



# Accessories

# Contents

- [10B10-2](#)
  - [10B20-2](#)
  - [10B5](#)
  - [20CT20](#)
  - [20CT-SUP](#)
- [8152L+](#)
  - [8152U+](#)
  - [8154](#)
  - [8155](#)
  - [8220](#)
  - [8230M](#)
  - [8230MCT](#)
  - [8320](#)
  - [8325](#)
  - [8330](#)
  - [8407](#)
  - [8430](#)
  - [8430CT](#)
  - [8462-FILM](#)
  - [8463D](#)
  - [8503](#)
  - [8903](#)
  - [8905](#)
  - [8915](#)
  - [8926](#)
  - [8930](#)
  - [8935](#)
  - [90E6](#)
- [ADTS-W](#)
  - [AG-EXTENSION](#)
  - [AGTABSGO/AGTABSGOKEX](#)
  - [AGTS-W](#)
  - [CT-0.6](#)
  - [EXCEL](#)

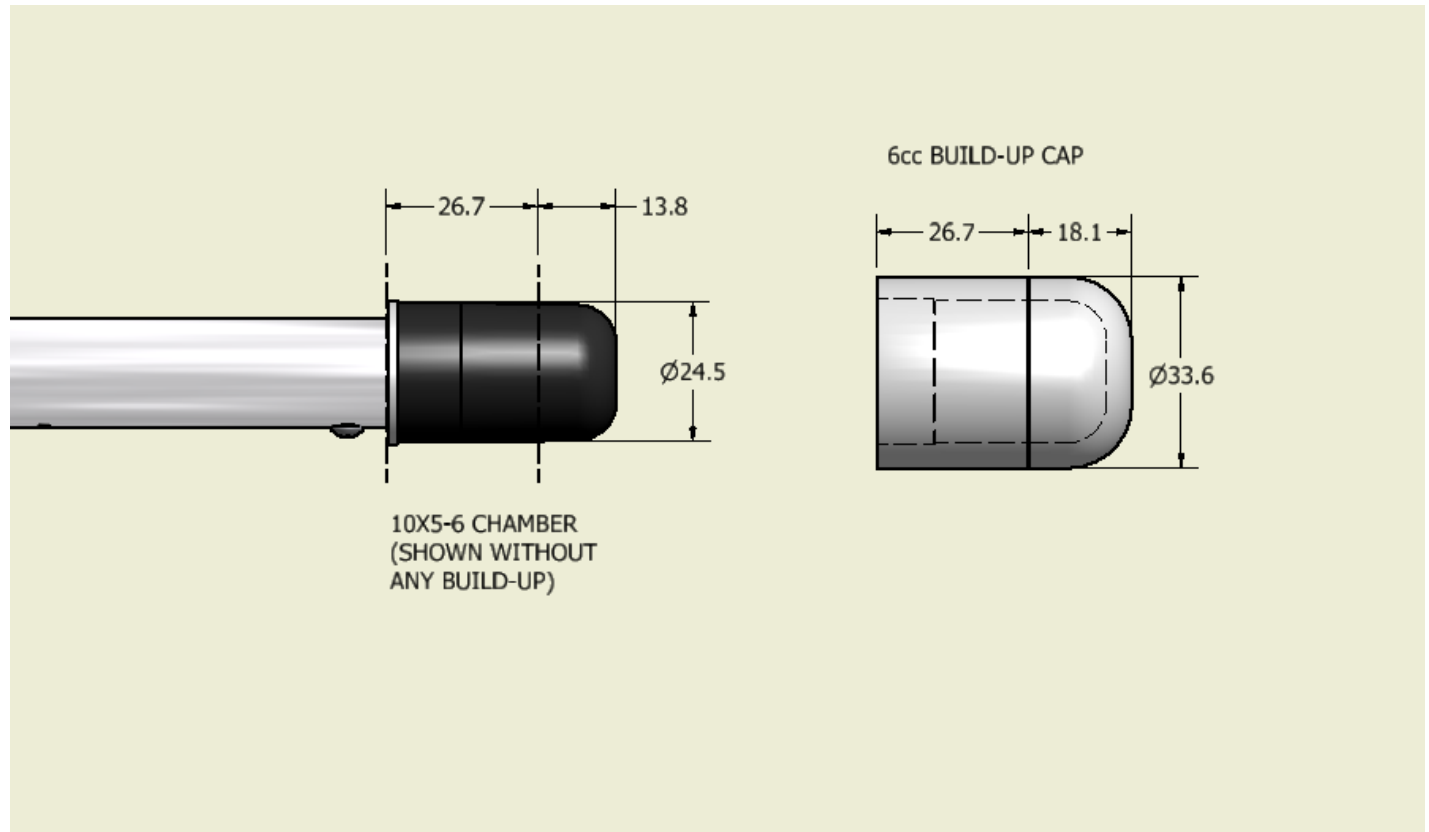
Note: All Radcal Accessories products are to be used with Radcal Systems only and as such are shipped under international Harmonizing code 9030.10.00.00 *Instruments and apparatus for measuring or detecting ionizing radiations*

# 10B10-2

## 6cc Co/Cs BUILD-UP CAP

Build-up cap for use in high-energy photon beams

Build-up caps are used with ionization chambers for in-air measurements in photon beams when equilibrium is desired. The 10B10-2 is made of acrylic. Acrylic build-up caps are more water-equivalent than brass build-up caps.

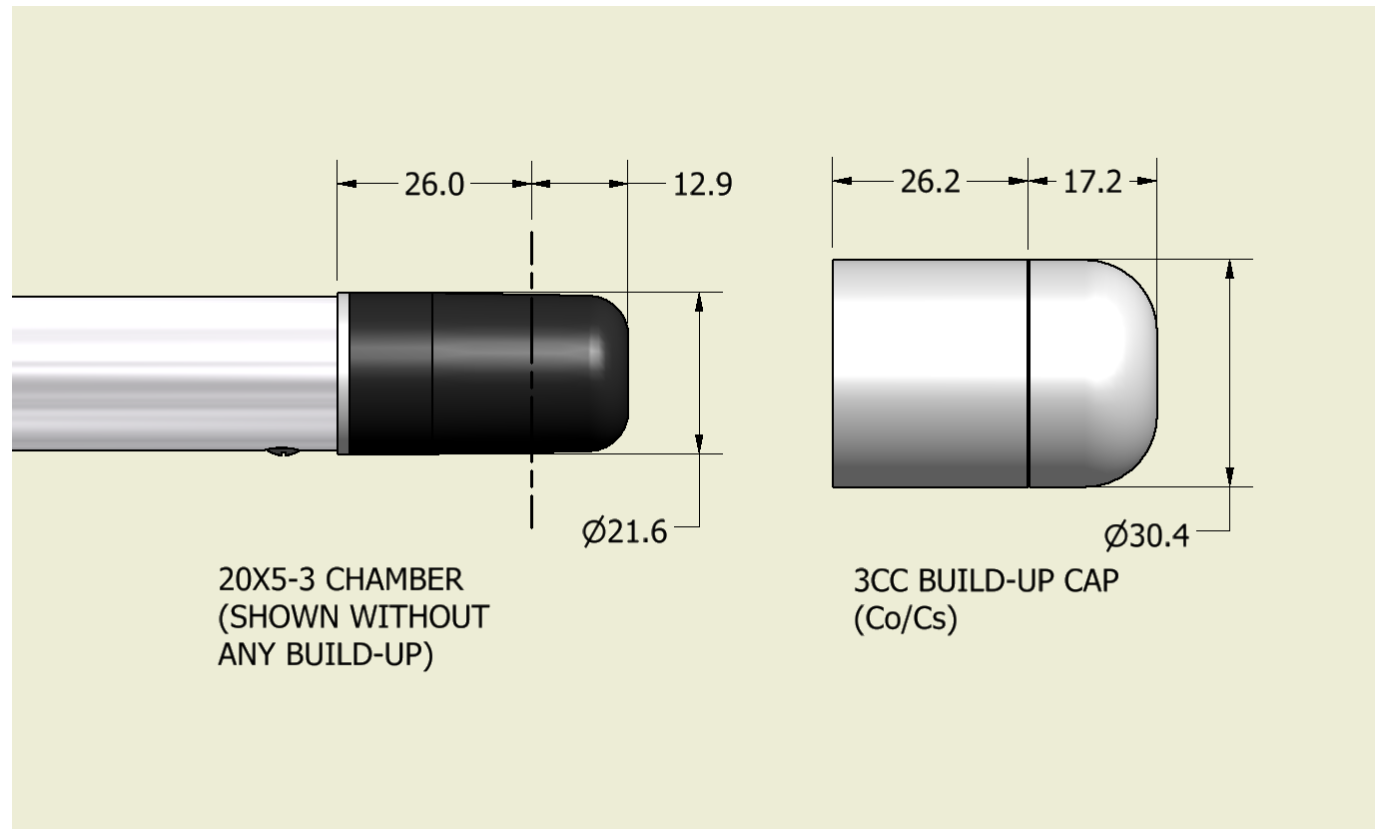


# 10B20-2

## 3cc Co/Cs BUILD-UP CAP

Build-up cap for use in high-energy photon beams

Build-up caps are used with ionization chambers for in-air measurements in photon beams when equilibrium is desired. The 10B20-2 is made of acrylic. Acrylic build-up caps are more water-equivalent than brass build-up caps.

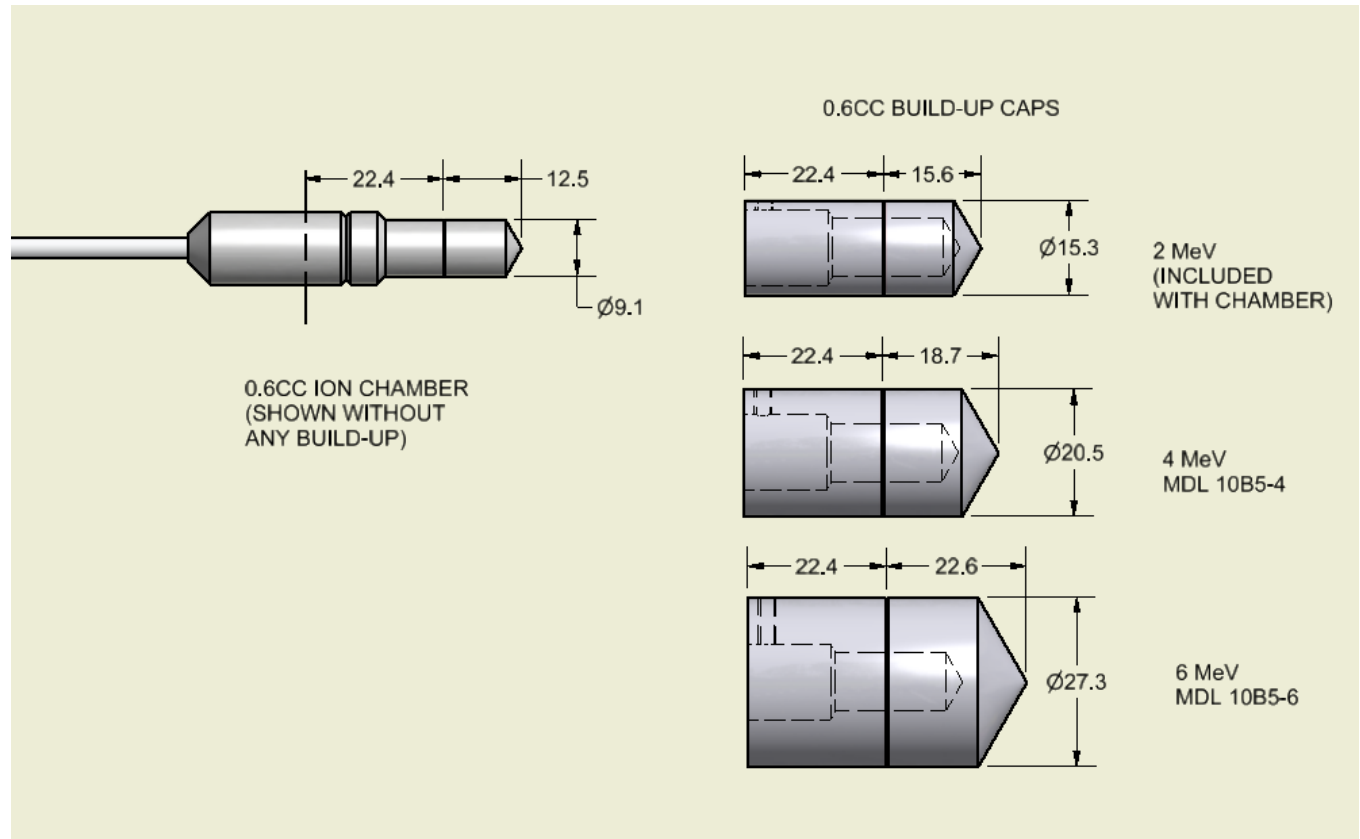


# 10B5

## 0.6cc BUILD-UP CAPS

Build-up caps for use in high-energy photon beams

Build-up caps are used with ionization chambers for in-air measurements in photon beams when equilibrium is desired. The 10B5 are made of acetal. Build-up caps are available for different photon energy ranges.

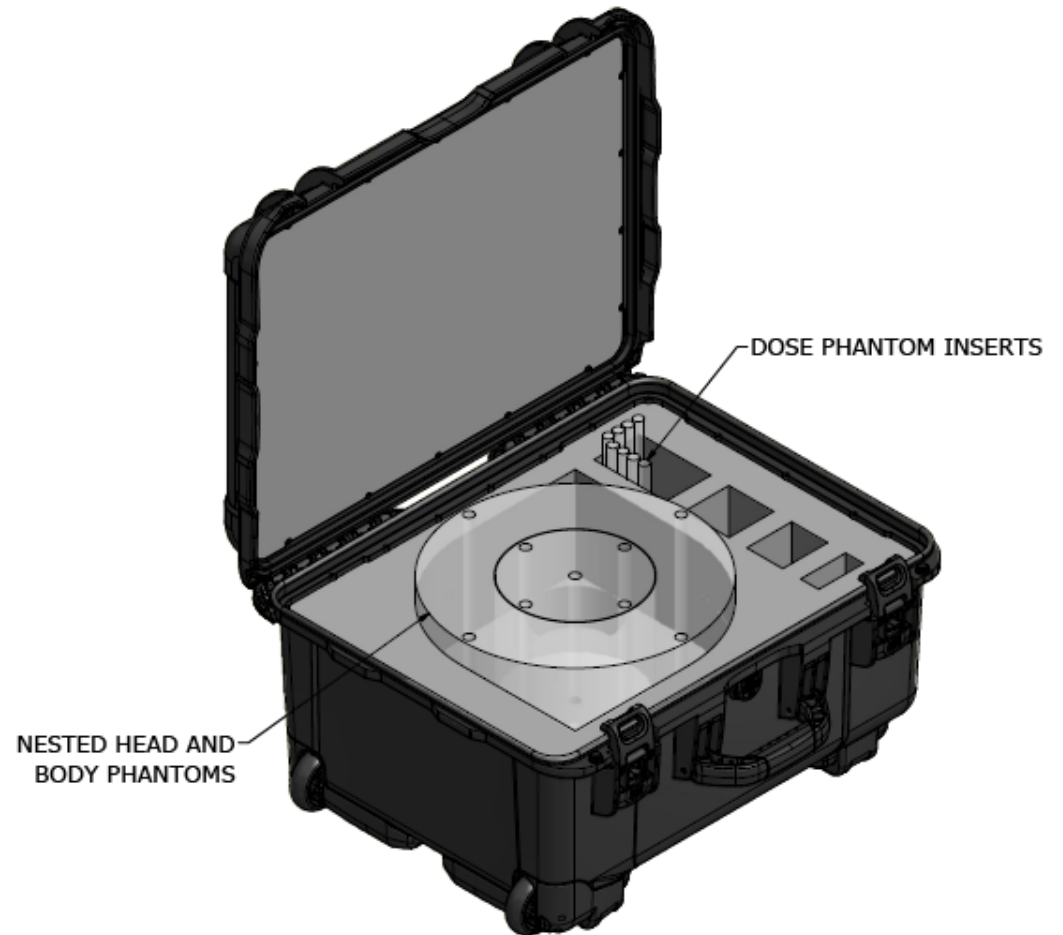


# 20CT20

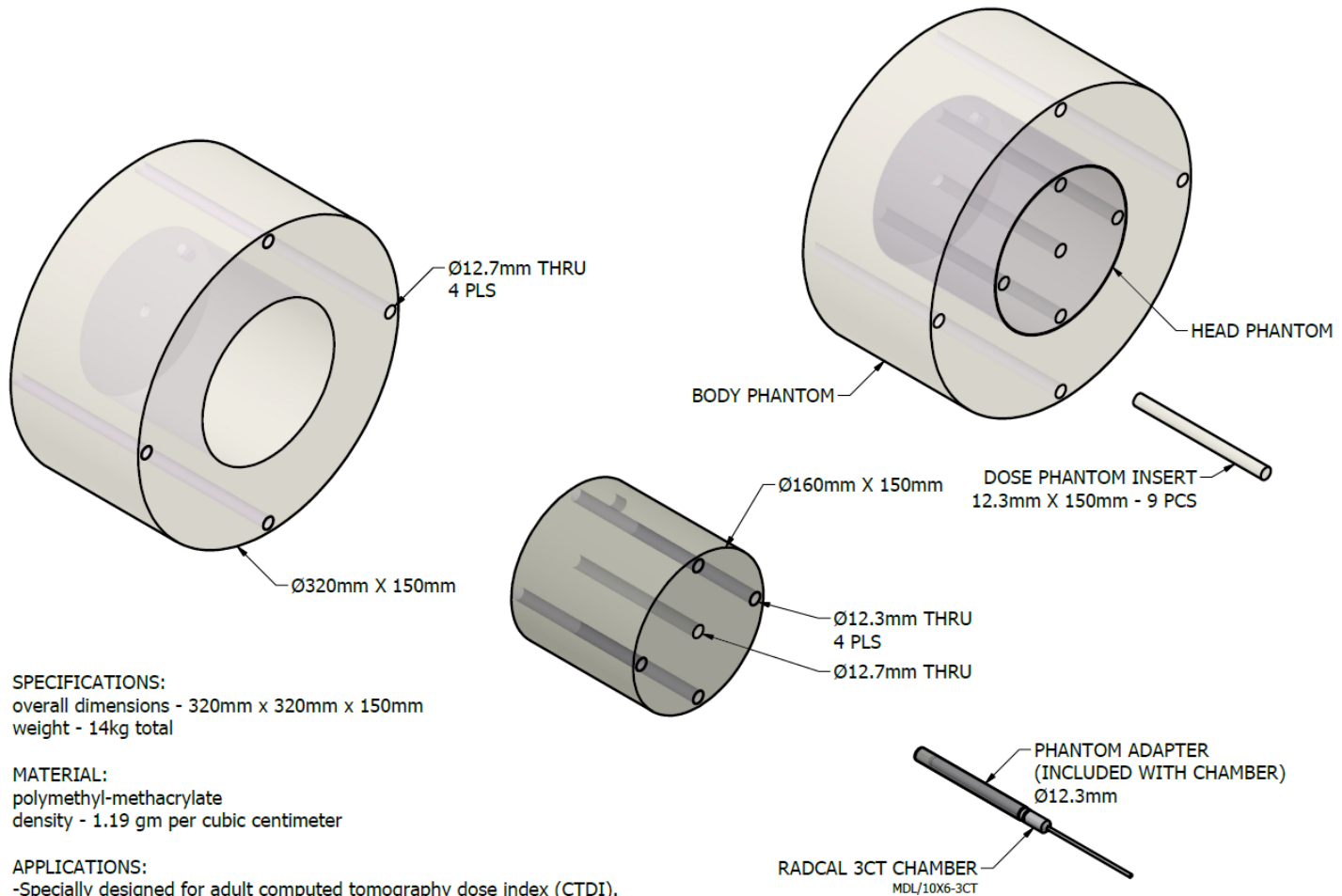
EXTERIOR DIMENSIONS L22.5" X W18.3" X H11.7"  
L579mm X W465mm X H297mm

INTERIOR DIMENSIONS L20.5" X W15.3" S H10.1"  
L521mm X W389mm X H257mm

TOTAL WEIGHT 51lbs  
(CASE, FOAM & PHANTOM) 23kg



# 20CT20 (cont)



## SPECIFICATIONS:

overall dimensions - 320mm x 320mm x 150mm  
weight - 14kg total

## MATERIAL:

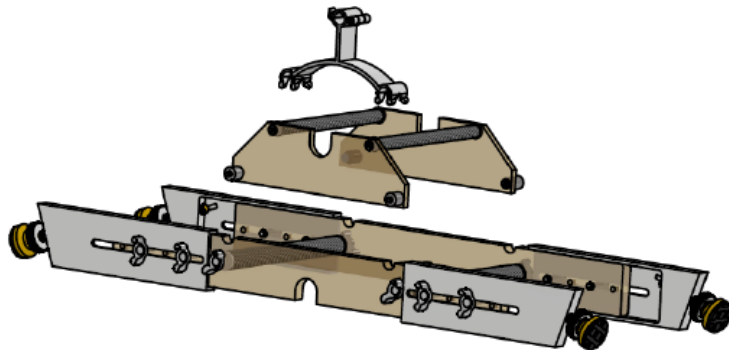
polymethyl-methacrylate  
density - 1.19 gm per cubic centimeter

## APPLICATIONS:

- Specially designed for adult computed tomography dose index (CTDI).
- Can be used with all Radcal 3CT ion chambers.
- The CTDI Phantom was designed to meet specifications outlined by the FDA (21CFR 1020.33) and the IEC (IEC 60601-2-44).

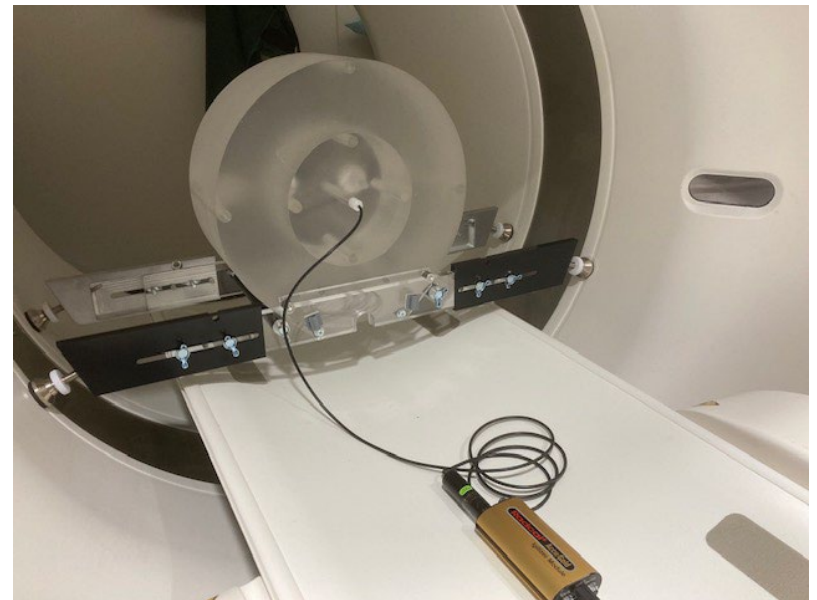
# 20CT-SUP

## Radcal Helical Scan CTDIw Bracket Assembly



Supports the Head and Body Phantoms in the bore of the helical scan CT machine in order to make CTDI<sub>w</sub> measurements. No phantom modifications required.

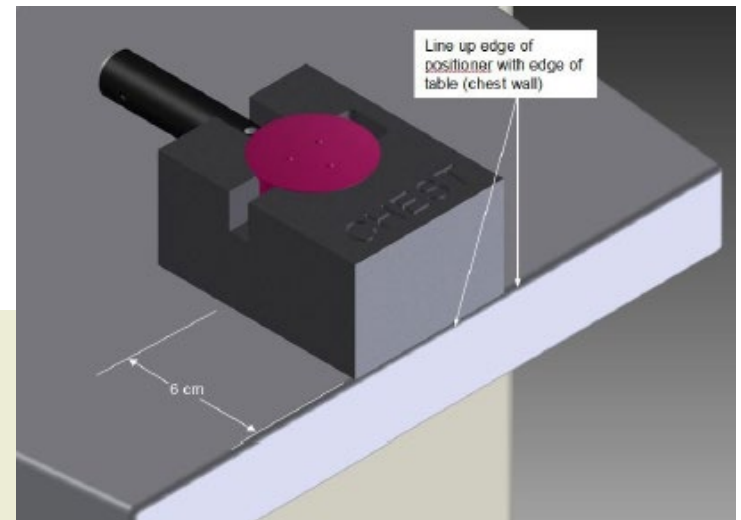
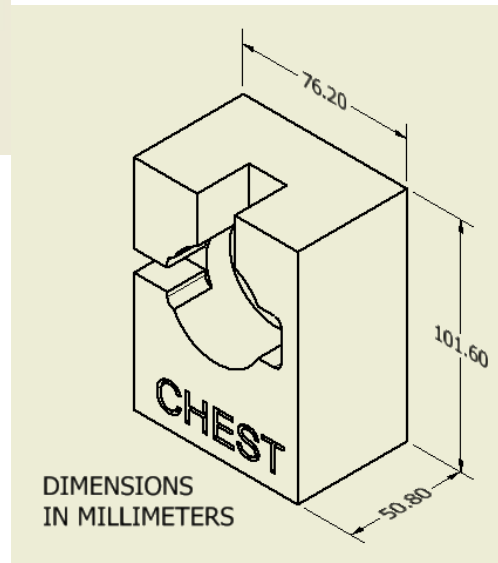
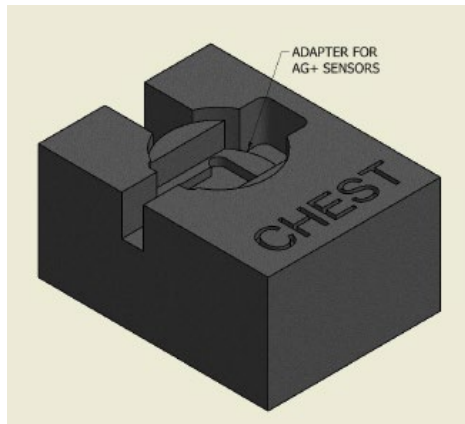
Allows separate Body, Head and chamber measurements all on iso-center.





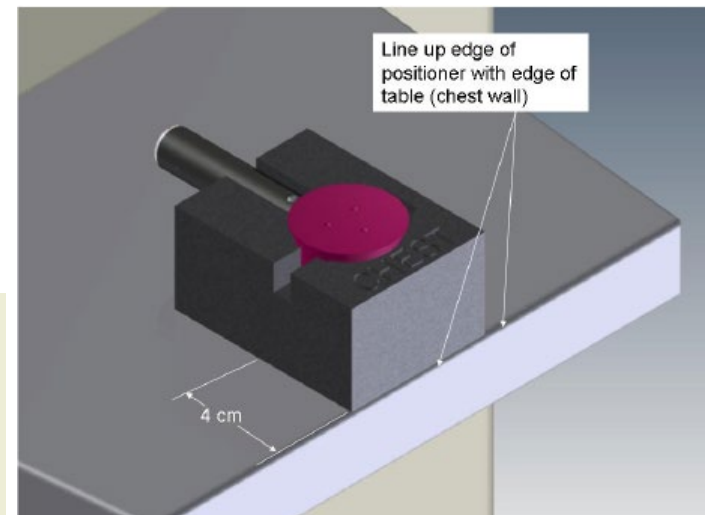
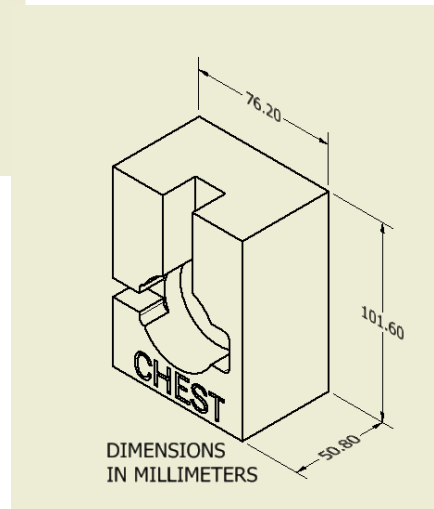
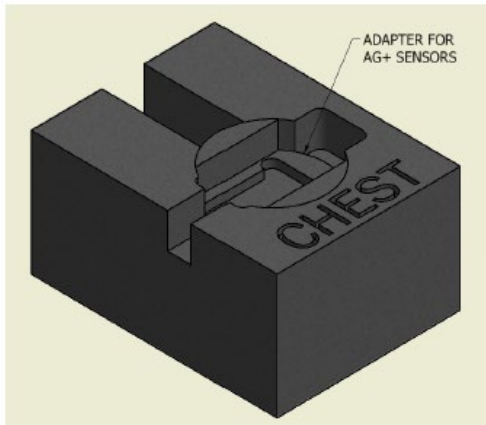
# 8152L+

- THE 8152L+ IS SIMILAR TO THE 8152U+ EXCEPT THAT IT USES DIMENSIONS RECOMMENDED BY THE IEC IN EUROPE: THE CHAMBER SHOULD SIT 6.0CM IN FROM THE CHEST WALL AND 4.0CM ABOVE THE TABLE. THIS POSITIONER ALLOWS ONE TO POSITION THE 10X6-6M CHAMBER IN ADDITION TO MAMMO MULTI-SENSORS SO THAT THE POSITION CORRESPONDS TO THOSE DIMENSIONS.



# 8152U+

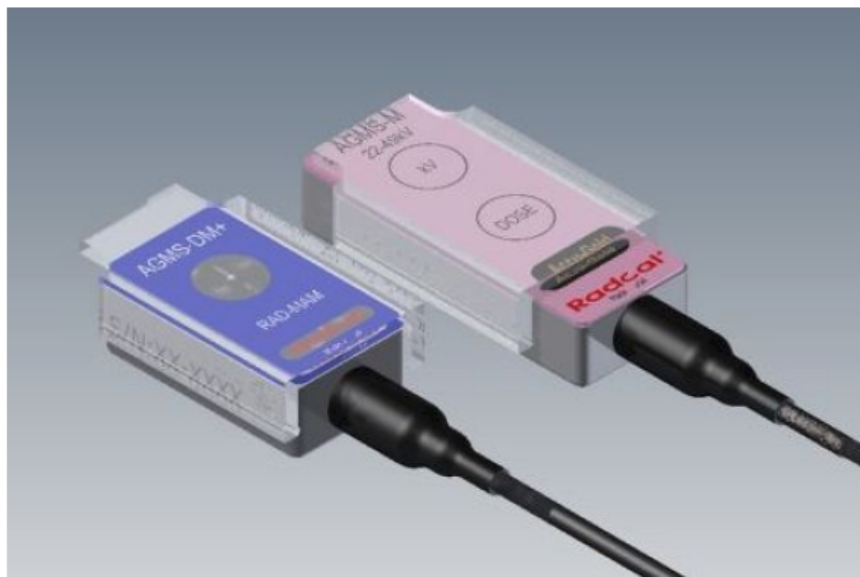
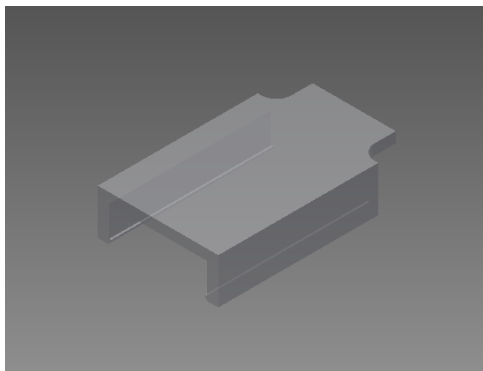
- THE FDA HAS RECOMMENDED POSITIONING MAMMO CHAMBERS IN A CONSISTENT SPOT FOR INSPECTION PURPOSES. THE CHAMBER SHOULD SIT 4.0CM IN FROM THE CHEST WALL AND 4.5CM ABOVE THE TABLE. THIS POSITIONER ALLOWS ONE TO POSITION THE 10X6-6M CHAMBER IN ADDITION TO MAMMO MULTI-SENSORS SO THAT THE POSITION CORRESPONDS TO THOSE DIMENSIONS.



# 8154 - SIMULATED PADDLE

## Note for Mammography Sensor users.

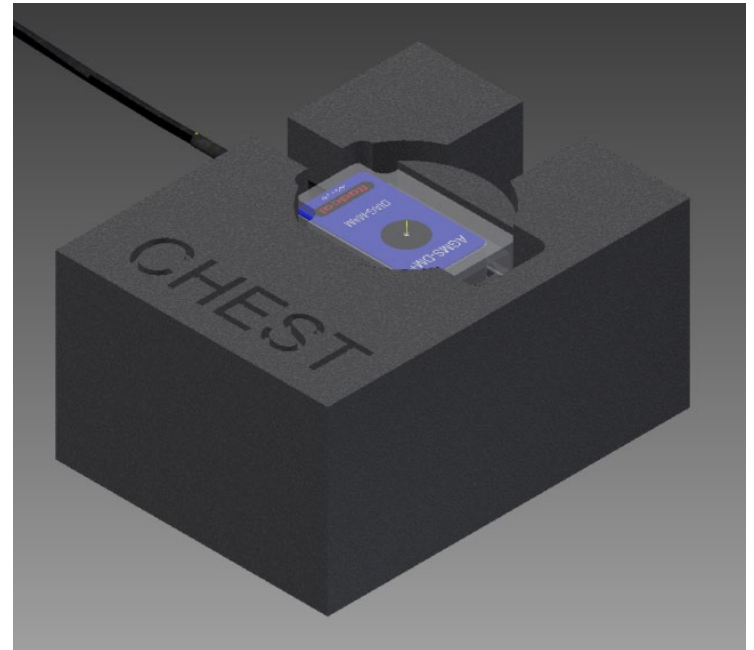
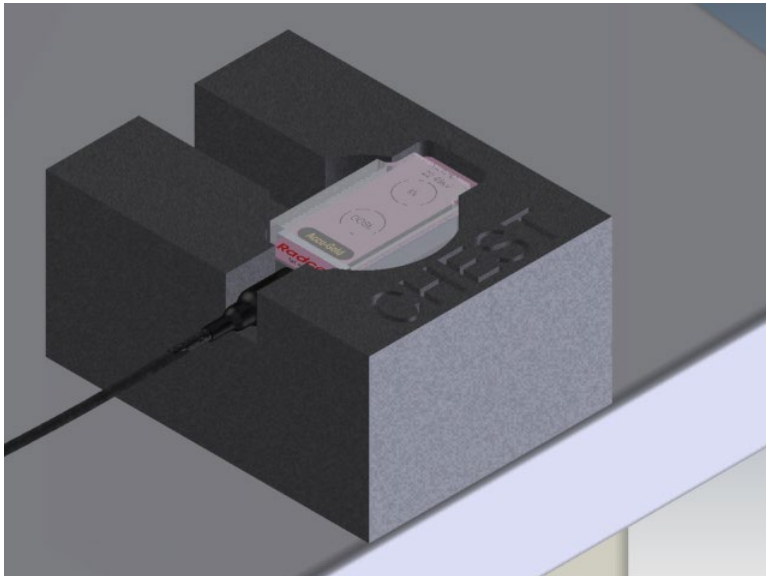
The Mammographic Sensors, models RAPD-M, AGMS-M, AGMS-DM+ and AGMS-M+ are calibrated using a 2.2 mm thick polycarbonate compression paddle placed in beam for all measurements (kVp, dose, hvl). If you are making measurements where it is not practical to use the machine's paddle in beam, use this 2.2 mm polycarbonate plate (Model 8154 - Simulated Paddle) on top of the sensor during your measurements.



If you have any questions, please contact Radcal Customer Support – email [cust\\_sup@radcal.com](mailto:cust_sup@radcal.com) or telephone 626-357-7921 Extension 123.

# 8154 (cont)

The simulated paddle is included with your mammography sensor and fits in the Mammo positioner (8152) as shown.



# 8155 - Tungsten Filter Holder

Radcal Corporation is committed to providing the most accurate, reliable, and complete measurements in the industry. Due to the high kV range in which the Straton tubes operate and the exotic filtration used in the Siemens CT systems, Radcal has found the most accurate measurements are obtained using additional Tungsten filtration. By using the Tungsten filter accessory along with the Siemens Straton tube calibration selection, Radcal's Accu-Gold family products deliver reliable measurements without any additional scale factors.

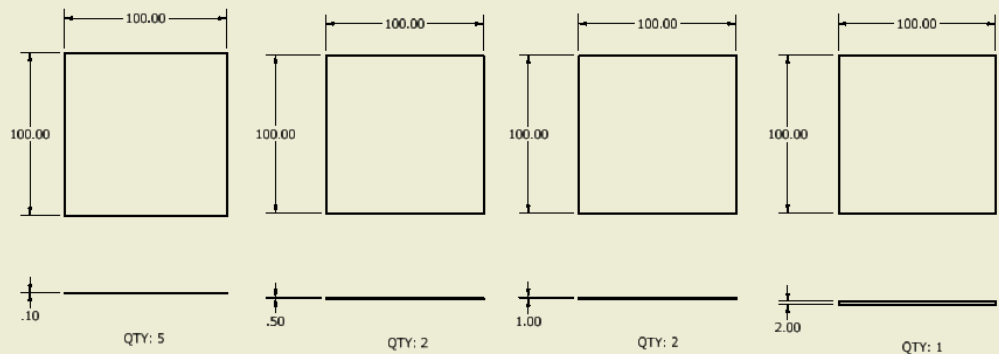
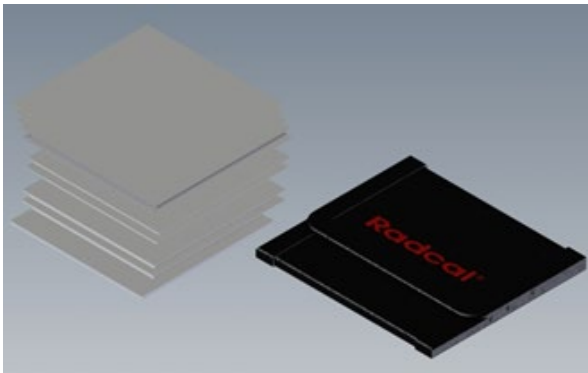


# 8220 - Filter Set

All filters are 100mm X 100mm (3.94" X 3.94") in size and are labeled as shown in the table. Tolerances: Length and Width  $\pm 1.5\text{mm}$ ". Thickness  $\pm 10\%$ . Use with filter holder model 8915.

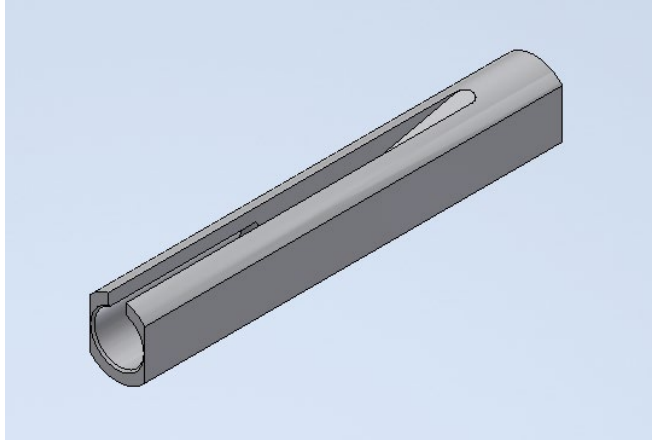
The Model 8220 HVL Kit consists of the following:

Qty	Thickness	Material	Aluminum
1	2.0mm	AL1100	99.0%
2	1.0mm	AL1100	99.0%
2	0.5mm	AL 99.5%	99.5%
5	0.1mm	AL1145	99.5%

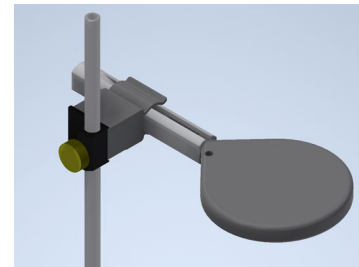
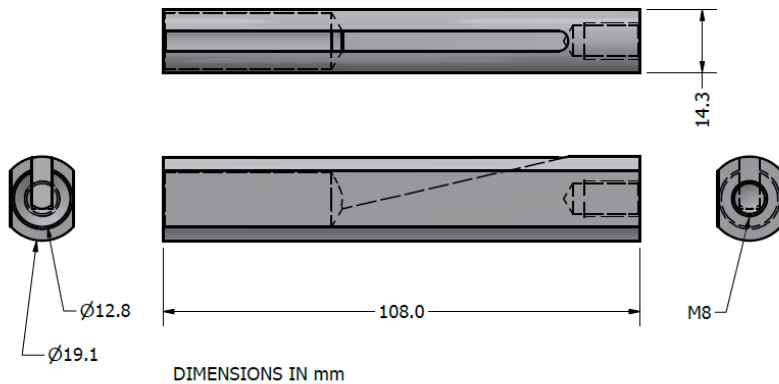
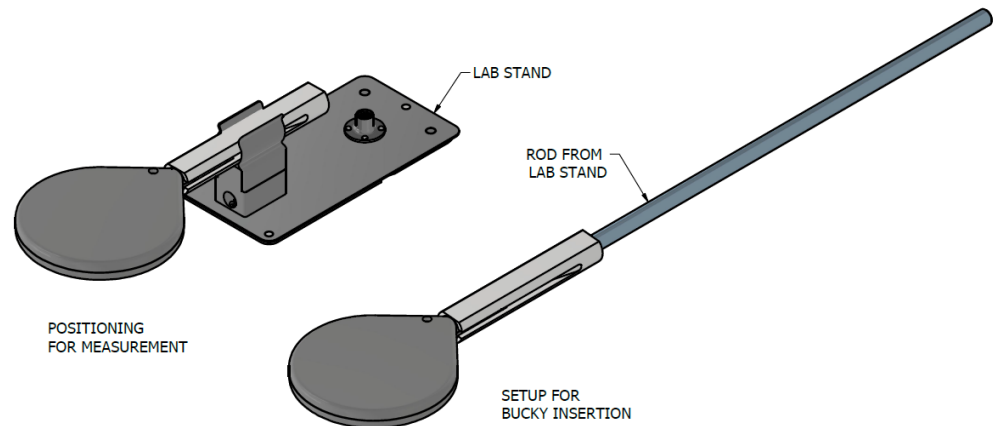


DIMENSIONS IN MILLIMETERS

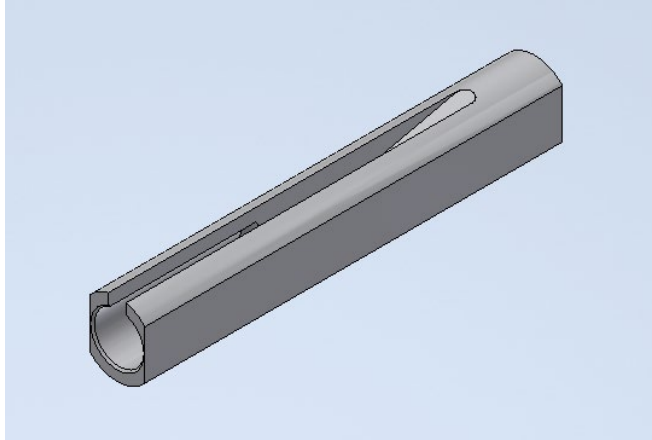
# 8230M



USED TO ADAPT A 60CC CHAMBER TO  
A 3/4" DIA (19.1mm) CHAMBER CLAMP.  
CAN ALSO CAN BE USED TO ATTACH TO THE LAB STAND  
ROD FROM THE AGTS STAND.



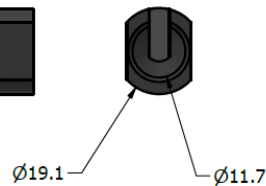
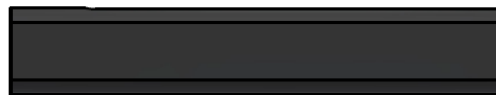
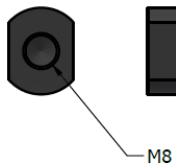
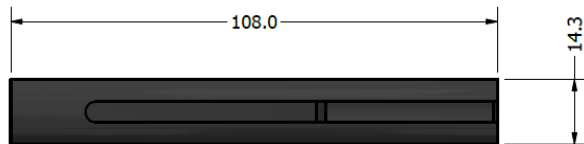
# 8230MCT



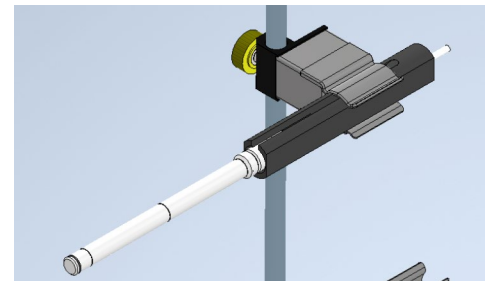
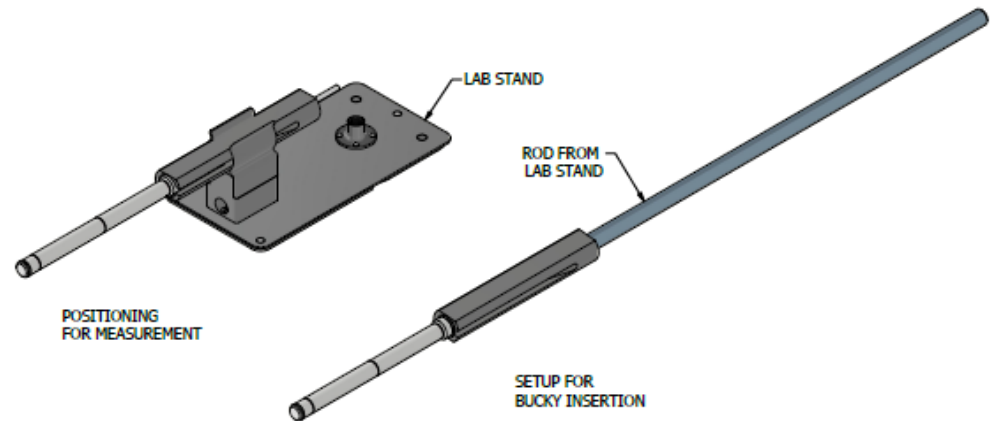
USED TO ADAPT A 3CT CHAMBER TO A 3/4" DIA (19.1mm) CHAMBER CLAMP.

(CAN BE USED WITH 0.6CC and 0.18CC CHAMBERS)

CAN ALSO CAN BE USED TO ATTACH TO THE ROD FROM THE AGTS STAND FOR USE WITH BUCKY.



DIMENSIONS IN mm





# 8320

## Hi-Purity Aluminum HVL Kit

- Ultra-thin high purity aluminum
- Calibrated thickness

Radcal's ultra-thin and high purity aluminum sheets provide more accurate measures of half value layer aluminum (HVL Al) than other less pure aluminum alloys.

The set consists of ten 100 x 100 x 0.1 mm sheets of 99.99% pure aluminum. The thickness is measured to 1% and the actual thickness labeled on each sheet. The set also includes a metal storage case to help protect and maintain the flatness of the thin filters.

### **Specifications**

Construction: 99.99%

Quantity: 10

Length: 100 mm

Width: 100 mm

Thickness: 0.1 mm (nom)

Weight 2.7 g

# 8325

## Copper Filter Std

### Specifications

Material: 99.9% Copper

Type: 110 Copper ½ hard

Quantity: 1@ 1.0 mm,  
1@ 0.5 mm

Length: 150 mm

Width: 150 mm

Thickness: 1.5 mm (total)

Weight 320 g (total)

# 8330 - Tripod

Use with 8905 tripod  
bracket for mounting ion  
chambers.

Extends  
from 0.4 m  
to 1.3 m

Comes with pouch for  
convenient carrying



# 8407

## Plugable 5 Meter (16 Foot) USB 2.0 Active Extension Cable Type A Male to A Female



- USB 2.0 active repeater with premium 5m/16ft cable
- Connect any USB 2.0/1.1 device with no performance compromises\*
- Standard USB Type A male to type A female connectors
- Shares available USB power between cable itself and attached device
- Up to 4 cables can be connected. (Grand total must be < 25 meters including the original cable.)

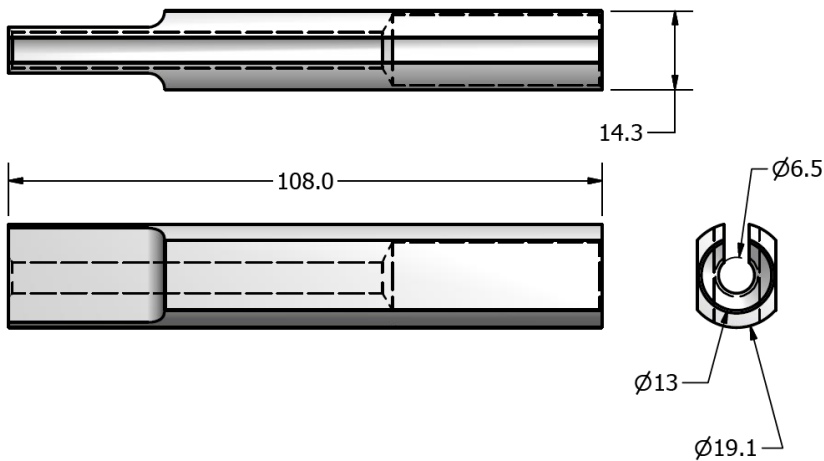
\* Note: USB active repeaters draw power from the USB port. Some laptops and tablets have marginal USB power specifications which may inhibit the use of an active repeater.

# 8430

USED TO ADAPT A 60CC CHAMBER OR DOSE DIODE TO  
A 3/4" DIA (19.1mm) CHAMBER CLAMP.

# DISCONTINUED

USE 8230M



DIMENSIONS IN mm

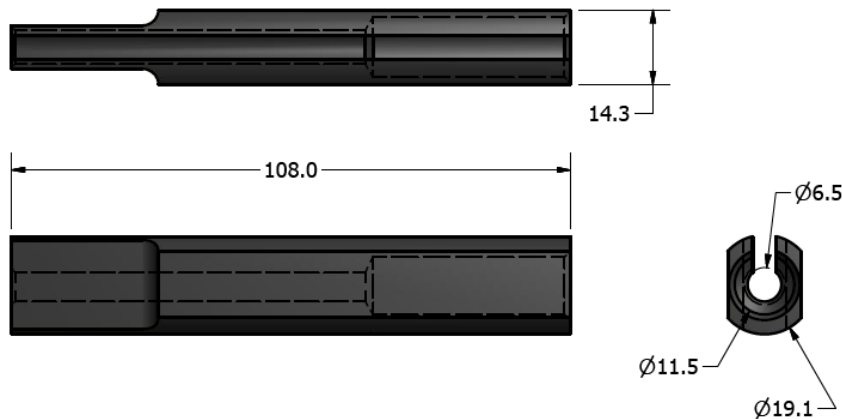
# 8430CT

SIMILAR TO THE 8430 EXCEPT ADAPTED TO THE  
3CT CHAMBER.

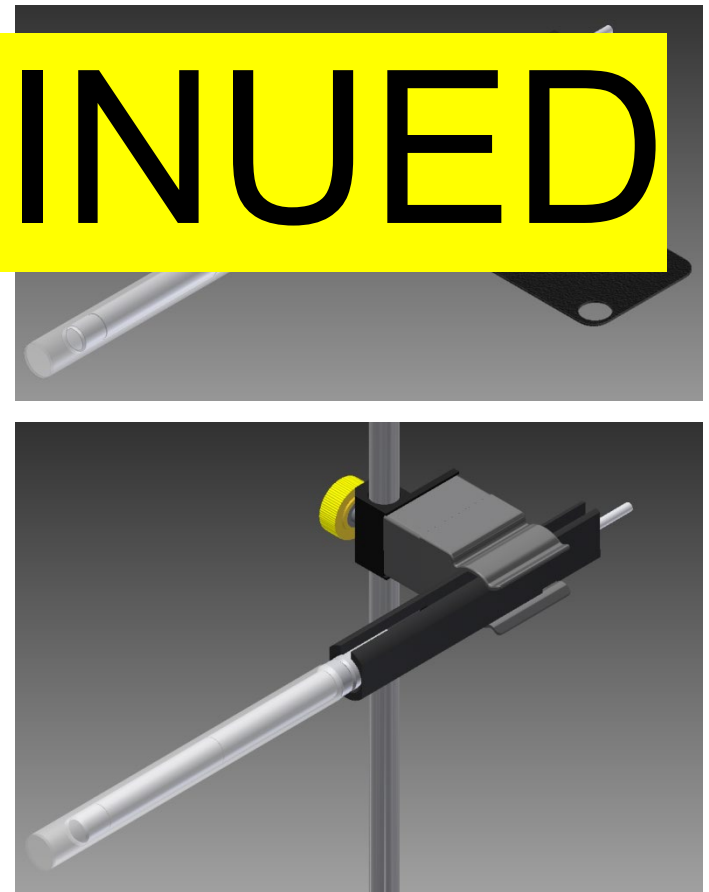
(WILL ALSO FIT THE 0.6CC AND 0.18CC CHAMBERS)

# DISCONTINUED

USE 8230MCT

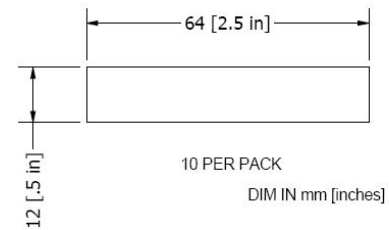
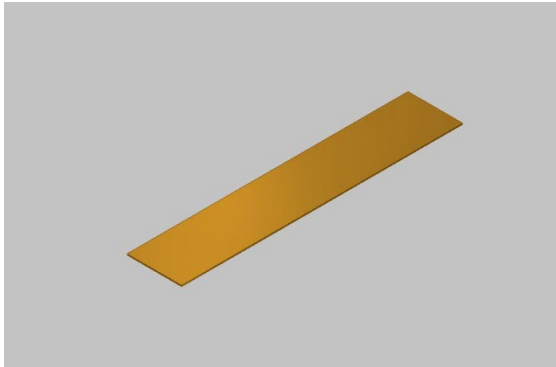


DIMENSIONS IN mm



# 8462-FILM

- Replacement Gafchromic film strips for the 8462 or 8463 Pan-Dental holder. 10 per pack.



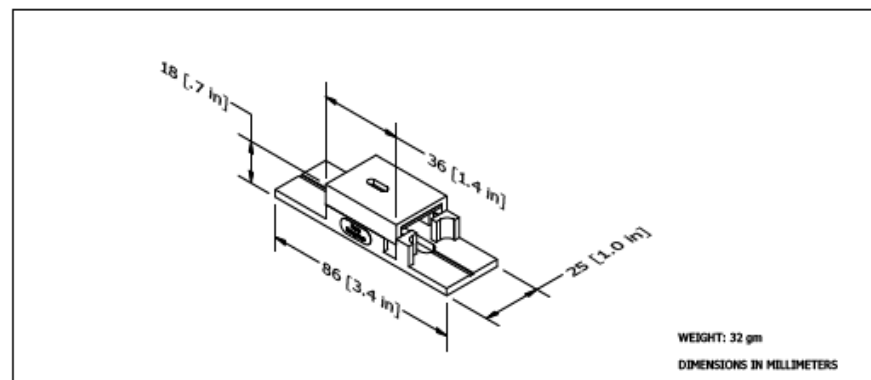
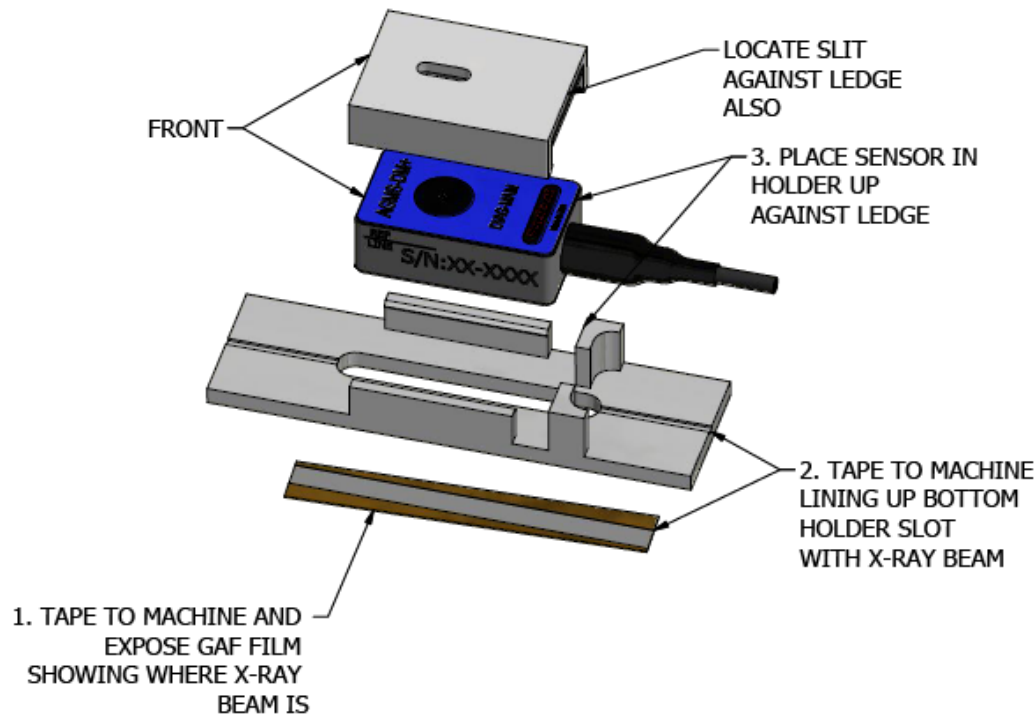
# 8463D – Pan-Dental Positioner

## Multi-sensor Positioner for Pan-Dental Machines

- The Model 8463D Pan-Dental Positioner has been designed to facilitate attaching and reliably positioning an AGMS-D+ or –DM+ multisensor on many types of panoramic dental systems.
- Using the Accu-Gold 2 software, a correct dose measurement can be obtained.

A densimet mask with an accurately machined slit is placed over the sensor to ensure that the area exposed is known. Lining up the slot of the base with the location of the beam as determined by the Gafchromic film, ensures that the slit for the sensor is within the beam. Angular alignment is easy since the exposed area defined by the slot is short which allows for larger angular misalignment. A correction based on the known area of the slit versus an entirely exposed detector, is then applied to the reading. Measurement accuracy is  $\pm 5\%$ .

10 strips of Gafchromic film included.  
Replacement film P/N: 8462-FILM.





# 8503 - CT Beam Width Tool

The Model 8503 CT Beam Width measuring tool kit is used to make beam width measurements with a new patent pending\* technique that simplifies the process for any quality assurance program. 3 different width radiopaque masks are provided to more closely correlate the measurement to the standard beam widths of the CT machine. A measurement is made with and without the mask and the difference allows one to compute the beam width to a significant precision. The mask is the only specialized equipment needed using this method, and no image analysis is required.

The Model 8503 kit includes the Model 8501 type sized to fit a Radcal -3CT chamber (9.1 mm) without it's phantom adapter, plus the Model 8502 type which is sized to fit 12.7 mm diameter CT chambers.

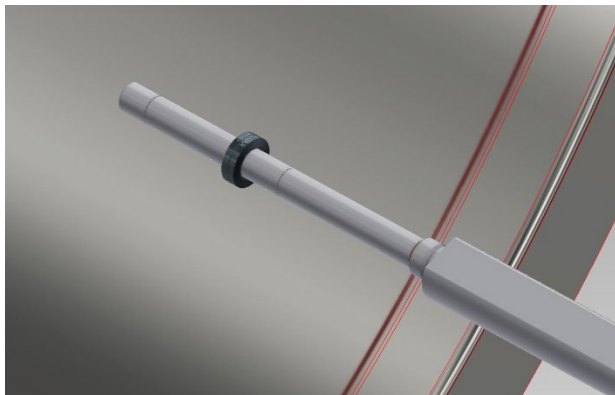
The kit comes with 3 different width masks, packaged in a compact zippered case. Each mask is engraved with the actual width.



Type	8501	8502
Width	5	5
	10	10
	15	20
Inner Diameter	9.4	12.7
Outer Diameter	15.4	18.7

(Dimensions in millimeters)

# 8503 (cont)



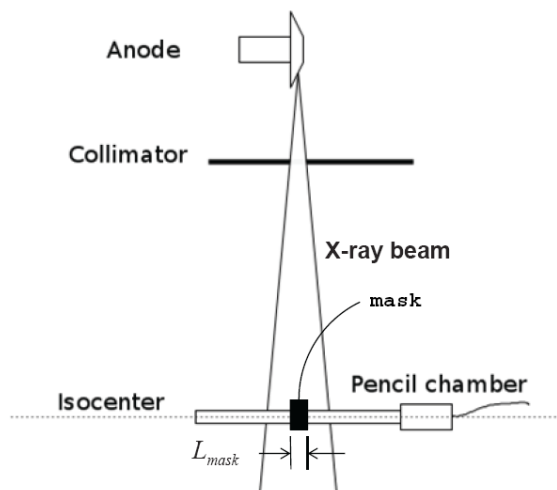
## Measuring the Beam Width –

Make the first measurement without the mask, then a second with the mask. Determine  $CF$ :

$$CF = \frac{(D_{nomask} - D_{mask})}{^1L_{mask}}$$

Once the value of  $CF$  has been determined, it is possible to determine the beam width  $W_{beam}$  for any nominal beam width by changing the collimation setting (and therefore the beam width) and acquiring a new measurement without the mask. The beam width  $W_{beam}$  can be calculated by dividing the new measurement by  $CF$ :

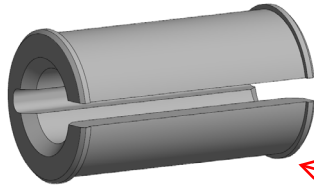
$$W_{beam} = \frac{D_{nomask}}{CF}$$



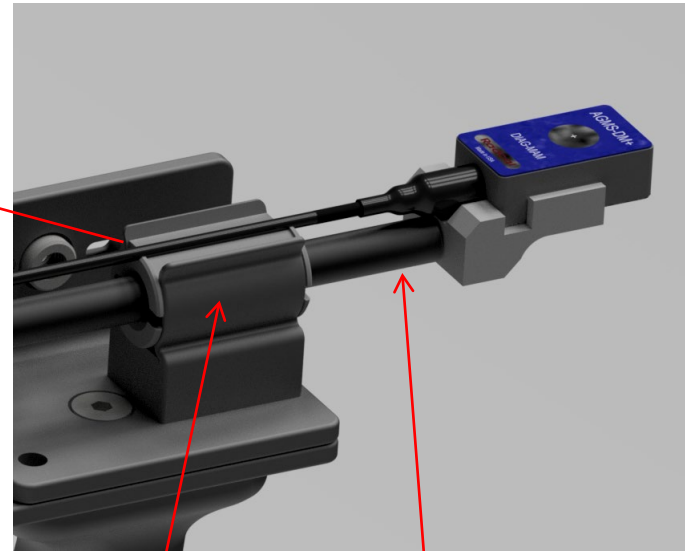
Using this method, it is possible to measure the beam width of a CT scanner using purely dosimetric means with an accuracy of better than 0.5 mm. The small mask is provided for use with older scanners that only have small beam widths. It should be possible to measure the beam width of most detector configurations for both the large and small focal spot in less than 15 minutes.

<sup>1</sup>Use the actual width as engraved on the mask.

# 8903 - Adapter



The 8903 adapts holders that use a 3/8" rod so that it can be held by the probe stem clip which is for 3/4" stems. Example: the 8905 Universal Chamber Holder.



3/4" CLIP

3/8" ROD

# 8905 – Universal Chamber Holder

## Universal

Convert your 1800cc or 180cc chamber to a hand held survey meter or mount any Radcal chamber on a tripod



## Portability



## Convenience



## Assembly Instructions

### Components

The Universal Chamber Holder consists of 5 components as shown. These components are combined as illustrated in these instructions to produce tripod or hand holding devices that are suitable for all Radcal chambers.



### Tripod Mount

Simply screw the support bracket (2) onto a tripod and fit the chamber into the spring clip as shown above. The chamber stem can be rotated in the clip to achieve the desired measurement direction when using "pancake" style chambers such as the 60 and 180cc chambers.

**Note:** The 60cc chamber requires the 8430 support adapter prior to mounting in the clip. The CT chamber requires the 8430CT adapter.



### Hand Support

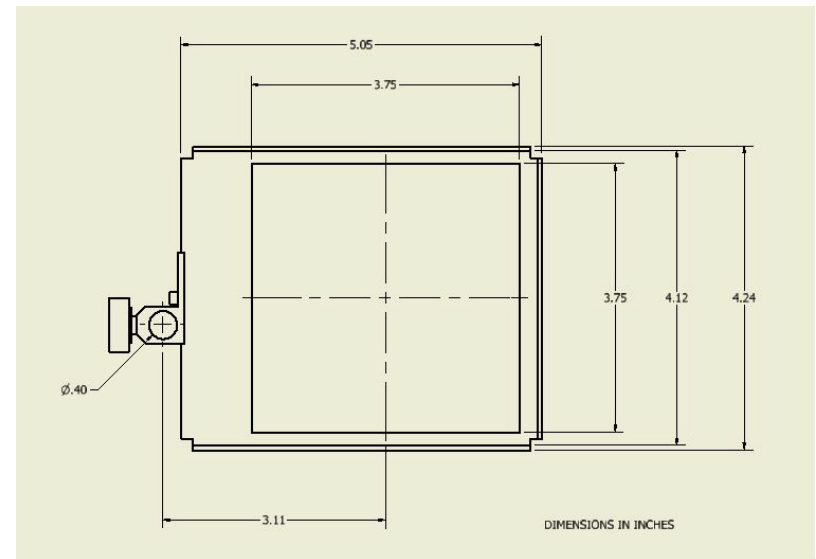
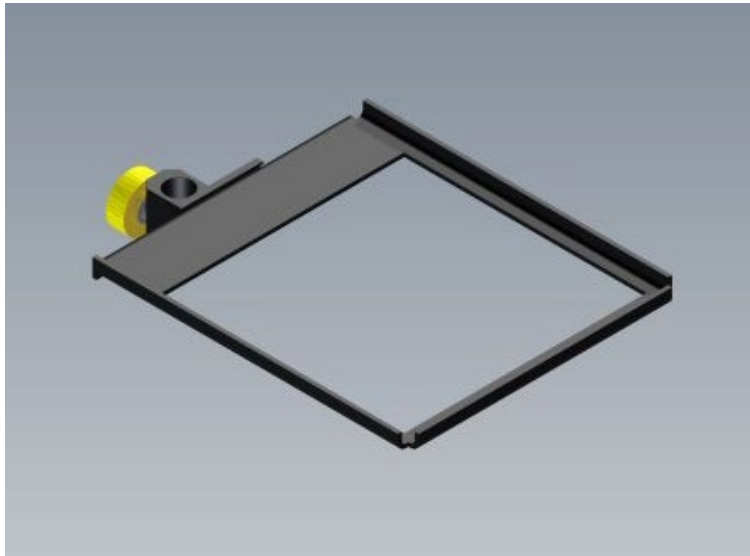
Fit the handle (5) to the support bracket (2) with screw (3) using the Allen key (4). This converts a Radcal chamber usually 180 or 1800cc into a survey type hand held instrument as shown here.

**Note:** When making very low level leakage measurements over a prolonged period, it is preferable to support the chamber on a tripod.

**Warning:** Only make hand held measurements in areas where the radiation dose has been estimated to be less than the permitted personnel exposure level.

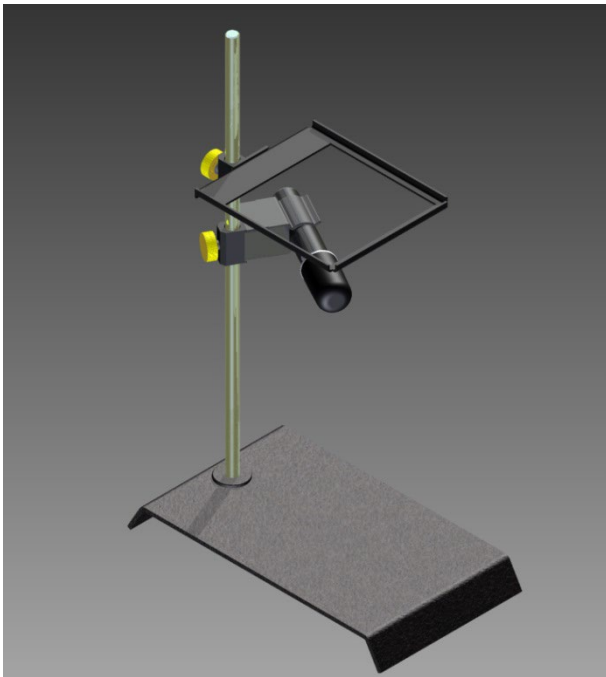


# 8915 - Filter Holder



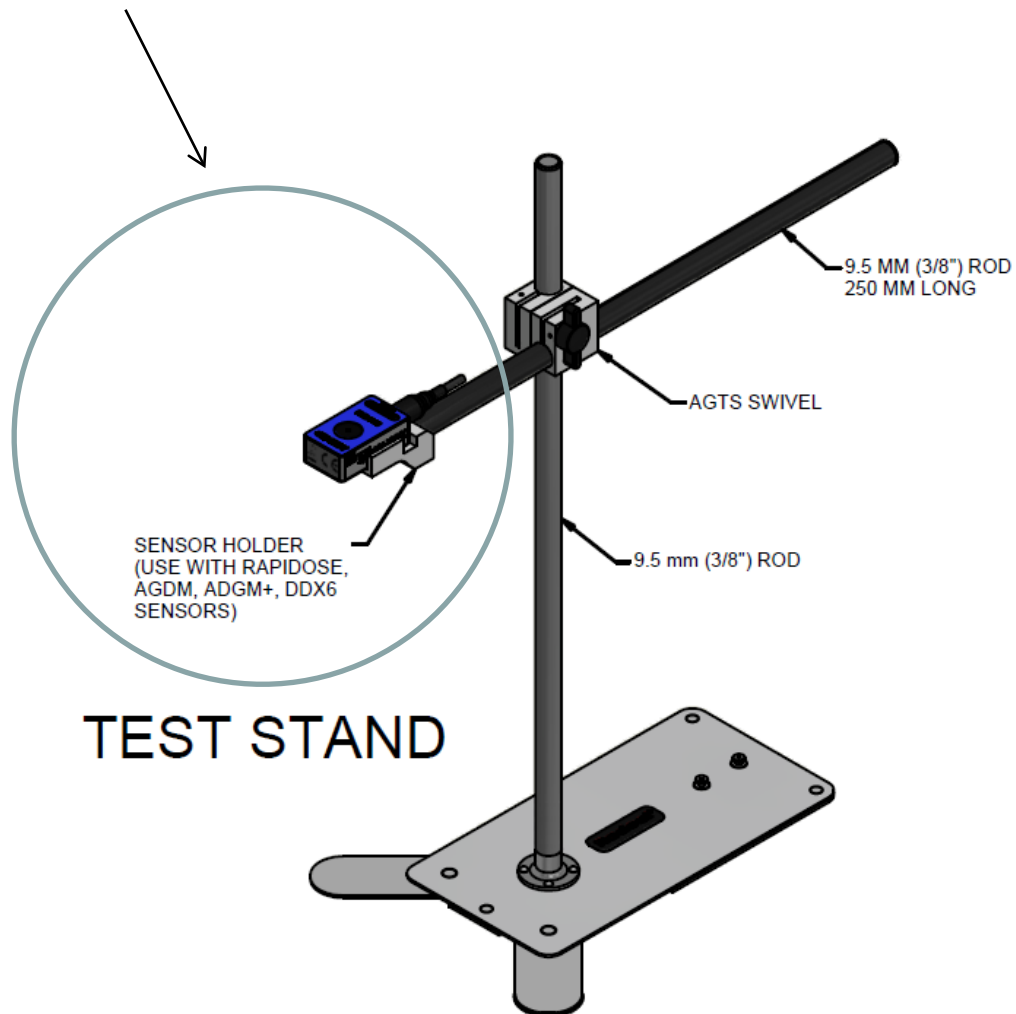
# 8915 - Filter Holder (cont)

- USE WITH MODEL 8220 ALUMINUM FILTER SET



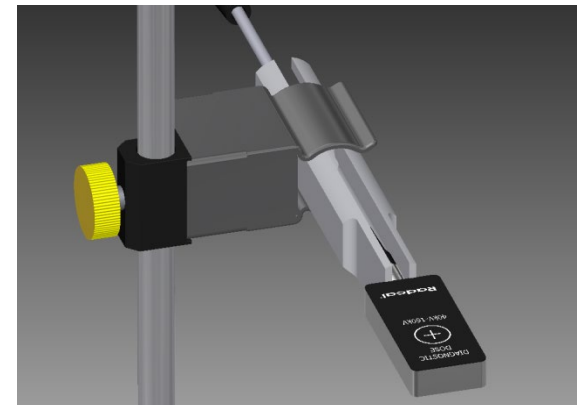
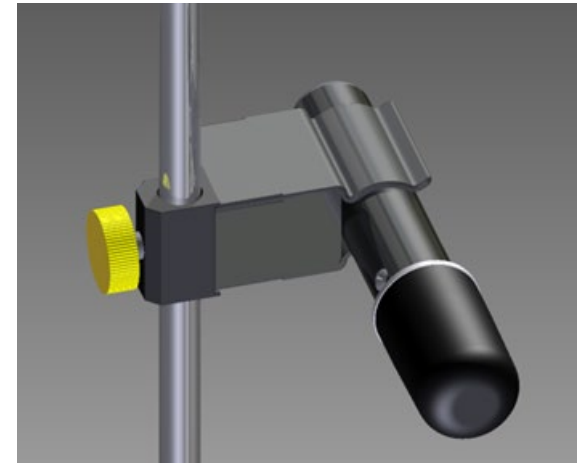
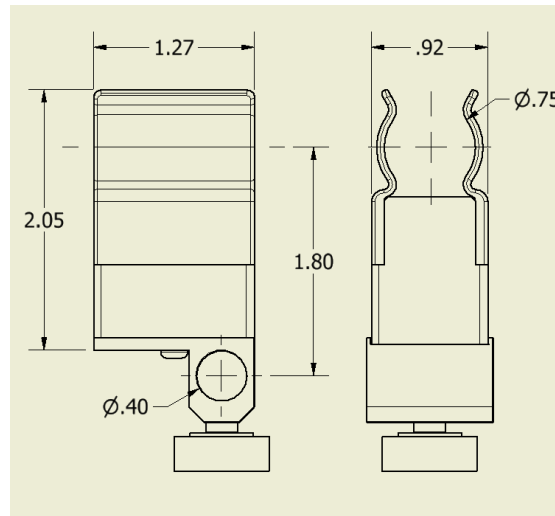
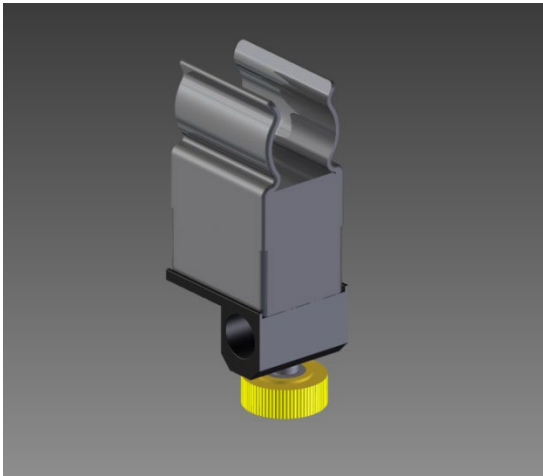
# 8926 – Test Stand Attachment

ROD and SENSOR-HOLDER



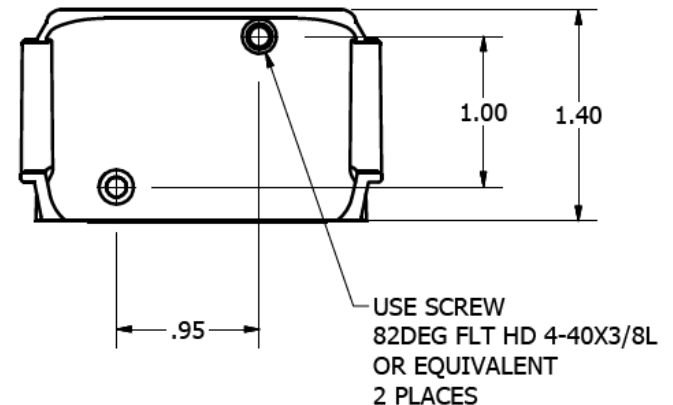
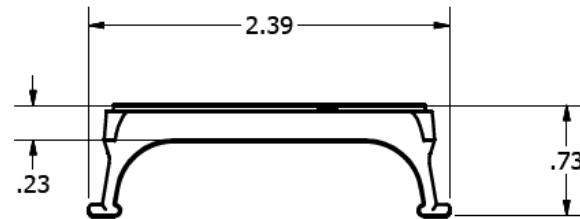
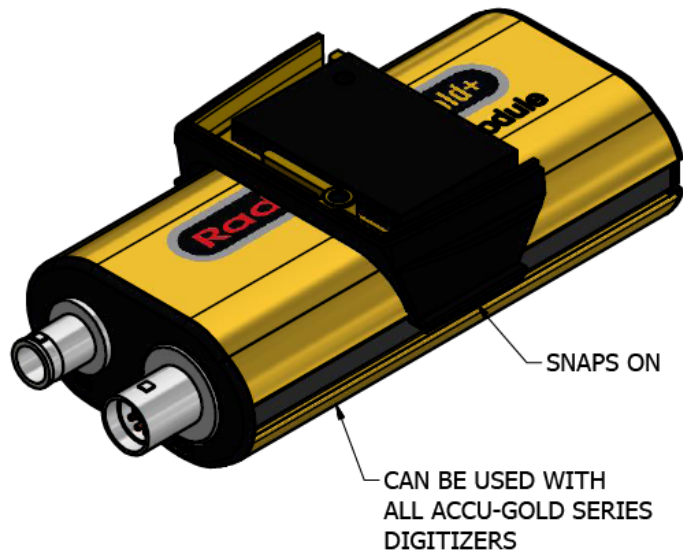
# 8930 – Chamber Holder

Designed to attach a 3/4" (19mm) stem to a 3/8" (9.5mm) stand rod.  
(All Radcal Ion Chambers use a 3/4" stem. All Radcal test stands use a 3/8" rod.)





# 8935 – Digitizer Mounting Clip



DIGITIZER MOUNTING CLIP

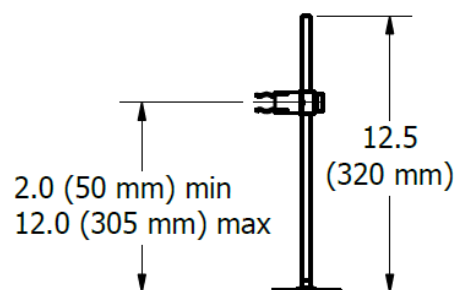
# 90E6-2 – Ion Chamber Extension

2 METER EXTENSION CORD BETWEEN THE ION CHAMBER  
INPUT OF THE DIGITIZER AND ANY 10X6 CHAMBER.

(Maximum length for this extension is 6 meters - special order)

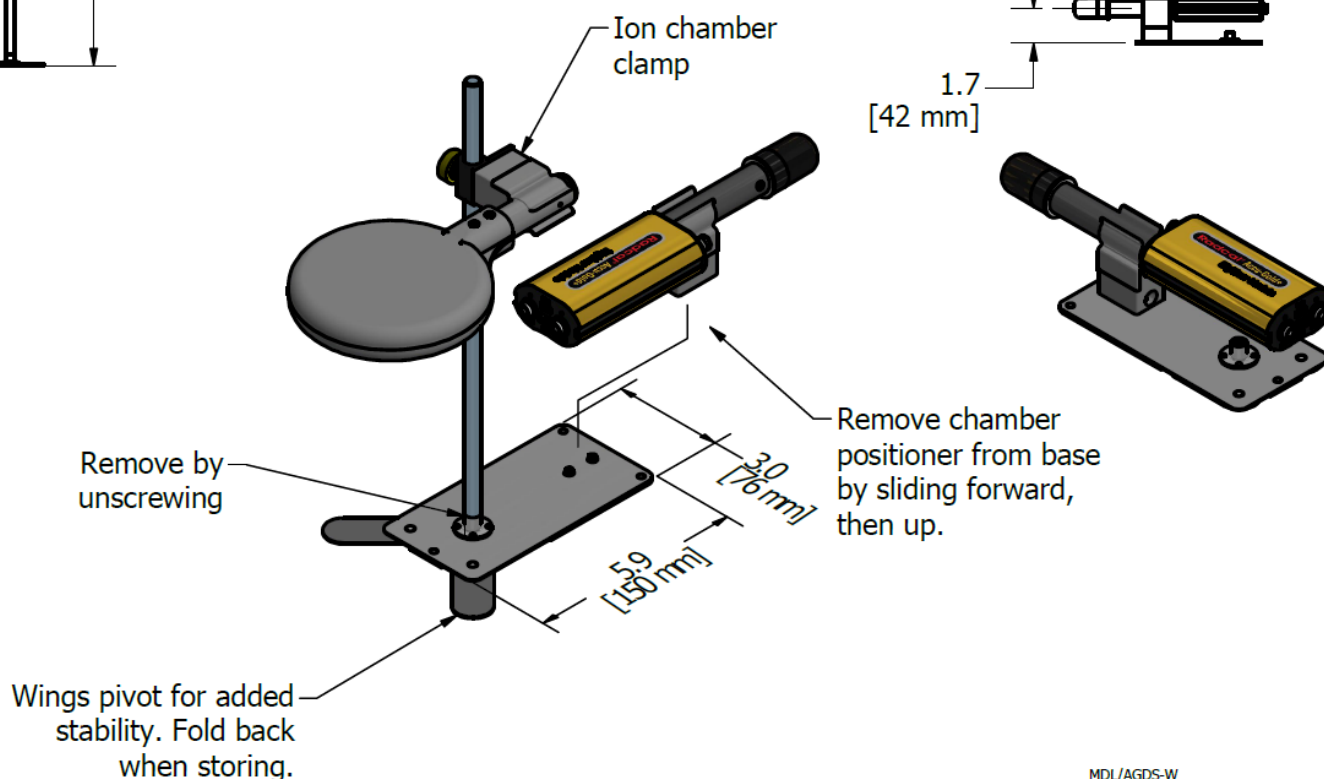


# ADTS-W – Accu-Dose Test Stand

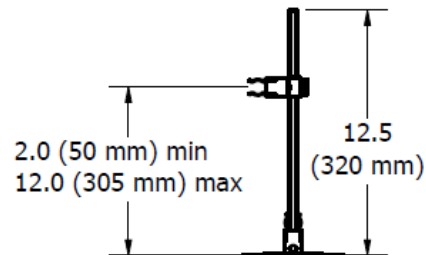


The ADTS-W lab stand includes the base, vertical rod with ion chamber clamp, and the chamber positioner.

The rod can be removed from the base and the ion chamber clamp used as shown.

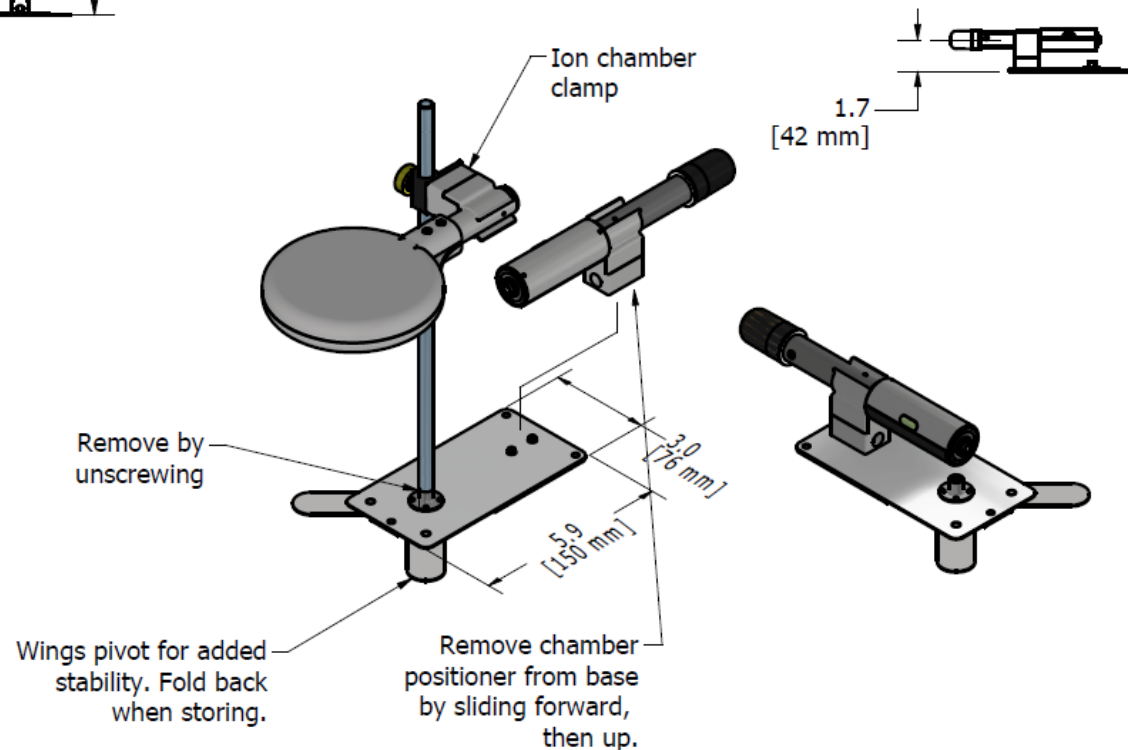


# ADTS-W – Accu-Dose Test Stand

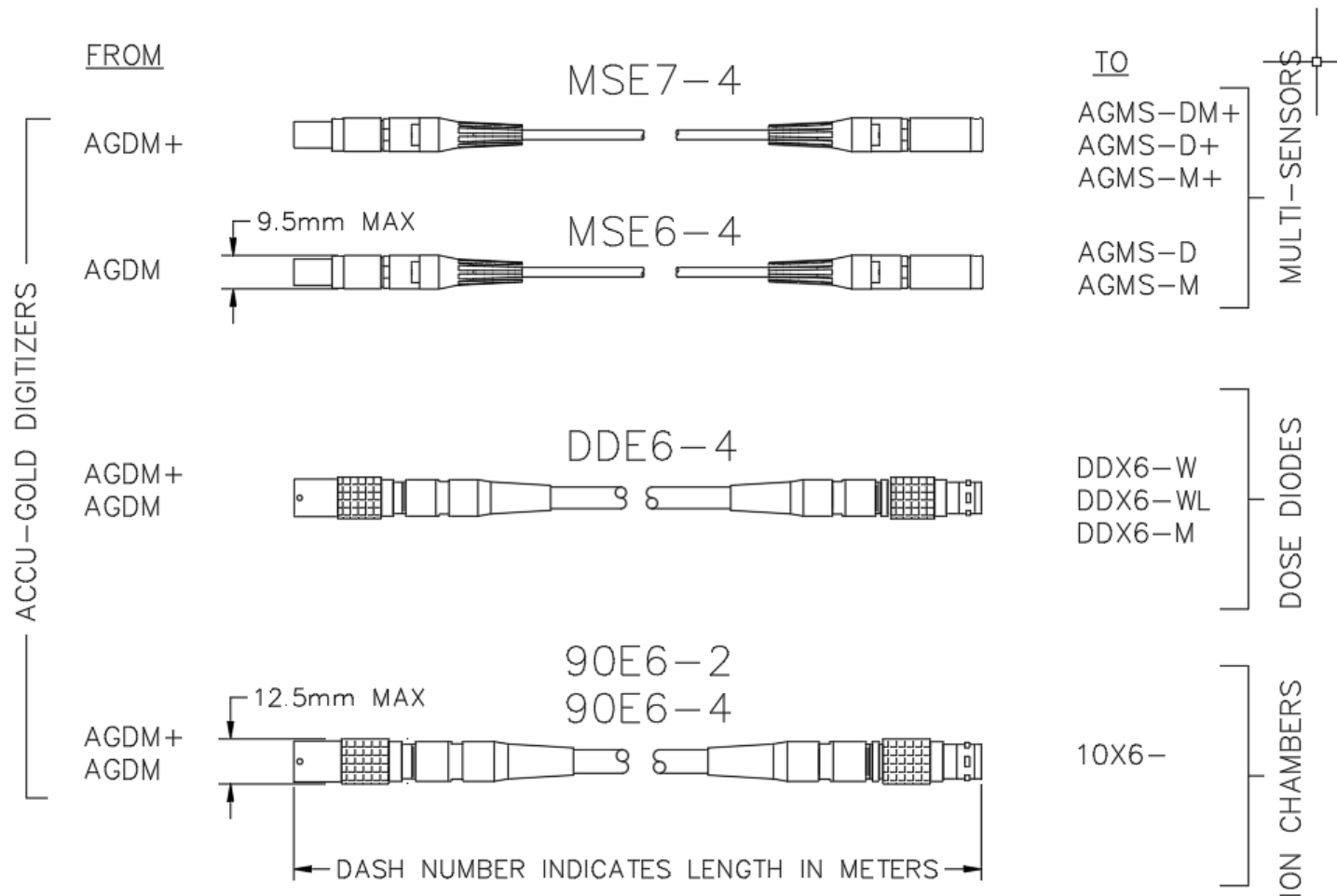


The ADTS-W lab stand includes the base, vertical rod with ion chamber clamp, and the chamber positioner.

The rod can be removed from the base and the ion chamber clamp used as shown.



# AG-EXTENSION CABLES



# AGTABSGO – 10” Display

AGTABSGOKEX – Includes  
keyboard and Excel 2016

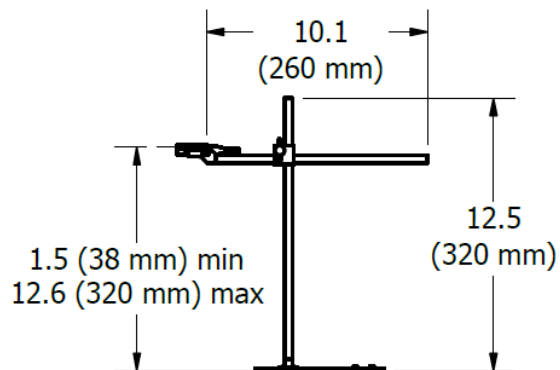
## Razor-thin 10.5-inch 2-in-1

- 10.5” touchscreen
- Built from magnesium-aluminum alloy - less-than-600g
- Ultraportable 2-in-1 with up to 11 hours of battery life
- Supports all the great new features of Windows 11
- HD display. 1500:1 contrast ratio. Gorilla Glass touch screen.



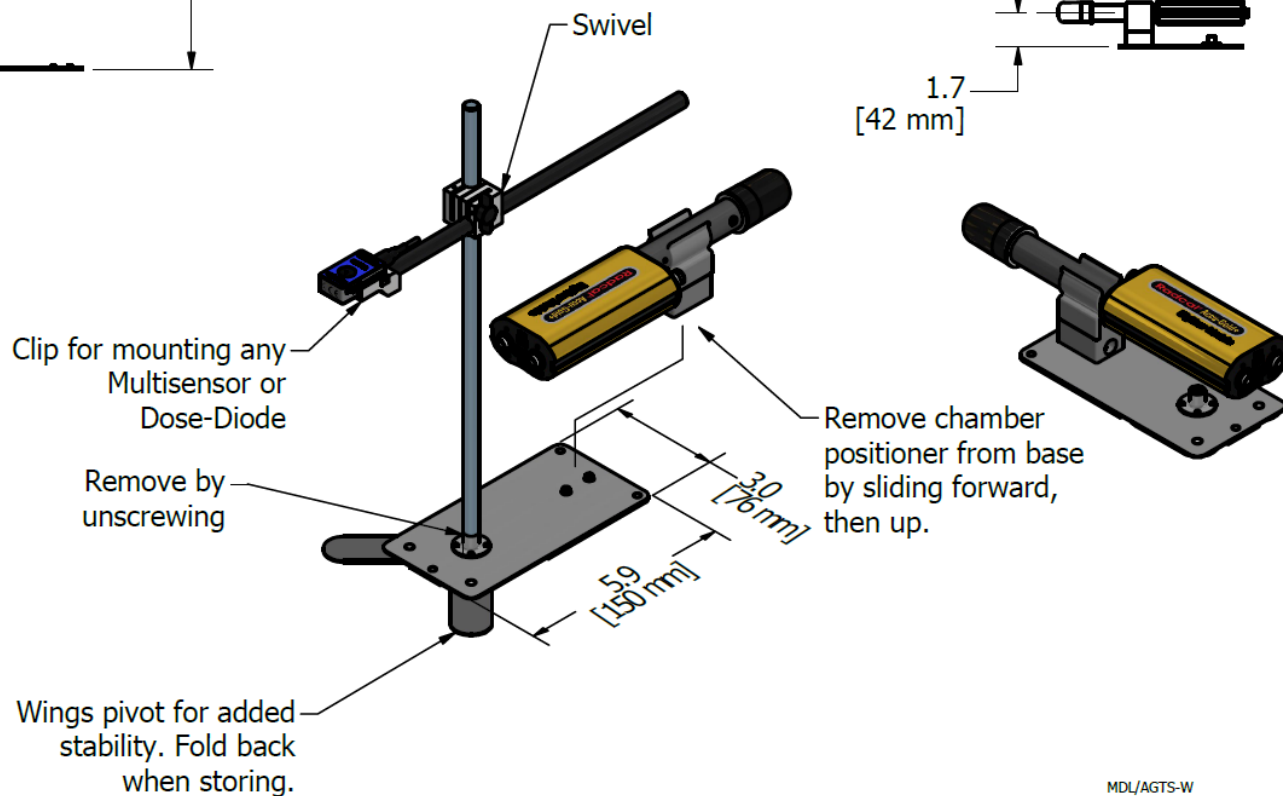
Storage	eMMC drive: 64 GB SSD drive: 128 GB
Dimensions	245 mm × 175 mm × 8.3 mm (9.65" × 6.9" × 0.33")
Battery life	WiFi: Up to 11 hours of typical device usage LTE Advanced: Up to 10.5 hours of typical device usage
Battery capacities	Battery Capacity Nominal (WH) 28.0 Battery Capacity Min (WH) 26.8 Screen: 10.5" PixelSense™ Display Resolution: 1920 x 1280 (220 PPI) Aspect ratio: 3:2 Contrast ratio: 1500:1 Touch: 10 point multi-touch Corning® Gorilla® Glass 3
Display	
Memory	4GB or 8GB LPDDR3
Graphics	Intel® UHD Graphics 615
Processor	Dual-core Intel® Pentium® Gold 6500Y processor  Dual-core 10th Gen Intel® Core™ i3-10100Y processor
Connections	1 x USB-C® 3.5 mm headphone jack 1 x Surface Connect port Surface Type Cover Port MicroSDXC Card Reader LTE Advanced: Nano SIM tray
Security	Enterprise-grade protection with Windows Hello face sign-in Firmware TPM Windows Hello face authentication camera (front-facing)
Cameras, video and audio	5.0 MP front-facing camera with 1080p HD video  8.0MP rear-facing auto-focus camera with 1080p HD video  Enhanced dual far-field Studio Mics 2W stereo speakers with Dolby® Audio™ WiFi 6: IEEE 802.11 a/b/g/n/ac/ax compatible Bluetooth Wireless 5.0 technology LTE Advanced
Wireless	
Software	Windows 11 Home in S mode? Microsoft 365 Family one month trial
Exterior	Casing: Magnesium Colours: Platinum, Matte Black Physical buttons: Volume, Power Ambient light sensor
Sensors	Accelerometer Gyroscope Magnetometer
Warranty	1-year limited hardware warranty Surface Go 3
What's in the box	Power Supply Quick Start Guide Safety and warranty documents
Weight	Wi-Fi: 544 g (1.2 lbs), not including Type Cover LTE Advanced: 553 g (1.22 lbs) Designed for Surface Pen
Pen Compatibility	Integrated magnetic storage with Surface Pen® Supports Microsoft Pen Protocol (MPP) Surface Go Signature Type Cover Surface Go Type Cover
Keyboard compatibility*	

# AGTS-W – Accu-Gold Test Stand



The AGTS-W lab stand includes the base, vertical rod with swivel, multisensor rod with clip, and the chamber positioner.

The rod can be removed from the base and the ion chamber clamp used as shown.



# CT-0.6

## Phantom Adapter for 0.6cc chambers

- The 0.6cc ion chamber has an excellent overall energy response in the diagnostic x-ray region making it an ideal chamber for point dose measurements in modern multi-slice CT x-ray machines. For CT applications, the fully guarded chamber is mounted at the end of a 3 meter low noise triax cable and is calibrated using x-rays @ 150 kVp and 10.2 mm Al HVL. Used with the phantom adapter, the chamber fits properly inside a standard CT head and body phantom.





# EXCEL



Microsoft Excel 2016  
needed for Accu-Gold  
Excel and Accu-Gold  
Excel for Templates.

Comes installed when  
ordered at the same time  
as the tablet.

(Included with large  
tablet, order separately  
for small tablet)