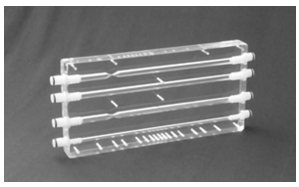
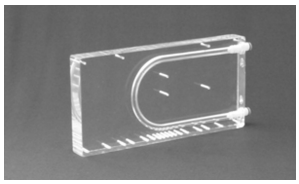
MRI Quality Assurance Flow Phantom Set

Product Description

The Model: MR-QA123 Quality Assurance Flow Phantom Set is a robust and portable standardized set of MR phase mapping quality assurance phantoms for acceptance testing, regular testing and comparative system testing. Evaluate flow measurement accuracy and repeatability, image resolution, vascular stenosis effects, as well as the influence of several imaging geometry factors; slice offset, in-plane position and slice-flow velocity. The flow phantoms will also benefit researchers and developers interested in further exploring MR quantitative flow as well as for developing improved data sets describing normal and pathological vasculature.



Straight tube phantom
Model: QA-STV



U-bend phantom
Model: QA-USV

Agarose separation slabs
Model: QA-AGSS

The Straight Tube Phantom provides a standard geometry for testing accuracy & precision, vascular stenosis effects, the effects of slice position and image resolution. The U-bend phantom evaluates the effects of vessel-slice obliquity. Three agarose separation slabs are positioned on top, below and in between the two silicone phantoms. These layers provide additional loading and static background signal for background correction. The agarose gel T1 and T2 values are 1760 msec and 42 msec respectively.

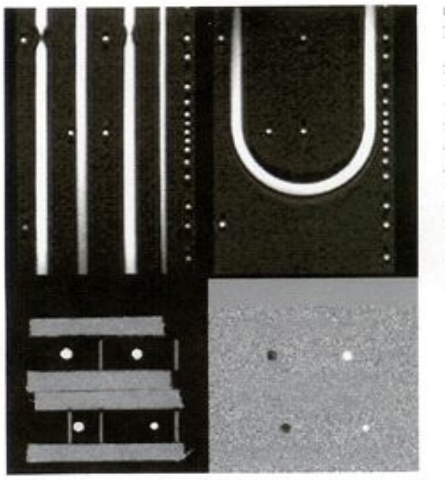
Both silicone phantoms incorporate fiducial markers to ensure reproducible phantom positioning within the magnet, and slice definition in both offset and angulations. Markers along and across the midlines of the flow layers are used with the patient alignment lights to position the phantom. These same fiducial markers, and additional markers that are visible on the planning scans, can be used to define specific offsets and angles. The fiducial markers consist of 3 mm diameter cylindrical wells that are visible in the planning scans when filled with water. Each silicone phantom possesses four corner alignment holes that are used to fix the two silicone flow phantoms by inserting a set of plastic rods.

Applications

- Calibration of clinical angiographic imaging systems.
- Phase mapping measurement accuracy & repeatability.
- Flow measurement accuracy & repeatability.
- Vascular stenosis flow effects.
- Assessing image resolution.
- Slice off-set geometry assessment.
- Slice-flow obliquity assessment.
- In-plane position assessment.

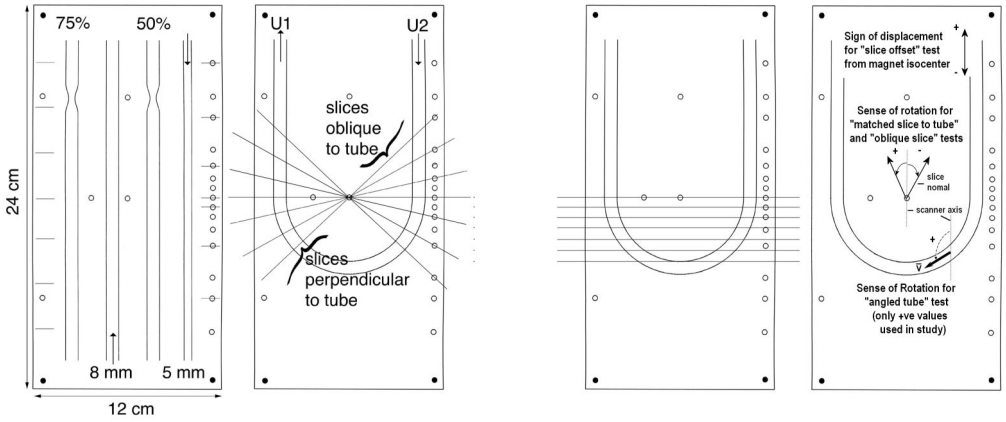
Phantom Features

- Robust and portable silicone design.
- Known standard geometry.
- Reproducible and easy alignment & assembly
- Geometry accuracy is known to within 50 µm.
- Vessel definition quality over the long term.
- Motion-free design.
- Leak free quick-disconnect connectors.
- Agarose separation slabs provide the background signal.



Coronal images

MRI Quality Assurance Flow Phantom Set



Straight tube phantom Specification, Model: QA-STV:

5 mm diameter vessel
8 mm diameter vessel
8 mm diameter vessel with 50% sinusoidal stenosis by diameter
8 mm diameter vessel with 75% sinusoidal stenosis by diameter
Phantom length 24 cm
Phantom width 12 cm

U-bend phantom Specification, Model: QA-USV:

8 mm diameter, 44 mm midline radius-of-curvature U-bend vessel
Phantom length 24 cm
Phantom width 12 cm

These phantoms are ideal for phase mapping, quantitative flow assessment and validation when used with Shelley Medical's CompuFlow 1000 MR pump system.

Reference:

Summers PE, Holdsworth DW, Nikolov HN, Rutt BK, Drangova M. Multisite Trial of MR Flow Measurement: Phantom and Protocol Design. JMRI 2005 May;21 (5):620-631

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