Seed Carrier	20 mm
971-020-25	Silicone Seed Carrier, Notched	20 mm
971-022-01	Gold Eye Plaque	22 mm
971-022-05	Gold Eye Plaque, Notched	22 mm
971-022-10	Clear Template Eye Plaque	22 mm
971-022-15	Clear Template Eye Plaque, Notched	22 mm
971-022-20	Silicone Seed Carrier	22 mm
971-022-25	Silicone Seed Carrier, Notched	22 mm

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# SEED IMPLANT PRODUCTS & EYE PLAQUES

## EYE PLAQUES LOADING STAND



The Eye Plaque Loading Stand is designed to hold the Silicone Seed Carriers (971-xxx-20 or 971-xxx-25) for easier loading of the seeds into the Carriers and Eye Plaques. The Eye Plaque Loading Stand is comprised of an aluminum base with aluminum and acrylic holders. The aluminum base is 2" (5.08 cm) wide and 3/16" (0.188 cm) thick with the length dependant on the number of holders. The holders have a 1" diameter x 0.9" high (2.54 x 2.29 cm) aluminum base with a 0.5" (1.27 cm) high acrylic ring on top. The acrylic ring can be made for the following sizes of Seed Carriers: 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm and 22mm.

This item is custom made to the customer's specifications as to the size and number of holders needed on the stand. Customer must specify the size of holders needed, 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm and 22mm.

Item	Description
971-050	Eye Plaque Loading Stand

## TUNGSTEN EYE SHIELD FOR EYE PLAQUE



The Tungsten Eye Shield with 3 suture holes is placed on top of the eye plaque for shielding behind the eye.

### Specifications

**Tungsten Density:** 17 g/cm<sup>3</sup>

**Thickness:** 1 mm

**Radius:** 10.2 mm

**Diameter:** 18.3 mm

Item	Description
971-110	Tungsten Eye Shield for Eye Plaque

## SHIELDED EYE PLAQUE BOX

### For Gas Sterilization



- Double box design prevents radiation leakage

The outer box of the Shielded Eye Plaque Box is made of stainless steel which has a handle, latch, and piano hinge. The top, bottom, and two sides are lined with 1/16" (0.16 cm) thick lead. The two ends are perforated stainless steel to allow the gas to flow through the box. The inside liner is perforated stainless steel and the two ends are lined with 1/16" (0.16 cm) thick lead to prevent radiation leakage. There are two compartments for the eye plaques, each compartment size is 1.25" x 1.25" x 7/8" deep (3.175 x 3.175 x 2.23 cm).

Item	Description
936-950	Shielded Eye Plaque Box for Gas Sterilization

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## FIXED ROLLING RADIATION SHIELDS

964-040 to 964-055



958-058



958-000

959-000



The Fixed Rolling Radiation Shields have a 1" thick sheet lead which will reduce the dose from a cesium source by over 90%. The shield is mounted on a base that has four 6" diameter swivel, locking, ball bearing casters which provide easy mobility. The shield also has handles on each end and side.

### Specifications

#### Item 964-040 to 964-055

**Lead Size:** 36" W x 24" H x 1" T

**Base Height:** 10.5"

**Casters:** Four 6" dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 434 to 500 lbs

**Interlocks to form corner with Bed End Shield (Item 965-000)**

#### Item 958-000

**Lead Size:** 36" W x 30" H x 1" T

**Overall Size:** 40" W x 48" H x 24" D

**Lead Mounted:** 18" from floor

**Base Height:** 10.5"

**Casters:** Four 6" dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 575 lbs

#### Item 958-058

**Lead Size:** 30" W x 36" H x 1" T

**Overall Size:** 34" W x 58" H x 30" D

**Lead Mounted:** 22" from floor

**Base Height:** 10.5"

**Casters:** Four 6" dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 575 lbs

#### Item 959-000

**Lead Size:** 36" W x 48" H x 1" T

**Overall Size:** 40" W x 72" H x 34" D

**Lead Mounted:** 24" from floor

**Base Height:** 10.5"

**Casters:** Four 6" dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 900 lbs

Item	Description
964-040	Fixed Rolling Radiation Shield, 40" W x 40" H x 24" D
964-042	Fixed Rolling Radiation Shield, 40" W x 42" H x 24" D
964-045	Fixed Rolling Radiation Shield, 40" W x 45" H x 24" D
964-048	Fixed Rolling Radiation Shield, 40" W x 48" H x 24" D
964-055	Fixed Rolling Radiation Shield, 40" W x 55" H x 30" D
958-000	Fixed Rolling Radiation Shield, 40" W x 48" H x 24" D
958-058	Fixed Rolling Radiation Shield, 34" W x 58" H x 30" D
959-000	Fixed Rolling Radiation Shield, 40" W x 72" H x 34" D
964-930	Optional Lead Filled Vertical Posts
960-100	Shelf, Adjustable for 24" High Shields
960-110	Tray for Mobile Radiation Lead Barrier Shields

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# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## ROLLING RADIATION SHIELD

1" Pb x 24" H x 36" W



This Rolling Radiation Shield uses 1" thick sheet lead for shielding. It is mounted on a base that has four (4) swiveling and lockable casters which provide easy mobility. The vertical and horizontal posts are filled with lead. The clearance from the bottom of the shield to the floor is 27" so the shield can straddle the CT couch. This shield also has handles on each end to facilitate moving the shield.

### Specifications

**Lead Size:** 36" W x 24" H x 1" T

**Overall Size:** 40" W x 53.875" H x 24" D (excluding casters)

**Lead Mounted:** 27" from floor

**Casters:** Four 6" dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

Item	Description
957-032	Rolling Radiation Shield, 1" Pb x 24" H x 36" W
960-100	Shelf, Adjustable for 24" High Shields
960-110	Tray for Mobile Radiation Lead Barrier Shields

## ROLLING BED END SHIELD



The Bed End Shield is capable of interlocking with all other Radiation Shields to form a corner. Handles on both sides and ends allow for easier handling.

### Specifications

**Lead Size:** 42" W x 36" H x 1" T (107.1 x 91.8 x 2.5 cm)

**Overall Size:** 46" W x 56" H x 30" D (117.3 x 142.7 x 76.5 cm)

**Lead Mounted:** 20" (51 cm) from floor

**Base Height:** 13" (33.1 cm)

**Casters:** Four 6" (15.3 cm) dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 800 lb (362.9 kg)

Item	Description
965-000	Bed End Shield

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## ADJUSTABLE HEIGHT ROLLING RADIATION SHIELD



- Only adjustable shield with 36" W x 24" H lead
- Easy-to-adjust

The Adjustable Lead Shield can be moved over a 9" (22.9 cm) height range by using a screw jack. The jack is operated by a hand crank or a flat blade (both included) for a 3/8" (0.95 cm) Drill. The shield is set in a metal frame and mounted on a base with four 6" (15.3 cm) diameter swivel, locking, ball bearing casters that provide easy mobility.

### Specifications

**Lead Size:** 36" W x 24" H x 1" T (91.8 x 61.2 x 2.5 cm)

**Overall Size:** 42.5" W x 24" D (108.3 x 61.2 cm)

**Base Height:** 10.5" (26.8 cm)

**Casters:** Four 6" (15.3 cm) dia. swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 500 lb (226.8 kg)

Item	Description
960-024	Adj. Height Rolling Radiation Shield, Height Adj. 36" to 45"
960-030	Adj. Height Rolling Radiation Shield, Height Adj. 39" to 48"
960-100	Shelf, Adjustable for 24" High Shields
960-110	Tray for Mobile Radiation Lead Barrier Shields

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## HEIGHT ADJUSTABLE PATIENT LOADING SHIELDS

### Afterloading or Intravascular



960-300



960-302

### Specifications

#### Item 960-300

**Lead Glass Size:** 8" sq. x 2" T (20.4 x 5.1 cm)

**Lead Glass Density:** 5.2 g/cm<sup>3</sup>

**Lead Size:** 16" W x 34" H x 1" T (40.8 x 86.7 x 2.5 cm)

**Overall Size:** 19" W x 24.5" D (48.4 x 62.5 cm)

**Height Adjustment:** 54.5" to 64.5" H (138.9 to 164.4 cm)

**Base Height:** 10.5" (26.8 cm)

**Casters:** Four 6" (15.3 cm) dia. swivel locking ball bearing.

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 250 lb (113.4 kg)

#### Item 960-302

**Lead Glass Size:** 8" sq. x 2" T (20.4 x 5.1 cm)

**Lead Glass Density:** 5.2 g/cm<sup>3</sup>

**Upper Lead Shield:** 16" W x 34" H x 1" T (40.8 x 86.7 x 2.5 cm)

**Lower Lead Shield:** 18" W x 21" H x 1" T (45.9 x 53.5 x 2.5 cm)

**Maximum Height:** 56" (142.7 cm)

**Minimum Height:** 38" (96.7 cm)

**Casters:** Four 6" (15.3 cm) dia. swivel locking ball bearing.

**Finish:** Durable tan textured polyurethane enamel paint

Item	Description
960-300	Height Adjustable Patient Loading Shield
960-302	Height Adjustable Patient Loading Shield w/Lower Shield

The Height Adjustable Patient Loading Shields provide complete protection to the head and torso or head, torso and legs. They roll easily into position on four 6" diameter swivel, locking, ball bearing casters.

Item 960-300 has a 16" wide x 34" high x 1" thick shield and can be adjusted over a 10" range from a shield height of 54.5" to 64.5". Item 960-302 is the same shield on top, but also includes a lower shield.

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## INTRAVASCULAR SHIELDS



Item 996-800

**Item 996-800 - Fixed Height**

**Lead Size:** 60" W x 36" H x 5/8" T

**Overall Size:** 64" W x 70" H x 35" D

**Shield Height:** 32" from the floor

**Casters:** Four 6" dia. swivel, locking, ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 786 lb (357 kg)

Item #	Description
996-800	60" Wide Intravascular Shield



Item 996-810

**Item 996-810 - Fixed Height**

**Lead Size:** 48" W x 36" H x 5/8" T

**Overall Size:** 52" W x 70" H x 35" D

**Shield Height:** 32" from the floor

**Casters:** Four 6" dia. swivel, locking, ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 500 lbs

Item #	Description
996-810	48" Wide Intravascular Shield



Item 996-820

The adjustable height shield is built with a 9" range of movement. When ordering the adjustable shield, specify the height range of the lead shielding needed (ie: 61" - 70" - keep in mind the lead shield is 36" high and add 4" for framework). A screw jack moves the shield. The jack is operated by a hand crank or a flat blade (both included) for a 3/8" drill.

**Item 996-820 - Adjustable Height**

**Lead Size:** 48" W x 36" H x 5/8" T

**Overall Size:** 52" W x 35" D - height will vary

**Height Adjustment Range:** 9"

**Casters:** Four 6" dia. swivel, locking, ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 500 lbs

Item #	Description
996-820	Adjustable 48" Wide Intravascular Shield

## SHIELD STEP



The Shield Step can be attached to the base of the radiation shield with four screws. The width of the shield step is 9" and has a 6" wide anti-skid material. When ordering please specify the item number of the shield that the step will be attached to.

Item #	Description
964-900	Shield Step 39 1/2" Long
960-900	Shield Step 38" Long

Custom Sizes Available

**CUSTOM SHIELDS AVAILABLE UPON REQUEST**



# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## SHELF, ADJUSTABLE FOR 24" HIGH SHIELDS



Heavy duty 14 ga. Stainless Steel adjustable tray.

### Specifications

**Size:** 7" W x 20" L x 1" Thick

Item	Description
960-100	Shelf, Adjustable for 24" High Shields

## TRAY FOR MOBILE RADIATION LEAD BARRIER SHIELDS



This tray is designed to easily hang over all 1" thick lead mobile radiation barrier shields. The product is made from 16 ga. steel and has a durable tan textured polyurethane enamel paint finish.

### Specifications

**Width:** 18" (45.7cm)

**Depth:** 6" (15.2cm)

**Side Height:** 2" (5.1cm)

**Hanging Height:** 8" (20.3cm)

**Finish:** Durable Tan Textured Polyurethane Enamel Paint

Item	Description
960-110	Tray for Mobile Radiation Lead Barrier Shields

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# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## MOBILE POSITIONING STAND FOR ARTICULATING ARMS

This versatile mobile positioning stand for articulating arms is capable of aiding you in the positioning a variety of treatment device options. The stand has a sturdy base with four lockable casters that easily slides under treatment tables and beds.

### Specifications

**Height:** 68.7" (175cm)

**Pole Height:** 66" (168cm)

**Under-bed Clearance:** 8.5" (22cm)

**Weight:** 89 lbs (41kg)

**Finish:** Durable tan textured polyurethane enamel paint

### Optional Items

**Item 940-102** Lead Shield for Articulating Mobile Positioning

**Item # 940-104\_ \_** : Stainless Articulating Arm Clamp for Mobile Position Stand

**Item # 940-106:** Articulating Arm with Quick Release Clamp



Shown with  
Lead Shield  
(Item # 940-102) &  
Articulating Arm Clamp  
(Item # 940-104\_ \_)

Item	Description
940-100	Mobile Positioning Stand for Articulating Arms
940-102	Lead Shield, 1/4x5x10" for Mobile Positioning Stand
940-104_ _	Articulating Arm Clamp
940-106	Articulating Arm with Quick Release Clamp

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## OVER BED RADIATION SHIELD

- Provides radiation protection to patients in the room above necessary if the ceiling construction is thin



The portable Over Bed Radiation Shield is made of 1" lead covered with stainless steel and mounted on a steel plate which is welded to the top of a tubular steel frame. Wheel extensions on the base provide extra stability when moving.

**Lead Size:** 24" sq. x 1" T  
**Overall Size:** 24" W x 50 1/2" H x 40 1/2" D  
**Top of Shield:** Covered with 16 ga. stainless steel  
**Top Frame Height:** 47"  
**Bottom Frame Height:** 10 1/2"  
**Inside Depth:** 34"  
**Casters:** Four 6" dia. swivel, locking, ball bearing  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 380 lbs

Item #	Description
957-000	Over Bed Radiation Shield

## OVER AND UNDER BED RADIATION SHIELD



### Item 957-020

**Lead Size:** Two 24" sq. x 1" T  
**Overall Size:** 28" W x 46 3/4" H x 40" D  
**Floor to Top of Over Shield:** 46 3/4"  
**Floor to Bottom of Over Shield:** 44 3/4"  
**Floor to Top of Under Shield:** 9 1/4"  
**Floor to Bottom of Under Shield:** 7 1/2"  
**Inside Depth:** 34"  
**Casters:** Four 6" swivel locking ball bearing  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 620 lbs

### Item 957-022

**Lead Size:** Two 24" sq. x 1" T  
**Overall Size:** 28" W x 43" H x 40" D  
**Floor to Top of Over Shield:** 43"  
**Floor to Bottom of Over Shield:** 41"  
**Floor to Top of Under Shield:** 5 1/2"  
**Floor to Bottom of Under Shield:** 3 3/4"  
**Inside Depth:** 34"  
**Casters:** Four 2 1/2" swivel  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 610 lbs

Item #	Description
957-020	Over and Under Bed Radiation Shield - 6" Casters
957-022	Over and Under Bed Radiation Shield - 2 1/2" Casters

- Provides radiation protection to patients in rooms above and below
- Necessary if the ceiling and floor construction is thin

The portable Over and Under Bed Radiation Shield, has a top and bottom shield. Each shield is made of 1" lead covered with 16 ga. steel and mounted on a steel plate which is welded to the tubular steel frame.

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# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## UNDER BED RADIATION SHIELDS



- Provides radiation protection to patients in room below, necessary if the floor construction is thin
- Lead shield is raised and lowered by using ratchet wrench
- Shield is adjustable from 9" to 25"

The portable, adjustable Under Bed Radiation Shield is made of 1" lead covered with stainless steel and is mounted on a steel plate which is welded to the top of a scissors jack. The scissors jack is screw operated to prevent any decrease in height during treatment. Outrigger type wheel extensions on the base provide extra stability when moving. The shield raises and lowers with any 1/2" square drive ratchet wrench (not included).



**Lead Size:** 24" sq. x 1" T  
**Height Adjustment:** 9" to 25"  
**Top of shield:** Covered with 16 ga. stainless steel  
**Casters:** Four swivel rubber  
**Weight:** 350 lbs

Item #	Description
956-000	Under Bed Radiation Shield
956-500	10" Ratchet with 2 1/2" Extension

## UNDER BED RADIATION SHIELD



**Lead:** 36"sq. lead covered with steel mounted on 1/4" steel plate  
**Overall Size:** 36" W x 36" L x 5 1/2" H  
**Casters:** Two 4" dia. swivel, locking and two 4" dia. locking  
**Stay Anywhere Handle**  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 330 lbs



Item #	Description	Lead Size
956-036	Under Bed Radiation Shield	36" sq. x 1/2" T
956-038	Under Bed Radiation Shield	36" sq. x 1" T

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## TUNNEL SHIELDS



957-025



957-030

The Tunnel Shields can straddle couches up to 24" wide. It has a 1" thick lead shield on the top and 4 (four) 3" locking casters.

### Specifications

#### Item 957-025

**For pregnant women to protect the fetus from radiation**

**Lead Shield Size:** 24" W x 30" L x 1" thick

**Inside Dimensions:** 30" W x 42.5" L x 45" H

**Overall Dimensions:** 34.5" W x 42.5" L x 49" H

**Weight:** 405 lbs

#### Item 957-030

**For HDR treatment in a CT room to protect ceiling areas from radiation**

**Lead Shield Size:** 24" W x 24" L x 1" thick

**Inside Dimensions:** 30" W x 24.5" L x 45" H

**Overall Dimensions:** 34.5" W x 24.5" L x 49" H

**Weight:** 359 lbs

NOTE: Larger lead shields can be custom ordered.

Item	Description
957-025	Tunnel Shield, 1" T x 24" W x 30" L Lead
957-030	Tunnel Shield, 1" x 24" Sq. Lead

## CT/HDR RADIATION SHIELD PLACEMENT



Using a CT Room for HDR can be very cost effective in Radiation Therapy Departments.

The Fixed Rolling Radiation Shields use 1" thick sheet lead for shielding. They are mounted on bases that have 4 (four) swiveling and lockable casters which provide easy mobility. These shields also have handles on each end and are custom built for each room.

Item 957-033 includes the following shields:

1 - 957-030, Tunnel Shield (1" Pb x 24" Sq.)

1 - 957-032, Rolling Radiation Shield (1" Pb x 36" W x 24" H)

3 - 964-048, Rolling Radiation Shields (1" Pb x 36" W x 24" H)

All Side Shields have Vertical Posts Filled with Lead

Item	Description
957-033	CT/HDR Radiation Shield Placement

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## RADIATION TRANSPORT CART WITH TWO 5 3/8" SQUARE HOLES



The Radiation Transport Cart is designed to accommodate two (2) pigs up to 5 3/8" diameter or square. The large wheels prevent the cart from tipping over. The two (2) 8" diameter ball bearing wheels and one (1) 3" diameter swivel, locking, ball bearing caster facilitate easy mobility of the cart. A 36" long friction held "Stay Anywhere Handle" permits easy towing and parking. The optional Item 949-262 Removable Paperwork and Forceps Holder has a slot for paperwork and 2 forceps.

### Specifications

**Each Square Hole:** 5.4" x 5.4" x 3 3/8"

**Base Size:** 15 1/2" W x 18" L

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 24 lbs

Item	Description
949-261	Radiation Transport Cart w/ Two 5 3/8" Square Holes
949-262	Optional Removable Paper and Forceps Holder

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## PIG CART WITH TWO 4 1/8" SQUARE HOLES



The Pig Cart is designed to accommodate the Heyman Carrier (Item 948-020), the Side Opening Carrier (Item 949-200) or any round pig up to 4" (10.16 cm) diameter (929-001, 929-002, 929-005) or up to a 4" (10.16 cm) square pig. The two 8" (20.32 cm) diameter ball bearing wheels and one 3" (7.62 cm) diameter wheel swivel, locking, ball bearing caster facilitate easy mobility of the cart. A 36" (91.4 cm) long friction held "Stay Anywhere Handle" permits easy towing. The optional Removable Paper and Forceps Holder has a slot for paperwork and 2 forceps.

### Specifications

**Each Square Hole:** 4 1/8" x 4 1/8" x 3 3/8" H  
(10.48 x 10.48 x 8.57 cm)

**Base Size:** 9" W x 13.5" L (22.9 x 34.3 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 20 lb (9.07 kg)

Item	Description
949-260	Pig Cart with Two 4 1/8" Square Holes
949-262	Optional Removable Paper and Forceps Holder

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## FLETCHER / HEYMAN CARRIER SYSTEM



948-020

### Radiation Exposure

The radiation level at 1 meter from the side of the carrier is 5mR/hr when loaded with 100 mg Ra-eq Cesium 137. There are high radiation levels at the top and a high overall exposure when the core is lifted. See the Low Dose Carrier System for lower exposure levels.



948-030



948-032

The sealed stainless steel Heyman Carrier has a 2.1" inside diameter x 12 3/4" usable depth. The lead protection on the sides and the bottom of the inner tube is 2 cm thick. A drop-in cover with a knob, has 2.5 cm lead. A leather strap handle is used for lifting the unit into a cart. The Heyman Carrier can be used with Heyman or Iridium Pig Cart (Item 949-260) or the 1" Lead Shielded Cart (Item 949-310).

### Specifications

**Shielded Height:** 13.4 cm

**Overall Size:** 4" dia. x 16 1/8" H

**Weight:** 27 lbs.

Item #	Description
948-020	Heyman Carrier

**Item 948-030** the unshielded stainless steel Heyman Core holds 12 Heyman capsules. The core is made of 12 separate tubes marked A - L, that are 8 mm diameter and 27 cm deep. There is a 1 1/8" handle on the top

**Item 948-032** the unshielded stainless steel Fletcher-Suit-Delclos Core has three holes each 1.4 cm dia. x 12 cm deep. The core holds two afterloading bucket carriers and one plastic tandem afterloader.

Both cores can be used with the Heyman Stainless Steel Lead Carrier (Item 948-020).

Item #	Description
948-030	Heyman Core for 12 Heyman Capsules
948-032	Fletcher-Suit-Delclos Core

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# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## DOT RADIATION SOURCE CONTAINER AND CART



The Department of Transportation (DOT) Radiation Source Container holds 7 radiation sources (3 mm x 21 mm) in a lockable steel container with 2" thick lead and 1/4" thick steel walls. The top screws onto the bottom. It can all be transported in the cart. The two 8" diameter ball bearing wheels and one 3" diameter swivel, locking, ball bearing caster facilitate easy mobility of the cart. The cart has a "Stay Anywhere Handle" that is friction held at any position which permits easy towing. This unit can be transported in trunk, if using a van, the unit must be secured with a strap through the container handle.

### Specifications

**Dimensions:** 5 1/2" dia. x 5 1/2" D

**Cart Size:** 9 1/2" W x 13" L

**Finish:** Durable tan textured polyurethane enamel paint

**Container Weight:** 50 lbs

**Cart Weight:** 16 lbs

Item #	Description
952-007	DOT Radiation Source Container and Cart

Optional Paper/Forceps Carrier Available Upon Request

## DOT RADIATION SOURCE TRANSPORTER



The Department of Transportation (DOT) Radiation Source Transporter has a stainless steel center tube that measures 2.1" inside diameter and 13 7/8" deep which will accommodate the FSD Leaded Core (Item 949-215). The lockable steel container has 2 1/2" thick lead and 1/4" thick steel outside walls. The two 12" diameter roller bearing rear wheels and one 6" diameter front swivel, locking, ball bearing caster facilitate easy mobility of the transporter. The DOT radiation source transporter is used to transport bucket carriers and tandems to a remote hospital/clinic by van with a wheelchair lift. The unit must be secured inside a van with nylon straps thru securing ring at rear of container. This cart has the "Stay Anywhere Handle" that is friction held at any position.

**Note:** The unit is not complete without FSD Leaded Core.

### Specifications

**Dimensions:** 7" dia. x 16 3/8" H

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 350 lbs

Item #	Description
952-010	DOT Transporter
949-215	FSD Leaded Core

Optional Paper/Forceps Carrier Available Upon Request



# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## CS-137 DOT SOURCE TRANSPORT PIG CONTAINER RENTAL ONLY



The Cesium-137 DOT Source Transport Pig Container provides for safe temporary storage and transport of up to nine (9) Cesium-137 tube sources. The set consists of a pail with a cover and handle for carrying, foam insert, stainless steel container and cap, lead pig with nine holes for sources and a lead cap. Item 067-650 is for rental only. Rental time is 30 days.

### Specifications

**Maximum Source Size:** 3.17 mm Dia. x 30 mm L  
**Pig Cap:** 37 mm Lead  
**Pig Sides:** 35 mm Lead  
**Pig Bottom:** 30 mm Lead  
**Stainless Steel Container:** 29 mm bottom  
**Weight:** 35 lbs (16 kg)

Item	Description
067-650	Cs-137 DOT Source Transport Pig Container, RENTAL ONLY

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## HDR CART - 1" PB, FOR RELOADING CONTAINER



The HDR Cart is designed to store HDR Source Buckets upon arrival to the department before loading into the HDR System. The four walls of the cart have a 1" (2.54 cm) lead thickness. The bottom of the cart and the cover have no lead shielding. The cart has two chrome handles on the sides and the cover has one handle. The bottom of the cart sits 1" (2.54 cm) above the floor. The container is welded to two support bars for the casters. It has four locking swivel casters for ease of moving.

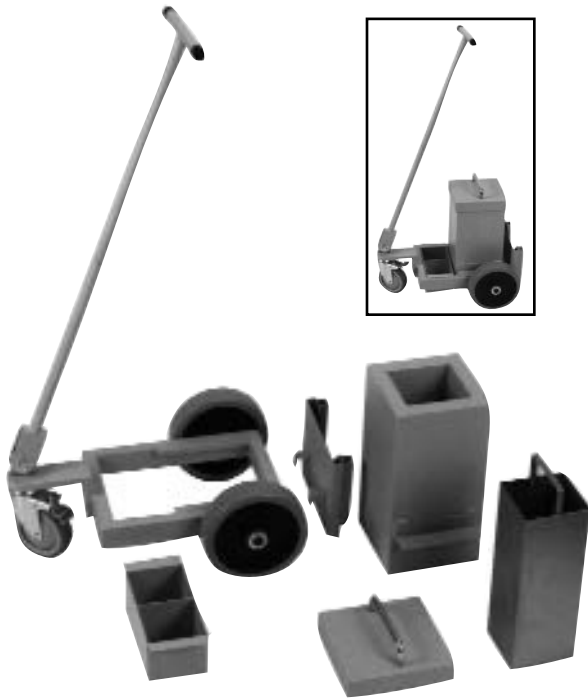
### Specifications

**Overall Dimensions:** 24.5" W x 40.25" L x 19" H  
 (62.2 x 102.2 x 48.3 cm)  
**Frame Dimensions:** 22.74" W x 32.27" L (57.8 x 81.9 cm)  
 excludes caster extension  
**Outside Container Dimensions:** 18.74" x 18.74" x 18" H  
 (47.6 x 47.6 x 45.7 cm)  
**Inside Container Dimensions:** 16" x 16" x 18" H  
 (40.6 x 40.6 x 45.7 cm)  
**Wall thickness:** 1" (2.54 cm) lead  
**Wall Material:** Steel and lead  
**Casters:** Four 6" diameter (15 cm) swivel and locking  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 734 lb (334 kg)

Item	Description
950-095	HDR Cart - 1" Pb, for Reloading Container

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## 1" LEAD SHIELDED CONTAINER AND CART



The Transport Cart can accommodate the double pig holder and the 1" (2.5 cm) shielded container at the same time. The steel pig holder is 3.5" (8.9 cm) deep and divided to accommodate 2 Iridium pigs or Heyman carriers up to 4 1/16" (10.3 cm) diameter. The large steel container is shielded with 1" (2.5 cm) thick lead, and has a removable stainless steel liner with a handle.

The cover is 1" (2.5 cm) thick lead covered with steel, the inside surface is stainless steel and it has a chrome handle.

The heavy duty cart is constructed of steel tubing and 1/2" (1.3 cm) thick steel bar. There are two 8" (20.4 cm) diameter roller bearing wheels and one 5" (12.7 cm) diameter swivel, locking, ball bearing front caster to allow easy mobility. The "Stay Anywhere Handle" is friction held at any position.

A paper/forceps holder clips onto the rear of the cart frame and holds two forceps and a chart or paper work. The pig holder, shielded container, and paper/forceps holder are all removable from the cart.

### The following are included with this item

- Pig Holder with two holes each 4 1/16" x 4 1/16" x 3" deep (10.3 x 10.3 x 7.6 cm)
- 1" (2.5 cm) Thick lead shielded container and cover
- Removable 18 gauge stainless steel liner with handle has a Storage Area: 4.75" x 4.75" x 13" H (12.1 x 12.1 x 33 cm)
- Cart with "Stay Anywhere Handle"
- Paper/forceps carrier

### Specifications

**Shielding:** 1" (2.54 cm) lead

**Storage Area:** 4.75" x 4.75" x 13" H (12.1 x 12.1 x 33 cm)

**Size:** 16" W x 22" L x 45" H w/handle up (40.8 x 56.1 x 114.7 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 241 lb (109.3 kg)

Item	Description
950-100	1" Lead Shielded Container with Cart

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## 1" LEAD SHIELDED CONTAINER W/SLIDING COVER AND CART



The bottom and sides of the steel container are made of 1" thick lead walls. The sliding 1" thick lead cover has a security lock. The steel container has a removable 18 gauge stainless steel liner for easy cleaning. The liner dimensions are 4 3/8" x 6 3/8" x 5 5/8" deep.

The cart is made of tubular welded steel with 3/4" axles. There are 2 - 10" diameter rear ball bearing wheels and 1 - 5" diameter swivel, locking, ball bearing front caster for easy mobility. The cart has the friction held "Stay Anywhere Handle".

The optional paper/forceps holder clips onto the rear of the cart frame and holds two forceps and a chart or paper work.

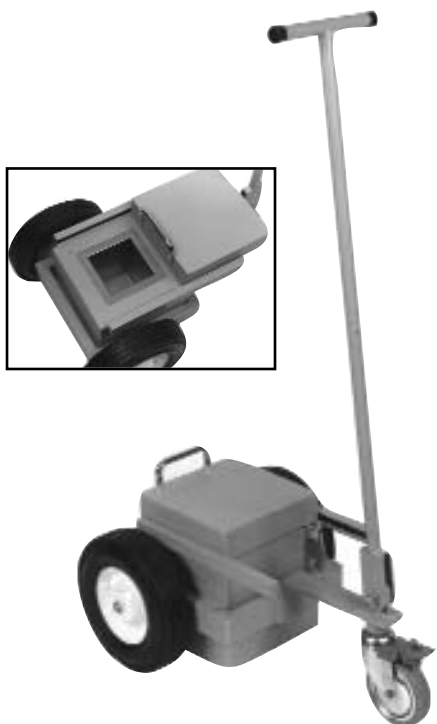
### Specifications

- Shielding:** 1" (2.54 cm) lead
- Storage Area:** 4 3/8" x 6 3/8" x 5 5/8" Deep (11.1 x 16.1 x 14.2 cm)
- Floor Clearance:** 1"
- Load Capacity:** 300 lb
- Finish:** Durable tan textured polyurethane enamel paint
- Weight:** 240 lb

Item	Description
950-210	1" Lead Shielded Container with Sliding Cover & Cart
950-101	Paper/Forceps Holder

Custom Sizes Available

## 2" LEAD SHIELDED CONTAINER W/SLIDING COVER AND CART



The bottom and sides of the steel container are made of 2" thick lead walls. The sliding 2" thick lead cover (64 lbs.) has a security lock. The steel container has a removable 18 gauge stainless steel liner for easy cleaning. The liner dimensions are 4" sq. x 6" deep.

The cart is made of tubular welded steel with 3/4" axles. There are 2 - 10" diameter rear ball bearing wheels and 1 - 5" diameter swivel, locking, ball bearing front caster for easy mobility. The cart has the friction held "Stay Anywhere Handle".

The optional paper/forceps holder clips onto the rear of the cart frame and holds two forceps and a chart or paper work.

### Specifications

- Shielding:** 2" (5.08 cm) lead
- Storage Area:** 4" x 4" x 6" Deep (10.3 x 10.3 x 15.2 cm)
- Floor Clearance:** 1"
- Load Capacity:** 300 lbs
- Finish:** Durable tan textured polyurethane enamel paint
- Weight:** 290 lbs

Item	Description
950-200	2" Lead Shielded Container with Sliding Cover & Cart
950-101	Paper/Forceps Holder

Custom Sizes Available

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# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## LOW DOSE CARRIER SYSTEM

### SIDE OPENING CARRIER

Stainless Steel With Lock



Easy access is provided with the side opening feature. This reduces the dose rate received because the inner core does not have to be raised to remove the source carriers. This unit provides 6" high x 3/4" thick lead shielding around the sides and 1" on the bottom. The top is shielded with 2 1/8" diameter x 1 1/8" thick lead. All lead is sealed in stainless steel for fire protection. A lock is furnished with the unit. This unit will fit in the Lead Shielded Cart (Item 949-310) or Heyman Iridium Pig Cart (Item 949-260).

#### Specifications

**Inside Dimensions:** 2 1/8" dia. x 12 1/2" H

**Overall Size:** 4" dia. x 15 1/4" H

**Weight:** 39 lbs

Item #	Description
949-200	Side Opening Carrier

### FSD LEADED CORE



This lead filled stainless steel core holds four afterloading bucket carriers and two tandems. Radiation streaming from the top is minimal. The FSD Leaded Core can be used with the Side Opening Carrier (Item 949-200) and the Lead Shielded Cart (Item 949-310).

#### Specifications

**Base Size:** 2" dia. x 6" H

**Overall Height:** 12 1/2"

**Weight:** 6 lbs

Item #	Description
949-215	FSD Leaded Core

### NEEDLE RACK CORE



The lead filled core holds twelve needles. The core holes have an inside diameter of 0.125" (3.1 mm) and a depth of 4.5" (114 mm). The Needle Rack Core can be used with the Side Opening Carrier (Item 949-200) and the Lead Shielded Cart (Item 949-310).

#### Specifications

**Base Size:** 2" dia. x 5 1/4" H

**Overall Height:** 12 1/2"

**Weight:** 6 3/4 lbs

Item #	Description
949-230	Needle Rack Core

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## LOW DOSE CARRIER SYSTEM (CONTINUED)

### Radiation Survey Around Cesium 137 Source Carrier and Cart

Cesium Sources	Nominal Strength	Actual mg Ra-eq	Core in Carrier Lateral	Carrier in 1" Lead Cart		
				Lateral	Handle 45° Angle	1 Meter Above
<b>Ovoid and Tandem</b>						
2	20 mg	35.0 mg	3.2 mR/hr	0.1 mR/hr	0.2 mR/hr	Carrier with 6.0 - Open Door 0.4 - Closed Door
3	20-10-10 mg	<u>17.5-7.5-7.5</u> 67.5 Total				
<b>Heyman</b>						
5	10 mg	52.0 mg	2.5 mR/hr	0.1 mR/hr	0.1 mR/hr	0.6 - Open Door
<b>Ovoid, Tandem and Heyman</b>						
2	20 mg	35.0 mg	5.0 mR/hr	0.2 mR/hr	0.2 mR/hr	6.5 - Open Door 0.4 - Closed Door
3	20-10-10 mg	17.5-7.5-7.5				
5	10 mg	<u>52.0</u> 119.5 Total				

**Core:** Minimum 1/4" Lead Plus Steel

**Source Carrier:** Minimum 3/4" Lead Plus 1/8" Stainless Steel

**Cart:** Minimum 1" Lead Plus 3/8" Steel

### LEAD SHIELDED CART

For Low Dose Carrier System or Nuclear Medicine



### LEAD COVER

The 1" Lead Cover is constructed of steel and shielded with 1" thick lead. The inside is stainless steel and the steel/nickel chromed handle provides easy handling. The Lead Cover will fit snugly over the Lead Shielded Cart (Item 949-310).

#### Specifications

**Dimensions:** 7 1/4" dia.

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 20 lbs

### DROP IN CONTAINER

This 24 gauge stainless steel container with handle fits into the Lead Shielded Cart (Item 949-310). It can be cleaned easily.

#### Specifications

**Inside Dimensions:** 4 1/8" dia. x 5 5/8" D

Item #	Description
949-310	Lead Shielded Cart
949-311	Lead Cover
949-312	Paper Forceps Holder for 949-310
949-330	Drop-In Container

This Lead Shielded Cart can carry the Side Opening Carrier (Item 949-200). The radiation exposure to the body and hands is very low. The cart is constructed of steel and shielded with 1" thick lead. It has two 8" diameter roller bearing rear wheels, one 5" diameter swivel, locking, ball bearing caster and a 36" long "Stay Anywhere Handle" that is friction held at any position. An optional removable paper and forceps holders (Item 949-312) attaches to the cart on the rear axle.

Radioactive materials for Nuclear Medicine can be transported in this cart using the lead cover (Item 949-311) and drop in container (Item 949-330).

#### Specifications

**Inside Dimensions:** 4 1/2" dia. x 5 3/4" D

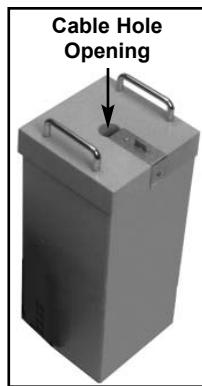
**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 83 lbs.

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# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## HDR EMERGENCY CONTAINER AND CART



The HDR Container is used to hold remote radiation applicator if a problem occurs. The steel container is filled with 1" thick (2.54 cm) lead and has a removable 18 gauge stainless steel liner with a handle for easy cleaning. The liner measures 4.75" sq. x 11.5" high (12.1 x 29.2 cm). The cover is 1" thick (2.54 cm) lead filled steel with a chrome handle and stainless steel inside surface. The container has a steel lip on the sides to set in the transport cart.

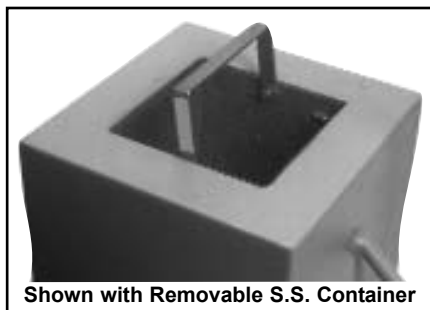
The cart is made of tubular steel and has two 8" diameter (20.3 cm) roller bearing wheels and a 5" diameter (12.7 cm) front swivel, locking, ball bearing caster. The cart has a "Stay Anywhere Handle" which is friction held at any position and allows for easy steering and pulling.

**Note:** The depth and cable opening in the cover is made to customers specifications. When ordering please specify depth and cable opening size, name of contact person and phone number.

Item	Description
950-050	HDR Emergency Container
950-060	HDR Transportation Cart
950-101	Paper/Forceps Holder

## HDR EMERGENCY CONTAINER

### 1.5" Lead Walls



The HDR Emergency Container is used to hold a remote applicator if a problem occurs. This container has 1.5" (3.8 cm) thick lead shielding on all sides. All walls are made of welded steel plate, sealed and filled with lead. A removable 18 gauge stainless steel container with handle fits inside which can be easily removed and cleaned. The cover is 1.5" (3.8 cm) thick with a slot for the cables. A drop-in lead plug fills the slot after the cable has been installed. The two 12" (30.5 cm) diameter roller bearing rear wheels and a 6" (15.2 cm) diameter front swivel, locking, ball bearing caster will roll easily on all floors. The "Stay Anywhere Handle" which is friction held in any position and allows for easy steering and pulling.

### Specifications

#### Item 950-070

**Inside Dimensions:** 4 7/8" Sq. x 17" D (12.38 x 43.18 cm)

**Overall Dimensions:** 16 7/8" W x 23 1/8" L x 23" H (42.86 x 58.74 x 58.42 cm)

**Cable Hole:** 1" (2.54 cm) diameter hole

**Handle Length:** 36" L (91.44 cm)

**Weight:** 507 lb (230 kg)

#### Item 950-071

**Inside Dimensions:** 4 7/8" Sq. x 13 1/8" D (12.38 x 33.34 cm)

**Overall Dimensions:** 16 7/8" W x 23 1/8" L x 19 1/8" H (42.86 x 58.74 x 48.58 cm)

**Cable Hole:** 1 1/2" (3.8 cm) diameter hole

**Handle Length:** 36" L (91.44 cm)

**Weight:** 436 lb (198 kg)

**Finish:** Durable Tan Textured Polyurethane Enamel Paint

Item	Description
950-070	HDR Emergency Container - 1" Dia. Cable Hole
950-071	HDR Emergency Container - 1 1/2" Dia. Cable Hole
949-312	Paper/Forceps Holder

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## RADIOACTIVE MATERIAL CONTAINER AND CART

With 1/2" Lead Walls



Shown with  
Optional Foam Insert

The outside of the radiation container is 1/8" (0.32 cm) welded stainless steel. The 1 1/2" (3.8 cm) thick steel chrome plated doors are overlapping, and have heavy duty hinges. The inside and bottom are lined with 1/2" (1.27 cm) thick lead. It is made to be easily cleaned with a removable 16 gauge stainless steel inner liner. The inside dimensions are 10 1/8" W x 11 5/8" L x 10 3/4" D (25.72 x 29.53 x 27.31 cm). The container comes with a security lock.

The Cart is made of a tubular welded steel frame with 3/4" (1.9 cm) axles. The "Stay Anywhere Handle" is friction held in any position. Two 10" (25.4 cm) diameter ball bearing wheels and one 5" (12.7 cm) diameter front swivel, locking, ball bearing caster make for easy mobility.

An optional foam insert is available for the 950-000 Cart. The foam insert is made of polyethylene foam and is 7" (17.78 cm) high with four 4" (10.16 cm) diameter x 6" (15.24 cm) deep cutouts.

### Specifications

**Lead:** 1/2" T (1.27 cm)

**Dimensions:** 18 1/2" W x 26" L x 16" H (47 x 66 x 40.5 cm)

**Floor Clearance:** 1" (2.54 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 280 lb (127.3 kg)

Item	Description
950-000	Radioactive Material Container with Liner and Cart
950-001	Foam Insert Bottle Holder for 950-000 Cart
950-101	Paper/Forceps Holder

## RECTANGULAR LEAD AND STEEL WALL CONTAINERS



The rectangular Lead and Steel Wall Container is designed for the storage and shipment of radioactive materials. The removable stainless steel liner is optional. The container has 2 side handles. The hinged cover may be locked with a padlock. There is a handle on the lead shielded lid.

The cart is a tubular welded steel frame and has a support plate for the container and 3/4" (1.9 cm) axles. There are two 10" (25.5 cm) ball bearing wheels and a 5" (12.75 cm) diameter swivel, locking, ball bearing front caster for easy mobility. The cart has the friction held "Stay Anywhere Handle".

**Note:** Lead is exposed, therefore, this container **will not** meet the Fire Protection Standards or DOT (Department of Transportation) requirements.

### Specifications

**Item 951-100**

**Lead Walls:** 1" T (2.5 cm)

**Outside Dimensions:** 8" square x 11" (20.4 x 28 cm)

**Inside Dimensions:** 6" sq. x 8" H (15.3 x 20.4 cm)

**Weight:** 175 lb (79.5 kg)

Item	Description
951-100	1" Lead and Steel Wall Container
951-101	Stainless Steel Liner for 1" Lead Container
951-058	Cart for Lead Container
950-101	Paper/Forceps Holder

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## SHIELD BOX, 1/4" LEAD EQUIVALENT



The Shield Box is made of 3/4" (1.92 cm) Steel on all sides, top and bottom which gives a shielding equivalency of 1/4" (.0635 cm) lead.

The Shield Box has two (2) top doors that slide open on heavy duty glide brackets. Each door has a 1/2" diameter steel handle that is used to slide the door open. The doors have a coupler latch and a keyed receiver lock welded to the doors for security.

There is a steel folding handle on each end of the Shield Box to use when moving the Shield Box. Four (4) 6" x 2" swivel casters with brakes makes this Shield Box easy to maneuver.

### Specifications

**Material:** 3/4" (1.92 cm) Steel

**Shielding Equivalency:** 1/4" (0.635cm) Lead

**Inside Dimensions:** 36" x 20" x 20" Deep

**Outside Dimensions:** 37.5" x 21.5" x 31.25" H

**Top Handles:** 5 1/4" W x 1 3/4" T x 1/2" diameter

**Side Handles:** 4 1/2" Wide, Folding

**Casters:** Four 6" (15.24 cm) diameter swivel with brakes

**Finish:** Durable Tan Textured Polyurethane Enamel Paint

**Shipping Weight:** 932 lbs (423kg)



Item	Description
950-010	Shield Box, 1/4" Pb Equivalent, ID: 36" x 20" x 20" D



# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## HDR EMERGENCY SHIELD FOR VARISOURCE



The HDR Emergency Shield was designed to shield the VariSource HDR system in the case of source retraction failure. The HDR Emergency shield can be rolled into position with the shield in front and covering the top of the VariSource. This will allow the Physicist or therapist protection from exposure while moving the VariSource to a corner of the room in an emergency situation. The patient can then be removed from the room.

The top, front and both sides of the shield are 1" (2.54 cm) lead covered with steel and painted. The vertical supports in the front are lead filled so there is no corner leakage. The bottom of the lead shield is 15.6" (39.6 cm) from the floor. The depth of the side shielding at the bottom of the shield is 8.5" (21.6 cm) and 20.5" (52.1 cm) at the top of the shield. The angled supports provide bracing for the shield.

The shield has one handle in the front and two on the sides with all three located in a shield area. The four casters also facilitate easy movement and the locks assure the shield stays in place.

### Specifications

**Overall Dimensions:** 26.7" W x 32" D x 47" H  
(67.8 x 81.3 x 119.4 cm) excluding casters

**Lead Thickness:** 1" (2.54 cm) Lead

**Casters:** Four 6" (15.24 cm) diameter swivel locking ball bearing

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 898 lb (409 kg)

Item	Description
950-080	HDR Emergency Shield f/ VariSource

## LEAD STORAGE CONTAINER FOR HDR



The Lead Storage Container for HDR has a 2" thick (5.08 cm) lead wall and is designed to store the source end of an HDR cable if there is a problem with the retracting system. This container can be easily moved in the cart which has 2" diameter (5.08 cm) swivel casters. The container wall and lid are made of 2" thick (5.08 cm) lead, and the container has an inside diameter of 1" (2.54 cm) and a depth of 10" (25.4 cm).

Optional: The "Stay Anywhere" Handle can be welded to the base plate of Item 994-071. The "Stay Anywhere Handle" is friction held in any position and allows for easy steering and pulling.

### Specifications

**Inside Dimensions:** 1" Dia x 10" Deep (2.54 x 25.4 cm)

**Cart Dimensions:** 10" Square (25.4 cm)

**Lead Wall:** 2" Thick (5.08 cm)

**Swivel Casters:** 2" Dia (5.08 cm)

**Finish:** Durable tan textured polyurethane enamel paint

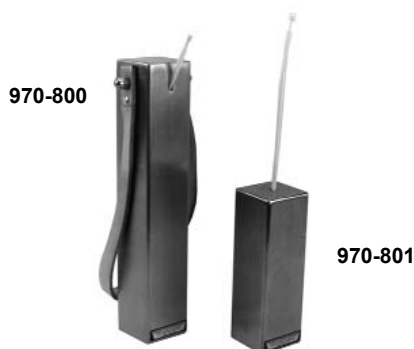
**Weight:** 100 lb (45.5 kg)

Item #	Description
994-071	Storage Container w/Cover & Cart
950-020	Optional "Stay Anywhere" Handle System

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## TANDEM CARRIER PIGS

Stainless Steel



The top entering Tandem Carrier Pig (Item 970-801) is used for emergency tandem storage in patient's room or placed inside a lead lined radiation cart.

### Specifications

#### Item 970-800

**Lead Size:** 2" sq. x 10 1/2" H

**Hole Size:** 8 mm W x 22 cm D

**Weight:** 17 lbs

#### Item 970-801

**Lead Size:** 2" sq. x 6" H

**Hole Size:** 8 mm W x 12.7 cm D

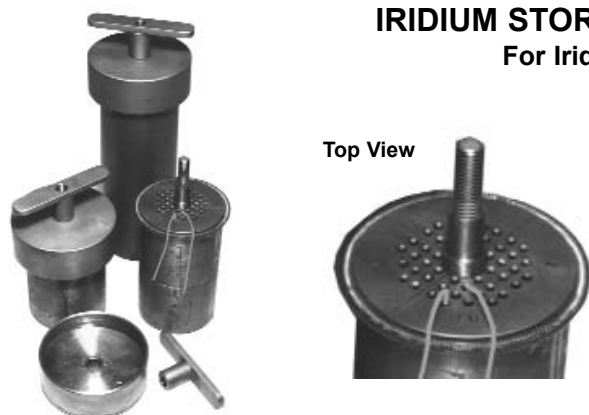
**Weight:** 16 lbs

Item #	Description
970-800	Tandem Carrier Pig with Handle
970-801	Tandem Carrier Pig

The side entering Tandem Carrier Pig (Item 970-800) gives good hand protection when carrying or it can be used for emergency tandem storage in patient's room. The carrier is made of stainless steel, filled with lead and has a tandem tube made of stainless steel that is welded in place.

## IRIDIUM STORAGE CONTAINERS

For Iridium Ribbons



**Item 901-030** is for ribbons containing 3-6 seeds; weight: 18 lbs., height: 6 7/8". This container is solid lead

**Item 901-070** is for ribbons containing 7-10 seeds; weight: 22 1/4 lbs., height: 8 3/8". This container is solid lead

**Item 901-110** is for ribbons containing 11-14 seeds; weight: 23 3/4 lbs., height: 10 3/8". This container has 3/4" of lead in the top and 5/8" of lead around the sides and bottom. This allows the largest container to be light enough for easy handling.

The nickel-chrome plated steel covers are 4" diameter x 1 3/8" thick and are secured to the main pig with a threaded stud and stainless steel T-handle.

Item #	Description	
901-000	Set of Iridium Storage Containers	
901-030	Iridium Storage Container	3 to 6
901-070	Iridium Storage Container	7 to 10
901-110	Iridium Storage Container	11 to 14

Each container in this set is marked into four quadrants. Each quadrant contains twelve stainless steel tubes for ribbons containing the same amount of seeds. Quadrants are marked for the number of seeds in each ribbon and allow 2 cm of lead shielding above the top seed. A stainless steel coil spring around the top plate allows each ribbon to be held in place by spring compression between the coils.

## LEAD CARRYING CASES (1" Pb)



### Specifications

**Lead Walls:** Top and Bottom: 1" Thick Lead (2.54 cm)

#### Item 929-001

**Cavity:** 1.5" Diameter x 3" Deep (3.82 x 7.65 cm)

**Overall Size:** 3.5" Diameter x 5" H (8.92 x 12.75 cm)

**Weight:** 19 lb (8.64 kg)

#### Item 929-002

**Cavity:** 1.5" Diameter x 4" Deep (3.82 x 10.2 cm)

**Overall Size:** 3.5" Diameter x 6" H (8.92 x 15.29 cm)

**Weight:** 21.5 lb (9.77 kg)

Item	Description
929-001	Lead Carrying Case (1" Pb), Cavity 1.5" Dia x 3" Deep
929-002	Lead Carrying Case (1" Pb), Cavity 1.5" Dia x 4" Deep

These Lead Carrying Case will ride in unshielded carts, Item 949-260 or 994-059 as well as the 1" Lead shielded cart, Item 949-500.

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## 1"LEAD SHIELDED CART WITH COVER



949-320 shown with 994-250



The 1" lead shielded cart with cover is designed to transport a 10/30 ml vial pig (Item 994-205) used with radionuclides.

The container is constructed of 0.25" (0.6 cm) thick steel and shielded with 1" (2.54 cm) lead. The cover is also steel and has a 1" (2.54 cm) thickness of lead with a bayonet latch to hold the cover tight on the container. The container and cover can be locked using the provided pad lock. The cart has two 8" (20 cm) diameter, roller bearing rear wheels and a 5" (13 cm) diameter, swivel, locking ball bearing front caster. The 36" (91.5 cm) long 'Stay Anywhere Handle' is friction held at any position.

An optional removable paper and forceps holder (Item 949-312) attaches to the cart on the rear axle.

### Specifications

**Inside Container Size:** 4.25" dia. x 8.0" D (10.8 x 20.3 cm)

**Outside Container Size:** 7.0" dia. x 9.32" D (17.8 x 23.7 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 133 lb (61 kg)

Item	Description
949-320	1" Lead Shielded Cart w/Cover for 10/30 ml PET Vials
949-312	Optional Paper Forceps Holder for Item 949-320

W

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## SHIELDED CART WITH COVER - 1" LEAD



The cart has two 8" (20 cm) diameter, roller bearing rear wheels and a 5" (13 cm) diameter, swivel, locking ball bearing front caster. The 36" (91.5 cm) long 'Stay Anywhere Handle' is friction held at any position.

This cart will accommodate the Item #'s 994-205, 30 ml Vial Pig and 949-520, DOT 1 1/8" Lead Shielded Container for 50cc Vial.

An optional removable paper and forceps holder (Item 949-312) attaches to the cart on the rear axle.

### Specifications

**Lead Thickness:** 1" (2.5 cm)

**Inside Container Dimensions:** 5.5" Dia. x 8.5" D (14 x 21.6 cm)

**Outside Container Dimensions:** 8.25" Dia. x 9.875" H (20.9 x 25.1 cm)

**Overall Cart Dimensions:** 12.37" W x 19.75" L x 14" H (31.5 x 50.0 x 35.6 cm) without handle

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 179 lb (81.2 kg)

Item	Description
949-500	Shielded Cart with Cover, 1" Lead
994-205	30ml Vial Pig, 1" Pb
949-520	DOT 1 1/8" Lead Shielded Container for 50cc Vial
949-312	Removable Paper & Forceps Holder

The shielded cart with cover is designed to transport vial pigs used with PET radionuclides.

The container is constructed of 0.25" (0.6 cm) thick steel and shielded with 1" (2.54 cm) lead. The cover is also steel and has a 1" (2.54 cm) thickness of lead with a bayonet latch to hold the cover tight on the container. The container and cover can be locked using the provided padlock.

## DOT 1 1/8" LEAD SHIELDED CONTAINER FOR 50cc VIAL (With Needle Access)



949-520

949-523

The DOT 1 1/8" Lead Shielded Container for 50cc Vial, Item 949-520 was designed to hold up to a 50cc vial of radioactive isotope. The container is made of steel encased with 1.125" (2.85 cm) thick lead including the screw on cover. In the center of the cover is a Stainless Steel needle access channel to the vial. A Stainless Steel screw knob with a silicone O-ring seal and a tungsten rod plugs the needle access channel when not in use. The vial cavity of the container includes a 1/8" (0.3) thick foam on the bottom to protect the vial. The cover has an attached Stainless Steel handle that lays flat for easy removal of the Stainless Steel screw knob to access the needle channel. The underside of the screw on cover has a Stainless Steel bottom and includes a Teflon ring insert to ease the threading of the screw on cover.

This all steel enclosed DOT Lead Shielded Container will fit in the DOT Shipping Container, Item 949-523 or in 949-500, the Shielded Cart with Cover. The foldable handle on the cover of the DOT Lead Shielded Container makes it easier to set the DOT Shipping Container into and lift out of either the DOT Shipping Container or the Shielded Cart.

### Specifications

**Item 949-520**

**Lead Thickness:** 1.125" (2.85 cm)

**Inside Container Size:** 1.75" Dia. x 3.125" D (4.5 x 7.9 cm)

**Outside Container Size:** 4.88" Dia. x 6.5" H (12.4 x 16.5 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 33 lb (15 kg)

Item	Description
949-520	DOT 1 1/8" Lead Shielded Container for 50cc Vial
949-523	DOT Shipping Container for 949-520

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## STAINLESS STEEL STORAGE CONTAINER

With 1" Lead



This lead shielded storage container has a stainless steel inner and outer shell. There is 1" of lead between the two shells. The lid is made of 1" thick painted lead and has a plastic handle.

This container has been designed with a lip along the rim which gives you the option to place it into a 6.5" diameter countertop hole.

### Specifications

**Outside Dimension:** 6.4" Dia. x 7.88" H (16.2 x 20 cm), height does not include handle

**Inside Dimensions:** 4" Dia. x 5.6" H (10.1 x 14.3 cm)

**Lead Wall:** 1" (2.5 cm) thick

**Lid:** 1" (2.5 cm) thick lead with attached handle

**Weight:** 78 lb (35.38kg)

Item	Description
994-072	Stainless Steel Storage Container with 1" Lead

## LEAD CARRYING CASES (3/4" Pb)



This Lead Carrying Case will ride in unshielded carts, Item 949-260 or 994-059 as well as the 1" Lead shielded cart, Item 949-500.

### Specifications

**Lead Walls:** Top and Bottom: 3/4" (1.91 cm) Thick Lead

**Cavity:** 2" Diameter x 4" Deep (5.1 x 10.2 cm)

**Overall Size:** 3.5" Diameter x 5.5" H (8.92 x 14.02 cm)

**Weight:** 19 lb (8.64 kg)

Item	Description
929-005	Lead Carrying Case (3/4" Pb) Cavity 2" Dia x 4" Deep

W

## LEAD SHIELDED SYRINGE HOLDER/PIG



The Lead Shielded Syringe Holder/Pig will accommodate unshielded syringes that contain radioisotopes, ranging from 1 cc to 20 cc. The entire syringe holder offers 1/2" of lead shielding. Its large diameter base prevents the holder from toppling over.

### Specifications

**Shielding:** 1/2" lead

**Inside Dimensions:** 13/16" dia. x 5 5/8" H

**Overall Size:** 3 7/8" W x 6 1/2" H

**Weight:** 6 lbs

Item #	Description
929-100	Lead Shielded Syringe Holder/Pig

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## STAINLESS STEEL SYRINGE CARRIER

Lead Filled With Fixed Handle



### Specifications

#### Item 929-091

##### Overall Dimensions with Handle:

3.2" W x 10.15" L x 6.5" H (8.16 x 25.87 x 16.57 cm)

##### Carrier Dimensions:

2.7" W x 9.6" L x 2.5" H (6.88 x 24.47 x 6.37 cm)

##### Inside Dimensions:

2" W x 9" L x 2" H (5.1 x 22.94 x 5.1 cm)

##### Material: Stainless steel and Lead

##### Lead Shielding:

**Top, Bottom, Sides and Ends:** 1/8" T (0.317 cm)

**Weight:** 8 lb (4 kg)

#### Item 994-065

##### Overall Dimensions with Handle:

3.4" W x 10.9" L x 6.7" H (8.67 x 27.78 x 17.08 cm)

##### Carrier Dimensions:

2.9" W x 10.35" L x 2.76" H (7.39 x 26.38 x 7.04 cm)

##### Inside Dimensions:

2" W x 9" L x 2" H (5.1 x 22.94 x 5.1 cm)

##### Material: Stainless steel and Lead

##### Lead Shielding:

**Top, Bottom and Sides:** 1/4" T (0.64 cm)

**Ends:** 1/2" T (1.3 cm)

**Weight:** 16 lb (8 kg)

The Stainless Steel Syringe Carrier is constructed of stainless steel inside and out, with ALL enclosed lead - not painted. The lead walls are poured between the stainless steel, so there is no exposed lead. The syringe carrier will store and transport syringes, vials or ampules up to 9" (22.94 cm) long. The lid is overlapping with a latch to prevent streaming. The lid opens 180° for easy access. There are four (4) rubber feet attached to the bottom of the carrier.

**Note:** Other Manufactures paint over the lead.

Item	Description
929-091	Stainless Steel Syringe Carrier, 1/8" Lead Walls
994-065	PET Stainless Steel Syringe Carrier, 1/4" Lead Walls

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## CESIUM AND RADIUM SHIELDED WORK STATION



The Cesium and Radium Shielded Work Station is the ideal vehicle for the safe storage of cesium and radium. It provides optimum protection to personnel from radiation exposure when storing sources, and has sufficient work and storage area to allow flexibility when using its contents. The steel table with drawer and heavy-duty 6" diameter swivel casters lend mobility from receiving area to final work area.

Each item sold separately on the following pages.

As a guide to determine maximum isotope content for a desired surface radiation level, the Tenth-Value Layers (in lead) are shown in this table.

Cesium-137 2.1 cm	Iridium-192 2.0 cm	Radium 4.6 cm	Cobalt 60 4.0 cm	Gold-198 1.1 cm
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\*National Council on Radiation Protection and Measurements. Report No. 40, "Protection Against Radiation from Brachytherapy Sources".

Item #	Description
998-004	Shielded Storage Safe - 4 Drawer
998-006	Shielded Storage Safe - 6 Drawer
990-288	L-Block Lead Shield - 2" Thick Lead Glass
990-488	L-Block Lead Shield - 4" Thick Lead Glass
992-020	Steel Table with Drawer and Shelf
999-054	Halogen Spot Lamp
990-900	Stainless Steel Tray

- Provides optimum working conditions when using cesium and radium
- Designed for maximum protection and versatility

## STEEL TABLES



This steel table has smooth, round-edges and the top shelf will support both a Storage Safe (Item 998-004 or 998-006) and a L-Block Shield (Item 990-488). The table has a locking storage drawer and a heavy duty lower shelf for storing radiation pigs and supplies. The support frame of the table is tubular steel with welded joints for maximum strength. The table is welded to four 6" diameter swivel, locking, casters rated at 1,200 pounds each.

### Specifications

**Dimensions:** 28" W x 36" D x 33 3/4" H

**Inside Drawer Size:** 20" W x 20" D x 5" H

**Finish:** Durable tan textured polyurethane enamel paint

Item #	Description	Weight
992-020	Steel Table with Drawer and Shelf	150 lbs.



This steel table has smooth, rounded edges with a stainless steel top, a locking storage drawer, and a lower shelf made of 1/8" steel. The support frame is 2" square tubular steel with welded joints for maximum strength.

### Specifications

**Dimensions:** 24" W x 24" D x 36" H

**Inside Drawer Size:** 16" W x 20" D x 6 3/4" H

**Finish:** Durable tan textured polyurethane enamel paint

Item #	Description
992-040	Steel Table with Storage Drawer

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## STEEL TABLES



These Steel Tables are made with a 2" (5.08 cm) square steel tubing framework and Stainless Steel shelves. The two front legs have adjustable leveling feet. The two back legs are a fixed length.

Item	Steel Table, 2 Shelves
992-060	36" W x 24" D x 36" H (91.44 x 60.96 x 94.44 cm)
992-147	48" W x 24" D x 36" H (121.92 x 60.96 x 94.44 cm)

W

## LEAD SIDE SHIELDS FOR STEEL TABLE



Side Shields are used when radiation protection is needed to the sides of the radiation loading area. The shield's steel framework is bolted to the side of the table and the 2" thick lead blocks are stacked inside. A steel cover plate is then secured in place.

### Specifications (Per Side of Shield)

**Dimensions:** Front Opening - 4 3/4" W x 13 3/4" H x 2" T  
Side - 20" H x 24" D x 2" T

**Lead Blocks:** 15 blocks - 2" x 4" x 8"  
1 block - 2" x 4 1/2" x 6"

**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 475 lbs

Item #	Items Shown in Photo and Sold Separately
992-020	Steel Table with Drawer and Shelf
992-132	Right - Lead Side Shield for Steel Table
992-134	Left - Lead Side Shield for Steel Table
990-288	L-Block Lead Shield - 2" Thick Lead Glass
990-488	L-Block Lead Shield - 4" Thick Lead Glass

## DUAL WORKSTATION WITH LEAD SIDE SHIELDS



**Lead Walls:** 2" Thick  
**Frame:** 2" steel tubing  
**Overall Size:** 64" W x 50 1/4" H x 36" D  
**Casters:** 4 rear fixed 6" diameter  
2 front swivel 6" diameter  
2 front swivel 6" diameter w/brakes  
**Bottom Shelf:** 32" W x 36" D x 9 5/8" from floor  
**Side Shields:** 16 7/16" H  
**Work Surface:** 34 1/8" from floor, 28" & 30" W x x 34" H  
**Shelf to Bottom of Drawer:** 15 1/8"  
**Locking Drawer Inside Dimensions:** 20" W x 20" D x 5" H  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 475 lbs

Item #	Description
992-140	Dual Workstation with Lead Side Shields



# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## SHIELDED STORAGE SAFES



- Latching door lock
- Reversible door
- Door opens 180°
- Optional Lamp Holder Stud

These safes are constructed of steel and shielded with 4" lead. They provide maximum protection from radiation exposure and are fire-proof. The door opens 180° so it is out of the way. The door is also reversible to open in either direction. It has a key lock which is used only to open the door. No key is needed to lock the door, simply close the door and it will latch lock. The stainless steel storage drawers (with knob) have a storage space 6" long x 1 1/2" wide x 1 1/2" deep. Drawer Inserts (Item 998-014 and 998-066) are needed for radiation sources. The shelf enclosure is made completely of stainless steel for the safe drawer to slide into. An eye bolt is furnished on top of the safe for lifting. The eye bolt can be removed and replaced with a lamp holder stud (Item 999-042 or 999-053) for supporting a lamp.

### Specifications

#### Item 998-004

#### 4 Drawer Safe

**Size:** 12 3/4" H x 12 3/4" W x 14 1/2" D

**Weight:** 950 lbs

#### Item 998-006

#### 6 Drawer Safe

**Size:** 12 3/4" H x 15" W x 14 1/2" D

**Weight:** 1150 lbs

**Finish:** Durable tan textured polyurethane enamel paint

Item #	Description	Size
998-004	Shielded Storage Safe	4 Drawer
998-006	Shielded Storage Safe	6 Drawer

Order Lead Drawer Inserts Separately

## SAFE DRAWER INSERTS

998-014



998-014 shown in safe drawer



998-050



The 14 Hole Lead Inserts have black plastic caps that are used to block the unused source holes. These inserts provide adequate storage space for most applications. Each insert can be marked for source size (10 mg, 15 mg, etc.). If marking of the insert is requested, specify mg Ra equivalent to be marked. The marking will be at the front of the insert. Blank Inserts are used to fill the empty drawers.

**Source Size:** 2.65 or 3.1 mm dia. x 20 or 21mm L

**Insert Size:** 1.8" Sq. x 5.9" L

**14 Hole Insert Weight:** 7.2 lbs

**Blank Insert Weight:** 7.6 lbs

Item #	Description
998-014	14 Hole Lead Insert
998-050	Blank Insert

## PRE-LOADED TANDEM STORAGE DRAWER

Replaces Standard Safe Drawer



Inside Construction



The Pre-loaded Tandem Storage Drawer contains four holes. Each hole is 0.5 cm diameter x 26 cm long and made of stainless steel tubing welded into the stainless steel drawer. The drawer is then filled with lead. Radiation streaming is prevented by a curve in the tubing.

**Drawer Size:** 2" sq. x 13.7" L

Item #	Description
998-066	Pre-Loaded Tandem Storage Drawer

W

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## FLUORESCENT LAMP

### With Magnifier



Make intricate details easier to see with bright light and magnification. This magnifying lamp can be used for radiation source inspection and reading serial numbers. A 45" steel swivel arm with tension controls allows for easy movement. A clamp-on style "D" bracket accommodates mounting on up to a 2" thickness. A 5" diameter, 3 diopter (1.75 x) lens magnifies the view while the 22-watt circular fluorescent tube floods the viewing area with light. This unit can be mounted to the top of the radiation safe by removing the eye bolt and installing a Lamp Holder Stud.

**Power:** 110 - 120 VAC, 60 Hz

**Weight:** 7.25 lbs

Item #	Description
999-041	Fluorescent Lamp
999-041-1	Replacement Fluorescent Bulb
999-042	Lamp Holder Stud for Mounting Fluorescent Lamp

- W**
- Convenient outlet and ballast in base
  - 6 foot - 3-conductor cord - grounded plug
  - UL listed

## HALOGEN SPOT LAMP

### With Adjustable Arm



- 20 watt halogen lamp provides projected high intensity light for over 2,000 hours.
- 24" (61.18 cm) articulated arm has 5 adjustment points.
- Compact head - 2.5" (6.37 cm) diameter.
- 4 hole universal base which can be mounted vertically or horizontally.
- A 4d + 12d magnifier can be clipped onto the light to make intricate details easier to see.

**Power:** 120 VAC

Item	Description
999-054	Halogen Spot Lamp
999-052	Magnifier (Optional)
999-053	Lamp Holder Stud for Mounting Halogen Spot Lamp

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## L-BLOCK LEAD SHIELD

### With Wide View Window

The L-Block Lead Shield's tilted wide view leaded glass window provides easy viewing of the radiation loading area. 3" of lead on each side of the viewing window give maximum protection to the head. The 8" square window is made of 2" or 4" thick leaded glass. The L-Block is made of sheet steel with lead shielding inside. Two holes are provided for lifting the unit.

#### Specifications

**Leaded Glass Size:** 8" Sq. x 2" or 4" T

**Lead Glass Density:** 5.2 g/cm<sup>3</sup>

Tenth Value Thickness (Cesium<sup>137</sup>) = 4.8 cm leaded glass

4" T. (10 cm) leaded glass = 4 cm lead equivalence

**Finish:** Durable tan textured polyurethane enamel paint

**Item 990-288 or 990-488**

**Overall Size:** 14" W x 17 1/2" D x 24 1/2" H x 2 1/4" T

**Weight:** 420 lbs or 450 lbs

**Item 990-250 or 990-251**

**Overall Size:** 14" W x 17 1/2" D x 24 1/2" H x 1 3/4" T

**Weight:** 280 lbs or 300 lbs



Item #	Description
990-250	L-Block Lead Shield - 1 1/2" Thick Pb, 4" Thick Pb Glass
990-251	L-Block Lead Shield - 1 1/2" Thick Pb, 2" Thick Pb Glass
990-288	L-Block Lead Shield - 2" Thick Pb, 2" Thick Pb Glass
990-488	L-Block Lead Shield - 2" Thick Pb, 4" Thick Pb Glass
990-900	Stainless Steel Tray

W

## LEAD "L" BLOCK SHIELD

### With Extra Wide View



The 1.5" thick Lead "L" Block Shield provides exceptional protection to the clinician when loading iodine and iridium.

The face shielding is made of optically clear 12" W x 8" L x 2" thick lead glass, cantilevered for unimpaired viewing of the work area. The leaded glass has a density of 5.2 g/cm<sup>3</sup> to give maximum eye and face protection.

#### Specifications

**Leaded Glass Size:** 12" W x 8" H x 2" T (30.6 x 20.4 x 5.1 cm)

**Lead Glass Density:** 5.2 g/cm<sup>3</sup>

**Lead Glass:** 2 cm lead equivalent (<sup>137</sup>Cs energy)

**Lead Thickness:** 1 1/2" (3.8 cm)

**Lead Density:** 11.35 g/cm<sup>3</sup>

**Overall Size:** 12 3/8" W x 13 1/2" D x 16 7/8" H  
(31.5 x 34.4 x 43.0 cm)

**Front Shield Size:** 12 3/8" W x 11 1/8" H (31.5 x 28.4 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 210 lb (95.25 kg)

Item #	Description
989-415	Lead L-Block Shield

# SHIELDING - MOBILE, L-BLOCKS, WORKSTATIONS

## TABLE TOP SHIELD

### 1/2" Thick Lead with 5/8" Thick Lead Glass



The inside stainless steel bottom is welded on all corner seams to prevent radiation sources or liquids from hiding under any edges or in any cracks, thus, providing easy cleaning. The reinforced steel framework prevents any bending or twisting. One 5/8" (1.59 cm) thick leaded glass piece is inserted into a steel frame with 1/2" (1.27 cm) lead overlapping on the front of the shield.

#### Specifications

**Viewing Area:** 15.4" W x 11.35" H (39.3 x 28.9 cm)

**Leaded Glass Size:** 16" W x 12" H x 5/8" T (40.8 x 30.9 x 1.59 cm)

**Leaded Glass Density:** 5.0 g/cm<sup>3</sup>

**Lead Equivalency @ 150 kvp:** 4 mm total

**Lead Thickness:** 0.5" (1.27 cm)

**Lead Density:** 11.35 g/cm<sup>3</sup>

**Front Shield Size:** 16" W x 15" H (40.8 x 38.2 cm)

**Side and Rear Shield Size:** 10" (25.5 cm) H with 6" (15.3 cm) sq. arm openings on sides

**Overall Size:** 16" W x 18" D x 23.5" H (40.8 x 45.9 x 59.9 cm)

**Finish:** Durable tan textured polyurethane enamel paint

**Weight:** 265 lb (120.2 kg)

Item	Description
989-320	Table Top Shield, 1/2" T Lead with 5/8" T Lead Glass

The Table Top Shield with 1/2" (1.27 cm) thick lead provides exceptional protection to the clinician when filling syringes or for general hot lab work. The shield has 1/2" (1.27 cm) lead protection on all four sides and the bottom. All four sides and the bottom of the table top shield are encased in steel.

## MINI BETA SHIELD

For <sup>125</sup>Iodine or <sup>103</sup>Palladium



Shown with  
Optional Arm Rest



#### Shielding Equivalency

<sup>125</sup>Iodine: 10th 1/2 Value Layer = 0.056 mm lead

<sup>103</sup>Palladium: 10th 1/2 Value Layer = 0.05 mm lead

Lead Density: 0.0056 cm x 11.35 g/cm<sup>3</sup> = 0.06356

Stainless Steel Density: 1/8" (0.3175 cm) thick x 7.916 g/cm<sup>3</sup> = 2.513

#### Specifications

**Material:** 1/8" (3.175 mm) thick stainless steel

**Stainless Steel Density:** 7.916 g/cm<sup>3</sup>

**Viewing Area:** 10.25" (26 cm) Square

**Leaded Glass Density:** 5.0 g/cm<sup>3</sup>

**Lead Equivalency @ 150 kvp:** 2 mm

**Lead Density:** 11.35 g/cm<sup>3</sup>

**Sterilization:** Gas

#### Item 906-081 Mini Beta Shield Short

**Size:** 12" W x 12" D x 17" H (30.5 x 30.5 x 43 cm)

**Weight:** 31 lb (14 kg)

#### Item 906-083 Mini Beta Shield Tall

**Size:** 12" W x 12" D x 24.5" H (30.5 x 30.5 x 62 cm)

**Weight:** 36 lb (16.5 kg)

Item	Description
906-081	Mini Beta Shield Short (17" H), Stainless Steel
906-083	Mini Beta Shield Tall (24.5" H), Stainless Steel
906-082	Arm Rest for Mini Beta Shield

The free standing Mini Beta Shield is made of 1/8" (3.2 mm) thick stainless steel and specifically designed to protect personnel when handling beta-emitting isotopes. The shield easily fits on a bench top or cart. The shield is ideal for protection against <sup>125</sup>Iodine and <sup>103</sup>Palladium. A 8 mm thick x 10" (25.4 cm) square lead glass viewing area. The bottom of the shield has a 3/4" (2 cm) lip to contain any dropped seeds.

The optional arm rest is made of clear acrylic and has rubber pads to cushion the arms. The arm rest is 29" wide and 3.5" deep (73.7 x 9 cm). The optional arm rest can be easily mounted to the stainless steel shield with two bolts into pre-drilled holes. The arm rest can be mounted in two different positions to the front of the shield, with arm rest forwards or backwards.

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

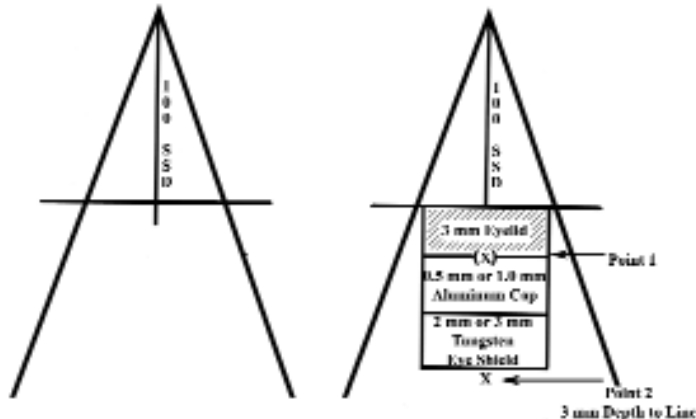
## TUNGSTEN EYE SHIELDS For Electron or Superficial Shielding



### Specifications

**Tungsten Density:** 17 g/cm<sup>3</sup>  
**Aluminum Density:** 2.718 g/cm<sup>3</sup>

The user will have to determine an acceptable amount of backscatter to decide whether to use 0.5 mm or 1 mm aluminum cap. See diagram and table below.



The doses are normalized to  $d_{max}$  without the eye shield (Diagram 1) using a 10 x 10 cone. When 1.00 Gy is delivered to  $d_{max}$  using 6 MeV with the shield, you get 1.08 Gy to the undersurface of the eyelid (Point 1) and 3.4% transmission to the lens (Point 2) (See table).

- Tungsten eye shields have less transmission than other eye shields

The Tungsten Eye Shield can use either the 0.5 mm or 1 mm thick anodized aluminum cap (both are included with each tungsten eye shield) to reduce the electron backscatter to the eyelid. The eye shield can be used without the aluminum cap when placed superficially.

### Recommendations Based on Transmission Values:

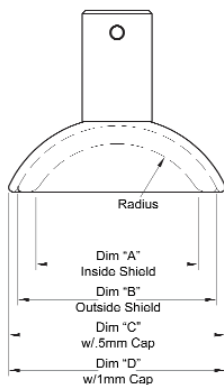
The 2 mm tungsten eye shield should be used for 6 MeV, and the 3 mm tungsten eye shield should be used for 9 MeV. **These tungsten eye shields are not recommended for use above 9 MeV.**

TRANSMISSION USING XV-2 FILM*		DOSE IN Gy When 1.00 Gy is Delivered to $d_{max}$ AT 3mm DEPTH*** USING TLD'S**		
6 MeV	9 MeV	6 MeV	9 MeV	
		0.72	0.77	Surface, No shield
		0.79	0.81	No Shield, Dose at Interface
3.4%	5.6%	1.08	1.11	2 mm Tungsten
3.0%	4.8%	1.03	1.06	2 mm Tungsten + 0.5 mm Aluminum
3.0%	4.4%	0.95	1.02	2 mm Tungsten + 1 mm Aluminum
2.5%	3.3%	1.12	1.13	3 mm Tungsten
2.4%	2.9%	1.02	1.05	3 mm Tungsten + 0.5 mm Aluminum
2.5%	2.8%	0.97	1.06	3 mm Tungsten + 1 mm Aluminum

Unreferenced data on this product is preliminary findings of Radiation Products Design, Inc. and is **not** to be used as a technical reference.

\*XV-2 Film placed under/below tungsten eye shield at 3 mm depth (anterior surface of lens)

\*\*TLD Microcubes placed under simulated eye lid using tungsten eye shields



Item #	Size	Thickness	Radius	Dim A	Dim B	Dim C	Dim D
936-583	XS	2	6.5	11.6	15.7	17.3	18.3
936-585	S	2	7.5	13.3	17.4	18.7	20.0
936-587	M	2	8.5	15.0	19.1	20.6	21.7
936-589	L	2	9.5	16.7	20.8	22.7	23.2
936-591	XL	2	10.5	18.4	22.5	23.9	25.1
936-596	XS	3	6.5	11.0	17.4	18.9	19.9
936-598	S	3	7.5	12.7	19.1	20.8	21.7
936-601	M	3	8.5	14.4	20.8	22.7	23.5
936-623	L	3	9.5	16.1	22.5	23.9	25.1
936-627	XL	3	10.5	17.8	24.2	25.9	27.1

All Dimensions in Millimeters

Reference: Evaluation of Eye Shields made of Tungsten and Aluminum in High-Energy Electron Beam - Randi D. Weaver B.S. Fairview - University Med. Ctr. PO Box 494, 420 Delaware St. SE, Mpls., MN 55455 Int. J. Radiation Oncology Biol. Phys. Vol. 41 Nal, pp 233-237-1998

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## CT / MR DUMMY EYE SHIELDS

For Simulating a Tungsten Eye Shield



CT Image

The CT/MR Compatible Dummy Eye Shields for simulating the Tungsten Eye Shields are made of a non-metallic material and can be used in CT and MR.

Item	CT/MR Compatible Dummy Eye Shield
935-5831	Simulates a 936-583 with 0.5 mm Al Cap
935-5832	Simulates a 936-583 with 1.0 mm Al Cap
935-5851	Simulates a 936-585 with 0.5 mm Al Cap
935-5852	Simulates a 936-585 with 1.0 mm Al Cap
935-5871	Simulates a 936-587 with 0.5 mm Al Cap
935-5872	Simulates a 936-587 with 1.0 mm Al Cap
935-5891	Simulates a 936-589 with 0.5 mm Al Cap
935-5892	Simulates a 936-589 with 1.0 mm Al Cap
935-5911	Simulates a 936-591 with 0.5 mm Al Cap
935-5912	Simulates a 936-591 with 1.0 mm Al Cap

Item	CT/MR Compatible Dummy Eye Shield
935-5961	Simulates a 936-596 with 0.5 mm Al Cap
935-5962	Simulates a 936-596 with 1.0 mm Al Cap
935-5981	Simulates a 936-598 with 0.5 mm Al Cap
935-5982	Simulates a 936-598 with 1.0 mm Al Cap
935-6011	Simulates a 936-601 with 0.5 mm Al Cap
935-6012	Simulates a 936-601 with 1.0 mm Al Cap
935-6231	Simulates a 936-623 with 0.5 mm Al Cap
935-6232	Simulates a 936-623 with 1.0 mm Al Cap
935-6271	Simulates a 936-627 with 0.5 mm Al Cap
935-6272	Simulates a 936-627 with 1.0 mm Al Cap

## SILVER-PLATED LEAD EYE SHIELDS FOR SUPERFICIAL THERAPY

1/16" Thick With Handle



934-012

934-014

934-016



934-018



934-020

The Silver-Plated Lead Eye Shields protect the patient's lens and cornea during radiation therapy treatments. The eye shields are available in four (4) different sizes to fit all sizes of patients.

The small and medium solid lead eye shields fit under the eyelid to protect the lens, while permitting irradiation to the entire thickness and width of the eyelids in the treatment of superficial basal cell carcinomas of the skin. Large solid lead eye shields are used when areas surrounding the eyes require irradiation, in which case, the shields are placed over the lid. When only a portion of the eyelid requires irradiation, an extra large shield with a window is properly placed over the eyelid.

These Eye Shields are fabricated of virgin lead and are silver-plated to prevent exposure to the lead and for durability. The lead permits less than 1% transmission of the radiation intensity at 120 kVp (3 mm Al HVL).

Using a soft contact lens (937-700) or coating the eye shield with dental wax (933-122) will give a smooth surface on the eye to prevent scratching or irritation to the eye.

These eye shields must be handled with care. Dents, scratches or silver flaking from improper handling or cleaning are not repairable or covered under the warranty.

Always consult the Radiation Physicist when using eye shields in electrons. 6MeV electrons have had a reported 16-25% transmission factor. Electron backscatter from lead eye shields has been reported to be 40% to 50%.

Please refer to the following paper: Field Shaping in Electron Beam Therapy, Khan, F.M. Ph.D. (Oct 1976).. *British Journal of Radiology*.

### Specifications

#### Silver-Plated Lead Eye Shield

**Density Lead:** 11.35 g/cm<sup>3</sup>

**Lead Thickness:** Approx. 1.6 mm

**Warranty:** One year

#### Storage Box for Eye Shields

**Size:** 7.75" W x 3.8" D x 2.4" H

Item	Silver-Plated Lead Eye Shield	Size (W x H)
934-012	Small	2.3 x 2.1 cm
934-014	Medium	2.7 x 2.4 cm
934-016	Large	3.1 x 2.8 cm
934-018	Extra Large with Window	3.1 cm Dia.

Item	Optional Items
934-020	Storage Box for Eye Shields, 8 Compartments
933-122	Wax Sheets, 1 lb
937-700	Soft Contact Lenses, 6/Pkg

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## LEAD AND TUNGSTEN EYE SHIELDS

### External Shield - No Handle or Plating



The Lead and Tungsten Eye Shields have a smooth top. These Eye Shields do not include the aluminum caps.

#### Specifications

**Lead Density:** 11.35 g/cm<sup>3</sup>

**Tungsten Density:** 17 g/cm<sup>3</sup>

Item	Lead Eye Shield	Thickness
936-320	2.00 cm Diameter	5 mm
936-322	2.25 cm Diameter	5 mm
936-325	2.50 cm Diameter	5 mm
936-330	3.00 cm Diameter	5 mm
936-333	3.30 cm Diameter	5 mm
936-425	2.50 cm Diameter	7 mm
936-427	2.70 cm Diameter	7 mm
936-430	3.00 cm Diameter	7 mm
936-433	3.30 cm Diameter	7 mm
936-434	3.40 cm Diameter	7 mm

Item	Tungsten Eye Shield	Thickness
936-641	11.6 mm Diameter	2 mm
936-642	13.3 mm Diameter	2 mm
936-643	15.0 mm Diameter	2 mm
936-644	16.7 mm Diameter	2 mm
936-645	18.4 mm Diameter	2 mm
936-651	11.0 mm Diameter	3 mm
936-652	12.7 mm Diameter	3 mm
936-653	14.4 mm Diameter	3 mm
936-654	16.1 mm Diameter	3 mm
936-655	17.8 mm Diameter	3 mm

X

## WARMING PLATE, STAINLESS STEEL CUP AND WAX SHEETS



#### Specifications

##### Item 933-122 Wax Sheets

**Size:** 1.5 mm (0.15 cm) x 7.5 cm x 14.2 cm

**Quantity:** 35 sheets

**Specific Gravity (H<sub>2</sub>O = 1):** 0.90

**Weight:** 1 lb (0.5 kg)

##### Item 933-140-1 Stainless Steel Cup

**Capacity:** 2.5 oz

**Finish:** Polished Stainless Steel

##### Item 933-140-2 Warming Plate

**Heating Surface:** 3.75" Diameter (9.5 cm) Non-Stick

**On-Off Switch**

**Neon Light Indicator**

**Extra Long 60" (152 cm) Cord**

**Overall Size:** 4" Diameter x 1.6" H (10.2 x 4.0 cm)

**Color/Finish:** White and Gray

**Weight:** 15 oz (0.43 kg)

**Voltage:** 120 V

**Watts:** 24 W

**UL Approved**

The Warming Plate and Stainless Steel Cup are used for melting wax to coat eye shields.

The wax is melted in a small stainless steel cup with a wide top on a small electric warming plate. When the wax is melted grip the eye shield with a forceps and dip into the wax for ten seconds and then remove. Constantly rotate it in all directions while the wax is cooling to prevent wax from building up in any one place. If the wax temperature is too low, it may go on the eye shield too thick and cause it to become bumpy. If the wax temperature is too high, it will not coat the eye shield evenly with a smooth surface layer.

*Refer to "Wax Coatings", The Physics of Radiation Therapy by F.M. Khan, Ph.D., under 14.6 Field Shaping part D. Internal Shielding, last paragraph on page 340.*

Item #	Description
933-122	Wax Sheets, 1 lb
933-140-1	Stainless Steel Cup, 2.5 oz
933-140-2	Warming Plate

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## SOFT CONTACT LENSES



The Soft Contact Lenses are used to prevent scratches to the cornea when using eye shields.

**Immediately remove the lens if the patient has any of the following problems**

- Eye pain
- Eye stinging, burning, itching, excessive watering, dryness, etc
- Unusual eye secretions

### Specifications

**Size:** 14 mm diameter

**Center Thickness:** 0.09 to 0.12 mm

**Base Curve:** Spherical surface flatter than the corneal curvature

Item #	Description
937-700	Soft Contact Lenses, 6/Pkg

## CONTACT LENS CASE AND SOLUTION



### Item 937-706 Contact Lens Cases

Not suitable for heat disinfection

### 937-711 Opti-Free Express Contact Lens Solution

- No-rub solution
- Cleans and disinfects
- Kills bacteria that can cause eye infections
- Removes protein daily
- Provides lasting moisture and comfort
- For use with both soft and silicone hydrogel contact lenses
- 4 oz (120mL)

Item #	Description
937-706	Contact Lens Cases, 4 Pairs/Pkg
937-711	Opti-Free Pure Moist Contact Lens Solution, 4 oz

## STERILIZATION TRAY



Sterilization tray for Eye Shields. Consists of Base, Lid and Mat. Sterilizable by all standard methods of sterilization (autoclave, steam, dry heat, chemical).

### Specifications

**Size:** 2.5" W x 6" L x 1.25" H (6.3 x 15.2 x 3.2 cm)

Item #	Description
936-500	Small Sterilization Tray, 2.5" x 6.0" x 1.25"

X



# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## CIDEX® OPA



### Proven Efficacy

CIDEX® OPA Solution has been tested and cleared as a high-level disinfectant for use with the most widely used endoscopes.

- Designed for either manual or automatic reprocessing
- Manufactured to the highest standards for purity
- Effective against a wide array of microorganisms

### Proven Safety

CIDEX® OPA Solution protects both patients and technicians, with a demonstrated safety profile that is backed by the heritage of Advanced Sterilization Products (ASP).\*

- Safe to use for patients, healthcare professionals and instruments
- Low vapor pressure for minimal inhalation exposure risk
- No need for special ventilation
- Near-neutral pH level ensures compatibility with endoscopic instruments

### Proven Value

CIDEX® OPA Solution is the number-one<sup>1</sup> product in high-level disinfection, offering more ways to make the most of your budget.

- Rapid disinfection improves productivity, allowing more endoscopes to be processed in less time<sup>2</sup>
- Noncorrosive formula protects your investment in instrumentation<sup>2,3</sup>
- Long-lasting efficacy allows reprocessing of more devices per gallon than with glutaraldehyde<sup>2</sup>

\*Please read and follow the Instructions For Use prior to using CIDEX® OPA Solution for important information, including contraindications, warnings and proper directions for use.

### Rapid Action, Reliable Disinfection

Multiple studies have shown the efficacy of CIDEX® OPA Solution against bacteria, fungi, and viruses.<sup>4, 5</sup> CIDEX® OPA Solution works within minutes and provides broad spectrum killing power—even in the presence of human serum.<sup>2</sup>

CIDEX® OPA Solution can be used straight from the bottle for extra efficiency.

- Requires no activation or mixing
- 5-minute soak time at 25°C in automatic endoscope reprocessors\*
- 12-minute soak time at 20°C for manual reprocessing

### Long Life, Lasting Power

A long shelf life and high reusability make CIDEX® OPA Solution a great value.

- 2-year unopened shelf life
- 75-day shelf life after opening the bottle

Using CIDEX® OPA Solution in an automatic reprocessor can mean 20% more cycles in a 14-day reuse cycle, compared with other solutions.<sup>5</sup>

- Sensitive test strips make it easy for you to test the minimum effective concentration (MEC) of ortho-phthalaldehyde, the active ingredient in CIDEX® OPA Solution

\*When used or reused in a legally marketed automatic endoscope reprocessor that can be set to a minimum of 25° C.

### Microbicidal Activity

The following table indicates the spectrum of activity as demonstrated by testing of CIDEX® OPA Solution using prescribed test methods.

#### Viruses Non-Enveloped

Poliovirus Type 1	Rhinovirus Type 42	Adenovirus Type 2
Vaccinia (Wyeth)	Coxsackievirus Type B-3	

#### Viruses Enveloped

Coronavirus HIV-1	Cytomegalovirus	Influenza Virus [Hong Kong]
	Herpes simplex Types 1,2	

#### Vegetative Organisms

<i>Staphylococcus aureus</i>	<i>Salmonella choleraesuis</i>	<i>Pseudomonas aeruginosa</i>
<i>Mycobacterium bovis</i>		

#### Fungi

*Trichophyton mentagrophytes*

### Materials Compatibility

#### Metals

Aluminum	Anodized aluminum	Brass
Carbon steel	Chrome-plated brass	Chrome-plated steel
Copper	Nickel-plated brass	Nickel-silver alloy
Stainless steel	Titanium	Tungsten carbide
Vanadium steel		

#### Plastics

Acetal	Acrylonitrile-butadiene-styrene (ABS)	Nylon
Polyamide	Polycarbonate	Polyethylene
Polyethylene terephthalate (polyester)	Polymethylmethacrylate (acrylic)	Polypropylene
Polystyrene	Polysulfone	Polyvinylchloride (PVC)
PTFE		

#### Elastomers

Kraton G	Natural rubber latex	Polychloroprene (Neoprene)
Polyurethane	Silicone rubber	

#### Adhesives

Cyanoacrylate	EPO-TEK 301 epoxy	EPO-TEK 353 epoxy
Polyether Polysulfide		

### Testing CIDEX® OPA Solution

To verify the efficacy of CIDEX® OPA Solution, ASP recommends testing for the minimum effective concentration (MEC) prior to each use. ASP offers test strips designed specifically for use with CIDEX® OPA Solution. Easy to use and read, CIDEX® OPA Test Strips are the most reliable means to verify that CIDEX® OPA Solution will effectively destroy microorganisms, including the highly resistant *Mycobacterium*.

#### References

1. 2008 Healthcare Products Information Services (HPIS) data, HLD Market Assessment. 2. Hession SM. Endoscope disinfection by ortho-phthalaldehyde in a clinical setting: an evaluation of processing time and costs compared with glutaraldehyde. Poster presented at: Society of Gastroenterology Nurses and Associates; May 18-23, 2001; Tampa, FL. 3. Vollmer C. New high-level disinfectant reduces equipment-repair costs. *Infect Control Today*, August 2002. 4. Akamatsu T, Minemoto M, Uyeda M. Evaluation of the antimicrobial activity and materials compatibility of orthophthalaldehyde as a high-level disinfectant. *J Int Med Res*. 2005;33:178-187. 5. Rutala WA, Weber DJ. New disinfection and sterilization methods. *Emerg Infect Dis*. 2001;7:348-353.

Item	Description
466-401	Cidex OPA, 1 gal
466-403	Cidex OPA Solution Test Strips, 60 strips/bottle

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## PHOTON LEAD EYE/EAR SHIELD With Tray Post



Picture Shown with Items  
588-000, 588-002 and 588-007



The Lead Eye/Ear Shield is an 8 cm lead cylinder attached to a 20 cm long stainless steel rod. The rod inserts into a hole in the swivel clamp which is connected to a 13 cm post that attaches to the treatment tray through a 1/4" (0.635 cm) diameter hole and is secured with a threaded knob.

Setting the lead cylinder shield for the proper divergence is accomplished by turning the collimator light on and adjusting the shield for a circular shadow on the patient. Two Eye Shields can be used on a tray for anterior eye shielding. A 13 cm or 30 cm extension (Item 588-002 or 588-003) can be added to the post to bring the shield closer to the patient.

The 13 cm Tray Post (Item 588-000) and the Lead Eye/Ear Shield (Item 588-007 to 588-020) must be ordered separately.

Item	Description
588-000	13 cm Tray Post with Swivel Clamp for Lead Eye/Ear Shield
588-002	13 cm Tray Post Extension
588-003	30 cm Tray Post Extension

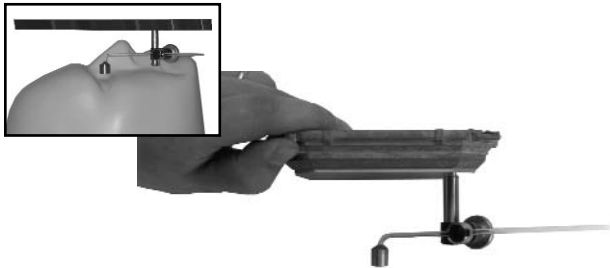
Item	Lead Eye/Ear Shield
588-007	0.75 cm Diameter x 8 cm
588-010	1 cm Diameter x 8 cm
588-012	1.25 cm Diameter x 8 cm
588-015	1.5 cm Diameter x 8 cm
588-017	1.75 cm Diameter x 8 cm
588-020	2 cm Diameter x 8 cm

**Custom Lead Eye/Ear Shields Available**

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## ADJUSTABLE TUNGSTEN EYE SHIELD FOR IRIS

Used For Electron Treatment



Adjustable Tungsten Eye Shield mounted to an electron cerrobend block as shown.

The eye shield is attached to a 5" (12.75 cm) long acrylic rod. Which connects to a clamp on the support rod. The support rod screws into the electron cerrobend mold.

The tungsten eyeshield sits approximately 5 mm above the eye. Instructed the patient to stare at the bottom of the eye shield, which can be marked with a dot. Dental wax can be used if build-up is needed.

This eyeshield is supplied with two support rods measuring 3.8 cm and 9 cm in length. These rods create the option to treat at an extended distance.

To use the Adjustable Tungsten Eye Shield it must be mounted to the electron cerrobend block by drilling a hole through the electron cerrobend block. Instructions and mounting tools are included with the Adjustable Tungsten Eye Shield.

### Specifications

**Material:** Tungsten

**Density:** 17 g/cm<sup>3</sup>

**Acrylic Density:** 1.185 g/cm<sup>3</sup>

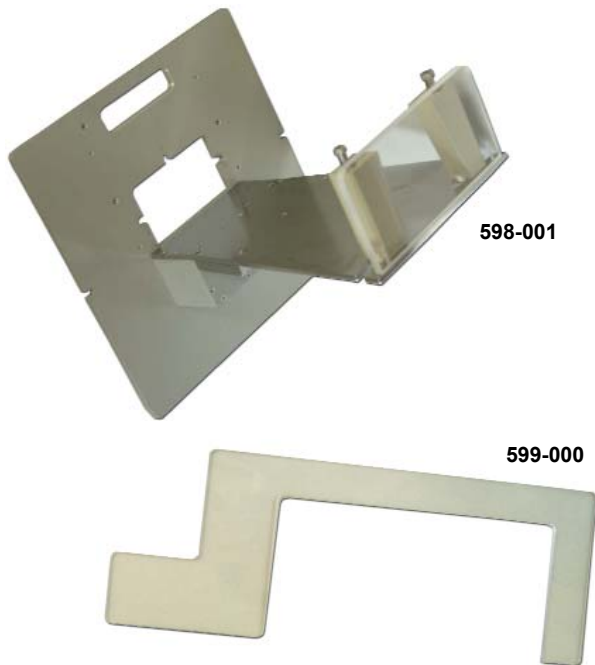
**Size of Tungsten:** 12 mm Dia x 10 mm Thick

Item	Description
936-925	Adjustable Tungsten Eye Shield for Iris

Custom Sizes Available Upon Request

X

## TANGENTIAL BREAST CONE, BEST THERATRONICS THERATRON



The Tangential Breast Cone for the Best Theratronics Theratron machines is a device designed to eliminate penumbra and beam divergence for the breast tangential portals. The device consists of a support plate and lead block for shielding of the contralateral side. An extension plate projects from the source head to the treatment distance. The extension plate is set to be off-center of the radiation source by one-half the diameter of the radiation source. This allows the entire radiation source to be utilized for treatment. Lateral adjustable lead trimming bars are provided to block the sides of the tangential fields, to insure that no overlapping with the supraclavicular field occurs. The end of the breast cone has an acrylic plate of 9.5mm thickness to provide equilibrium when treating the breast wall with Cobalt 60. The acrylic plate is removable for treatments without bolus.

The Back Pointer (Item 599-000) is a versatile device for accurately determining the exit points of the radiation beam when setting up a patient using the tangential breast cone. It is a light weight rigid device made of a Polycarbonate (lexan) material.

### Specifications

**Finishes:** Tan textured polyurethane, Nickle plate, Clear anodized

**Weight (without trimmers):** 27.5 lb (12.5 kg)

Item	Description
598-001	Tangential Breast Cone, Theratronics Theratron-80cm
598-002	Tangential Breast Cone, Theratronics Theratron-100cm
599-000	Back Pointer for Tangential Breast Cone

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## ROUND LEAD TESTICLE SHIELDS AND ADJUSTABLE TESTICLE SHIELD STAND



926-100 Adjustable Stand shown with Lead Testicle Shield

- 1/2" (1.27 cm) lead wall thickness
- An open sector is provided in each shield to allow comfortable positioning on the patient
- Lugs cast into each half of the shield unit provide anchor points for the two rubber straps used to hold the unit together
- All surfaces of the shields are coated with a tan polyurethane paint

The lead testicle shields are designed with a tongue and groove interlock to eliminate radiation leakage where the blocks are joined together and to prevent the halves from sliding apart. The shields top and bottom halves can be secured together with two rubber straps (supplied with each unit) or with nylon tape. Rotating the entrance of the shield toward the ceiling will reduce scatter radiation from entering the shield. A soft cotton sock can be used to cover the testicles when placing them inside a cold shield. The testicle shields are available in three sizes: small, medium and large. When using the Adjustable Stand with the shields, no rubber straps are needed.

The Lead Testicle Shields should be used with Item 926-100, Adjustable CT Testicle Shield Stand. This stand is easily adjustable and will cradle all 3 sizes of the round lead testicle shields. The holder for the testicle shield is made of PVC on this stand to minimize artifact on the CT scan. A hand knob allows for easy vertical adjustment from 1" to 10" (five turns per inch). The counter weighted base is made of cast iron. A plastic plate, secured to the base, provides easy positioning. The unit can be used for anterior and posterior treatments.

It is recommended that the Adjustable CT Testicle Shield Stand (Item 926-100) be used while raising and lowering the testicle shields, as this will reduce patient discomfort.

### Set-up:

1. Place half of shield in the stand cradle.
2. Adjust height and place testicles on the shield.
3. Fit the other half of the shield with the first half over the testicles and adjust height of stand if needed.
4. Rotate the opening of the shield toward the ceiling to reduce scatter from entering the shield.

The CT Testicle Shields are identical to the Lead Testicle Shields in size and shape but not weight. They are made of blue silicone rubber with shore hardness of 50A. The CT Testicle Shields do not use the rubber straps as the straps are too strong for the silicone rubber. The CT Testicle Shields should be used with the Adjustable Stand.

Reference: Testicular Doses in Definitive Radiation Therapy for Localized Prostate Cancer - C.J. Amies, M. App.Sc, H. Mameghan, F.R.A.C.R., A. Rose, M.A.I.P. and R. J. Fisher, Ph.D Radiation Oncology Biol. Phys, Vol. 32, No.3 pp. 839-846, 1995

### Specifications

#### Item 928-200 (Small Lead Testicle Shield)

**Size:** 2" I.D. x 3" O.D. (5.09 x 7.65 cm)

**Opening:** 0.6" x 1.25" (1.53 x 3.19 cm)

**Weight:** 4 lb (1.8 kg)

#### Item 928-250 (Medium Lead Testicle Shield)

**Size:** 2.5" I.D. x 3.5" O.D. (6.37 x 8.92 cm)

**Opening:** 0.75" x 1.6" (1.91 x 4.08 cm)

**Weight:** 5.7 lb (2.6 kg)

#### Item 928-300 (Large Lead Testicle Shield)

**Size:** 3" I.D. x 4" O.D. (7.65 x 10.2 cm)

**Opening:** 1" x 2" (2.55 x 5.09 cm)

**Weight:** 7.25 lb (3.3 kg)

#### Item 926-100 (Adjustable CT Testicle Shield Stand)

**Size:** 5" W x 10" D x 13.5" H (12.7 x 25.5 x 34.4 cm)

**Weight:** 10.25 lb (4.7 kg)

Item	Description
928-200	Lead Testicle Shield (Small) 2" I.D.
928-250	Lead Testicle Shield (Medium) 2 1/2" I.D.
928-300	Lead Testicle Shield (Large) 3" I.D.
928-500	Lead Testicle Shields, Set of 3 (Small, Med, Large)
926-100	Adjustable CT Testicle Shield Stand

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## ROUND CT TESTICLE SHIELDS AND ADJUSTABLE CT TESTICLE SHIELD STAND



926-100 Adjustable CT Stand shown with CT Testicle Shield

The CT testicle shields are available in three sizes: small, medium and large. A soft cotton sock can be used to cover the testicles when placing them inside a cold shield.

The CT Testicle Shields should be used with the Item 926-100, Adjustable CT Testicle Shield Stand. This stand is easily adjustable and will cradle all 3 sizes of the round CT testicle shields. The holder for the testicle shield is made of PVC on this stand to minimize artifact on the CT scan. A hand knob allows for easy vertical adjustment from 1" to 10" (five turns per inch). The counter weighted base is made of cast iron. A plastic plate, secured to the base, provides easy positioning. The unit can be used for anterior and posterior treatments.

It is recommended that the Adjustable CT Testicle Shield Stand (Item 926-100) be used while raising and lowering the testicle shields, as this will reduce patient discomfort.

### Specifications

#### Item 926-200 (Small Silicone CT Testicle Shield)

**Size:** 2" I.D. x 3" O.D. (5.09 x 7.65 cm)

**Opening:** 0.6" x 1.25" (1.53 x 3.19 cm)

#### Item 926-250 (Medium Silicone CT Testicle Shield)

**Size:** 2.5" I.D. x 3.5" O.D. (6.37 x 8.92 cm)

**Opening:** 0.75" x 1.6" (1.91 x 4.08 cm)

#### Item 926-300 (Large Silicone CT Testicle Shield)

**Size:** 3" I.D. x 4" O.D. (7.65 x 10.2 cm)

**Opening:** 1" x 2" (2.55 x 5.09 cm)

#### Item 926-100 (Adjustable CT Testicle Shield Stand)

**Size:** 5" W x 10" D x 13.5" H (12.7 x 25.5 x 34.4 cm)

**Weight:** 10.25 lb (4.7 kg)

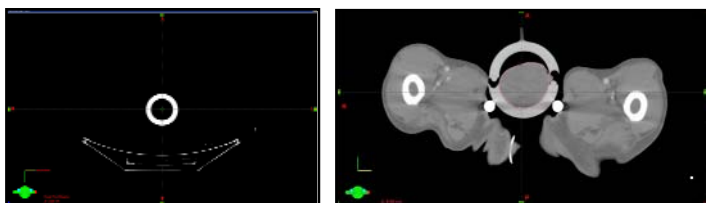


Image on CT Scans

- 1/2" (1.27 cm) silicone wall thickness
- An open sector is provided in each shield to allow comfortable positioning on the patient
- Lugs are molded into each half of the shield unit to simulate the Lead Testicle Shields
- All surfaces of the Adjustable CT Stand are coated with a tan polyurethane paint

The CT Testicle Shields are identical to the Lead Testicle Shields in size and shape but not weight. They are made of blue silicone rubber with shore hardness of 50A. The CT Testicle Shields do not use the rubber straps as the straps are too strong for the silicone rubber.

Item	Description
926-200	CT Testicle Shield, Silicone (Small) 2" I.D.
926-250	CT Testicle Shield, Silicone (Medium) 2-1/2" I.D.
926-300	CT Testicle Shield, Silicone (Large) 3" I.D.
926-100	Adjustable CT Testicle Shield Stand

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## TESTICLE RETRACTOR



The Testicle Retractor excludes a part or all of the testicle and scrotum from the direct beam while irradiating a portion of the scrotum.

This T-shaped device with a groove along the vertical support, allows a narrower blade (also with a groove) to be positioned in any vertical or angled orientation to the patient. It is fixed in position by a locking knob.

Item	Description
275-000	Testicle Retractor

X

## WALL PLUGS



200-009



200-010



200-011

These wall plugs are designed to fit into the conduit used for cables running from the linac vault to the control area. The plugs provide a lead barrier in the wall conduit. The plugs have a channel for the cables so they can remain in the conduit permanently. The wall plug is made to the customer specified diameter and wall thickness.

### Specifications

#### Item 200-009 Plug, Wall

**Material:** Lead and Stainless Steel

**Lead Dimensions:** 3" (7.62 cm) Thick x Customer Specified Diameter

#### Item 200-010 Plug, Outside Wall and 200-011 Plug, Inside Wall

**Material:** Lead, 5% Borated Polyethylene and Stainless Steel

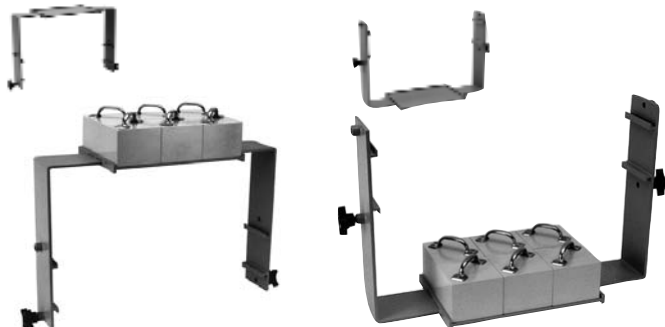
**Plug Dimensions:** 1" (2.54 cm) Thick 5% Borated Polyethylene and 3" (7.62 cm) Thick Lead x Customer Specified Diameter

Item	Plug	Lead	5% Borated Polyethylene
200-009	Wall	3" (7.62 cm) T	
200-010	Outside Wall	3" (7.62 cm) T	1" (2.54 cm) T
200-011	Inside Wall	3" (7.62 cm) T	1" (2.54 cm) T

**Items are Custom Made and Nonreturnable**

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## ANTERIOR AND POSTERIOR TREATMENT TABLE SHIELD



This unit attaches to the couch rails with two hand knobs. It can be used above or below the couch. Six lead blocks with handles are included. Each lead block weighs 21 pounds (9.5 kg) and is 8 cm thick x 10 cm square. A 1/4" (0.64 cm) high rail mounted around three sides prevents the lead blocks from sliding off. Anterior clearance to top of couch is 30 cm, posterior clearance is 20 cm. Each unit is custom made for the rail spacing. Please state the manufacturer and the model number of the couch when ordering.

### Specifications

**Shielded Area:** 30 W x 20 L x 8 H cm

Item	Description
925-108	Anterior/Posterior Treatment Table Shield

## ADJUSTABLE SHIELDING TABLE



The Adjustable Shielding Table is used to shield the abdomen/fetus of a pregnant woman requiring radiation treatment.

The table height is adjustable to accommodate for the different sizes of patients and various stages of pregnancy.

**Lead Filled Front Vertical Shield:** 34.5" W x 8" H x 2" T (87.9 x 20.4 x 5.09 cm)

**Top Horizontal Tray:** 36" W x 26" D x 2" T (91.7 x 66.3 x 5.09 cm)

**Lead Bricks with Handles within Tray:** (20) 2" x 4" x 8" (5.09 x 10.2 x 20.4 cm)

**Lead Filled Side Vertical Shields Qty. 2:** 28" W x 16" H x 2" T (71.4 x 40.8 x 5.09 cm)

**Opening Between Vertical Side Shields:** 38" (96.86 cm)

**Frame Construction Base:** 2" (5.09 cm) square steel tubing

**Overall Size:** 47" W x 43" D x 77" H (119.8 x 109.6 x 196.3 cm)

**Hand Crank Winches (2):** Adjust the height of the top or side shields

**Safety Lock Pins Included:** 2

**Casters:** (4) 6" (15.3 cm) dia. swivel

**Finish:** Tan Textured Polyurethane

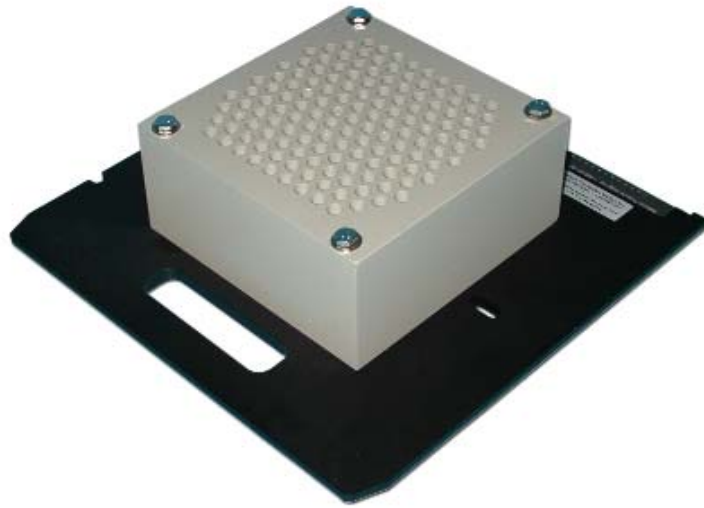
**Weight:** 1800 lb (817 kg)

Item	Description
925-020	Adjustable Shielding Table w/ Wheels

X

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## “GRID” PHOTON BLOCK Special Fractionation Radiation (SFR)



X

Special fractionation (GRID) is a new paradigm in radiation therapy for effective treatment of tumors that defy conventional dose/time fractionation.

The Special Fractionation Radiation (SFR) approach recreates a virtual brachytherapy dose distribution using megavoltage external beam radiation. This method combines the direct cellular response to high dose radiation with the indirect by-stander-effects of human tissue responses to produce enhanced biological effects. This treatment is particularly beneficial for the treatment of radioresistant or large tumors. The “GRID” Photon Block is used to treat these bulky tumors with SFR.

In the Department of Radiation Medicine at the University of Kentucky, over 200 patients having bulky malignant tumors in various sites, such as head and neck, lung and pelvis were treated. Excellent clinical results were obtained using the SFR technique. The efficacy and safety of using a large fraction of SFR are published in scientific journals<sup>1</sup>.

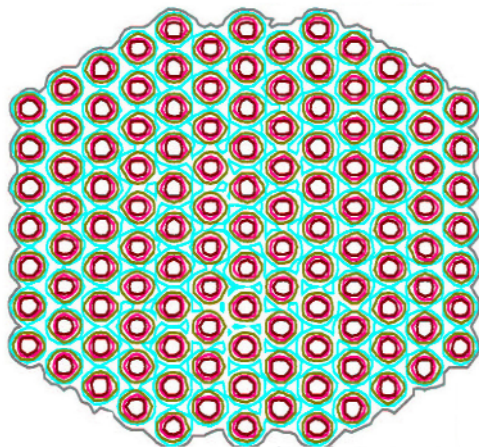
The “GRID” Photon Block is made of a low melting alloy with the divergent holes spaced in a honeycomb fashion. At 100 cm each hole has a beam width of 14 mm and the distance from center to center of each hole is 21 mm.

<sup>1</sup>High-Dose Spatially-Fractionated Radiation (GRID): A New Paradigm in the Management of Advanced Cancer by Mohammed Hoshiuddin, M.D., Mihoko Fujita, M.D., PH.D., William F. Regine, M.D., Ali S. Megouni, PH.D., Geoffrey S. Ibbott, PH.D., and Mansoor M. Ahmed, PH.D. - Department of Radiation Medicine, University of Kentucky, College of Medicine, Lexington, KY Int. J. Radiation Oncology Biol. Phys. Vol. 45, No. 3, pp 721-727. 1999

**Weight:** 48 lb (22 kg)

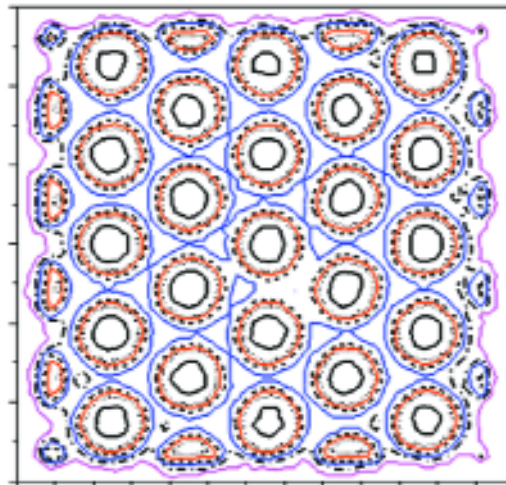
Item	“GRID” Photon Block
591-010	Varian Type III, 61.6 cm
591-011	Varian Type III 65.4 cm MLC
591-020	Siemens 56 cm - Screw Coding
591-021	Siemens 68.6 cm - Plug Coding
591-022	Siemens 56 cm - Plug Coding
591-030	Philips Elekta SL-20 65.4 cm

“GRID” Photon Blocks Can Be Manufactured for Any Accelerator



25 x 25 Field Size

**Isodose Lines**  
10% Gray  
16 % Cyan  
30% Dark Green  
70% Pink  
90% Wine



10 x 10 Field Size

**Isodose Lines**  
95 ———  
70 - - - - -  
50 ———  
30 - - - - -  
15 ———  
10 - - - - -  
5 ———



# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## LEAD SHIELDING BLOCKS



NCRP Report No. 102 states the thickness of lead required reduce the beam to 5% is as follows:

4 MV - 6.4 cm	6 MV - 6.66 cm
10 MV - 7.31 cm	15 MV - 7.18 cm
20 MV - 7.05 cm	25 MV - 6.92 cm

Choose from three thicknesses: 5 cm (used with Cobalt 60 machines), 6 cm (used with 4 or 6 MV linear accelerators) and 8 cm (used with 6 MV accelerators and up). Blocks are made of gravity cast antimonial lead, resulting in harder blocks that resist scratching and corner breakage.

All surfaces are machined flat, square and smooth and are finished with a tough polyurethane paint. The bottom of each block is covered with thick vinyl to minimize scratching of the surface on which they are placed.

Blocks for use with a treatment tray can be studded with stainless steel bolts. The protruding stud of each block has a wing nut which secures the block to the treatment tray. This is necessary for rotational and angular treatments.

We offer a large assortment of Lead Shielding Blocks for cobalt and linear accelerators. Custom sizes are also available.

**All Lead Shielding Blocks on the following pages are made to order and are non-returnable.**

## STUDS FOR LEAD BLOCKS

### Specifications

- 1/4" (6 mm) Blocking Tray:** Needs 1/2" long stud
- 3/8" (9-10 mm) Blocking Tray:** Needs 5/8" long stud
- 1/2" (13 mm) Blocking Tray:** Needs 3/4" long stud



The studs are used to secure lead blocks to the treatment tray. The Heavy Duty T-Studs are recommended for lead blocks that are over 15 pounds. All lead blocks with a stud are sold with a wing nut for securing the block to the treatment tray. The area around the stud is packed with lead to prevent radiation leakage.

Item #	Description
500-150	Standard Stud Protrudes 1/2" x 10-32
500-152	Standard Stud Protrudes 5/8" x 10-32
500-154	Standard Stud Protrudes 3/4" x 10-32
500-156	Medium Duty Stud Protrudes 1/2" x 1/4-20
500-158	Medium Duty Stud Protrudes 5/8" x 1/4-20
500-160	Medium Duty Stud Protrudes 3/4" x 1/4-20
500-162	Heavy Duty "T" Stud Protrudes 1/2" x 1/4-20
500-164	Heavy Duty "T" Stud Protrudes 5/8" x 1/4-20
500-166	Heavy Duty "T" Stud Protrudes 3/4" x 1/4-20

## KNOBS FOR LEAD BLOCKS



Item #	Description
565-050	1/2" Hex x 1 cm S.S. Thumb Nut 10-32 Thread - Pkg/12
565-075	3/4" Round x 1/2" S.S. Knob 10-32 Thread - Each
565-100	1" Round x 1/2" S.S. Knob 10-32 Thread - Each
565-140	1" Round x 1/2" S.S. Knob 1/4-20 Thread - Each

## KNOBS WITH STUDS AND INSERTS



Item #	Description
565-203	1/2" Stud with Knob 1/4-20 Thread - Each
565-205	5/8" Stud with Knob 1/4-20 Thread - Each
565-207	3/4" Stud with Knob 1/4-20 Thread - Each
565-220	1/4-20 Threaded Brass Insert Installed in Lead Block - Each
565-223	8-32 Threaded Brass Insert Installed in Lead Block - Each

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## LEAD SHIELDING BLOCK INFORMATION

NCRP Report No. 102

Thickness of lead required to reduce beam to 5%

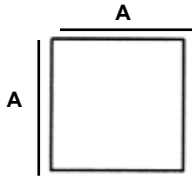
### Commonly Used Thicknesses

5 cm Thick - Cobalt 60  
 6 cm Thick - 4 MV - 6 MV Linear Accelerators  
 8 cm Thick - 10 MV & Higher Linear Accelerators

4 MV - 6.4 cm      6 MV - 6.66 cm  
 10 MV - 7.31 cm      15 MV - 7.18 cm  
 20 MV - 7.05 cm      25 MV - 6.92 cm

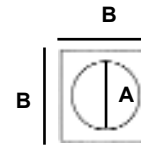
Please call or visit [rpdinc.com](http://rpdinc.com) for specific information on Lead Shielding Blocks

### SQUARE BLOCKS



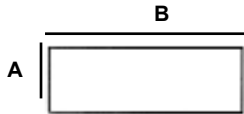
Item # Range	Description
510-015 thru 510-308	Square

### DIVERGENT HOLE IN SQUARE BLOCKS



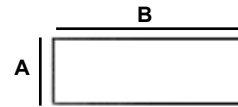
Item # Range	Description
535-055 thru 535-108	Divergent Hole in Square

### RECTANGULAR/SPINAL CORD SHAPED BLOCKS



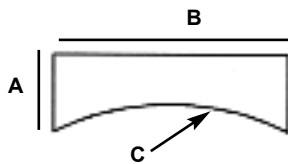
Item # Range	Description
511-025 thru 511-968	Rectangular/Spinal Cord

### RECTANGULAR BLOCKS



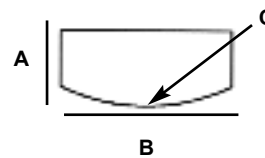
Item # Range	Description
512-025 thru 512-708	Rectangular

### RECTANGULAR BLOCKS WITH CONCAVE SIDE



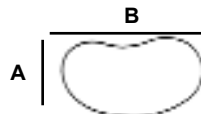
Item # Range	Description
525-155 thru 525-488	Rectangular with Concave Side

### RECTANGULAR BLOCKS WITH CONVEX SIDE



Item # Range	Description
524-125 thru 524-458	Rectangular with Convex Side

### KIDNEY SHAPED BLOCKS

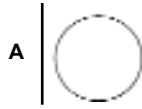


Item # Range	Description
526-135 thru 526-318	Kidney

X

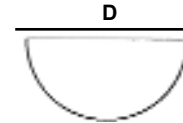
# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## ROUND BLOCKS



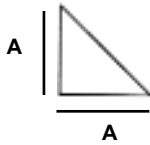
Item # Range	Description
513-005 thru 513-408	Round

## HALF ROUND BLOCKS



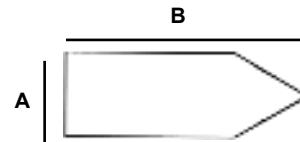
Item # Range	Description
514-085 thru 514-408	Half Round

## TRIANGLE BLOCKS



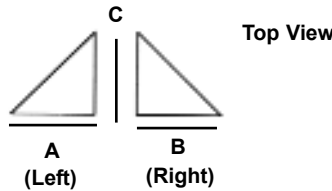
Item # Range	Description
515-025 thru 515-248	Triangle

## POINTED RECTANGULAR BLOCKS



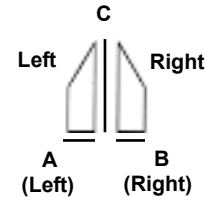
Item # Range	Description
519-115 thru 519-418	Pointed Rectangular

## TRIANGLE BLOCKS



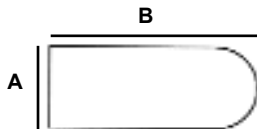
Item # Range	Description
516-115 thru 516-768	Triangle

## ANGLED RECTANGULAR BLOCKS



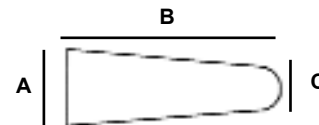
Item # Range	Description
518-105 thru 518-178	Angled Rectangular

## ROUNDED RECTANGULAR BLOCKS



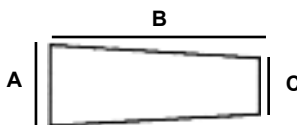
Item # Range	Description
520-105 thru 520-508	Rounded Rectangular

## SALT CELLAR BLOCKS



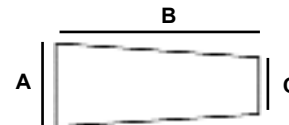
Item # Range	Description
521-115 thru 521-278	Salt Cellar

## LARYNX BLOCKS



Item # Range	Description
523-135 thru 523-198	Larynx

## TRAPEZOID BLOCKS



Item # Range	Description
522-125 thru 522-388	Trapezoid

X

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## INTERLOCKING LEAD BRICKS

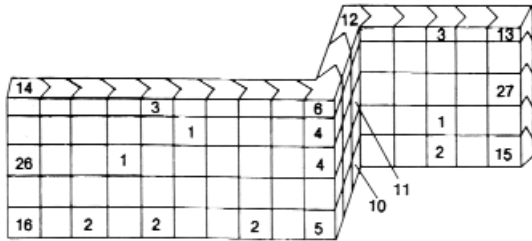
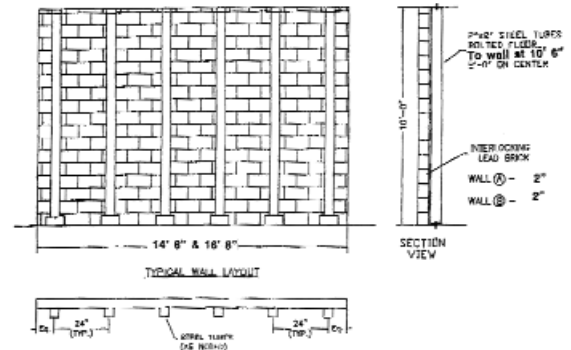
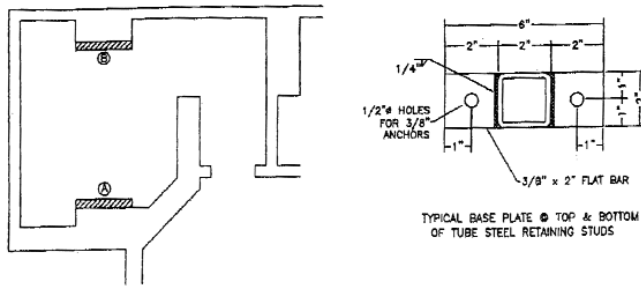


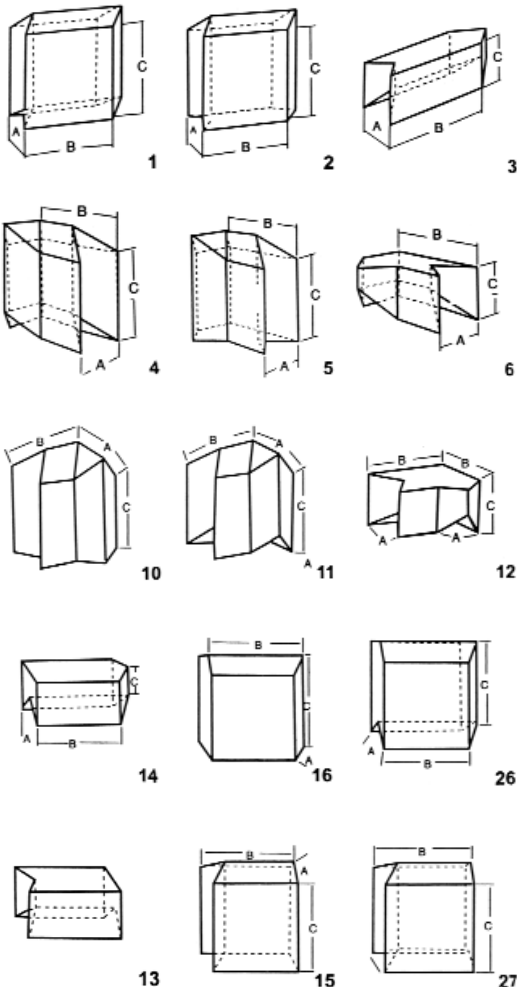
Diagram Shows Block Positions, Shape Function and Wall Alternatives

Interlocking lead bricks make it easy to erect, modify, and relocate protective walls and cells of any size. Interlocking V-shaped edges eliminate the danger of leakage common to straight-edged bricks. The interlocking design also creates a sturdier wall and minimizes the chances of toppling. The bricks have a durable paint finish to protect from direct lead contact.

X



Extra wall shielding can be accomplished using the 2" interlocking lead bricks. The customer must determine width, height, and thickness needed for extra shielding. Call for quote.



Item	Interlocking Lead Brick	Figure	AxBxC
001-100	Standard Wall, 13.2 lb (6 kg)	1	4x4x2"
001-200	Standard Base, 14.9 lb (6.77 kg)	2	4x4x2"
001-300	Standard Top, 5 lb (2.27 kg)	3	4x2x2"

Item	Interlocking Lead Brick	Figure	AxBxC
001-400	Corner for Wall, 13.2 lb (6 kg)	4	4x4x2"
001-500	Corner for Base, 14.9 lb (6.77 kg)	5	4x4x2"
001-600	Corner for Top, 5 lb (2.27 kg)	6	4x2x2"

Item	Interlocking Lead Brick	Figure	AxBxC
001-130	Reverse Corner for Base, 14.9 lb (6 kg)	10	4x4x2"
001-132	Reverse Corner for Wall, 13.2 lb (6.77 kg)	11	4x4x2"
001-135	Reverse Corner for Top, 5 lb (2.27 kg)	12	4x2x2"

Item	Interlocking Lead Brick	Figure	AxBxC
001-142	Left End Top, 5.2 lb (2.36 kg)	14	4x2x2"
001-147	Left End Base, 13.2 lb (6 kg)	16	4x4x2"
001-148	Left End, 14.9 lb (6.77 kg)	26	4x4x2"

Item	Interlocking Lead Brick	Figure	AxBxC
001-140	Right End Top, 5.2 lb (2.36 kg)	13	4x2x2"
001-145	Right End Base, 13.2 lb (6 kg)	15	4x4x2"
001-149	Right End, 14.9 lb (6.77 kg)	27	4x4x2"

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## LEAD BRICKS



All ends are saw cut to fit together practically eliminating open spaces between stacked bricks. Bricks of various sizes, other than the standard, will be quoted upon request.

Item #	Size	Thickness	Weight
910-000	2" W x 6" L (5.08 x 15.24 cm)	4" (10.16 cm)	19.8 lb (9 kg)
912-000	2" W x 8" L (5.08 x 20.32 cm)	4" (10.16 cm)	26.4 lb (12 kg)

## LEAD SHEET



### Electron Shielding Thickness

$$\frac{\text{Energy}}{2} = \text{Lead Thickness in Millimeters}$$

These pure, cold-rolled Lead Sheets can be formed/cut into any shape to shield areas of concern. They will conform to irregularities. Common applications include electron and superficial shielding to protect against small amounts of radiation. The sheets are 99.90% pure lead. The thickness tolerance is  $\pm 0.005$ " (0.0127 cm).

Unlimited scissors (RT-4932) will cut lead sheet thickness up to and including the 3.2mm thick lead sheet. The 6.3 mm thick lead sheet can be cut with a circular saw or jigsaw. Whenever cutting lead sheets be aware that cross contamination of lead particles may occur from the cutting tool. It is recommended to not use a cutting tool used on lead sheets to cut other non lead items.

Item #	Size	Thickness	Weight
3000-062	12" W x 24" L (30.48 x 60.96 cm)	0.063" (1.6 mm)	7.5 lb (3.4 kg)
3000-125	12" W x 24" L (30.48 x 60.96 cm)	0.125" (3.2 mm)	15 lb (6.8 kg)
3000-250	12" W x 24" L (30.48 x 60.96 cm)	0.25" (6.3 mm)	30 lb (13.6 kg)

## FACE FORM FOR CONTOURING LEAD SHEETS



This solid cast iron face form can be used for contouring thicker lead sheets when needed. This face form will hold up to use of a hammer on the lead sheets.

There are four (4) rubber feet on the bottom to prevent the form from sliding.

### Specifications

**Size:** 5.8" W x 8.8" L x 4.3" H (14.8 x 22.5 x 11.0 cm)

**Weight:** 28 lb (12.7 kg)

Item	Description
149-200	Face Form for Contouring Lead Sheets

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## SNIPS



The Bulldog Aviation snips can be used to cut lead sheets up to 1/8" thick. This bulldog snip cuts straight and can be used in either hand. It has serrated blades.

### Specifications

**Nominal Length:** 9" (22.9 cm)

**Cut Length:** 7/8" (2.22 cm)

**Weight:** 1 lb (0.5 kg)

Item	Description
878-738	Snips, Bulldog Aviation, 9" L



These Bulldog Blade Snips can be used to cut 1/4" thick lead sheets. This bulldog snip cuts straight and wide curves and can be used in either hand.

### Specifications

**Nominal Length:** 16" (40.64 cm)

**Cut Length:** 2.5" (6.35 cm)

**Weight:** 3.5 lb (1.6 kg)

Item	Description
878-740	Snips, Bulldog Blade, 16" L

X

## LEAD FOIL



Lead Foil can be cut easily with scissors and formed into almost any shape for shielding areas, partial areas or objects of all types.

### Electron Shielding Thickness

$$\frac{\text{Energy}}{2} = \text{Lead Thickness in Millimeters}$$

Item #	Size	Thickness	Weight
3000-020	12" W x 4.5' L (30.5 cm x 1.37 m)	0.020" (0.5 mm)	5.25 lb (2.4 kg)
3000-030	14" W x 4.5' L (35.5 cm x 1.37 m)	0.030" (0.76 mm)	10 lb (4.5 kg)
3000-040	12" W x 4.5" L (30.5 cm x 1.37 m)	0.040" (1.016 mm)	10.5 lb (4.8 kg)

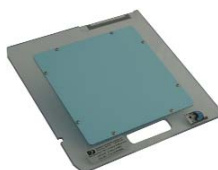
## LEAD FOIL FOR TG-51



691-175



691-176



691-177

Items 691-175 through 691-190: The lead foil thickness is 1 mm ±10% and 25 cm square. The lead is sandwiched between two 0.025" PVC sheets. The lead foil is also available mounted to a tray.

Item 691-200: The lead foil thickness is 1 mm ±10% and 10.4 cm in diameter. The lead is sandwiched between two 0.025" PVC sheets and fits in the PTW chamber holder T4316-U563.



691-190



691-200

Shown in PTW holder T4316-U563 (holder not included)

Item #	Description
691-175	Lead Foil for TG-51
691-176	Lead Foil, Varian III Wedge Slot Tray
691-177	Lead Foil, Varian II or III Block Tray
691-178	Lead Foil, Varian II Wedge Slot-Coding By-Pass
691-180	Lead Foil, Siemens Screw Coding, Block Tray
691-184	Lead Foil, Siemens, Block Tray w/ By-Pass Coding
691-185	Lead Foil, Siemens, Block Tray w/Coding Plug Pocket*
691-190	Lead Foil, Elekta, Acrylic, Block Tray
691-200	Lead Foil Insert for PTW T4316-U563 Holder

\* Coding Plug is extra, use Item 1884-10-5

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## LEADED VINYL SHEETS



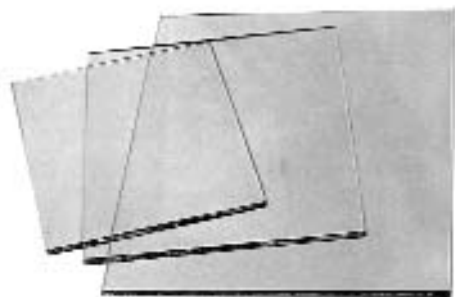
- Uniform density throughout
- Acid and alkali resistant
- Odorless
- Abrasion resistant

The Lead Vinyl Sheets are a flexible protective material available in a variety of lead equivalents for use wherever additional protection is required. It can be cut and shaped for many protective applications. It is 10% lighter in weight compared to that of lead rubber for the same lead equivalency. The sheets are sanitary and non-absorbing with smooth surfaces on both sides. They can be cleaned using a nonabrasive, household surface cleaner or Wipeout<sup>SM</sup> antimicrobial wipes. The material is non-aging, therefore, it has an indefinite shelf life.

Item #	Size	Thickness	Weight	Lead Equivalence	Color
3051-902	2' W x 3' L (61 x 91.4 cm)	0.063" (1.6 mm)	1.5 lb (0.7 kg) per sq. foot	0.0196" (0.50 mm)	Gray
3051-903	2' W x 3' L (61 x 91.4 cm)	0.125" (3.2 mm)	3.0 lb (1.4 kg) per sq. foot	0.0392" (1.0 mm)	Cream

X

## LEADED ACRYLIC - CLEAR Pb® LEAD - PLASTIC SHEET



Leaded Acrylic Clear Pb® Lead Plastic x-ray shielding can be used for viewing windows and radiation shielding.

Leaded Acrylic Clear Pb® shatter-resistant lead plastic x-ray shielding is a lead impregnated transparent plastic sheet that contains 30% lead by weight. Its physical properties are similar to those of conventional acrylic resins and routine acrylic fabrication techniques (machining and cementing) can be applied.

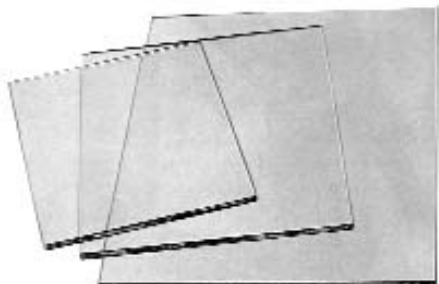
Leaded Acrylic Clear Pb® meets ANSI Standards, Z97.1 and US Consumer Product Safety Commission standards.

Thickness	Lead Equivalency at 100 KV (Nominal)	Density (gm/cm <sup>3</sup> )
12 mm	0.5 mm	1.6
18 mm	0.8 mm	1.6
22 mm	1.0 mm	1.6
35 mm	1.5 mm	1.6

Item	Description
3300	Leaded Acrylic- CLEAR Pb Lead-Plastic Sheet

Specify Size and Thickness When Ordering

## LEAD GLASS (X-RAY PLATE GLASS)



Thickness	Lead Equivalency at 100 KV (Nominal)	Density (gm/cm <sup>3</sup> )
1/4" (0.64 cm)	2.0 mm	4.8
1/2" (1.27 cm)	3.7 mm	4.8
3/4" (1.91 cm)	5.7 mm	4.8
3/4" (1.91 cm)	7.7 mm	6.2
1" (2.55 cm)	10 mm	6.2

Item	Description
3500	Lead Glass (X-Ray Plate Glass)

Specify Size and Thickness When Ordering

# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## MATRIX THERMO-SHIELD™ Moldable Thermoplastic Radiation Shielding Material



MATRIX Material without Portal



MATRIX Material with Portal



MATRIX Material in 50 cc Syringe

The MATRIX patented shield is manually moldable thermoplastic material when heated in a water bath. MATRIX protects healthy tissues while allowing treatment to the exact treatment field during therapy. It may be quickly and repeatedly molded, adapted, shaped, stacked, or thinned directly on the patient at any time during therapy, thereby increasing treatment accuracy and decreasing clinical construction times.

### Features:

- This material can be reshaped, readapted, thickened or thinned making it particularly adaptable for sensitive anatomy.
- Provides a time-saving factor as customized shields can be constructed in approximately 25 minutes.
- Provides a linear attenuation coefficient of approximately 34% of elemental lead.
- Eliminates fabrication of shields from plaster cast, cerrobend block or amorphous toxic leaded clay.
- Homogenous mix of hydrocarbon and bismuth particles provides uniform radiodensity.
- Material is non-toxic and biocompatible.
- Available as solid or with an "open" portal.
- Easily moldable to anatomic detail.
- Can be disinfected with glutaraldehyde spray (i.e. Cidex).
- Moldable at 108°- 132°F and becomes rigid at 102°F.
- Retains its shape and thickness for the course of treatment or can be modified if needed.

### Usage:

The clinician chooses width, thickness, and either the solid or "open" portal shield, according to the determined therapy. The shield is then warmed in a water bath to 123° -128°F and molded to the healthy patient anatomy to protect it from electron or photon radiation during therapy. The shield sets at approximately 102°F and is removed from the patient. The shield is now rigid for accurate anatomic detail and can be placed repeatedly for multiple radiation sessions.

### Specifications:

The only constituent used in the production of thermoplastic radiation shield is an FDA and ADA approved dental hydrocarbon impression compound for intro-oral usage and elemental bismuth-100 mesh, which is not absorbed through the skin. The thermoplastic dental compound and bismuth are blended in a volume ratio of approximately 66:33. The manufacturing process bonds the dental compound to the bismuth to produce the dense thermoplastic radiation shield.

### Specifications:

#### Dimensions:

Slabs: 8 x 8 cm or 12 x 12 cm  
Thickness: 13 or 16 mm  
Portal diameter: 2.5 cm  
Syringes: 50 cc

**Color:** Brown

**Odor:** Chocolate

**Density:** Approximately 4.2 gm/cc

#### Environmental Factors:

MATRIX will maintain proper performance with normal use under the least favorable of the following conditions:

- Ambient temperature range of 59°F to 95°F
- Relative humidity range of 30% to 75%, including condensation
- Atmospheric pressure range of 700 hpa to 1100 hpa

MATRIX will not be adversely affected for up to 15 weeks while packed for transport or storage or if exposed to:

- Ambient temperature range of -40°F to 234°F
- Relative humidity range of 10% to 100%, including condensation
- Atmospheric pressure range of 500 hpa to 1060 hpa

#### Single patient use.

#### Not Sterilized.

#### Reimbursement is for a complex shield-CPT 77334.

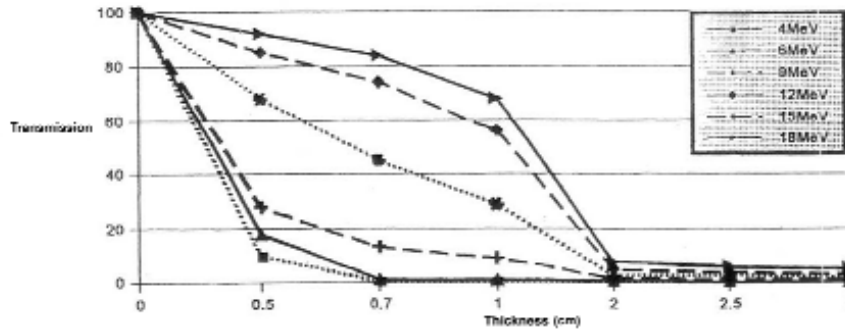
The syringe of Hydrocarbon only (thermoplastic without bismuth; specific gravity of 1.66) can be used to fabricate a backscatter electron shield on a MATRIX shield.

Item #	Description
MX1-0813	Matrix Thermo-Shield™ 8 x 8 cm x 13 mm
MX1-0813P	Matrix Thermo-Shield™ 8 x 8 cm x 13 mm with Portal
MX1-0816	Matrix Thermo-Shield™ 8 x 8 cm x 16 mm
MX1-0816P	Matrix Thermo-Shield™ 8 x 8 cm x 16 mm with Portal
MX1-1213	Matrix Thermo-Shield™ 12 x 12 cm x 13 mm
MX1-1213P	Matrix Thermo-Shield™ 12 x 12 cm x 13 mm with Portal
MX1-1216	Matrix Thermo-Shield™ 12 x 12 cm x 16 mm
MX1-1216P	Matrix Thermo-Shield™ 12 x 12 cm x 16 mm with Portal
MX1-500	Matrix Thermo-Shield™ 50cc Syringe
MX2-500	Matrix Thermo-Shield™ Hydrocarbon ONLY 50cc Syringe
MX1-300	Matrix Thermo-Shield™ Parchment Paper



# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

Relative Value at the depth of maximum dose in Solid Water® vs. thickness of MATRIX Thermo-shield



\* This data is for reference only and should not be used for clinical purposes.

## Attenuation characteristics of a new compensator material: Thermo-Shield for high energy electron and photon beams

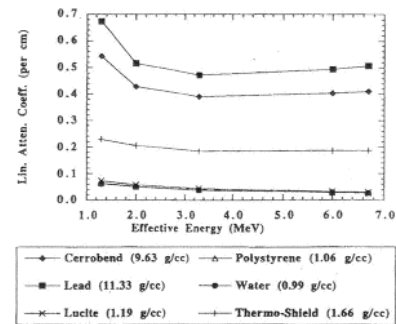
Bhudatt R. Paliwal,<sup>a)</sup> Stephen Rommelfanger, and Rupak K. Das  
 Med. Phys. 25 (4), April 1998 pp.484-487

TABLE I. Measurements of electron transmission (percentage) at depth of maximum dose through increasing thickness of Thermo-Shield. For each beam energy, the data are normalized to its corresponding value measured for 0 cm thickness.

Thickness (cm)	Electron beam energy					
	4 MeV	6 MeV	9 MeV	12 MeV	15 MeV	18 MeV
0.00	100.0	100.0	100.0	100.0	100.0	100.0
0.50	10.0	18.0	28.0	68.0	85.0	92.0
0.70	0.4	1.2	13.3	45.0	74.0	83.9
1.00	0.4	0.9	9.0	29.0	56.0	68.0
2.00	0.3	0.6	1.4	2.8	4.9	7.6
2.50	0.2	0.4	1.1	2.5	4.0	6.1
3.00	0.2	0.3	1.0	2.0	3.2	5.2

The authors conclude that thermoshield is a desirable material for use in clinical radiation therapy as a compensator or shielding material for photon beams. For electrons Thermoshield acts as a good shielding material. The authors describe a new highly attenuating thermoplastic with extremely desirable physical and radiation shielding properties.

Comparison of linear attenuation coefficient of Thermo-Shield with other materials relevant to radiotherapy



# SHIELDING - EYE, EAR, & TESTICLE SHIELDS, MATRIX

## GAMMA PUTTY



### Radiation Properties

**Macroscopic thermal neutron cross section:**  $0.01 \text{ cm}^{-1}$

**Lead equivalent thickness (inch):** 0.39

### Attenuation Factors for 1-inch

200 keV:  $1.9 \times 10^4$

500 keV: 4.7

1.0 MeV: 2.0

### Attenuation Factors for 2-inch

Ir-192: 30

Cs-137: 8.4

Co-60: 3.0

**Gamma resistance:**  $5 \times 10^8 \text{ rad}$

**Neutron resistance:**  $2.5 \times 10^{17} \text{ n/cm}^2$

### Composition Data

**Hydrogen atom density/cm<sup>3</sup>:**  $3.28 \times 10^{22}$

**Hydrogen weight percent:** 1.44 %

**Bismuth atom density/cm<sup>3</sup>:**  $9.89 \times 10^{21}$

**Bismuth weight percent:** 90.0 %

**Total Density:**  $3.81 \text{ g/cm}^3$  (238 lbs/ft<sup>3</sup>)

### Physical Properties

**State:** Putty

**Color:** Gray

**Odor:** No significant odor

**Machinability:** Poor

### Thermal Properties

**Recommended Temperature Limit:** 110°F (45°C)

### Chemical Properties

**Chemical Name & Synonyms:** Bismuth poly putty (LDPE)

### Approximate 1/10 Thickness

#### Gamma Energy Inches

100 keV 0.1"

500 keV 1.5"

1 MeV 3.5"

2 MeV 5.0"

### Specifications

#### Non-hardening

**Net Weight:** 10 lbs

**Density:**  $3.8 \text{ g/cm}^3$

Item	Description
3050-262	Gamma Putty - 10 lbs.

- 1-Inch of Gamma Putty is roughly equivalent to 0.4-Inch of lead for gamma shielding applications
- It is non-hardening and it will not dry out to form a powder
- Reusable and lead-free

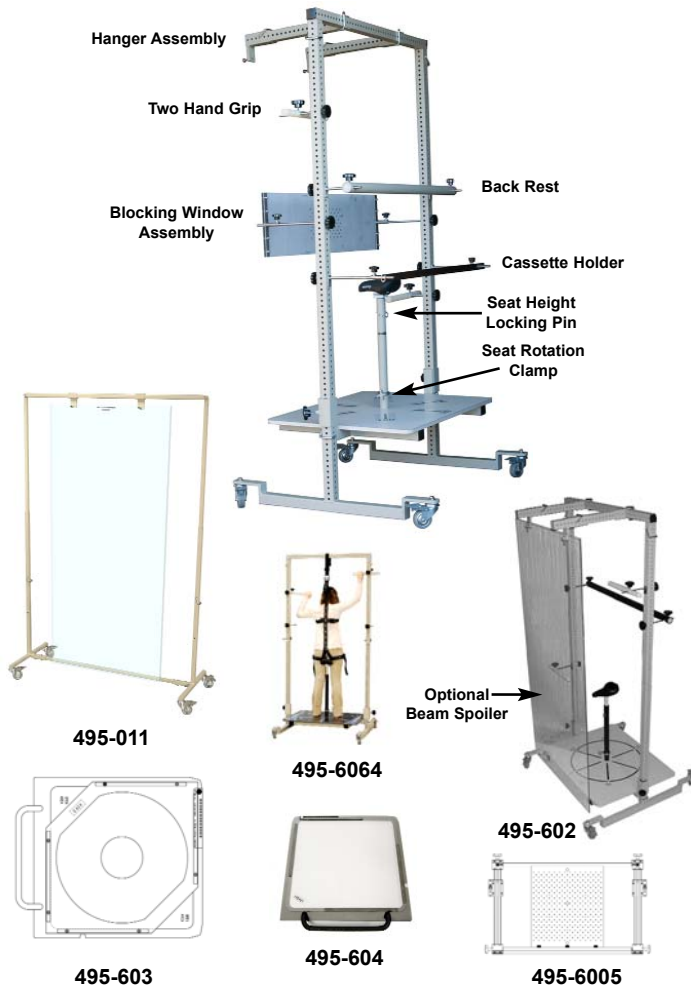
Gamma Putty is a malleable gamma shielding clay that contains no lead. It contains high-density bismuth that is uniformly distributed throughout the LDPE binder material to insure there are no gamma streaming paths. The additive is elemental bismuth, 90% by weight, and the material will not dry out to form a powder. It is supplied in chunks that are readily pliable by hand and holds its shape after placement.

Gamma Putty provides a simple means of protecting patients from damage to adjacent healthy tissue during irradiation of tumors and other confined areas. It provides an accurate, reproducible technique for obtaining small ports in shields molded to fit the patient.

X

# TBI STANDS & ACCESSORIES, BEAM SPOILERS

## TOTAL BODY IRRADIATION STAND



**Item 495-600 Total Body Irradiation Stand for Photons or Electrons includes:** Frame and platform, 2 adjustable seat posts, seat, 2 hand grips, back rest, cassette holder, polycarbonate block holder, tungsten pins, a block tray for the blockroom and 2 beam spoiler hanger assemblies.

### Specifications

**Overall Size:** 45" W x 43.25" L x 93" H (114 x 110 x 236 cm)

**Platform Size:** 38" W x 31" L (97 x 77 cm)

**Adjustment from Floor:** 3" (7.6 cm) and up in 1" (2.5 cm) increments

**Overall Weight:** 202 Lb

**Item 495-602 Total Body Irradiation Stand for Electrons includes:** Frame and platform, 2 adjustable seat posts, seat, 2 hand grips, back rest and 2 beam spoiler hanger assemblies.

### Optional Accessories

**Item 495-6004 - TBI Chin Rest Assembly** The TBI Chin Support will hold patient alignment during treatment.

**Item 495-6005 - TBI Lung & Kidney Adjustable X-Y Blocking System** The TBI Lung & Kidney Adjustable X-Y Blocking System allows for movement of the Blocking Tray, 3/8" Thick x 19.69" W x 25.98" H (0.762 x 50 x 66cm), in the Left/Right Direction of +/- 15cm (5.91") and in the Up/Down Direction of +/- 15cm (5.91). Both adjustments are accomplished by turning hand knobs.

**Item 495-603 - Wedge Tray Flattening Filter for TBI, 6 MeV Varian III**

**Item 495-604 - Wedge Tray Scale for TBI Isodose Curves, Varian III** Physicists will draw 90% isodose area on the tray which will project a line around patient

**Item 495-6064 - Safety Harness** Attaches to the top stabilizer bar and prevents a patient from falling.

**Items 495-600-83 to 495-600-86 - Beam Spoiler/Beam Degrader** The optional Beam Spoiler/Beam Degrader is available in 3/8" (1 cm) or 1/2" thick (1.3 cm) acrylic or polycarbonate. The beam spoiler measures 38" W x 86" L (96.5 x 218.4 cm).

**Acrylic Density:** 1.185 g/cc

**Polycarbonate Density:** 1.2 g/cc

Item #	Description
495-600	Total Body Irradiation Stand for Photons or Electrons
495-602	Total Body Irradiation Stand for Electrons

Item #	Optional Accessories
495-6004	TBI Chin Rest Assembly
495-6005	TBI Lung & Kidney Adjustable X-Y Blocking System
495-603	Wedge Tray Flattening Filter for TBI, 6 MeV, Varian III
495-604	Wedge Tray Scale for TBI Isodose Curves, Varian III
495-6064	Safety Harness for TBI Stands

Item	Optional TBI Beam Spoiler/Degrader	Thickness
495-600-83	Acrylic	3/8" (1 cm)
495-600-84	Polycarbonate	3/8" (1 cm)
495-600-85	Acrylic	1/2" (1.3 cm)
495-600-86	Polycarbonate	1/2" (1.3 cm)
495-011	Small Mobile Beam Spoiler Frame for TBI Stands	

The platform of the Total Body Stand is in the lowest position at 3" (7.6 cm) from the floor and is adjustable upward in 1" (2.5 cm) increments. This will allow centering the patient to the central axis of the beam. The platform is made of Gray PVC covered with non-slip vinyl material that is marked in 60° increments and has a mounting hole for the seat post. Long and short seat posts are included to provide maximum adjustment, in 1/4" (0.64 cm) increments, of the seat height. The seat height is determined and the seat is locked to the seat post. The seat angle is set by rotating seat post and locking when position is selected.

The Total Body Stand frame is made of 2" (5 cm) steel tubing. The frame consists of 2 "T" vertical posts and a top stabilizer bar. Holes spaced 1" (2.5 cm) apart on the vertical posts allow easy adjustment of all attachments. The top stabilizer bar and vertical "T" posts are removable for easy breakdown and storage. Two (2) beam spoiler hanger assemblies attach to the top stabilization bar. The stand has 4 swivel locking casters which allow easy movement and positioning.

A polycarbonate block holder can be mounted on the front of the vertical posts to support lung blocks or other shields. A stainless steel cassette holder can be mounted on the rear of the vertical posts. The back rest and hand grips can be used at any location on the vertical posts.

The polycarbonate block holder and the block tray for the blockroom have the exact same hole pattern. Tungsten pins can be inserted into the block holder as alignment markers.

# TBI STANDS & ACCESSORIES, BEAM SPOILERS

## ROTATIONAL TOTAL BODY IRRADIATION STAND



The Rotational Total Body Irradiation Stand was designed for use when treating the total body with electrons.

The stand has an adjustable rotating platform that adjusts vertically based on the patient's height and will rotate 360°. The platform is marked in 60° increments. The adjustable rotating platform is in the lowest position at 4.5" (11.43 cm) from the floor and is adjustable upward in 1" (2.54 cm) increments. This allows centering the patient to the central axis of the beam. The rotating platform is made of Gray PVC covered with non-slip vinyl material and has a mounting hole for the seat post. The Rotation Motor attaches to the rotating platform with four (4) mounting screws and the Motor Speed Controller attaches to the vertical "T" leg. The Motor Speed Controller is variable speed and adjustable from 3 to 7 RPM with scale markings at 3, 4, 5 and 6 RPM. A slow Start-up and Slow-down is designed into the Motor Speed Controller for patient stability. A 60' On/Off Rotation Remote Control Cable with a switch allows the therapist to start and stop the platform rotation from the control area.

Long and short seat posts are included to provide maximum adjustment, in 1/4" (0.635 cm) increments, of the seat height. The seat post to be used is determined by the patient's leg inseam. The seat height is determined and the seat is locked to the seat post. The seat direction is set by rotating the seat post and locking when desired direction is selected.

The rotational hand rail assembly rotates freely with patient rotation and accommodates the optional Safety Harness (Item 495-6066).

The Rotational Total Body Stand frame is made of 2" (5.08 cm) steel tubing. The frame consists of two (2) "T" legs with casters and a top stabilizer bar. Holes spaced 1" (2.54) apart on the vertical "T" legs allow easy adjustment of the rotating platform and hand rail assembly. The beam spoiler hanger assemblies attach to the top stabilizer bar.

The Rotational TBI Stand can be taken apart easily for storage. The rotation motor is easily removable from the rotating platform by removing the four (4) mounting screws and the motor speed controller easily lifts off the vertical "T" leg. The top stabilizer bar, vertical "T" legs, adjustable rotating platform and rotational hand rail assembly are all removable for easy breakdown. The stand has 4 swivel locking casters which allow easy movement and positioning.

### Item 495-605 Rotational Total Body Irradiation Stand Includes

- Frame
- Adjustable Rotating Platform
- 2 Adjustable Seat Posts
- Seat
- Rotational Hand Rail Assembly
- Rotation Motor
- Variable Motor Speed Controller 3-7 RPM
- On/Off Rotation Remote Control Cable and Connector
- 2 Beam Spoiler Hanger Assemblies

### Specifications

**Overall Size:** 45" W x 43.25" L x 110" H (114 x 110 x 280cm)  
**Platform Size:** 38" W x 31" L (97 x 79 cm)  
**Rotating Area:** 22" Diameter (56 cm)  
**Adjustment From Floor:** 4.25" (11cm) and up in 1" (2.5 cm) increments  
**Rotation Speed:** 3-7 RPM  
**Power:** 120 VAC  
**Shipping Weight:** 485 lb (221 kg)

### Optional Accessories

**Item 495-603 Wedge Tray Flattening Filter for TBI, 6 MeV, Varian III**

**Item 495-604 Wedge Tray Scale for TBI Isodose Curves, Varian III**

**Item 495-6066 Safety Harness**

Attaches to the rotational hand rail assembly and prevents a patient from falling.

**Item 495-610 Head Shield for Rotational TBI Stand, 1/8" Lead**

**Item 495-612 Lead Hand Shield Rotational TBI Stand**

**Item 495-605-83 through 495-605-86 Beam Spoiler/Beam Degradator (for 495-605 Rotational TBI Stand only)**

The optional beam spoiler/beam degrader is available in 3/8" or 1/2" (0.97 or 1.27 cm) acrylic or polycarbonate. The beam spoiler measures 42" W x 96" L (106.7 x 243.8 cm). Acrylic Density: 1.185 g/cc. Polycarbonate Density: 1.2 g/cc.

**Acrylic Density:** 1.185 g/cc

**Polycarbonate Density:** 1.2 g/cc

**Item 936-583 through 936-627 Tungsten Eye Shields with Aluminum Caps**

Item	Description
495-605	Rotational Total Body Irradiation (TBI) Stand

Item	Optional
495-603	Wedge Tray Flattening Filter for TBI, 6 MeV, Varian III
495-604	Wedge Tray Scale for TBI Isodose Curves, Varian III
495-6066	Safety Harness for Rotational TBI Stand
495-610	Head Shield for Rotational TBI Stand, 1/8" Lead
495-612	Lead Hand Shield for Rotational TBI Stand

Item	Rotational TBI Stand Beam Spoiler	Thickness
495-605-83	Acrylic	3/8" (1 cm)
495-605-84	Polycarbonate	3/8" (1 cm)
495-605-85	Acrylic	1/2" (1.3 cm)
495-605-86	Polycarbonate	1/2" (1.3 cm)

Item	Tungsten Eye Shield with Aluminum Caps
936-583	11.6 mm Inside Dimension x 2 mm Thick
936-585	13.3 mm Inside Dimension x 2 mm Thick
936-587	15.0 mm Inside Dimension x 2 mm Thick
936-589	16.7 mm Inside Dimension x 2 mm Thick
936-591	18.4 mm Inside Dimension x 2 mm Thick
936-596	11.0 mm Inside Dimension x 3 mm Thick
936-598	12.7 mm Inside Dimension x 3 mm Thick
936-601	14.4 mm Inside Dimension x 3 mm Thick
936-623	16.1 mm Inside Dimension x 3 mm Thick
936-627	17.8 mm Inside Dimension x 3 mm Thick

# TBI STANDS & ACCESSORIES, BEAM SPOILERS

## WEDGE TRAY SCALES FOR TBI ISODOSE CURVES, VARIAN III



For use with Total Body Irradiation (TBI) Stands, Items 495-600 and 495-602.

The Radiation Physicist must find the projected isodose curves for their TBI Stand location.

The mapping of the isodose curves must be marked on the wall or stand covered with paper so values and lines can be seen. Use chamber or film. Record gantry angle used.

The Total Body Scale Tray is inserted in the treatment machine and rotated to the same gantry angle setting used for producing the projected isodose on the wall or stand. With a black marker, mark the demagnification on the acrylic TBI tray which will project a line around the patient.

Item	Description
495-604	Wedge Tray Scale for TBI Isodose Curves, Varian III

## HEAD SHIELD FOR ROTATIONAL TBI STAND, 1/8" LEAD



This head shield is designed to work with the Rotational Total Body Irradiation Stand (495-605 and 495-609) providing full 360° of 1/8" lead shielding to the head of the patient. The shield is supported by two chains connected to the treatment stand.

### Specifications

**Lead Density:** 11.35g/cm<sup>3</sup>  
**Shielding:** 1/8" (3.175mm) Lead  
**Inside Diameter:** 11.25" (28.5cm)  
**Height:** 12" (30.5cm)  
**Finish:** Durable Tan Polyurethane Enamel Paint  
**Weight:** 33 lb (15kg)

Item	Description
495-610	Head Shield for Rotational TBI Stand, 1/8" Pb

## LEAD HAND SHIELDS FOR ROTATIONAL TBI STAND



The Lead Hand Shields are to be used with the Rotational Total Body Irradiation Stand (495-605 and 495-609) for the purpose of shielding the hands of a patient from radiation exposure during treatment. The hand shields are sold as a pair, not individually.

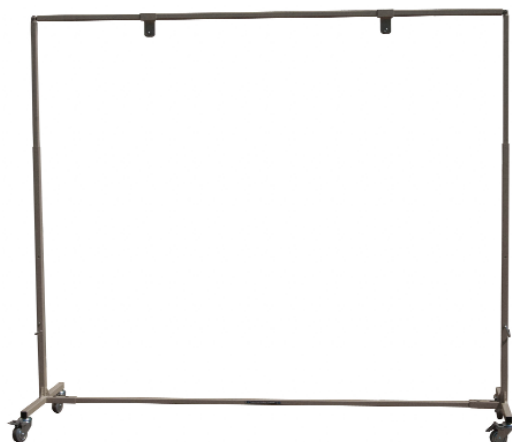
### Specifications

**Inner Lining:** .140" (3.56mm) Plastic with Finish  
**Shielding:** 0.25" Lead (6.35mm)  
**Diameter:** 6" (15.2cm)  
**Inner Diameter:** 5.22" (13.3cm)  
**Height:** 6" (15.2cm)  
**Finish:** Durable tan textured polyurethane enamel paint  
**Weight:** 11.65 lb (5.28kg) each

Item	Description
495-612	Lead Hand Shields for Rotational TBI Stand

# TBI STANDS & ACCESSORIES, BEAM SPOILERS

## BEAM SPOILER FRAME AND BEAM SPOILERS



The Beam Spoiler Frame holds a beam spoiler for Total Body Irradiation. The frame is made of 1" (2.54 cm) square and 1.25" (3.18 cm) square steel tubing. The vertical legs are telescoping to allow a 13" (33 cm) vertical range of movement. Two hangers welded on the top horizontal bar are positioned to hold a beam spoiler in either the vertical or horizontal direction. The frame can support 1" (2.54 cm) thick (2 plates for Photons) weight up to 250 pounds (114 kg). Four 3" (7.62 cm) diameter swivel locking casters allow for easy movement of the Beam Spoiler. The frame can be dismantled for storage.

The optional Beam Spoiler is available in acrylic or polycarbonate in 0.375" (0.95 cm) or 0.50" (1.27 cm) thickness. The beam spoiler has two key holes on both the 60" (152 cm) side and on the 84" (213.4 cm) side to allow for positioning on the frame in either direction. The key holes can also be used to hang the beam spoiler from wall hooks for storage.

### Specifications

#### Item 495-004 Beam Spoiler Frame for TBI

**Overall Size:** 91.5" L x 24" W x 80.375" or 93.375" H (232.4 x 61 x 204.2 or 237.2 cm)

**Finish:** Durable tan textured polyurethane enamel paint

### Beam Spoilers

**Size:** 60" x 84" (152.4 x 213.4 cm)

**Acrylic Density:** 1.185 g/cc

**Polycarbonate Density:** 1.2 g/cc

Item	Description
495-004	Beam Spoiler Frame for TBI

Item	Beam Spoiler	Thickness	Weight
495-005	Polycarbonate	0.375" (0.95 cm)	77 lb (35 kg)
495-006	Polycarbonate	0.50" (1.27 cm)	103 lb (47 kg)
495-007	Acrylic	0.375" (0.95 cm)	77 lb (35 kg)
495-008	Acrylic	0.50" (1.27 cm)	103 lb (47 kg)

## SMALL MOBILE BEAM SPOILER FRAME FOR TBI STANDS



The Small Mobile Beam Spoiler Frame can be used with all Total Body Irradiation stands.

The Beam Spoiler Frame will hold up to a 1" (2.54 cm) thickness beam spoiler for Total Body Irradiation. The frame is made of 1" (2.54 cm) square and 1.25" (3.18 cm) square steel tubing. The vertical legs are telescoping to allow up to a 93.375" height. Two adjustable hangers on the top horizontal bar are positioned to hold a beam spoiler in the vertical direction. The frame can support up to a 1" (2.54 cm) thickness of plates for Photons (2 of the 0.50" maximum). Four 3" (7.62 cm) diameter swivel locking casters allow for easy movement of the Beam Spoiler. The frame can be dismantled for storage.

Optional Beam Spoiler plates are available in acrylic or polycarbonate in 0.375" (0.95 cm) or 0.50" (1.27 cm) thickness. The beam spoiler plates have 2 key holes on the 38" side for hanging. The frame can support 2 Beam Spoiler plates (Items 495-600-83, 495-600-84, 495-600-85 and 495-600-86). The key holes can also be used to hang the beam spoiler plates from wall hooks for storage.

### Specifications

#### Item 495-011 Beam Spoiler Frame for TBI

**Overall Size:** 59" L x 24" W x 93.375" H (150 x 61 to 237.2 cm) not including casters

**Finish:** Durable tan textured polyurethane enamel paint

### Beam Spoilers

**Size:** 38" W x 86" H (96.5 x 218.4 cm)

**Acrylic Density:** 1.185 g/cc

**Polycarbonate Density:** 1.2 g/c

Item	Description
495-011	Small Mobile Beam Spoiler Frame for TBI Stands

Item	TBI Beam Spoiler	Thickness
495-600-83	Acrylic	0.375" (0.95 cm)
495-600-84	Polycarbonate	0.375" (0.95 cm)
495-600-85	Acrylic	0.50" (1.27 cm)
495-600-86	Polycarbonate	0.50" (1.27 cm)

# TBI STANDS & ACCESSORIES, BEAM SPOILERS

## SELF HOLDING BEAM SPOILER WITH FLEXIBLE ARM



The Self Holding Beam Spoiler has a flexible 18" (45.7 cm) or 24" (61 cm) arm that manually adjusts for easy use. The acrylic plate has an arm rotation lock that secures the acrylic plate to the desired position. The acrylic plate is 30 cm square x 0.25" (0.64 cm) or 0.375" (0.95 cm) thick and is mounted at the end of the flexible arm. The whole assembly attaches to the table rail with a rail clamp.

### Specifications

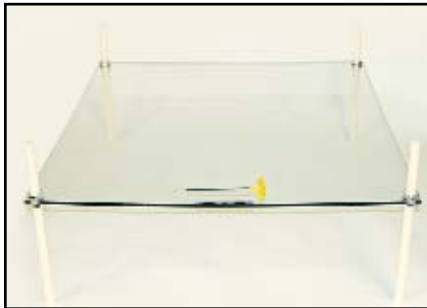
**Acrylic Density:** 1.185 g/cm<sup>3</sup>

Item	Description
495-053-20	Siemens Flexible 18" Beam Spoiler
495-053-32	Varian Flexible 18" Beam Spoiler
495-053-50	Philips Flexible 18" Beam Spoiler
495-054-20	Siemens Flexible 24" Beam Spoiler
495-054-32	Varian Flexible 24" Beam Spoiler
495-054-50	Philips Flexible 24" Beam Spoiler

**Customer to Specify Acrylic Thickness**

60 x 60 cm

## TBI TABLE, BEAM SPOILER FOR CHILD



The TBI Table, Beam Spoiler can be used when a child needs to be placed on the floor for treatment and the beam spoiler can be placed over them. The unit is made of 0.5" (1.27 cm) thick polycarbonate and four (4) nylon legs that are secured with aluminum clamps. The Beam Spoiler is adjustable up to 60cm from the floor.

### Specifications

**Over all Dimensions:** 48" W x 48" L (122 x122 cm), Adjustable to 60 cm high

**Material:** Polycarbonate, Nylon and Aluminum

**Polycarbonate Density:** 1.2 g/c

Item	Description
495-620	TBI Table, Beam Spoiler for Child

## TBI ADJUSTABLE ANGLE BOARD



The TBI Adjustable Angle Board is designed to provide angled back support to patients that need to be on the floor when getting TBI. The board can be set at 40°, 50° or 60° angles.

### Specifications

**Over all Dimensions:** 48" W x 95" L x 10 mm Thick (121.9 cm W x 241.3 cm L x 10 mm Thick)

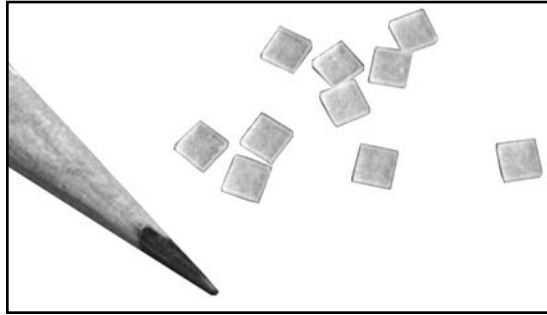
**Angles:** 40°, 50° and 60°

**Material:** Polypropylene Coroplast Corrugated Sheet

Item	Description
258-800	TBI Adjustable Angle Board

# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## TLD-100 CHIPS



- **Optically transparent chips**
- **Simulate “point detector” in medical physics applications**
- **Reusable hundreds of times**
- **Independent of dose rate up to 100 MGy/s**
- **Long term response retention**
- **Nearly tissue-equivalent**
- **±15% sample-to-sample uniformity**
- **Repeatability to within 2% or better.**

### Approximate tissue equivalence

- Z - 8.14 (LiF )
- Z - 7.64 (AIR)
- Z - 7.42 (TISSUE)

Consistent, well-controlled and repeatable procedures are key to successful TLD. Variations in annealing temperature will affect dosimeter sensitivity.

When using TLDs, vacuum tweezers should always be used. Mechanical tweezers and fingers should not be used.

### Specifications

**Radiations Measured:** Photon - energies >5 keV,  
Neutron - thermal to 100 MeV  
Electron/beta - energies >70 keV

**Range:** 10 µGy to 1 Gy (1 mrad to 100 rad) linear  
1 Gy to 20 Gy (100 rad to 2000 rad) supralinear

**Tissue Equivalence:** Nearly tissue equivalent

**Fading:** <20% in 3 months without thermal treatment and <5% in 3 months using preheat or glow curve deconvolution

**Batch uniformity:** ±15% STD DEV from the batch mean

**Residual TL Signal:** <0.2% of reading, over the range, without annealing

**Repeatability:** for 1 mGy (100 mrad) <sup>137</sup>Cs doses, <2% STD DEV of 10 sequential measurements

**Reuse:** More than 500 per dosimeter with <10% sensitivity change

**Threshold:** <10 µGy (1 mrad) based on 2.26 STD DEV of 10 repeat readings of an unexposed dosimeter

**Material:** Lithium Fluoride LiF:MgTi

**Density:** 2.64 gm/cc

**Size:** 0.125" sq. x 0.035" (3.2 mm<sup>2</sup> x 0.9 mm)

**Temperature of Main TLD Glow Peak:** 195° C

**Sensitivity at Cobalt 60 Relative to LiF:** 1.0

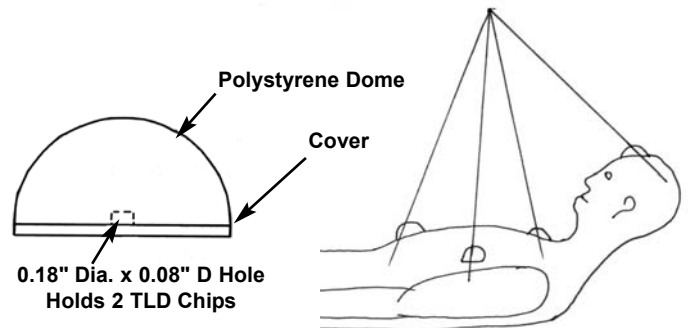
**Energy Response 30 keV/Cobalt 60:** 1.25

Item #	Description	Quantity
155-000-1	TLD-100 Chips	1
155-000-10	TLD-100 Chips	10
155-000-50	TLD-100 Chips	50
155-000-100	TLD-100 Chips	100

## POLYSTYRENE DOME TLD CHIP HOLDER



The Polystyrene Dome TLD Chip Holders can be positioned at any angle on the patient during treatment, allowing the radiation to pass through the same amount of thickness. Each TLD Holder holds two 0.125" square x 0.035" TLDs. The TLD Holder includes a 0.8 mm cover.

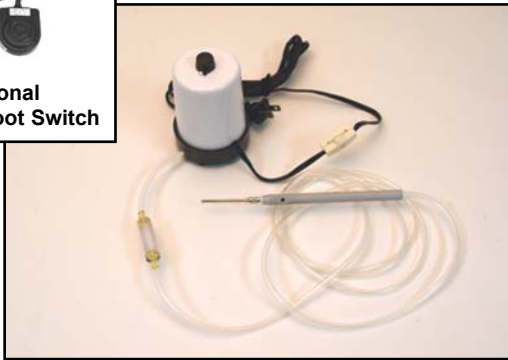


Item #	Description	Dome Diameter	Build-Up
155-010	TLD Holder	12mm	6 mm
155-020	TLD Holder	20 mm	10 mm
155-030	TLD Holder	30 mm	15 mm
155-040	TLD Holder	40 mm	20 mm
155-050	TLD Holder	50 mm	25 mm



# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## VACUUM TWEEZERS SYSTEM



The Vacuum Tweezers System allows the handling of TLDs of varying sizes without risk of damage or contamination. This system eliminates defects caused by pinching, scratching or handling when using a mechanical tweezers. An optional Remote Foot Switch (Item 906-002) is available.

### Item 162-000 Vacuum Tweezers System Includes

- Compact vacuum generator with a line switch
- 4 feet of clear tubing
- Vacuum line filter
- Vacuum pen
- 3 needle tips (small, medium and large)

### Specifications

**Vacuum:** 14" Hg.

**Air Flow:** 125 in.<sup>3</sup>/min.

**Power:** 115 VAC, 60Hz, 2 watts or 220VAC, 50Hz

Item #	Description
162-000	Vacuum Tweezer System, 115V
162-002	Vacuum Tweezer System, 220V
906-002	Remote Foot Switch for Vacuum Tweezer System

## TLD PLASTIC BAGS AND BAG SEALERS



The TLD Plastic Bags are used with the Bag Sealer for sealing individual TLDs in plastic. The bags can then be placed in or on the patients by taping. Identification of TLD is accomplished by labeling or trimming the corner of the plastic bag.

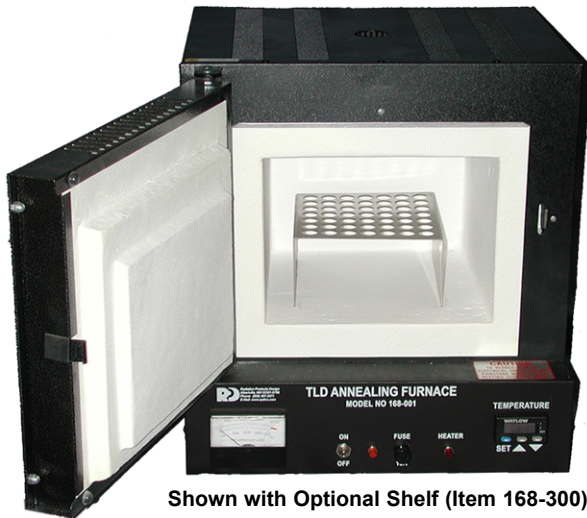
Plastic Bag Sealers are ready to use instantly - no warm up time is needed. The adjustable timer settings ensure a perfect seal for all thicknesses of bags.

Item #	Description	Size	Quantity
156-000	Black TLD Plastic Bags	1" x 3" x 0.015" (2.54 x 7.62 x 0.04 cm)	500
158-100	Clear TLD Plastic Bags	2" x 3" (5.08 x 7.62 cm)	500
161-001	Plastic Bag Sealer, 110V	4" (10.2 cm) Wide	

# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## TLD ANNEALING FURNACE

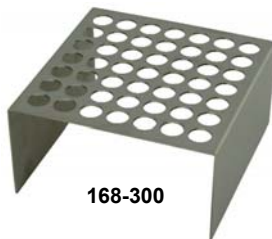
80°, 100° and 400° C



Shown with Optional Shelf (Item 168-300)



Face of Furnace



168-300

- No over temperatures at set points of 80°, 100° or 400°C
- Large inside volume for even heat distribution
- Furnace will reach 375-425° C in less than 15 minutes
- Independent pyrometer with type K thermocouple
- Control stability of ±1° C
- Cold junction compensation
- Long-life type J thermocouple
- If thermocouple opens, unit shuts down automatically
- Heater indicator
- Power indicator, switch and fuse
- No line interference with triac zero switching
- Hospital grade plug
- Ceramic tray protects fiber floor from gouging or scratching
- Non-skid rubber feet
- Fiber hardening agent included

Utilization of this solid state, closed-loop, automatic controlling system provides faster heat-up rates to a temperature setpoint in less than thirty minutes.

A rugged 18 gauge steel cabinet has an easy access side opening door hinged on nylon with a positive latching mechanism. The stepped fiber door insulation panel is spring mounted for optimum sealing when closed. A large interior chamber provides an even temperature distribution for the aluminum planchet. All steel cabinet surfaces are electrostatically coated with high-temperature baked-on enamel.

The heart of the furnace is a rugged, lightweight molded heating unit. The insulation material is space-age alumina-silica fiber. It's molded into a tough, one piece structure with a heavy duty (14 gauge ) heating element embedded in the top and three sides giving increased heat transfer. This provides even temperature distribution inside.

An integrated circuit temperature controller switches power on and off through a triac to the furnace heater. This temperature controller allows you to adjust the desired "Set" temperature. The red digital LED temperature display will indicate the furnace temperature within ±1° C.

Input to the controller is provided by a thermocouple (located in the furnace), which produces a millivolt signal representing furnace temperature. This signal is compared to a reference signal which is adjusted by the "Set" temperature. Any resultant error is amplified and conditioned to provide a switched DC logic signal to an optical coupled solid state relay using zero-cross-over firing pulses to a triac semi-conductor. This proportions power to the furnace heating unit with no line interference.

### Operating Instructions

Turn the power switch to "ON". After an initial adjustment of the "Set" temperature, a red heater indicator lamp will illuminate, indicating power is being applied to the "Heater" in the furnace. A digital display indicates the furnace temperature. After the furnace heats up to the appropriate temperature, open furnace door and place TLD aluminum planchet on shelf then close door. Wait 30 seconds for thermocouple sensor to heat up to furnace temperature then turn furnace on. Leave TLD's in furnace for about 1 hour or until temperature is reached. Allow 20 minutes soaking time for aluminum planchet. Turn power off and remove planchet from furnace. Place planchet between two brass cooling plates to cool down rapidly.

### Specifications

**Maximum Operating Temperature:** 1100° C  
**Oven Dimensions:** 9" W x 9" D x 6.5" H and Tapered 1/4" (22.86 x 22.86 x 16.51 cm and tapered 0.64 cm)  
**Overall Dimensions:** 15.5" W x 15.5" D x 16.5" H (39.37 x 39.37 x 41.91 cm)  
**Color:** Black  
**Power:** 110-120 VAC, 50/60 Hz, 13 amps, 1460 watts  
**Power:** 220-240 VAC, 50/60 Hz, 6.5 amps  
**Shipping Weight:** 46 lb (20.9 kg)  
**Optional Stainless Steel Shelf:** 6" W x 6" D x 3" H (15.24 x 15.24 x 7.62 cm)

Item #	Description
168-001	TLD Annealing Furnace - 120 VAC, 13 amps
168-002	TLD Annealing Furnace - 220 VAC, 6.5 amps
168-300	Stainless Steel Shelf

Z

# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## TLD ROD AND CHIP ANNEALING PLANCHET



159-000



163-002



163-000

They are furnished with two holes on one end for the Planchet Handle (Item 163-002). An acrylic storage cover with two thumb screws provides a secure way to retain the chips or rods in their locations after cool down.

### TLD Procedure

- Bake TLD chips at 400° C for 1 hour, then quench between Brass Cooling Plates (Item 164-000)
- Bake TLD chips at 80° C for 16 to 24 hours or 100° C for 2 hours
- Expose to radiation
- The TLD reader preheat cycle is set at 100° C
- The TLD's should be read under a low amount of nitrogen, either 1.88 SLPM (Standard Liters Per Minute) or 4 SCFH (Standard Cubic Feet Per Hour).

### Specifications

**Material:** Anodized Aluminum

**Size:** 10 cm x 12 cm x 6.3 mm

### Note

To clean the holes, use Q-tip® swabs. Bake the planchet for 4 hours at 400° C before using. The aluminum planchet will not deposit aluminum on the TLD chips or rods.

**Z** The TLD Annealing Planchets are engraved with numbers 1 to 10 across the top. The rod planchet is engraved with numbers 11, 21, 31, and 41 on the side, and the chip planchet is engraved with numbers 11, 21, 31, 41, 51, 61, 71, 81 and 91 on the side, indicating chip locations.

The specially machined holes (3/16" diameter) allow good thermal contact of the rods and chips providing rapid cooling when placed between the brass cooling plate set (Item 164-000), as required by the Cameron Annealing Technique.

Item #	Description	Holds
159-000	TLD Rod Annealing Planchet with Acrylic Cover	50 (1 mm x 6 mm) Square or Round TLD Rods
163-000	TLD Chip Annealing Planchet with Acrylic Cover	100 1/8" Square Chips or 100 4.7 mm Diameter Round TLDs
163-002	Stainless Steel Planchet Handle	

## BRASS COOLING PLATE SET



The Brass Cooling Plate Set is used to rapidly cool down the TLD planchet containing the TLD's. After 400° C annealing the Brass Cooling Plate Set can cool the TLD planchet to 95° in 25 seconds. The top cooling plate has a large heavy duty handle.

### Specifications

**Size:** 6" L x 6" W x 1" T (15.24 x 15.24 2.54 cm)

Item #	Description
164-000	Brass Cooling Plate Set

# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## TLD EASY TRANSFER STORAGE HOLDER



The TLD Easy Transfer Storage Holder provides for an easy transfer to the annealing planchet. The Storage Holder measures 10 x 12cm and is compatible with TLD Rod Annealing Planchet (Item 159-000) and TLD Chip Annealing Planchet (Item 163-000). The numbers on the storage holder are opposite of the planchet numbers. The TLD Easy Transfer Storage Holder also has an acrylic cover to protect TLDs from dust.

To transfer TLD's to the storage holder, line up the numbers on the planchet and storage holder, fasten storage holder to annealing planchet and turn over. Remove annealing planchet and fasten storage holder cover.

Item #	Description	Material	Holds
163-010	TLD Easy Transfer Storage Holder	Polystyrene	100 - 1/8" (3.175 mm) square chips or 4.7 mm diameter round chips
163-013	TLD Easy Transfer Storage Holder	Acrylic	50 - 1 mm x 6 mm square or round rods or 13 mm diameter disks

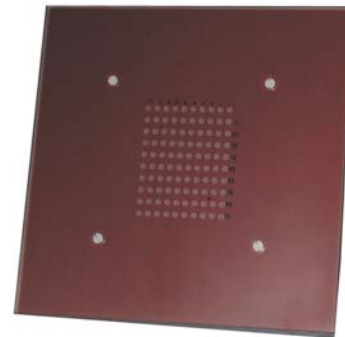
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## TLD IRRADIATION PHANTOMS

### Polystyrene Phantoms



### Plastic or Solid Water Phantom



The TLD Polystyrene Irradiation Phantom consists of 2 plates. The TLD phantom is numbered 10 to 1 across the top. The left side of the TLD phantom is numbered 11 to 91 for TLD chips or 11 to 41 for TLD rods. This numbering matches the annealing planchet when the irradiation phantom is flipped. The area that holds the chips or rods is 8.5 cm x 10.5 cm centered on the polystyrene plate.

The 6 mm polystyrene cover is secured to the bottom plate which holds TLDs in the individual holes. The plates can be separated for easy cleaning.

#### Specifications

**Size:** 1.43 cm x 25 cm sq. (9/16" x 9.8" sq)

Item #	Description
165-000	Polystyrene Phantom for TLD Chips
167-000	Polystyrene Phantom for Rods

The Plastic or Solid Water TLD irradiation phantoms consist of a 5 mm phantom plate and a 1/4" acrylic cover. These are numbered the same as the Polystyrene Irradiation Phantom and will hold 100 TLD chips or 50 TLD Rods.

#### Specifications

**Size:** 5 mm x 30 cm sq.

Item #	Description
165-005	Plastic Water Phantom for Chips
165-010	Solid Water Phantom for Chips
167-005	Plastic Water Phantom for Rods
167-010	Solid Water Phantom for Rods

**Custom Units Available**

# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## STEREOTACTIC COLLIMATOR SYSTEM



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The Stereotactic Collimator System is custom made for each customer. The customer must select the options wanted.

The tray is made to be placed in the wedge tray slot. An X-Y translation stage tray allows for adjustment of the collimator barrel in the X-Y directions. The collimator barrel attaches to either the wedge tray or the X-Y translation stage tray.

The collimator barrel has an outside diameter of 7 cm with an inside diameter of 6.3 cm. The length of the barrel is specified by the customer. With short collimator barrels the lead collimators insert from the top of the barrel (the barrel unscrews from the tray). Long collimator barrels have a screw on bottom which is taken off to insert the lead collimator from the bottom. A test collimator will be sent to determine divergence prior to manufacturing.

### Optional Accessories

X-Y pointer system (Item 1080-06), or a stereotactic front pointer (Item 1080-08). The stereotactic front pointer has a magnetic base that will attach to the collimator barrel or Item 1081-73 Stereotactic Film Holder.

The Stereotactic Film Holder has a ring clamp that mounts to the collimator barrel of the Stereotactic Collimator System. The removable rod extends past isocenter. A film holder plate slides onto the rod and is adjustable to the proper distance, a tightening screw will hold the film holder plate in place. Two spring clips on the film holder plate holds the film.

### Stereotactic Collimator System Includes

- Tray
- Translation Stage Tray
- Barrel

When placing an order, please provide the following information:

- Item 1080-\_\_
- Machine
- Machine Type
- Target to Bottom of Wedge Tray Slot in centimeters
- Target to End of Collimator Barrel in centimeters
- Contact Information

The contact person will have to verify all information prior to manufacturing.

Item #	Description
1080-20	Varian Type II, Screw Coded with X-Y Stage, Wedge Slot
1080-21	Varian Type III, Digital Coded with X-Y Stage, Wedge Slot
1080-30	Siemens Screw Coded with X-Y Stage, Wedge Slot
1080-32	Siemens Digital Coded with X-Y Stage, Wedge Slot
1080-06	X-Y Pointer System
1080-08	Stereotactic Front Pointer
1081-73	Stereotactic Film Holder

**Other Manufacturers Available**  
Items are Custom Made and Nonreturnable

## LEAD COLLIMATORS



The lead collimators have a lip at the bottom which fits into the barrel to insure proper placement of the lead collimator.

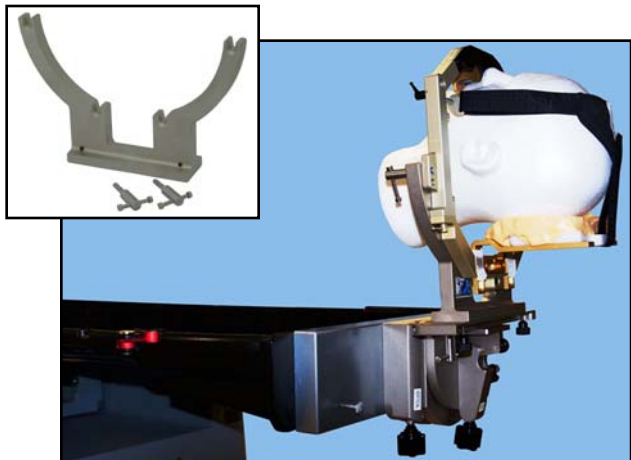
The lead collimators are custom designed for each machine based on field size, flatness, and the slope angle of the radiation penumbra edge.

Item #	Stereotactic Lead Collimator
1081-05	Diameter at Isocenter 5 mm
1081-08	Diameter at Isocenter 8 mm
1081-10	Diameter at Isocenter 10 mm
1081-15	Diameter at Isocenter 15 mm
1081-20	Diameter at Isocenter 20 mm
1081-25	Diameter at Isocenter 25 mm
1081-30	Diameter at Isocenter 30 mm
1081-35	Diameter at Isocenter 35 mm
1081-40	Diameter at Isocenter 40 mm

**Items are Custom Made and Nonreturnable**

# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## STEREOTACTIC ADAPTER FOR VARIAN TO RADIONICS SRS HEAD FRAME



Item 1082-001 Shown with  
Varian Couch and Radionics Head Frame

The Stereotactic Adapter allows for the Radionics Head Frame to be attached to a Varian Couch.

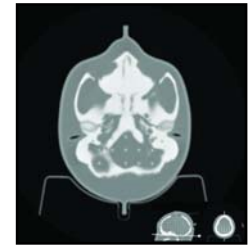
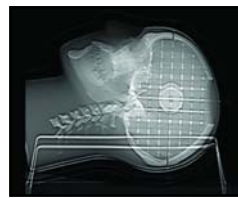
Item #	Description
1082-001	Stereotactic Adapter, Varian to Radionics SRS Head Frame

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# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## MRI DISTORTION PHANTOM FOR SRS

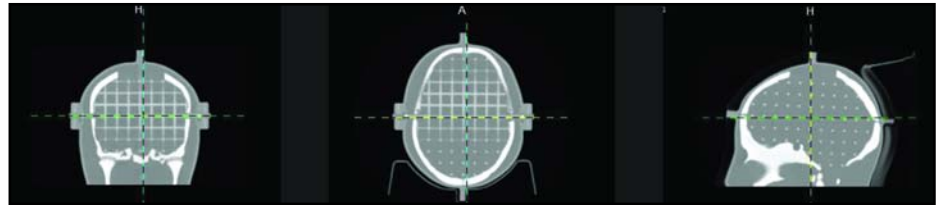
For Assessment of Image Distortion in Treatment Planning Systems



CT

MRI

CT Showing Ear Canals



CT Reconstruction

- Provides a realistic anthropomorphic scenario for CT and MR imaging
- Unique inter-cranial 3D grid design allows assessment of spatial distortion
- Special pads enable use with all fixation frames
- CT/MR markers facilitate positioning and image registration
- 335 control points
- Works with Distortion Check Software

CIRS Model 603A was designed for assessment of MR image distortion in Stereotactic Radiosurgery Planning. It is also a useful tool for verifying image fusion and deformable image registration algorithms used in various treatment planning systems. The tissue equivalent, anthropomorphic design provides the closest conditions to a clinical imaging scenario. The phantom can be imaged using X-ray, Computed Tomography and Magnetic Resonance. It images well with all MRI sequences tested to date, including T1 weighted, T2 weighted, 3D Time of Flight, MPRAGE and CISS.

The skull is manufactured from a plastic-based bone substitute, and the interstitial and surrounding soft tissues are made from a proprietary signal generating water-based polymer. The entire phantom is encased in a clear plastic shell to protect gel from desiccation. The phantom is supplied with specially designed pads that allow fixation with any stereotactic frame or mounting for end-to-end testing. The phantom is also suitable for frameless SRS QA.

The entire inter-cranial portion of the skull volume is filled with an orthogonal 3D grid of 3 mm diameter rods spaced 15 mm apart. Five extended axis-rods intersect at the reference origin of the grid. The end of each extended axis is fitted with CT/MR markers allowing for accurate positioning with lasers and co-registration of CT and MR image sets.

The phantom includes right and left air voids, 3 mm in diameter by 17 mm long to simulate each ear canal for evaluation of potential distortions commonly found in clinical settings.

### 682-825 Includes

- (1) 3D Anthropomorphic Skull Phantom
- (1) ABS Cradle
- (1) Complimentary 90 day license for 5 successful analyzed scans using Distortion Check Software
- (1) SRS Frame Support Cups (Set of 4)
- (1) Custom Carry Case
- (1) User Guide
- (1) 48-Month Warranty

### Specifications

**Overall Dimensions:** 32 cm x 24 cm x 18 cm

### Materials

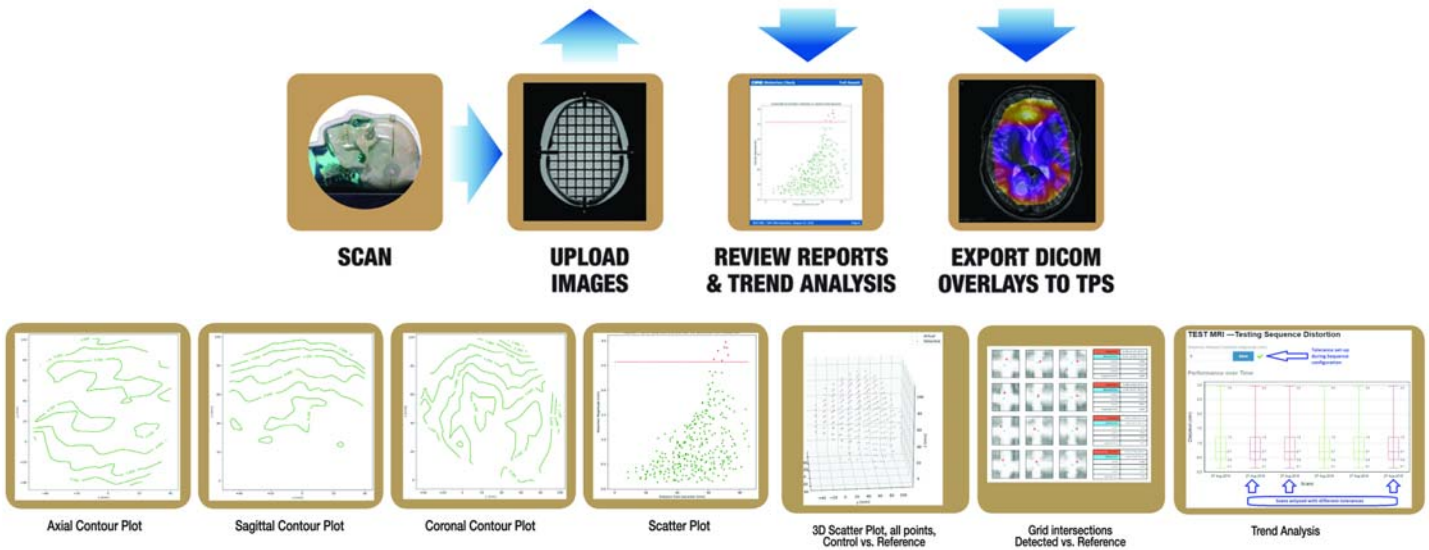
- Skull:** Plastic-based bone substitute
- Interstitial/Soft Tissues:** Water-base polymer
- Grid:** Reinforced nylon
- Weight:** 12 lbs (5.5 kg)

Item	Description
682-825	MRI Distortion Phantom for SRS

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# TLD - CHIPS, FURNACE & ACC.; STEROTACTIC SYSTEM

## DISTORTION CHECK SOFTWARE



- Quickly & automatically analyze complete MR data sets
- Unique grid phantoms provide physical control points through out entire 3D image volume
- Density of control points optimized to bring interpolation close to linearity
- CIRS materials simulate distortion due to susceptibility and chemical shifts typical to clinical patient scans
- Cloud based solution frees user of operating system and hardware constraints
- Online deployment facilitates collaboration and easy review and portability of results

- Simple, user friendly web interface
- Detect physical control points thru out the 3D image volume
- Web based pdf report in summary or detailed format to NEMA MS 12 standard recommendations.
- Output raw data or DICOM overlay files for use with 3rd party software
- Establish multiple user accounts with different permissions
- Easily analyze and track multiple machines, imaging sequences and phantoms
- Establish distortion tolerance thresholds specific to different imaging sequences
- Re-compute any scans acquired for different tolerance thresholds

Distortion Check is a cloud-based solution designed to quickly and automatically quantify distortion in MRI images. Used in conjunction with CIRS MRI Grid phantoms, the software provides the capability to quickly and accurately measure distortion through out the entire image volume.

After automatically detecting all grid intersections, the software registers either a CAD or CT scan ground truth to these MR detected control points. An interpolation is then performed to generate 3D distortion vector fields.

Results can be reported in a variety of output formats including scatter plots, contour plots, box and whisker plots and DICOM overlays that can be imported to TPS or other 3rd party software. The software algorithms will work with any grid configuration and CIRS employs proprietary 3D printing techniques that enable easy modification of grid phantoms to meet customer requirements.

Distortion Check Software is an online application. It does not require any installation on a user's PC. Once a User Account is created the software can be accessed from any device that is connected to internet.

Distortion Check Software is a licensed product. The licensing of this product is based on the number of scans successfully analyzed by the end user within a period of time. For licensing purposes, a successful analyzed scan is defined as follows: more than 50% of the grid intersections are matched to a gold standard point for Item 682-825, The license will expire based on which terms of the license expire first (time or number of scans).

Item #	Description	License or Scans
682-860	Distortion Check Software	2 years or 25
682-862	Distortion Check Software	2 years or 50
682-864	Distortion Check Software	2 years or 100
682-866	Distortion Check Software	2 years or 200
682-868	Distortion Check Software	2 years or 500

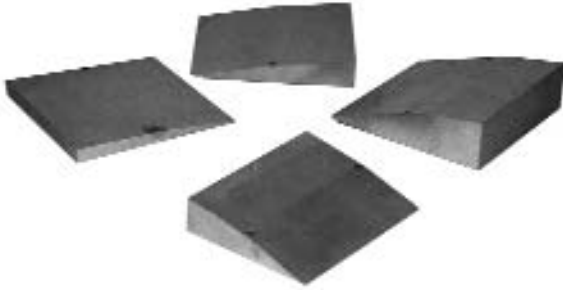
- 1) License is for time or number of scans successfully analyzed, whichever expires first.
- 2) Phantom serial number is Required

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# WEDGES, CODING PLUGS & COUCH INSERTS

## CUSTOM WEDGES



Custom Wedges are made for Varian, Siemens, AECL, Philips, Toshiba, ATC, Mitsubishi and ADAC accelerators. For high energy linear accelerators, wedges can be made of stainless steel, cold roll steel, lead with antimony, brass, tungsten or aluminum. When ordering state the height for each step in the wedge and give the overall width and length, central axis, type of material, contact person and phone number.

**NOTE:** The degree angle of the wedge is not the physical angle. The radiation angle must be calculated by the physicist.

### TUNGSTEN WEDGES Density: 17 g/cm<sup>3</sup>/ Machinable Grade

Item #	Description	Size
243-215	Tungsten Wedge	15° x W x L
243-220	Tungsten Wedge	20° x W x L
243-230	Tungsten Wedge	30° x W x L
243-240	Tungsten Wedge	40° x W x L
243-245	Tungsten Wedge	45° x W x L
243-250	Tungsten Wedge	50° x W x L
243-260	Tungsten Wedge	60° x W x L

### ALUMINUM WEDGE Density: 2.718 g/cm<sup>3</sup>

Item #	Description	Size
243-315	Aluminum Wedge	15° x W x L
243-320	Aluminum Wedge	20° x W x L
243-330	Aluminum Wedge	30° x W x L
243-340	Aluminum Wedge	40° x W x L
243-345	Aluminum Wedge	45° x W x L
243-350	Aluminum Wedge	50° x W x L
243-360	Aluminum Wedge	60° x W x L

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### LEAD WEDGES Density: 11.35 g/cm<sup>3</sup>

Item #	Description	Size
243-515	Lead Wedge	15° x W x L
243-520	Lead Wedge	20° x W x L
243-530	Lead Wedge	30° x W x L
243-540	Lead Wedge	40° x W x L
243-545	Lead Wedge	45° x W x L
243-550	Lead Wedge	50° x W x L
243-560	Lead Wedge	60° x W x L

### STEEL WEDGES Density: 7.83 g/cm<sup>3</sup>

Item #	Description	Size
243-615	Steel Wedge	15° x W x L
243-620	Steel Wedge	20° x W x L
243-630	Steel Wedge	30° x W x L
243-640	Steel Wedge	40° x W x L
243-645	Steel Wedge	45° x W x L
243-650	Steel Wedge	50° x W x L
243-660	Steel Wedge	60° x W x L

### STAINLESS STEEL WEDGES Density: 7.916 g/cm<sup>3</sup>

Item #	Description	Size
243-715	Stainless Steel Wedge	15° x W x L
243-720	Stainless Steel Wedge	20° x W x L
243-730	Stainless Steel Wedge	30° x W x L
243-740	Stainless Steel Wedge	40° x W x L
243-745	Stainless Steel Wedge	45° x W x L
243-750	Stainless Steel Wedge	50° x W x L
243-760	Stainless Steel Wedge	60° x W x L

### BRASS WEDGES Density: 8.515 g/cm<sup>3</sup>

Item #	Description	Size
243-415	Brass Wedge	15° x W x L
243-420	Brass Wedge	20° x W x L
243-430	Brass Wedge	30° x W x L
243-440	Brass Wedge	40° x W x L
243-445	Brass Wedge	45° x W x L
243-450	Brass Wedge	50° x W x L
243-460	Brass Wedge	60° x W x L

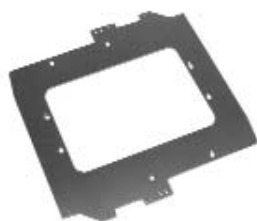
There is an extra charge for wedges over 2.5 cm thick or 15cm wide - Wedge tray must be ordered separately.

AA- 1

# WEDGES, CODING PLUGS & COUCH INSERTS

## VARIAN CLINAC 4, 6, 12, 18 & 20

### Replacement Wedge Trays



When placing an order please specify wedge mounting hole spacing, contact person, and phone number.  
Standard wedge mounting hole spacing: 7.5"

Item #	Description
1846-098	Varian II S.S. In-Plane Wedge Tray
1846-099	Varian II S.S. Cross Plane Wedge Tray

**Custom Trays Available**

## VARIAN TYPE II IN-PLANE WEDGES

### Standard and Custom

When placing an order please state the size needed, a contact person, phone number and tray coding.

#### Specifications

**Tray:** Coded metal tray

**Materials:** Brass, steel, stainless steel, or lead

**Toe to Heel Size:** 15 cm, 20 cm, 30 cm and 40 cm

**Width:** 40 cm



Item #	Description	Size
1846-215	15° Steel In-Plane Wedge w/Plug	20 cm x 40 cm
1846-216	15° S.S. In-Plane Wedge w/Plug	20 cm x 40cm
1846-230	30° Steel In-Plane Wedge w/Plug	20 cm x 40 cm
1846-231	30° S.S. In-Plane Wedge w/Plug	20 cm x 40 cm
1846-245	45° Lead In-Plane Wedge w/Plug	20 cm x 40 cm
1846-246	45° S.S. In-Plane Wedge w/Plug	20 cm x 40 cm
1846-260	60° Lead In-Plane Wedge w/Plug	15 cm x 40 cm
1846-315	15° Steel In-Plane Wedge w/Plug	30 cm x 40 cm
1846-330	30° Steel In-Plane Wedge w/Plug	30 cm x 40 cm
1846-345	45° Steel In-Plane Wedge w/Plug	30 cm x 40 cm
1846-346	45° Lead In-Plane Wedge w/Plug	30 cm x 40 cm
1846-360	60° Lead In-Plane Wedge w/Plug	30 cm x 40 cm

Item #	Description	Size
1846-150	15° Brass In-Plane Wedge w/Plug	40 cm x 40 cm
1846-151	30° Brass In-Plane Wedge w/Plug	40 cm x 40 cm
1846-152	45° Brass In-Plane Wedge w/Plug	40 cm x 40 cm
1846-153	60° Brass In-Plane Wedge w/Plug	40 cm x 40 cm
1846-155	15° Brass In-Plane Wedge w/Plug	20 cm x 40 cm
1846-156	30° Brass In-Plane Wedge w/Plug	20 cm x 40 cm
1846-157	45° Brass In-Plane Wedge w/Plug	20 cm x 40 cm
1846-158	60° Brass In-Plane Wedge w/Plug	15 cm x 40 cm

**40 cm sq. Wedge May Have An Additional Charge**

# WEDGES, CODING PLUGS & COUCH INSERTS

## VARIAN CROSS-PLANE WEDGE Type II Accessories



## VARIAN IN-PLANE HALF WEDGES Type II Accessories



Item #	Description	Size
1846-251	15° Brass Cross-Plane Plug Coding	20 x 40 cm
1846-252	30° Brass Cross-Plane Plug Coding	20 x 40 cm
1846-253	45° Brass Cross-Plane Plug Coding	20 x 40 cm
1846-254	60° Brass Cross-Plane Plug Coding	15 x 40 cm
1846-261	15° Steel Cross-Plane Plug Coding	30 x 40 cm
1846-262	30° Steel Cross-Plane Plug Coding	30 x 40 cm
1846-263	45° Steel Cross-Plane Plug Coding	20 x 40 cm
1846-264	45° Lead Cross-Plane Plug Coding	20 x 40 cm
1846-265	60° Lead Cross-Plane Plug Coding	15 x 40 cm

Custom Sizes Available

Item #	Description	Size
1846-370	15° Steel In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-372	30° Steel In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-374	45° Steel In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-375	45° Lead In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-376	60° Lead In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-378	15° Brass In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-379	30° Brass In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-380	45° Brass In-Plane Half Wedge w/Plug	20 cm x 40 cm
1846-377	60° Brass In-Plane Half Wedge w/Plug	20 cm x 40 cm

Option: Wedge maybe put on center line or 2mm off center line

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## VARIAN 4-WAY WEDGE Type III Accessories



## VARIAN 4-WAY HALF-WEDGE Type III Accessories



Item #	Description	Size
1846-600-2	Optical Coded S.S. Wedge Tray, Hole Spacing 8.688"	
1846-600-8	Handle for Four Sided Optical Coded Wedge Tray	
1846-601	Optical Coded 1/4" Lexan Wedge Tray with Handle	
1846-602	15° 4-Way Steel Wedge on Opt Coded Tray	30 x 40 cm
1846-603	15° 4-Way S.S. Wedge on Opt Coded Tray	30 x 40 cm
1846-604	30° 4-Way Steel Wedge on Opt Coded Tray	30 x 40 cm
1846-605	30° 4-Way S.S. Wedge on Opt Coded Tray	30 x 40 cm
1846-606	45° 4-Way Lead Wedge on Opt Coded Tray	20 x 40 cm
1846-608	60° 4-Way Lead Wedge on Opt Coded Tray	20 x 40 cm

Custom Sizes Available

Item #	Description	Size
1846-622	15° Steel 4-Way Half Wedge Opt Coded Tray	20 x 40 cm
1846-624	30° Steel 4-Way Half Wedge Opt Coded Tray	20 x 40 cm
1846-625	45° Steel 4-Way Half Wedge Opt Coded Tray	20 x 40 cm
1846-626	45° Lead 4-Way Half Wedge Opt Coded Tray	20 x 40 cm
1846-628	60° Lead 4-Way Half Wedge Opt Coded Tray	20 x 40 cm

Option: Wedge maybe put on center line or 2 mm off center line

# WEDGES, CODING PLUGS & COUCH INSERTS

## SIEMENS MEVATRON - SCREW CODING - 20 CM , 30 CM AND 40 CM.

The Wedge Filter System is designed to be used with all Mevatrons with lower independent jaws.

The wedges are mounted on screw coded trays which verify the wedge direction and the wedge angle on the 20 cm and 30 cm

The 40 cm Wedges are coded with auxiliary codes, which will not limit the field size.



1880-4907  
In-Plane



1880-3902  
Cross-Plane

### Steel In-Plane With Screw Coding Head to Foot (#1 & 2)

#### Steel In-Plane With Screw Coding

Item #	Wedge Description	Size
1880-2901	15° In-Plane Screw Coding	20 cm x 20 cm
1880-2902	30° In-Plane Screw Coding	20 cm x 20 cm
1880-2903	45° In-Plane Screw Coding	20 cm x 20 cm
1880-2904	60° In-Plane Screw Coding	15 cm x 20 cm

#### Steel In-Plane With Screw Coding

Item #	Description	Size
1880-4906	15° In-Plane Screw Coding	25 cm x 30 cm
1880-4907	30° In-Plane Screw Coding	25 cm x 30 cm
1880-4908	45° In-Plane Screw Coding	25 cm x 30 cm
1880-4909	60° In-Plane Screw Coding	20 cm x 30 cm

#### Steel In-Plane With Screw Coding

Item #	Description	Size
1881-4916	15° In-Plane Screw Coding	25 cm x 40 cm
1881-4917	30° In-Plane Screw Coding	25 cm x 40 cm
1881-4918	45° In-Plane Screw Coding	25 cm x 40 cm
1881-4919	60° In-Plane Screw Coding	20 cm x 40 cm

### Steel Cross-Plane With Screw Coding Side to Side (#3 & 4)

#### Steel Cross-Plane With Screw Coding

Item #	Description	Size
1880-3901	15° Cross-Plane Screw Coding	20 cm x 20 cm
1880-3902	30° Cross-Plane Screw Coding	20 cm x 20 cm
1880-3903	45° Cross-Plane Screw Coding	20 cm x 20 cm
1880-3904	60° Cross-Plane Screw Coding	15 cm x 20 cm

#### Steel Cross-Plane With Screw Coding

Item #	Description	Size
1880-5906	15° Cross-Plane Screw Coding	25 cm x 30 cm
1880-5907	30° Cross-Plane Screw Coding	25 cm x 30 cm
1880-5908	45° Cross-Plane Screw Coding	25 cm x 30 cm
1880-5909	60° Cross-Plane Screw Coding	20 cm x 30 cm

#### Steel Cross-Plane With Screw Coding

Item #	Description	Size
1881-5916	15° Cross-Plane Screw Coding	25 cm x 40 cm
1881-5917	30° Cross-Plane Screw Coding	25 cm x 40 cm
1881-5918	45° Cross-Plane Screw Coding	25 cm x 40 cm
1881-5919	60° Cross-Plane Screw Coding	20 cm x 40 cm

# WEDGES, CODING PLUGS & COUCH INSERTS

## SIEMENS MEVATRON - DIGITAL CODING - 20 CM , 30 CM AND 40 CM.

The Wedge Filter System is designed to be used with all Mevatrons with lower independent jaws. The wedges are mounted on screw coded trays which verify the wedge direction and the wedge angle on the 20 cm and 30 cm. The 40 cm Wedges are coded with auxiliary codes, which will not limit the field size.



1880-8908  
In-Plane



1880-9917  
Cross Plane

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### Steel In-Plane With Digital Coding Plug Head to Foot (#1 & 2)

#### Steel In-Plane With Digital Coding Plug

Item #	Description	Size
1880-6901	15° In-Plane Digital Coding	20 cm x 20 cm
1880-6902	30° In-Plane Digital Coding	20 cm x 20 cm
1880-6903	45° In-Plane Digital Coding	20 cm x 20 cm
1880-6904	60° In-Plane Digital Coding	15 cm x 20 cm

#### Steel In-Plane With Digital Coding Plug

Item #	Description	Size
1880-8906	15° In-Plane Digital Coding	25 cm x 30 cm
1880-8907	30° In-Plane Digital Coding	25 cm x 30 cm
1880-8908	45° In-Plane Digital Coding	25 cm x 30 cm
1880-8909	60° In-Plane Digital Coding	20 cm x 30 cm

#### Steel In-Plane With Digital Coding Plug

Item #	Description	Size
1880-8916	15° In-Plane Digital Coding	25 cm x 40 cm
1880-8917	30° In-Plane Digital Coding	25 cm x 40 cm
1880-8918	45° In-Plane Digital Coding	25 cm x 40 cm
1880-8919	60° In-Plane Digital Coding	20 cm x 40 cm

### Steel Cross-Plane With Digital Coding Plug Side to Side (#3 & 4)

#### Steel Cross-Plane With Digital Coding Plug

Item #	Description	Size
1880-7901	15° Cross-Plane Digital Coding	20 cm x 20 cm
1880-7902	30° Cross-Plane Digital Coding	20 cm x 20 cm
1880-7903	45° Cross-Plane Digital Coding	20 cm x 20 cm
1880-7904	60° Cross-Plane Digital Coding	15 cm x 20 cm

#### Steel Cross-Plane With Digital Coding Plug

Item #	Description	Size
1880-9906	15° Cross-Plane Digital Coding	25 cm x 30 cm
1880-9907	30° Cross-Plane Digital Coding	25 cm x 30 cm
1880-9908	45° Cross-Plane Digital Coding	25 cm x 30 cm
1880-9909	60° Cross-Plane Digital Coding	20 cm x 30 cm

#### Steel Cross-Plane With Digital Coding Plug

Item #	Description	Size
1880-9916	15° Cross-Plane Digital Coding	25 cm x 40 cm
1880-9917	30° Cross-Plane Digital Coding	25 cm x 40 cm
1880-9918	45° Cross-Plane Digital Coding	25 cm x 40 cm
1880-9919	60° Cross-Plane Digital Coding	20 cm x 40 cm

# WEDGES, CODING PLUGS & COUCH INSERTS

## SIEMENS PRIMUS WEDGE

The wedges are mounted on coded trays which verify the wedge direction and the wedge angle.



In-Plane  
1882-9917



Cross-Plane  
1882-8908

### Steel In-Plane With Digital Coding Plug Head to Foot (#1 & 2)

### Steel Cross-Plane With Digital Coding Plug Side to Side (#3 & 4)

Item #	Description	Size
1882-9906	15° In-Plane Digital Coding	25 cm x 30 cm
1882-9907	30° In-Plane Digital Coding	25 cm x 30 cm
1882-9908	45° In-Plane Digital Coding	25 cm x 30 cm
1882-9909	60° In-Plane Digital Coding	20 cm x 30 cm

Item #	Description	Size
1882-8906	15° Cross-Plane Digital Coding	25 cm x 30 cm
1882-8907	30° Cross-Plane Digital Coding	25 cm x 30 cm
1882-8908	45° Cross-Plane Digital Coding	25 cm x 30 cm
1882-8909	60° Cross-Plane Digital Coding	20 cm x 30 cm

Item #	Description	Size
1882-9916	15° In-Plane Digital Coding	25 cm x 40 cm
1882-9917	30° In-Plane Digital Coding	25 cm x 40 cm
1882-9918	45° In-Plane Digital Coding	25 cm x 40 cm
1882-9919	60° In-Plane Digital Coding	20 cm x 40 cm

Item #	Description	Size
1882-8916	15° Cross-Plane Digital Coding	25 cm x 40 cm
1882-8917	30° Cross-Plane Digital Coding	25 cm x 40 cm
1882-8918	45° Cross-Plane Digital Coding	25 cm x 40 cm
1882-8919	60° Cross-Plane Digital Coding	20 cm x 40 cm



In-Plane Half Wedge  
1881-030



In-Plane Half Wedge  
1881-130

### SIEMENS MEVATRON HALF WEDGE - SCREW CODING

### SIEMENS MEVATRON & PRIMUS HALF WEDGE - DIGITAL CODING

#### Steel In-Plane With Screw Coding

Item #	Description	Size
1881-015	15° Half In-Plane Screw Coding	20 cm x 40 cm
1881-030	30° Half In-Plane Screw Coding	20 cm x 40 cm
1881-045	45° Half In-Plane Screw Coding	20 cm x 40 cm
1881-060	60° Half In-Plane Screw Coding	20 cm x 40 cm

#### Mevatron Steel In-Plane With Digital Coding Plug Primus Steel Cross-Plane With Digital Coding Plug

Item #	Description	Size
1881-115	15° Half Digital Coding	20 cm x 40 cm
1881-130	30° Half Digital Coding	20 cm x 40 cm
1881-145	45° Half Digital Coding	20 cm x 40 cm
1881-160	60° Half Digital Coding	20 cm x 40 cm

Specify Tray Coding

Specify Tray Coding

#### Steel Cross-Plane With Screw Coding

Item #	Description	Size
1881-215	15° Half Cross-Plane Screw Coding	20 cm x 40 cm
1881-230	30° Half Cross-Plane Screw Coding	20 cm x 40 cm
1881-245	45° Half Cross-Plane Screw Coding	20 cm x 40 cm
1881-260	60° Half Cross-Plane Screw Coding	20 cm x 40 cm

#### Mevatron Steel Cross-Plane With Digital Coding Plug Primus Steel In-Plane With Digital Coding Plug

Item #	Description	Size
1881-315	15° Half Digital Coding	20 cm x 40 cm
1881-330	30° Half Digital Coding	20 cm x 40 cm
1881-345	45° Half Digital Coding	20 cm x 40 cm
1881-360	60° Half Digital Coding	20 cm x 40 cm

Specify Tray Coding

Specify Tray Coding

Custom Sizes Available

# WEDGES, CODING PLUGS & COUCH INSERTS

## ELEKTA (PHILIPS) 4-SIDED WEDGE AND TRAY



Item #	Description	Size
1883-214	4 Sided Polystyrene Wedge Tray	
1883-215	15° 4-Sided Steel Wedge, Dig. Coding	20 cm x 40 cm
1883-230	30° 4-Sided Steel Wedge, Dig. Coding	20 cm x 40 cm
1883-245	45° 4-Sided Steel Wedge, Dig. Coding	20 cm x 40 cm
1883-260	60° 4-Sided Steel Wedge, Dig. Coding	20 cm x 40 cm

Tray Coding is programmed

## SIEMENS DIGITAL CODING PLUGS



Item #	Description	Size
1884-10-1	Threaded Mounting Holes	3 3/8"
1884-10-5	Threaded Mounting Holes	3 1/8"
1884-10-6	Countersunk Mounting Holes	3 1/8"
1884-10-7	Countersunk Mounting Holes	3 3/8"
1884-11-1	Double Coded Threaded Mounting Holes (MLC)	3 3/8"
1884-11-5	Double Coded Threaded Mounting Holes (MLC)	3 1/8"
1884-11-6	Double Coded Countersunk Mounting Holes (MLC)	3 1/8"
1884-11-7	Double Coded Countersunk Mounting Holes (MLC)	3 3/8"

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## SIEMENS WEDGE CODING PLUGS FOR .DECIMAL® BRASS COMPENSATORS



Item	Description	Quantity
1884-10-11R	Siemens 3 3/8" Wedge Coding Plug with Threaded Holes for Block Tray Slot, Specify code 1 to 18	Single
1884-10-11R-32771-01	Siemens Wedge Coding Plug S2N01 for Brass Compensator	Single
1884-10-11R-32771-02	Siemens Wedge Coding Plug S2N02 for Brass Compensator	Single
1884-10-11R-32771	Siemens Wedge Coding Plugs for Brass Compensators	Set of 18

Other Codes Available, Specify Code

# WEDGES, CODING PLUGS & COUCH INSERTS

## WEDGE BOX

The Wedge Box can be made for any manufacturer's wedges.

### Specifications

**4 Rubber Feet**

**Material:** 3/4" T plywood w/vinyl covering outside.

**Color:** Beige



Item #	Description
880-990	Varian Type II Wedge Box for 6 Wedges Box Size: 13 5/8" W x 17 9/16" W x 12 3/4" D
880-991	Varian Type III Standard Wedge Box for 8 Wedges Wedge Tray Size: 10 5/8" W x 1/8" T Box Size: 13 9/16" W x 22" H x 12 1/4" D
880-992	Varian Type III Lower Wedge Box for 6 Wedges Wedge Tray Size: 12 1/2" W x 14" L x 1/4" T Box Size: 15 7/16" W x 14 1/2" H x 15" D
880-996	Varian Type III Upper Wedge Box for 6 Wedges Wedge Tray Size: 10 5/8" Sq. x 1/8" T Box Size: 13 5/8" W x 17 5/8" H x 12 13/16" D
880-995	Siemens Wedge Box for 6 Wedges Box Size: 11 1/4" W x 14 1/4" H x 10 7/16" D

## EQUINOX WEDGES



Item #	Description	Size
1846-6915	15° Lead Equinox Wedge Tray	25 cm x 43 cm
1846-6930	30° Lead Equinox Wedge Tray	25 cm x 43 cm
1846-6945	45° Lead Equinox Wedge Tray	25 cm x 43 cm
1846-6960	60° Lead Equinox Wedge Tray	25 cm x 43 cm

## STEEL ATTENUATOR FOR VARIAN III FULL FIELD

1.9 cm Thick



Item	Description
1846-650	Attenuator Varian III, Full Field, Steel 1.9 cm Thick



# WEDGES, CODING PLUGS & COUCH INSERTS

## RESTRINGING OF TENNIS RACKETS AND MYLAR REPLACEMENT

The couch racket/panel should be sent to RPDinc. All panels will be returned within one to two weeks.

To determine what size racket/panel you have measure the outer frame. If the panel is under 55 cm long it will be considered a small racket/panel. Any racket/panel over 55 cm long will be considered a large racket/panel.

Some rackets may require modification before restringing can be done. This will be determined once the racket is received by RPDinc.

Item	Description
800-003	Restring Small Tennis Racket w/Kevlar String
800-005	Restring Large Tennis Racket w/Kevlar String
800-007	Restring Small Tennis Racket w/Kevlar String and Mylar Replacement
800-009	Restring Large Tennis Racket w/Kevlar String and Mylar Replacement

Tennis Racket Panels can be restrung with either nylon or kevlar 1.25 mm diameter string with tension to 65 pounds. The Kevlar string is an anti-stretch string and will retain its tautness after many uses.

Some Tennis Rackets are covered with 0.007" thick polyester (mylar) to prevent skin from protruding through the openings and give maximum support and comfort to the patient. The mylar panels are stretched extremely tight using 0.010" thick polyester (mylar) covering.

Item	Description
800-010	Small Panel Mylar Replacement
800-012	Large Panel Mylar Replacement
801-001-2	"H" Frame Racket Restring w/Kevlar String
801-001-4	"H" Frame Racket Restring w/Kevlar String and Mylar Replacement

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Rental Tennis Rackets or Mylar Panels are Available for Some Panels. State the Size, Manufacture and Type of Couch When Renting.

## CLEAR MYLAR (POLYESTER)



801-005



832-040

Item	Description
801-005	Clear Mylar Sheet 40" W x 36" L x 0.005" T (101.6 x 91.44 x 0.0127 cm)
801-007	Clear Mylar Sheet 40" W x 36" L x 0.007" T (101.6 x 91.44 x 0.0178 cm)
801-010	Clear Mylar Sheet 40" W x 36" L x 0.010" T (101.6 x 91.44 x 0.0254 cm)
832-040	Varian Clear Mylar/PSA Couch 17" x 40' x 0.007" T (43.18 cm x 12.2 m x 0.0178 cm)

# WEDGES, CODING PLUGS & COUCH INSERTS

## TENNIS RACKETS AND MYLAR PANELS

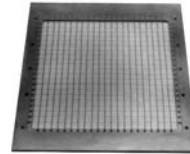
RPDinc manufactures a wide range of couch rackets and panels - Please call or visit our website to see the various styles we carry.

### VARIAN CLINAC - MYLAR PANELS Original Clinac Treatment Couch



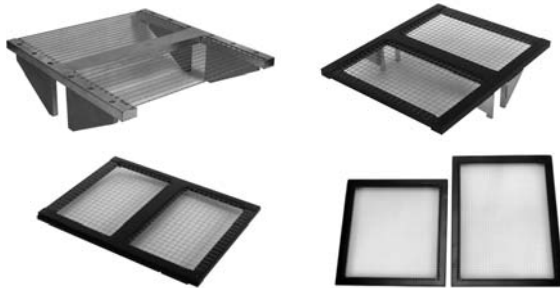
Item #	Description
822-000	Varian Clinac

### VARIAN CLINAC TENNIS RACKETS



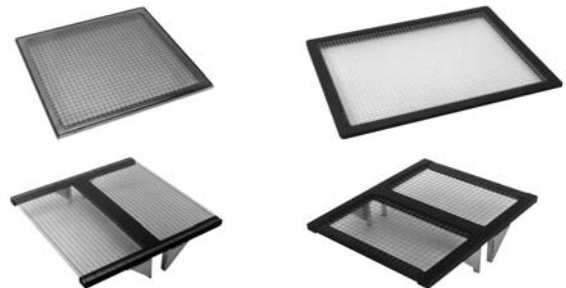
Item #	Description
823-000 and 824-008	Varian Clinac

### VARIAN PSA



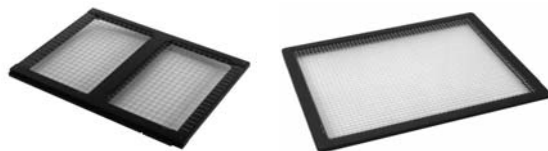
Item #	Description
827-000 thru 831-100	Varian PSA Couch

### VARIAN ETR



Item #	Description
831-100 thru 833-060	Varian ETR Couch

### VARIAN XIMATRON



Item #	Description
831-000 and 834-000	Varian Ximatron

### MITSUBISHI



Item #	Description
820-008 and 820-014	Mitsubishi

### AECL THERATRON 780



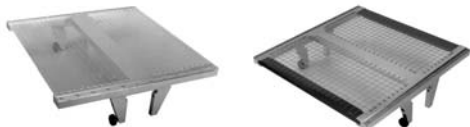
Item #	Description
851-000 thru 856-000	AECL Theratron 780

# WEDGES, CODING PLUGS & COUCH INSERTS

## TENNIS RACKETS AND MYLAR PANELS

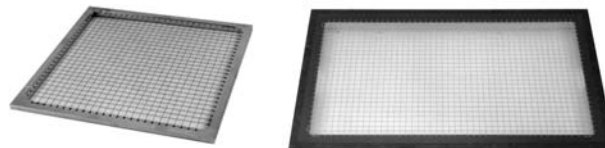
Radiation Products Design manufactures a wide range of couch rackets and panels - Please call or visit our website to see the various styles we carry.

### SIEMENS Z-II AND Z-IV Mevatron Panels



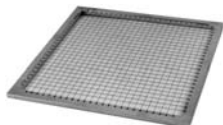
Item #	Description
805-000 thru 808-610	Siemens Z-II and Z-IV Mevatron Panels

### SIEMENS Z-IV



Item #	Description
808-100 thru 808-200	Siemens Z-IV

### SIEMENS Z-II



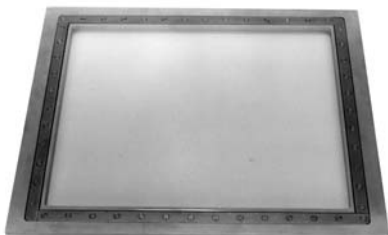
Item #	Description
807-000 thru 807-200	Siemens Z-II

### SIEMENS Z-II MEVATRON



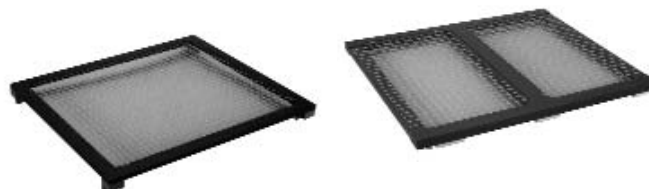
Item #	Description
804-200	Siemens Z-II Mevatron

### SIEMENS Z-II MYLAR PANEL



Item #	Description
802-000	Siemens Z-II Mylar Panel

### PHILIPS

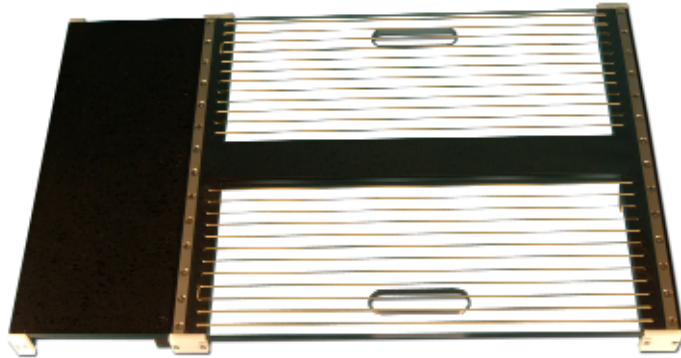


Item #	Description
819-018 thru 819-110	Philips

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# WEDGES, CODING PLUGS & COUCH INSERTS

## BEST THERATRONS REMOVABLE COUCH INSERTS



### Specifications:

**Kevlar String:** 0.010" (0.25 cm) Thick Mylar Covering

**Item 857-400 Best Theratron Removable Couch Insert, 100cm**

**Overall Size:** 19.6" W x 27.5" L (49.8 x 69.85 cm)

**Aluminum End Plate:** 19.125" W x 6.3" L x 0.375" T (48.58 x 16 x 0.95 cm)

**Aluminum Center Spine:** 2.48" W x 17.7" L (6.30 x 44.96 cm)

**Open Area Size:** 8.3" W x 17.7" L (21.08 x 44.96 cm)

**Removable Panels:** 8.8" W x 18.2" L x 0.5" T (22.35 x 46.23 x 1.27 cm), Polycarbonate Under Kevlar Strings

**Finish:** Black Anodized Aluminum and Black Textured Polyurethane Paint

**Item 857-480 Best Theratron Removable Couch Insert, 80cm**

**Overall Size:** 17.1" W x 27.5" L (43.4 x 69.85 cm)

**Aluminum End Plate:** 16.625" W x 6.3" L x 0.375" T (42.23 x 16 x 0.95 cm)

**Aluminum Center Spine:** 2.48" W x 17.7" L (6.3 x 44.96 cm)

**Open Area Size:** 7.1" W x 17.7" L (18.03 x 44.96 cm)

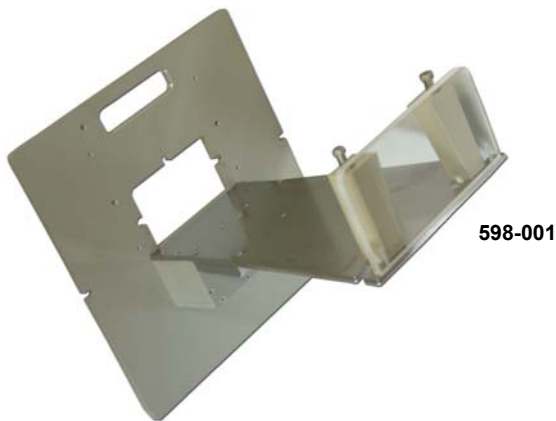
**Removable Panels:** 7.6" W x 18.2" L x 0.5" T (19.3 x 46.23 x 1.27 cm), Polycarbonate Under Kevlar strings

**Finish:** Black Anodized Aluminum and Black Textured Polyurethane Paint

The couch insert is available for either the 80 cm or 100 cm Best Theratron Cobalt machines. The couch insert has an aluminum end plate, center and end bars. The open side areas have kevlar string with mylar covering and removable 0.5" (1.27 cm) polycarbonate support plates for each open area. The support plates are held in place by a spring plunger and are easily removable using the cutout handle.

Item	Description
857-400	Best Theratron Removable Couch Insert, 100cm
857-480	Best Theratron Removable Couch Insert, 80cm

## TANGENTIAL BREAST CONE, BEST THERATRONS THERATRON



598-001

The Tangential Breast Cone for the Best Theratron Theratron machines is a device designed to eliminate penumbra and beam divergence for the breast tangential portals. The device consists of a support plate and lead block for shielding of the contralateral side. An extension plate projects from the source head to the treatment distance. The extension plate is set to be off-center of the radiation source by one-half the diameter of the radiation source. This allows the entire radiation source to be utilized for treatment. Lateral adjustable lead trimming bars are provided to block the sides of the tangential fields, to insure that no overlapping with the supraclavicular field occurs. The end of the breast cone has an acrylic plate of 9.5mm thickness to provide equilibrium when treating the breast wall with Cobalt 60. The acrylic plate is removable for treatments without bolus.



599-000

The Back Pointer (Item 599-000) is a versatile device for accurately determining the exit points of the radiation beam when setting up a patient using the tangential breast cone. It is a light weight rigid device made of a Polycarbonate (lexan) material.

### Specifications

**Finishes:** Tan textured polyurethane, Nickel plate, Clear anodized

**Weight (without trimmers):** 27.5 lb (12.5 kg)

Item	Description
598-001	Tangential Breast Cone, Theratron Theratron-80cm
598-002	Tangential Breast Cone, Theratron Theratron-100cm
599-000	Back Pointer for Tangential Breast Cone