



**Radiation Products Design, Inc.**

**5218 Barthel Industrial Drive**

**Albertville, MN 55301**

**www.rpdinc.com**

**Phone: 800-497-2071      Fax: 763-497-2295**

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authorized distributor**

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## **RPD Product Information**

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### **Item Number Description**

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|                      |   |
|----------------------|---|
| <b>300-232-A11TW</b> | <b>* Exradin Model A11TW - 0.94cc Spokas Thin Window Plan</b> |
| <b>300-232-P11TW</b> | <b>* Exradin Model P11TW - 0.94cc Spokas Thin Window Plan</b> |
| <b>300-232-T11TW</b> | <b>* Exradin Model T11TW - 0.94cc Spokas Thin Window Plan</b> |

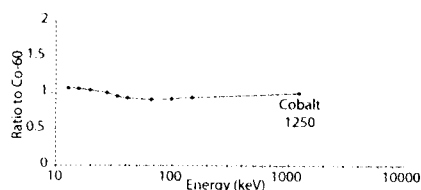
# EXRADIN®

## PARALLEL PLATE CHAMBERS

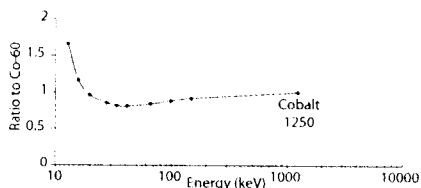
*For use in routine electron beam measurements and for depth-dose studies in electron, photon, proton, and neutron beams*

- Completely characterized in TG 51 & TRS-398.
- The Model 11 is inherently waterproof without any additional cap or covering. The 11TW and the A10 require waterproof caps due to their Kapton film windows.
- Fully guarded for extremely uniform field lines and negligible variation of polarizing potential, thus polarity corrections are not needed.
- Exceptionally wide 4.14 mm guard rings exceed the benefits described in TG-39 for 3 mm rings. This allows for no perturbation in field lines, even at low electron energies, ensuring precision in depth-dose measurement.
- Strong, reliable construction with homogeneous conductive plastic allows for little to no scatter when compared to other similar type chambers.
- Rigid stem allows accurate positioning of the chamber. No stem effects are present.
- The chamber vents through a flexible tube that surrounds the triaxial cable. This vent tube is sealed to the chamber body and open near the connector.
- The Model 11's larger volume is ideally suited for routine electron field measurements in a water phantom. A Cobalt-60 buildup cap is available.
- Model A10's small measuring volume allows for excellent spatial resolution. It is ideally suited for smaller electron field measurements in a water phantom for absolute electron dosimetry calibration. A 1.0 mm waterproof acrylic buildup cap for TG 51 is included.
- Model A10 is capable of measuring in zero depth in the buildup region of an electron field.
- **For detailed technical specifications see the fold-out pages at the back of this brochure.**

**Model A10 Characterization Curve**



**Model 11 Characterization Curve**



### MODEL A10

#### Waterproof Parallel Plate Electron Markus™-Type Chamber, 0.05 cc

|   |                                |
|---|--------------------------------|
| Centroid of Collecting Volume (from surface window) | 1.0 mm                         |
| Window Collector Gap                                | 2.0 mm                         |
| Collector Diameter                                  | 5.4 mm                         |
| Window Film   | 3.86 mg/cm <sup>2</sup> Kapton |
| Nominal Leakage                                     | <10 <sup>-15</sup> amps        |
| Maximum Polarizing Voltage                          | 1000 volts                     |

### MODEL 11 [A11, P11, T11]

#### Waterproof Parallel Plate Chamber, 0.62 cc

|   |                         |
|---|-------------------------|
| Centroid of Collecting Volume (from surface window) | 2.0 mm                  |
| Window Collector Gap                                | 2.0 mm                  |
| Collector Diameter                                  | 20.0 mm                 |
| Nominal Leakage                                     | <10 <sup>-15</sup> amps |
| Maximum Polarizing Voltage                          | 1000 volts              |

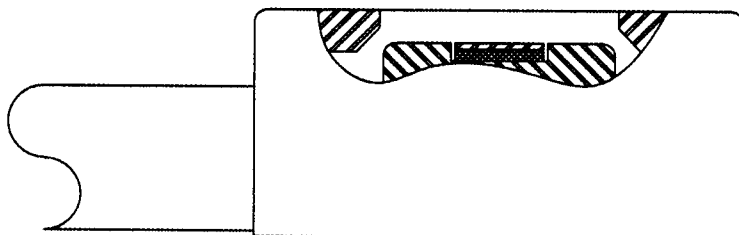
### MODEL 11TW [A11TW, P11TW, T11TW]

#### Thin Window Parallel Plate Chamber, 0.94 cc

|   |                                |
|---|--------------------------------|
| Centroid of Collecting Volume (from surface window) | 1.5 mm                         |
| Window Collector Gap                                | 3.0 mm                         |
| Collector Diameter                                  | 20.0 mm                        |
| Window Film   | 3.86 mg/cm <sup>2</sup> Kapton |
| Nominal Leakage                                     | <10 <sup>-15</sup> amps        |
| Maximum Polarizing Voltage                          | 1000 volts                     |

### Parallel Plate Electron Chamber Model A10

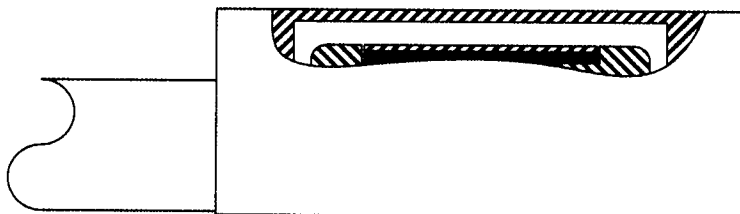
Collecting Volume: 0.05 cc  
Nominal Calibration Factor: 60 R/nC (TG-21)  
Nominal Calibration Factor: 527.4 Gy/ $\mu$ C (Air Kerma)



**Centroid of Collecting Volume:** 1.0 mm from window surface  
**Collector Diameter:** 5.4 mm  
**Window-Collector Gap:** 2.0 mm  
**Window:** Conductive Kapton film, 3.86 mg/cm<sup>2</sup>  
**Window Support Rings, Collector and Guard Material:**  
A10 – C552 Shonka air-equivalent plastic  
**Stem:** 8.9 mm OD black polycarbonate one-piece 7.6 cm long; not removable  
**Waterproof:** Yes, waterproofing cap required to seal window  
**Venting:** Through Tygon® PVC tubing secured to chamber body and running the full length of the triaxial cable; cable is inside tubing.  
**Waterproofing Cap included with Chamber:** 1.0 mm acrylic cap, TG-51 compliant  
**Buildup Caps Available:** Co-60 cap made of black delrin (3.5 mm thick), also acts as waterproofing cap  
**Options:** None available

### Spokas Parallel Plate Chamber Model A11, P11 or T11

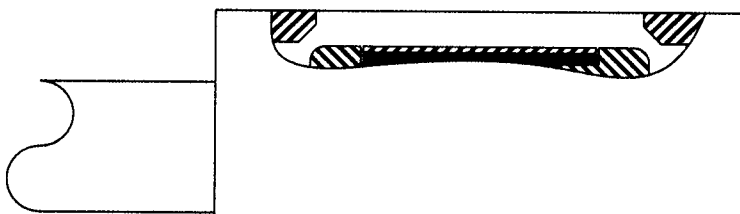
Collecting Volume: 0.6 cc  
Nominal Calibration Factor: 5.5 R/nC (TG-21)  
Nominal Calibration Factor: 48.3 Gy/ $\mu$ C (Air Kerma)



**Centroid of Collecting Volume:** 2.0 mm from window surface  
**Collector Diameter:** 20.0 mm  
**Window-Collector Gap:** 2.0 mm  
**Window Thickness:** 1.0 mm  
**Window, Collector and Guard Material:**  
A11 – C552 Shonka air-equivalent plastic  
P11 – D400 polystyrene-equivalent plastic.  
T11 – A150 Shonka tissue-equivalent plastic  
**Stem:** 11.1 mm OD black phenolic two-piece 10.1 cm + 12.7 cm long; removable; others available upon request  
**Waterproof:** Yes, as furnished; no sheath required  
**Venting:** Through Tygon® PVC tubing secured to chamber body and running the full length of the triaxial cable; cable is inside tubing.  
**Buildup Caps Available:** Co-60 thickness; same material as chamber window  
**Options:** CRS stem

### Thin-Window Parallel Plate Chamber Model A11TW, P11TW or T11TW

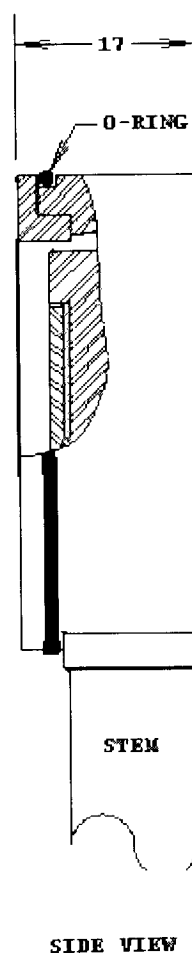
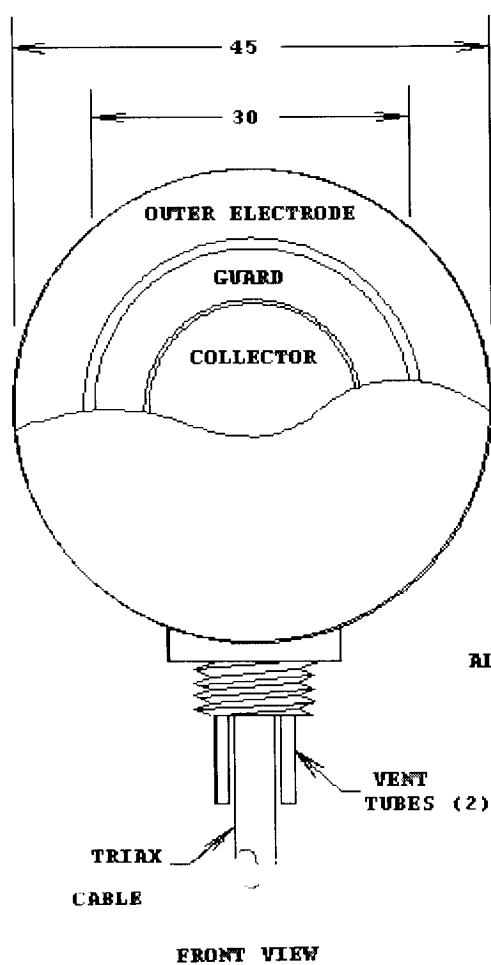
Collecting Volume: 0.94 cc  
Nominal Calibration Factor: 3.4 R/nC (TG-21)  
Nominal Calibration Factor: 29.9 Gy/ $\mu$ C (Air Kerma)



**Centroid of Collecting Volume:** 1.5 mm from window surface  
**Collector Diameter:** 20.0 mm  
**Window-Collector Gap:** 3.0 mm  
**Window:** Conductive Kapton film, 3.86mg/cm<sup>2</sup>  
**Window Support Rings Material:** C552  
**Collector and Guard Material:**  
A11TW – C552 Shonka air-equivalent plastic  
P11TW – D400 polystyrene-equivalent plastic.  
T11TW – A150 Shonka tissue-equivalent plastic  
**Stem:** 11.1 mm OD black phenolic two-piece 10.1 cm + 12.7 cm long; removable; others available upon request  
**Waterproof:** Yes, waterproofing cap required to seal window  
**Venting:** Through Tygon® PVC tubing secured to chamber body and running the full length of the triaxial cable. Cable is inside tubing.  
**Waterproofing Cap included with Chamber:** 1.0 mm acrylic cap, TG-51 compliant  
**Buildup Caps Available:** Co-60 thickness; same material as chamber shell; others available upon request  
**Options:** CRS stem

## Model 11TW - Spokas Thin-Window Planar Chamber

- Planar geometry
- Homogeneous construction
- Complete guarding
- Thin stretched conductive window
- Waterproof with cover over window
- Low mass collector
- Gas flow capability
- Integral flexible low-noise cable
- Separable minimum scatter stem
- Handsome wooden case



## Features

**Collecting Volume:**  $0.94 \text{ cm}^3$

**Centroid of Collecting Volume:** 1.5 mm from surface of window

**Collector Diameter:** 20.0 mm

**Window-Collector Gap:** 3.0 mm

**Window:** Conductive Kapton film,  $3.86 \text{ mg/cm}^2$

### **Body, Collector, and Guard Material:**

Model A11TW – Shonka air-equivalent plastic C552

Model P11TW – Polystyrene equivalent plastic D400

Model T11TW – Shonka tissue-equivalent plastic A150

**Maximum Polarizing Potential:** Greater than 1000 V

**Inherent Leakage Currents:** Less than  $10^{-15}$  Amperes

**Cable:** 50 Ohms, 29pF/f, 2 m long

**Signal Connector:** Choice of coaxial and triaxial BNC plugs and jacks and triaxial TNC plug

**High Voltage Connector:** Integral with triaxial connectors (shell of chamber is common with connector body). Banana, MHV, and SHV plugs are also available.

**Vent Tubes:** Two 21 Ga stainless steel tubes which may be extended to connector via 22 Ga TFE tubing for possible immersion in liquid phantoms. (Chamber immersion requires a cover over the window.)

**Stem:** Black phenolic, 7/16 in OD by 9, 5, or 4 in long. Two-piece stem consisting of a 4 in segment at chamber and a 5 in segment threaded together is also available.