

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

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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)

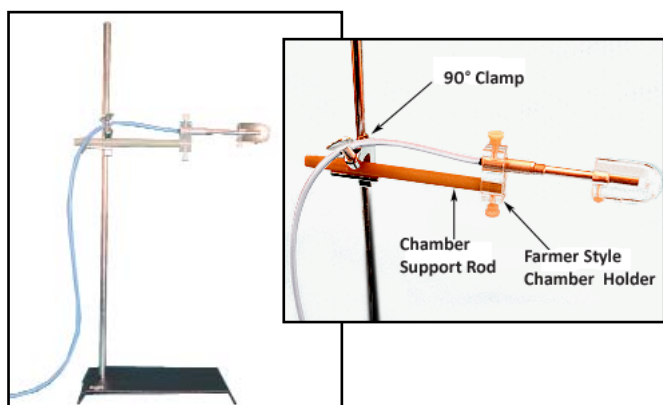
Metal Base: 8" (20.32 cm) Diameter

Diameter: 10 mm and 14 mm

Weight: 6 lb (2.8 kg)

Item	Description
666-010	Probe Holder

CHAMBER SUPPORT STAND



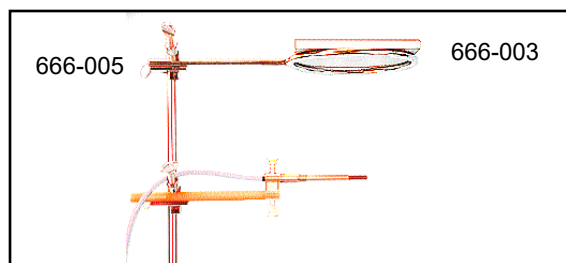
The steel chamber support stand will hold an ion chamber for "in air" measurements. The base of the stand is 6" x 9" (15.24 x 22.86 cm) and the vertical post is 24" (61 cm). The support stand includes a 90° clamp which holds a 15 cm chamber support rod. A farmer style chamber holder is also included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

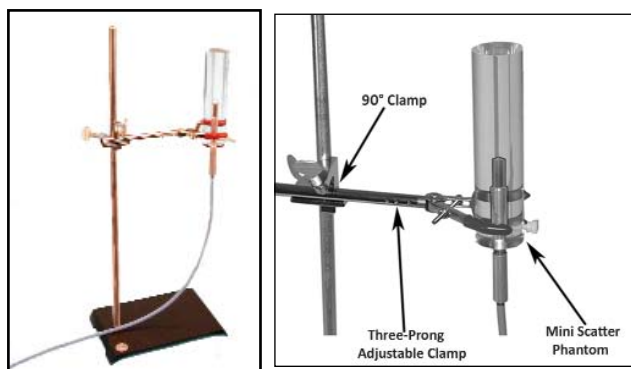
EXTENSION RINGS FOR CHAMBER SUPPORT STAND



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



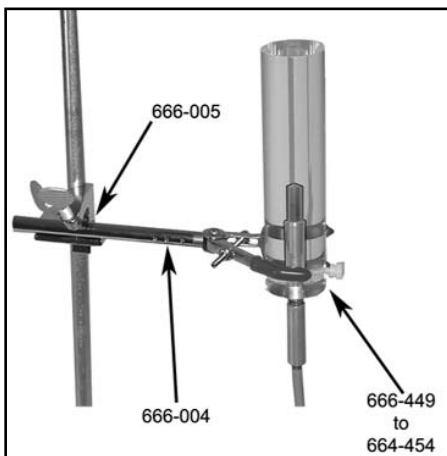
The steel Cylindrical Scatter Phantom Support Stand will hold a Cylindrical Scatter Phantom vertically. The base of the stand is 6" x 9" (15.24 x 22.86 cm) and the vertical post is 24" (61 cm). The support stand includes a three-prong adjustable clamp that attaches to the vertical post using a 90° clamp.

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.

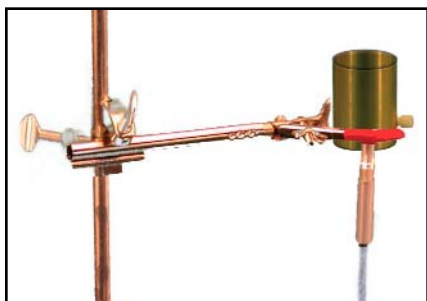
Item	Miniphantom	Material
664-449	for PTW 31002 / 31010	Acrylic
664-450	for PTW Farmer Chamber	Acrylic
664-450-31010	for PTW 31010 Chamber	Acrylic
664-450-A26	for Exradin A-26 Chamber	Acrylic
664-450-Farmer	for PTW Farmer Chamber	Acrylic
664-451	for Exradin A-12 Chamber	Polystyrene
664-451-A12	for Exradin 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

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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 Zhu¹⁾ - 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, 0.6cm³ Farmer Style Chamber** with a 0.28 mm wall thickness of air equivalent plastic and a density of 1.785 g/cm³.

These build-up caps **fit over the Cobalt 60 polystyrene** (density 1.04 g/cm³) 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 ³		Aluminum Density 2.718 g/cm ³		Polystyrene Density 1.05 g/cm ³		Brass Density 8.515 g/cm ³	
		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 ³		Copper Density 8.90 g/cm ³		Plastic Water Density 1.02 g/cm ³	
		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 cm³ 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 cm³ Farmer Style Chamber With 0.5 mm Acrylic Wall

D-Max In Water	Nominal Energy	Acrylic Density 1.85 g/cm ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³		Polystyrene Density 1.05 g/cm ³	
		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 cm³ 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 ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³		Lead Density 11.35 g/cm ³	
		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 ³		Polystyrene Density 1.05 g/cm ³		Solid Water Density 1.03 g/cm ³		Plastic Water Density 1.02 g/cm ³	
		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 ³		Brass Density 8.515 g/cm ³		Lead Density 11.35 g/cm ³	
		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 ³	
		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 cm³ 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 ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³		Lead Density 11.35 g/cm ³		Polystyrene Density 1.05 g/cm ³		Solid Water Density g/cm ³	
		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 cm³ 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 ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³		Lead Density 11.35 g/cm ³	
		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	4.59 mm	662-2224	4.59 mm	662-2424	3.45 mm

D-Max In Water	Nominal Energy	Copper Density 8.90 g/cm ³		Polystyrene Density 1.05 g/cm ³		Plastic Water Density 1.02 g/cm ³	
		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 0.5cm³ Spokas Thimble Chamber** with a wall thickness of 1.0 mm.

Material: Shonka air equivalent plastic C552. **Density:** 1.76 g/cm³

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm ³		Polystyrene Density 1.05 g/cm ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³	
		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/cm³

D-Max In Water	Nominal Energy	Acrylic Density 1.185 g/cm ³		Polystyrene Density 1.05 g/cm ³		Aluminum Density 2.718 g/cm ³	
		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 ³		Lead Density 11.35 g/cm ³	
		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, 0.6cm³ Farmer Style Chamber with a 0.36 mm graphite (density 1.857 g/cm³) wall thickness.

These build-up caps fit over the Cobalt 60 delrin (density 1.415 g/cm³) 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 ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³		Lead Density 11.35 g/cm ³	
		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 ³		Polystyrene Density 1.05 g/cm ³		Plastic Water Density 1.02 g/cm ³	
		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 ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³	
		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 ³	
		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 ³		Lead Density 11.35 g/cm ³	
		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 ³		Aluminum Density 2.718 g/cm ³		Brass Density 8.515 g/cm ³	
		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 ³		Lead Density 11.35 g/cm ³	
		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.