VERSATILE STEREOTACTIC QA

For fast and accurate commissioning of Accuray CyberKnife® treatment systems and patient specific dose verification plans.
Stereotactic Radiosurgery QA

The Stereotactic Dose Verification Phantom provides dose measurements for commissioning treatment systems, such as Accuray CyberKnife®, and specific plan dose verification. With just one phantom, use film, ion chambers and the unique SRS Dosimetric QA Slab to perform fast and accurate system evaluation.

Ion Chamber Configuration

Included ion chamber plugs
Model A16 Exradin Microchamber
Model A19 Exradin Classic Farmer-type Chamber

Precise orientation and positioning – Ideal for Accuray CyberKnife®
Convenient Design

The standard phantom is 20 x 20 x 10 cm in size, comprised of two 4 cm top and bottom build-up slabs, and two interchangeable 2 cm test inserts in the center. Optional inserts include the SRS Dosimetric QA Slab and SDVP Heterogeneity insert. Rigid alignment posts ensure phantom configurations are precisely repositioned, and thumb or flat-head screws secure the phantom together for repeatable results. The Stereotactic Dose Verification Phantom is constructed of Blue Water material and additional slabs are available in many thicknesses for increased build-up.

Built With Precision

Laser alignment lines are provided to accurately position the phantom for CT scans and for treatment. Gold and lead fiducial markers are located throughout the phantom for additional orientation and positioning accuracy. Distance measurements within the CT scanning and TPS can be verified with confidence.

For rigorous testing and evaluation of imaging, treatment planning, and dose conformity
CUSTOMIZABLE CONFIGURATIONS

Validate dose conformity, Monte Carlo algorithms and small field measurements with the Stereotactic Dose Verification Phantom inserts.

SRS Dosimetric QA Insert [OPTIONAL]

For rigorous testing and evaluation of imaging, treatment planning, and dose conformity.

The SRS Dosimetric QA Insert provides complex geometric targets to evaluate the imaging avoidance and inclusion components of the treatment planning system. The volume of the test objects are known and can be used to evaluate the volumetric accuracy of the treatment planning system. Five CT densities are available for a QA check of the CT density model.

SDVP Heterogeneity Insert [OPTIONAL]

Verify your treatment planning system's Monte Carlo dose calculation within 0.5%.

The SDVP Heterogeneity Insert allows for validation of Monte Carlo algorithms for small fields in both homogenous and heterogeneous phantom materials. The insert has two 5 cm slabs and a 2 cm chamber slab made of lung equivalent material inserted between the Stereotactic Dose Verification Phantom Blue Water slabs to test these different environments. The Blue Water cavity plug with embedded gold fiducial markers simulates a small target, allowing for testing to be completed on your Cyberknife System at the 4 mm field size.

Use the Exradin W1 Scintillator or other small field detector to provide accurate results in this difficult testing environment.

SDVP with SRS Dosimetric QA Insert

SDVP with SDVP Heterogeneity Insert
**Film Dosimetry Insert [INCLUDED]**

Five water equivalent Blue Water slabs allow film to be positioned 2 mm apart for dose profile measurements of very small SRS targets. A cavity in each slab positions a 2.5 x 2.5 inch film in the exact center.

**Ion Chamber Insert [INCLUDED]**

The 2 cm Blue Water Ion Chamber Insert has a cavity drilled to accommodate inter-changeable ion chamber plugs, allowing one slab to accommodate several plugs drilled for different ion chambers. The ion chamber plug positions the detector in the exact center of the phantom to facilitate repositioning and fast, accurate measurements. Two drilled ion chamber plugs and one solid plug are included with each phantom.
**Blue Water Construction**

**Build-up Slabs**
- Two 4.0 cm thick Blue Water slabs positioned above and below the film, chamber or SRS QA Dosimetric Slab provide adequate build-up
- White fiducial lines are located on the X, Y, Z coordinates of the phantom

**Tested for Consistency**
- Each production run of Blue Water is tested at an independent calibration laboratory for consistency

**Wide Range**
- Blue Water is also available in nine standard thicknesses for additional build-up
- Custom phantom sizes and shapes are available upon request

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**QA Crosschecker Specifications**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>MATERIAL DENSITY</th>
<th>NOMINAL CT DENSITY #</th>
<th>RELATIVE ELECTRON DENSITY TO WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Water</td>
<td>1.09 g/cm³</td>
<td>70</td>
<td>1.055</td>
</tr>
<tr>
<td>Black delrin alignment posts and thumbscrews</td>
<td>1.43 g/cm³</td>
<td>355</td>
<td>N/A</td>
</tr>
<tr>
<td>Nylon 6/6 flathead screws</td>
<td>1.14 g/cm³</td>
<td>100</td>
<td>N/A</td>
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<tr>
<td>Black C552 target shapes</td>
<td>1.76 g/cm³</td>
<td>600</td>
<td>1.593</td>
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<tr>
<td>Cortical bone plug</td>
<td>1.91 g/cm³</td>
<td>1500</td>
<td>1.782</td>
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<tr>
<td>Trabecular bone plug</td>
<td>1.20 g/cm³</td>
<td>300</td>
<td>1.157</td>
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<tr>
<td>Adipose plug</td>
<td>0.94 g/cm³</td>
<td>-60</td>
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<tr>
<td>Lung</td>
<td>0.28 g/cm³</td>
<td>-700</td>
<td>0.259</td>
</tr>
</tbody>
</table>

**Dimensions**

- **(Assembled phantom)** Height: 10.00 cm, 3.94 in Width: 20.00 cm, 7.87 in Length: 20.00 cm, 7.87 in Weight: 4.4 kg, 9.7 lbs
- **(SRS Dosimetric QA Insert)** Height: 2.00 cm, 0.79 in Width: 20.00 cm, 7.87 in Length: 20.00 cm, 7.87 in Weight: 0.9 kg, 2.0 lbs
- **(SDVP Heterogeneity Insert)** Height: 12.00 cm, 4.72 in Width: 20.00 cm, 7.87 in Length: 20.00 cm, 7.87 in Weight: 1.3 kg, 2.9 lbs

**Included Components**
1. Bottom slab with imbedded gold markers, lead BBs, and integral alignment posts
2. Top slab with imbedded gold markers and lead BBs
3. 2.0 cm chamber slab with generic cavity hole
4. Ion chamber plugs (drilled for Model A19 Exradin Classic Farmer-type Chamber and Model A16 Exradin Micro Chamber)
5. Solid ion chamber plug
6. 5.0 mm slabs
7. 2.0 mm slabs with recessed pockets to accept 2.500 x 2.500 film
8. Flathead nylon 6/6 screws
9. Black delrin thumbscrews
10. Flathead screwdriver

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**RELATED PRODUCTS**

**SuperMAX Electrometer & Exradin W1 Scintillator**

The SuperMAX electrometer paired with the Exradin W1 makes dose verification with the CyberKnife easier, simplifying and streamlining the process via integrated design and a straightforward user interface.

**SuperMAX**
- The premier two-channel, reference-grade electrometer on the market
- Two independent measurement channels
- Built-in detector library

**W1 Scintillator**
- Near water equivalence
- Linear dose response
- Dose rate independence

**PIPSpro Software**

PIPSpro 5.1 is your CyberKnife image analysis software. Version 5.1 of PIPSpro now includes improved CyberKnife compatibility, allowing you to configure complete TG-142 reports for your CyberKnife machine. Bring your dose verification full circle with PIPSpro’s powerful software.

- Filmless, quantifiable TG-142 QA
- Easy analysis, trending and reporting
- Validated performance

**QCkV-1 Phantom**

QCkV-1 is the perfect phantom for image quality reporting with CyberKnife. The QCkV-1 is equipped with tighter line pairs to account for high resolution of kV imagers. When PIPSpro 5.1 software is paired with the QCkV-1 Phantom, you have unparalleled ease of CyberKnife image analysis and trending.

The QCkV-1 Positioning Stand can be used to position the phantom at a 45 angle compatible with Accuray imagers.