Order online

Diagnostic Imaging DI

Multipurpose Tissue/Cyst Ultrasound Phantom

Nuclear Associates Model 84-317

- Complies with the AIUM standard for quality assurance
- The best-performing phantom in the industry, for evaluating system and transducer performance
- Includes cyst-like and solid structures in various sizes
- Simulates liver tissue scattering and attenuation
- Now available with 0.5 or 0.7 dB/cm/MHz attenuation coefficients
- Provides resolution targets at several depths
- Compatible with all types of imaging equipment, including small parts scanners
- Withstands extreme temperatures, making it ideal for service and quality control use
- Three large scanning surfaces

Introduction

The Multipurpose Tissue/Cyst Ultrasound Phantom (Model 84-317) helps provide both quantitative and qualitative information on the performance of all diagnostic ultrasound imaging systems. When used on a regular basis, it promotes uniform system performance, better patient data, and more productive work schedules. Imaging equipment can be evaluated for axial and lateral resolution, vertical and horizontal distance calibration and linearity, and ring down.

This updated and improved phantom is filled with Zerdine®, a solid-elastic, water-based polymer that exhibits echogenic patterns similar to those encountered in human liver parenchyma. Unlike other phantom materials, Zerdine is elastic and is not damaged by heavier scanning pressures. It is also highly-resistant to damage by extreme temperatures.

Specifications

Phantom body

Phantom material Zerdine*; solid-elastic water-based polymer

Freezing point 0°C

Melting point Above 100°C

Storage temperature 32° to 150°F (0° to 66°C)

Speed of sound 1540 m/s ± 6 m/s

Attenuation coefficient 0.5 dB/cm/MHz or 0.7 dB/cm/MHz

Scatter Mimics healthy liver parenchyma

Positional tolerance of wires (monofilaments) Stated distance ± 0.10 mm

Diameter of cylindrical targets Stated Diameter ± 5%

Base material Cork

Phantom dimensions 7.87 (w) x 8.26 (h) x 3.15 in (t) (20 x 21 x 8 cm)

Weight 7.4 lb (3.36 kg)

Optional scanning trough

For scanning with a liquid coupling agent (water or coupling oil)

Optional carrying case

This insulated case is large enough to hold the phantom and trough and also protects the phantom from extreme heat or cold

Optional acoustic standoffs

A fast, easy, accurate way to bring the focal zone closer to the surface, for enhanced diagnostic detail during ultrasound examinations

Material Sonolucent gel

Dimensions 10 x 15 cm

Weight 1 lb (0.42 kg)

Optional accessories

Scanning Trough (Model 84-318), for Oil and Water

Carrying Case (Model 89-317), insulated for phantom and trough

Acoustic Standoff, 1.0 cm (Model 84-325-1000)

Acoustic Standoff, 2.0 cm (Model 84-325-2000)

Acoustic Standoff, 3.0 cm (Model 84-325-3000)

Acoustic Standoff, 4.0 cm (Model 84-325)

Acoustic Standoff Set, includes all four: 1, 2, 3, and 4 cm (Model 84-325-1234)

Available model(s)

84-317 Multipurpose Tissue/Cyst Ultrasound Phantom, 0.5 dB/cm/MHz

84-317-7000 Multipurpose Tissue/Cyst Ultrasound Phantom, 0.7 dB/cm/MHz

84-314 Multipurpose Tissue/Cyst Ultrasound Phantom Kit, consists of phantom (either 0.5 dB/cm/MHz or 0.7 dB/cm/MHz), scanning trough, carrying case, and the "AIUM Quality Assurance Manual"

* *US Patent No. 5196343.*

For additional information, please contact Cardinal Health, Radiation Management Services customer service at 440.248.9300, 800.850.4608, or fax: 440.349.2307; located at 6045 Cochran Road, Cleveland, Ohio 44139-3303, USA.

84-317-ds rev 1 10 mar 03

CardinalHealth

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General Purpose Multi-Tissue Ultrasound Phantom

Nuclear Associates Model 84-340

DI Diagnostic Imaging

- Complies with the AIUM Standard for Quality Assurance
- Simulates characteristics found in human liver tissue
- Ensures patient's safety and doctor's confidence
- Perfect for QC/service use since phantom is not affected by changes in temperature
- Promotes uniform system performance for all types of imaging equipment, including small parts scanners
- Supplied with insulated, rugged storage/carrying case
- Quick scanning can be performed without removing phantom from the airtight case

Introduction

The Model 84-340 General Purpose Multi-tissue Ultrasound Phantom is constructed from a patented solid elastic material called Zerdine®. Unlike other phantom materials, it is not affected by changes in temperature. It can be subjected to boiling or freezing conditions without sustaining significant damage. It is also more elastic than other materials and allows more pressure to be applied to the scanning surface without subsequent damage to the material.

Applications

At normal room temperature, Zerdine will accurately simulate the ultrasound characteristics found in human liver tissue. It contains dense and cystic masses in a range of sizes, one high-density target, and an assortment of nylon monofilament target groups. It was designed to allow for assessment of linearity, axial and lateral resolution, depth calibration, dead zone measurement, and registration within two different backgrounds of 0.5 and 0.7 dB/cm/MHz. The phantom is protected by an acrylic case and plastic membrane to facilitate scanning and minimize desiccation.

Specifications

Material Zerdine*
Type Solid elastic water-based polymer
Freezing point 0ºC
Melting point Above 100ºC
Attenuation coefficient 0.5 dB/cm/MHz; 0.7 dB/cm/MHz
Speed of sound 1540 m/s
Scanning well 1 cm deep
Scanning membrane Saran

Targets
Material Monofilament nylon wire
Diameter 0.1 mm

Vertical plane target
Number of groups 1
Number of targets 7
Depth range 9 cm
Spacing 2 cm

Horizontal plane target
Number of groups 1
Number of targets 7
Depth range 9 cm
Spacing 2 cm

Resolution targets
Number of arrays 3
Depths 3 and 10 cm
Axial intervals 0.5, 1, 2, 3, 4, and 5 mm
Horizontal intervals 1, 2, 3, 4, and 5 mm

Low contrast targets
Number of targets 4
Diameter of targets 2, 4, 6, and 8 mm
Depth of targets 2, 4, 6, and 8 cm
Contrast of targets - 15 dB relative to background

High contrast targets
Number of targets 4
Diameter of targets 2, 4, 6, and 8 mm
Depth of targets 2, 4, 6, and 8 cm
Contrast of targets 15 dB relative to background
Phantom dimensions 7.08 x 5.9 in (18 x 15 cm)
Weight 17 lb with case (7.73 kg)

Available model(s)
84-340 General Purpose Multi-tissue Ultrasound Phantom

Tolerances
- Distance between any two wires equals stated ± 0.38 mm
- Cylinder diameters equal state ± 5%

Accuracy of measured parameters
- Speed of sound equals stated ± 3.0 m/s
- Attenuation coefficient equals stated ± 0.02 dB/cm/MHz

Temperature at time of measurement
- Recorded on certification document

* *US Patent No. 5196343.*

For additional information, please contact Cardinal Health, Radiation Management Services customer service at 440.248.9300, 800.850.4608, or fax: 440.349.2307; located at 6045 Cochran Road, Cleveland, Ohio 44139-3303, USA.

84-340-ds rev 1 10 mar 03

Order online

Diagnostic Imaging DI

General Purpose Urethane Ultrasound Phantom

Nuclear Associates Model 84-342

- Features three scan-surfaces
- Complies with the AIUM standard for quality assurance
- Rugged, durable
- Ideal for service use
- Performs a wide variety of tests needed to meet AIUM and ACR ultrasound QC guidelines
- Includes an in-house certification traceable to NIST standards

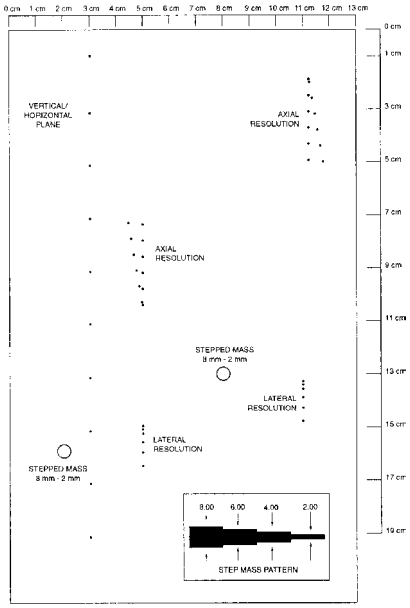


Diagram showing internal targets

Specifications

Phantom material Proprietary urethane matrix

Attenuation coefficient 0.50 dB/cm/MHz ± 0.05 dB/cm/MHz at 5.0 MHz

Speed of sound 1430 m/s ± 10 m/s at 20ºC

Scanning surfaces

Number 3

Depth of scanning wells 2 cm

Housing material White PVC

The General Purpose Urethane Ultrasound Phantom offers a reliable medium which contains specific, known test objects, making it more accurate than random scannable materials. The phantom enables repeatable, qualitative assessment of ultrasound scanner performance over time. The phantom is constructed from a proprietary urethane matrix, housed within a rigid PVC container with three separate scanning windows. It allows for depth of penetration, uniformity, distance calibration, resolution and lesion detectability assessment. The three scanning surfaces also provide the user with the ultimate in versatility, simplicity and ease of use. The scanning wells permit either water or gel to be used as an acoustic coupling agent.

Specifications *(continued)*

Vertical plane targets

Number of groups 1

Number of targets per group 10

Depth of visualization 1 and 19 cm

Visualized spacing 20.0 ± 0.38 mm

Material Nylon monofilament, 0.10 mm Ø

Horizontal plane targets (Note: This target group is also the Vertical Plane Target Group)

Number of groups 1

Number of targets per group 10

Depth of visualization 3 and 10 cm

Visualized spacing 20.0 ± 0.35 mm

Material Nylon monofilament, 0.10 mm Ø

Axial resolution targets

Number of groups 2

Number of targets per group 12

Depths of visualization 2, 5, 8, and 11 cm

Axial resolution test range 0.50, 1.0 to 5.0 mm, in 1.00 mm increments

Material Nylon monofilament, 0.10 mm Ø

Lateral resolution targets

Number of groups 2

Number of targets per group 6

Depths of visualization 2, 5, 8, and 11 cm

Lateral resolution test range 1.00 to 5.00 mm, in 1.00 mm increments

Material Nylon monofilament, 0.10 Ø

Anechoic targets

Number of targets 2

Diameter 8 to 2 mm, in 2 mm increments

Depths of visualization 2, 5, 8, 11, 13, and 16 cm

Phantom dimensions 17 x 25.5 x 7 cm thick

Weight 12 lb (5.45 kg)

Available model(s)

84-342 General Purpose Urethane Ultrasound Phantom, includes carrying case

For additional information, please contact Cardinal Health, Radiation Management Services customer service at 440.248.9300, 800.850.4608, or fax: 440.349.2307; located at 6045 Cochran Road, Cleveland, Ohio 44139-3303, USA.

Specifications are subject to change without notice.

84-342-ds rev 1 10 mar 03

CardinalHealth

Order online

Near Field Ultrasound Phantom

Nuclear Associates Model 84-350

DI Diagnostic Imaging

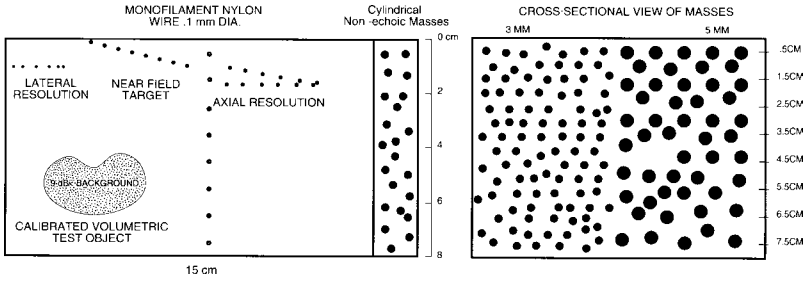
Introduction

The Model 84-350 Near Field Ultrasound Phantom is constructed from a patented solid elastic material called Zerdine®. Unlike other phantom materials, it is not affected by changes in temperature. It can be subjected to boiling or freezing conditions without sustaining significant damage. It is also more elastic than other materials and allows more pressure to be applied to the scanning surface without subsequent damage to the material.

- Complies with the AIUM Standard for Quality Assurance
- Simulates characteristics found in human breast tissue
- Monitors image quality for all high resolution scanners
- Embedded monofilament target groups maximize imaging capabilities
- Perfect for QC/service use, since phantom is not affected by changes in temperature

Applications

At normal room temperature, Zerdine will accurately simulate the ultrasound characteristics found in human breast tissue. The phantom contains low-scatter masses in a range of sizes and depths, a calibrated volumetric test object, and an assortment of nylon monofilament target groups. It was designed to allow for assessment of linearity, axial and lateral resolution, depth calibration, dead zone measurement, volumetric calibration, and registration. The phantom is protected by an acrylic case and plastic membrane to facilitate scanning and minimize desiccation.



Specifications

Material Zerdine*
- **Type** Solid elastic water-based polymer
- **Freezing point** 0ºC
- **Melting point** Above 100ºC

Attenuation coefficient 0.5 dB/cm/MHz
Speed of sound 1540 m/s
Scanning well 1 cm deep
Scanning membrane Polyurethane

Targets

Material Monofilament nylon wire
Diameter 0.1 mm

Vertical plane target

Depth range 8 cm
Spacing 1 cm

Resolution targets

Number of arrays 2
Depths 1.5 and 2 cm
Axial intervals 0.5, 1, 2, 3, 4, and 5 mm
Horizontal intervals 1, 2, 3, 4, and 5 mm

Ring down target

1 to 10 mm

Volumetric test object

Calibrated asymmetric shape

Spherical cysts

Diameter 5 mm, 3 mm; random distribution
Phantom dimensions 5.9 x 3.15 in (15 x 8 cm)
Weight 12 lb with case

Available model(s)

84-350 Near Field Ultrasound Phantom

Tolerances
- Distance between any two wires equals stated ± 0.38 mm

Accuracy of Measured Parameters
- Speed of sound equals stated ± 3.0 m/s
- Attenuation coefficient equals stated ± 0.02 dB/cm/MHz

Temperature at Time of Measurement
- Recorded on certification document

* *US Patent No. 5196343.*

For additional information, please contact Cardinal Health, Radiation Management Services customer service at 440.248.9300, 800.850.4608, or fax: 440.349.2307; located at 6045 Cochran Road, Cleveland, Ohio 44139-3303, USA.

Specifications are subject to change without notice.

84-350-ds rev 1 10 mar 03

Order online

Diagnostic Imaging DI

AccuFlo™ Doppler Flow Phantom

Nuclear Associates Model 84-433

- Simulates actual blood flow for evaluation of your Doppler ultrasound system
- Sample gate position accuracy
- Flow direction discrimination
- B-mode position vs. color flow position

Introduction

It's a fact! Quality control and performance testing of the Stand-Alone Doppler, Duplex Doppler, and Two-Dimensional Color-Flow Doppler units continue to grow in importance, due to the significant increase in the clinical utilization of these products. Now, you can implement an effective QC program and perform quick QC checks of your Doppler system with the AccuFlo Doppler Flow Phantom.

AccuFlo is the first and only inexpensive, easy-to-use Doppler QC test phantom using blood mimicking fluid.

AccuFlo also eliminates the problems associated with traditional, high-cost, complex Doppler flow phantoms.

The AccuFlo Doppler Flow Phantom is an easy-to-use blood flow simulator that is completely self-contained; it houses a pump, a simulated vessel, blood mimicking fluid, and internal electrical components.

AccuFlo is supplied with a specification validation certificate for propagation speed, sample gate depth, Doppler angle, and peak flow velocity.

Applications

The AccuFlo Doppler Flow Phantom operates in a continuous (non-pulsed) flow mode.

Using the phantom, you can:

- Check the accuracy of the sample gate location by positioning the gate in the center of the vessel
- Use the ultrasound system's pulse Doppler mode to check the relative accuracy of the ultrasound system's velocity readout
- Compare the location of the vessel on B-mode with the location of the vessel as indicated by the color flow pattern
- Check the ultrasound system's ability to discern direction, after noting the flow direction indicated on the phantom's exterior. Both conventional and color Doppler modes should be checked

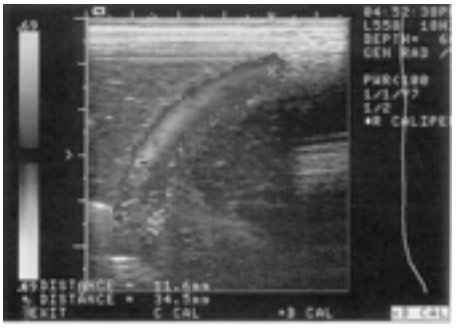
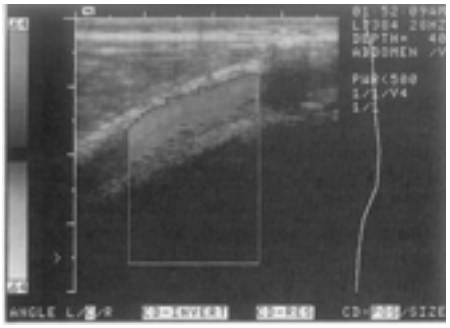
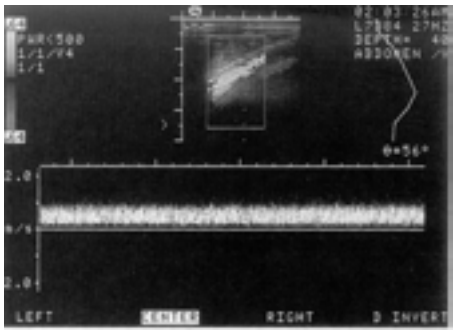


Image demonstrating Doppler flow and velocity



Color Doppler B-mode image which demonstrates flow through the simulated vessel



Duplex presentation of the flow pattern along with the spectral analysis display

Specifications

Phantom housing material Thermoformed ABS plastic
Phantom scanning material Tissue equivalent urethane
Usable scan surface 6.5 x 6.5 cm
Blood-mimicking material speed of sound 1570 m/sec
Reservoir capacity 1.4 L (1400 cc)
Flow velocity 100 cm/sec approximate
Vessel angle 35°
Vessel internal diameter 6.3 mm
Vessel depth 6 to 3 cm
Power requirements 110 VAC
Dimensions 4.72 (w) x 8.46 (d) x 4.72 in (h) (12 x 21.5 x 12 cm)

Optional accessories

Blood Mimicking Fluid, 1.8 L bottle (Model 84-433-1000)

Available model(s)

84-433 AccuFlo Doppler Flow Phantom

For additional information, please contact Cardinal Health, Radiation Management Services customer service at 440.248.9300, 800.850.4608, or fax: 440.349.2307; located at 6045 Cochran Road, Cleveland, Ohio 44139-3303, USA.

Specifications are subject to change without notice.

AccuFlo is a trademark of Cardinal Health, Inc. or one of its subsidiaries.

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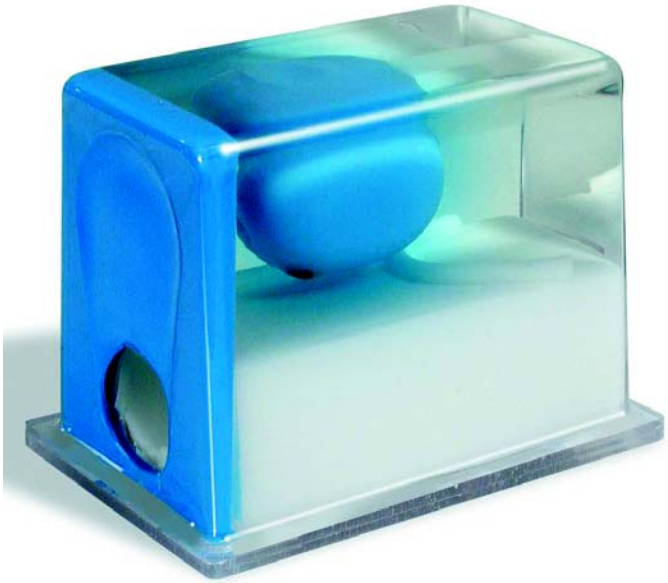
Prostate Phantoms for Ultrasound-Guided Procedures

Model 84-353 Series

DI Diagnostic Imaging



Shown is Model 84-358

- Ten versatile designs to choose from
- The ideal training devices for ultrasound-guided:
  - Cryosurgery
  - Radioactive seed implantation
  - Needle biopsy

These disposable tissue-equivalent phantoms have been developed specifically for practicing procedures which involve scanning the prostate with a rectal probe.

The prostate and the structures simulating the rectal wall, seminal vesicles and urethra, are contained within a 11.5 x 7.0 x 9.5 cm clear acrylic container. A 3 mm simulated perineal membrane enables various probes and surgical tools to be inserted into the prostate.

Available model(s)

84-353 Basic Prostate Phantom

84-353-5000 Basic Prostate Phantom with embedded lesion. 0.5 cc ± hypoechoic unless otherwise specified. (Ideal for needle biopsy)

84-353-8800 Basic Prostate Phantom with clear rectal area, for visualization of probe orientation

84-353-8000 Basic Prostate Phantom with semi-clear prostate, allows visualization of seed placement

84-353-8100 Basic Prostate Phantom with pubic arch simulation

84-353-8123 Basic Prostate Phantom with removable pubic arch simulation. Ideal for permanent seed implantation (disposable)

84-353-8200 Basic Prostate Phantom with hollow urethra, for catheter insertion

84-353-8300 Basic Prostate Phantom with oil-based prostate gel, for minimal needle tracks

84-353-8400 Basic Prostate Phantom with small rectal opening

84-358 Basic Prostate Phantom, non-disposable urethane

For additional information, please contact Cardinal Health, Radiation Management Services customer service at 440.248.9300, 800.850.4608, or fax: 440.349.2307; located at 6045 Cochran Road, Cleveland, Ohio 44139-3303, USA.

84-353-ds rev 1 10 mar 03

Image Intensifier Covers

Models 03-003 to 03-604

Order online

DI Diagnostic Imaging

Model	Description	Dimension	Weight	Package
03-018	Image Intensifier Cover	18 inch Ø (46 cm)	4 lb (1.8 kg)	50
03-024	Image Intensifier Cover	24 inch Ø (61 cm)	4 lb (1.8 kg)	50
03-030	Image Intensifier Cover	30 inch Ø (76 cm)	4 lb (1.8 kg)	50
03-036	Image Intensifier Cover	36 inch Ø (91 cm)	4 lb (1.8 kg)	50
03-039	Image Intensifier Cover	39 inch Ø (99 cm)	5 lb (2.3 kg)	50
03-042	Image Intensifier Cover	42 inch Ø (107 cm)	5 lb (2.3 kg)	50
03-183	Image Intensifier Cover	18 (h) X 36 inch (w) (46 x 91 cm)	5 lb (2.3 kg)	50
03-303	Image Intensifier Cover	30 (h) x 30 inch (w) (76 x 76 cm)	9 lb (4.1 kg)	50
03-308	Image Intensifier Cover	30 (w) x 38 inch (h) (76 x 97 cm)	9 lb (4.1 kg)	50
03-363	Image Intensifier Cover	36 (w) x 30 inch (h) (91 x 76 cm)	9 lb (4.1 kg)	50
03-360	Image Intensifier Cover Kit	36 + 36 + 30 inch (3 unit kit)	9 lb (4.1 kg)	50
03-403	Image Intensifier Cover	40 (w) x 30 inch (h) (102 x 76 cm)	9 lb (4.1 kg)	50
03-404	Image Intensifier Cover	40 (w) x 40 inch (h) (102 x 102 cm)	9 lb (4.1 kg)	50
03-483	Image Intensifier Cover	48 (w) x 30 inch (h) (122 x 76 cm)	10 lb (4.5 kg)	50
03-524	Image Intensifier Cover	52 (h) x 48 inch (w) (132 x 122 cm)	20 lb (9.1 kg)	50
03-604	Mini C-Arm Cover	60 (h) x 40 inch (w) (152 x 102 cm)	20 lb (9.1 kg)	40
03-003	Image Intensifier Cover	30 inch Ø (76 cm)	4 lb (1.8 kg)	100
03-009	Image Intensifier Cover	39 inch Ø (99 cm)	5 lb (2.3 kg)	100
03-275	Image Intensifier Cover (non-sterile)	27 (h) x 50 inch (w) (69 x 127 cm)	4 lb (1.8 kg)	50
03-406	Image Intensifier Cover (non-sterile)	40 (w) x 60 inch (h) (102 x 152 cm)	20 lb (9.1 kg)	50
03-029	Foot Pedal Cover	18 x 15 inch	4 lb (1.8 kg)	50
03-413	Remote Control Cover	4 (h) x 13 inch (w) (10 x 33 cm), with 4 inch cuff	3 lb (1.4 kg)	100

The Image Intensifier Covers are non-latex and protect both the patient and the equipment when performing a sterile procedure. They provide an excellent barrier and facilitates sterile handling of equipment. Each cover is individually packed in "peel open" pouches that provide high assurance of sterility.

Ultrasound Probe Covers

Models 03-416 to 03-748

Order online

Model	Description	Dimension	Weight	Package
03-416	Ultrasound Probe Cover	4 (w) x 16 inch (h) (10 x 41 cm)	3 lb (1.4 kg)	100
03-432	Ultrasound Probe Cover	4 (w) x 32 inch (h) (10 x 81 cm)	3 lb (1.4 kg)	100
03-714	Ultrasound Probe Cover	7 (w) x 14 inch (h) (18 x 36 cm)	3 lb (1.4 kg)	100
03-732	Ultrasound Probe Cover	7 (w) x 32 inch (h) (18 x 81 cm)	3 lb (1.4 kg)	100
03-748	Ultrasound Probe Cover	7 (w) x 48 inch (h) (18 x 122 cm)	4 lb (1.8 kg)	100
03-748PC	Ultrasound Probe Cover with 5 inch Pocket	7 (w) x 48 inch (h) (18 x 122 cm)	4 lb (1.8 kg)	100
03-748B	Ultrasound Probe Cover Pocket and Gel	7 (w) x 48 inch (h) (18 x 122 cm)	5 lb (2.3 kg)	50
03-670	Ultrasound Probe Cover	6 (w) x 70 inch (h) (15 x 178 cm)	5 lb (2.3 kg)	50

These non-latex covers protect both the patient and the equipment when performing a sterile ultrasound procedure. Probe covers are designed for one-time use only and are individually packaged in sterile pouches.

Ultrasound Gel Products

Models 03-361 to 03-924

Order online

Ultrasound gels are:

- conductive
- non-staining
- non-corrosive
- salt and alcohol free
- odorless
- water soluble

Ultrasound scanning gels are specially formulated with the needs of the diagnostic imaging professional in mind. Our gel provides a superior transmission medium for high intensity sound waves. Our gel is also available in a therapeutic formulation for the therapeutic professional.

Model	Description	Dimension	Weight	Package
03-924S	Ultrasound Scanning Gel	250 ml squeeze bottle	16 lb (7.3 kg)	24
03-901S	Ultrasound Scanning Gel	5 L container	11 lb (5 kg)	1
03-924	Therapeutic Scanning Gel	250 ml squeeze bottle	16 lb (7.3 kg)	24
03-901	Therapeutic Scanning Gel	5 L container	11 lb (5 kg)	1
03-361	Ultrasound Scanning Gel	20 ml sterile packet	3 lb (1.4 kg)	25

For additional information, please contact Radiation Management Services business of Cardinal Health at 440.248.9300, fax 440.349.2307, or e-mail rmsinfo@cardinal.com; located at 6045 Cochran Rd., Cleveland, Ohio 44139-3303, USA.

 03-003-ds rev 1 09 jul 03

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