ULTRASOUND QA SOLUTIONS
Ensure Accurate Screening, Diagnosis and Monitoring
INNOVATORS IN ADVANCED ULTRASOUND TECHNIQUES

Gammex is the only ultrasound QA solutions manufacturer with expertise in medical physics since 1969.

We collaborated with clinical and academic thought leaders to develop our patented HE Gel™ and the first portable Doppler Flow phantoms in the world. HE (High Equivalency) Gel sets Gammex ultrasound products apart; it helps ensure all your transducers and system settings are fully tested across the entire frequency range from 2 to 18 MHz. Our HE Gel combined with our medical physics and quality control expertise gives you confidence with consistent diagnostic image quality in clinical applications.
HE Gel™ has superior longevity and provides multi-frequency, high quality, reproducible images.

A critical consideration in the selection of an ultrasound phantom

The higher the frequency response, the less depth of penetration. This can lead to a deterioration in axial resolution and penetration depth measurements at higher frequencies, and potentially can produce QC and performance results which are not representative of tissue.1,2,3 Gammex HE Gel solves these potential issues.

- Exceeds ACR, AIUM and other international program requirements
- Very uniform with a nonlinearity parameter (B/A) equivalent to human liver
- Near-linear variation of attenuation with frequencies between 2 to 18 MHz4,5
- Over 8 MHz, HE Gel supports accurate axial resolution and penetration depth representative of human tissue1,4

HE Gel™: Gammex’s patented multi-frequency TMM

| Frequency Range: | 2 – 18 MHz |
| Speed of Sound: | 1540 m/s |
| Attenuation Coefficient: | 0.5 or 0.7 dB/cm/MHz |
| Variation of attenuation with frequency: | $f^{1.08}$ at 0.5 dB/cm/MHz $f^{1.1}$ at 0.7 dB/cm/MHz |


Near-linear responses of attenuation with frequencies between 2 to 18 MHz support accurate axial resolution and penetration depth representative of human tissue.
The leading QA solution in ultrasound. The all-in-one Doppler flow Phantoms with B-Mode included. The best of both worlds.

Doppler 403 Flow and Mini-Doppler 1430 Flow phantoms assess system velocities using precision flow rates and Gammex's proprietary blood-mimicking fluid.

DOPPLER 403™ AND MINI-DOPPLER 1430™ FLOW PHANTOMS

These rugged, self-contained and battery-operated systems help cover all your Ultrasound QC needs and exceed ACR requirements. Precision flow rates (constant and parabolic) mimic blood flow in human vessels and allow you to reliably test system velocities.

Whether you require the full capabilities of the Doppler 403 Flow Phantom or the specialized small parts’ capabilities of the Mini-Doppler 1430 Flow Phantom, we have the solution for you.
With Doppler Flow Phantoms, go from storage to use in less than 10 seconds. Both Phantoms include advanced features that provide years of consistent QC measurements and high quality diagnostic imaging.

Common Highlights

- Patented multi-frequency HE Gel™
- Constant and pulsatile flow modes
- Rugged, self-contained, battery-operated

Mini-Doppler 1430 Flow Phantom

- Ideal for cardiology and musculoskeletal (MSK) applications
- Portable and lightweight (<10 lbs / 4.6 kg)

Doppler 403 Flow Phantom

- The reference standard in Doppler Ultrasound QA
- Laminar and parabolic flows are available (velocity dependent)
- Includes the Sono Transducer Holder
- New blood mimicking fluid formulation
  - Increased viscosity and decreased Reynolds number
  - No need to ever purchase or store blood mimicking fluid

Consistency with a Gammex Doppler Flow phantom... ... means confidence in your patient's assessment.

### Specifications

<table>
<thead>
<tr>
<th>Performance Measures</th>
<th>Doppler 403 Flow Phantom</th>
<th>Mini-Doppler 1430 Flow Phantom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image uniformity, artifact survey, axial and lateral resolution, horizontal and vertical distance, dead zone, depth of penetration, signal-to-noise ratio, anechoic and echogenic mass resolution, and gray scale contrast resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vessels (2): 5mm inner diameter; 1 horizontal at 2 cm depth, 1 diagonal at 40° from 2 to 16 cm deep</td>
<td>4mm inner diameter; 1 horizontal at 2 cm depth, 1 diagonal at 35° from 2 to 9 cm deep</td>
<td></td>
</tr>
<tr>
<td>Flow rates: Customizable, constant and pulsatile</td>
<td>Customizable, constant and pulsatile</td>
<td></td>
</tr>
<tr>
<td>Blood Mimicking Fluid: Speed of Sound 1550 ± 10 m/s, total volume approx. 300 ml</td>
<td>Speed of Sound 1550 ± 10 m/s, total volume approx. 100 ml</td>
<td></td>
</tr>
<tr>
<td>Targets: Strings, cysts, grey scale, resolution groups</td>
<td>Strings, cysts, grey scale, resolution groups</td>
<td></td>
</tr>
<tr>
<td>Dimensions (Case): 28 H x 30.5 W x 22 cm D (11 x 12 x 8.65 in.)</td>
<td>20 H x 23 W x 15.2 cm D (7.87 x 9.06 x 5.94 in.)</td>
<td></td>
</tr>
<tr>
<td>Weight: 8.34 kg (18 lbs. 4 oz.)</td>
<td>4.6 kg (9 lbs. 15 oz.)</td>
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</tbody>
</table>
ADVANCED SONO LINEUP FOR QC AND TRAINING

We can help simplify the transition from QC testing to clinical use. Our B-mode phantoms are reliably used to test ultrasound systems using clinical settings to save time during QC.

**Sono403™**
The Sono403 Multi-Purpose Phantom exceeds the ACR guidelines and recommendations for ultrasound QA. It has precision-placed targets for measuring system grey scale and axial resolution. The depth of the phantom is designed to simulate the typical depth through the abdomen to the liver.

The Sono403 family includes the 403 SCG and 403 SC models with complex to simple targets.

**Sono410™**
The Sono410 Phantom features a Full Contact™ curved scanning surface, which improves coupling between convex transducers and the phantom scanning window. Invert the phantom 180 degrees, and use the patented scanning interface for linear arrays. Check resolution against published limiting values with the targets at 80 and 150 mm, or apply the Skolnick method.

The Sono410 Phantom family includes the 410 SCG, 410 SC and 410 S models with complex to simple targets.

**Sono408™**
The Sono408 Spherical Lesion Phantom provides a unique way to test resolution performance in three dimensions: axial, lateral and elevational. Designed in collaboration with researchers to meet their precise specifications.
**Specifications (Sono)**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Sono403 SCG Multi-Purpose</th>
<th>Sono404 SCG Small Parts</th>
<th>Sono410 SCG Full Contact™</th>
<th>Sono408 Spherical Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patented HE Gel</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Speed of Sound 1540 m/s</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Frequency Range 2-18 MHz</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Patented composite film scanning surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>String/Pin targets- vertical</td>
<td>20 mm at 2 to 16 cm deep</td>
<td>5 mm at 1 to 9 cm deep</td>
<td>1, 2 and 4 cm at 1 to 15 cm deep</td>
<td></td>
</tr>
<tr>
<td>String/Pin targets- horizontal</td>
<td>30 mm at 2 to 12 cm deep</td>
<td>10 mm at 1 and 5 cm deep</td>
<td>2 cm at 2 cm deep, 4 cm at 7 and 13 cm deep</td>
<td></td>
</tr>
<tr>
<td>Anechoic Cysts (mm)</td>
<td>2, 4, 6, 10 mm diameter</td>
<td>1, 2, 4, 7 mm diameter</td>
<td>12 targets, 1, 2, 4, 8 mm diameter</td>
<td></td>
</tr>
<tr>
<td>Grey Scale (dB)</td>
<td>3 targets, 10 mm diameter, -6, +6 and +12</td>
<td>3 targets, 7 mm diameter, -6, +6 and +12</td>
<td>6 targets, 8 mm diameter, -6, +6 and +12</td>
<td></td>
</tr>
<tr>
<td>Full Contact™ Curved Scanning surface</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Anechoic Spherical Lesions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revalidation reports available</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Exceeds ACR and other program requirements</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Sono404™**

The Sono404 Small Parts Phantom provides training and testing for the most difficult cases. Pin targets are vertically spaced at 5 mm from 1 to 9 cm deep to measure image quality of small parts for ultrasound systems used in breast care centers and MSK. Test your high frequency transducers routinely to ensure precise measurements with patients.

The Sono404 Phantom family includes the 404 SCG and 404 SC models with complex to simple targets.

**Sono TE**

The Sono TE Phantom is a low-cost, high-value ultrasound transducer evaluation device. It provides affordable uniformity tests for linear, convex and intercavity transducers. Excellent for quick transducer tests and training.

**Sono Transducer Holder**

The Sono Transducer Holder fits any Gammex phantom including the Doppler Flow and Sono (B-mode) phantoms.

- Place a transducer in a precise location for reproducible tests over time
- Use the cable hook to contain the cable

**Rejuvenation Will Protect Your Investment**

Our Doppler Flow and Sono (B-Mode) phantoms are the only ultrasound phantoms on the market that can be rejuvenated and re-validated. Implementing a rejuvenation program can extend the life of your phantoms to 10+ years.
Gammex is a leader in advanced ultrasound techniques, and we have the expertise and technical knowledge to support your Quality Assurance programs.

Call us or visit our website for details.
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