



## Transducers, Cables, Couplants and Test Blocks for Ultrasonic Precision Thickness Gages

Olympus NDT offers a complete selection of transducers, cables, couplants, calibration test blocks, and accessories to meet a wide variety of ultrasonic precision thickness gaging applications.

Ultrasonic thickness gages are used to precisely measure wall thickness in virtually any engineering material — metals, plastics, ceramics, composites, and more. Access to only one side of the part is required and a wide variety of materials can be measured with a single instrument.

The Panametrics-NDT Microscan transducers are frequently used with the Series 25 and Series 35 thickness gages, as well as other commercially available thickness gages, flaw detectors and ultrasonic instrumentation.

Microscan transducer part numbers reflect the connector designation:  
 RM = Right Angle Microdot®,  
 SM = Straight Microdot,  
 RB = Right Angle BNC,  
 SB = Straight BNC,  
 SU = Straight UHF

When selecting a transducer, please review the chart below or consult the Transducer Frequency Range in the Instruction Manual that was shipped with your gage.

THICKNESS GAGE MODEL	TRANSDUCER FREQUENCY RANGE
35, 35DL 25, 25DL 25DL PLUS 25MULTI PLUS	2.0 TO 30 MHz
35HP, 35DL-HP 25HP PLUS 25HPV	0.5 TO 5.0 MHz



# CONTACT TRANSDUCERS

One of the advantages of an Panametrics-NDT Microscan contact transducer is its versatility; a single transducer can cover a broad thickness range in many engineering materials. Contact transducers are constructed with the unique WC-5 wearplate for greater durability and a longer life.

Frequency (MHz)	Element Diameter		Transducer Part Number
	inches	mm	
0.5	1.00	25	M101-SB
1.0	1.00	25	M102-SB
1.0	0.50	13	M103-SB
2.25	0.5	13	M106-RM, M106-SM
2.25	0.5	13	M1036*
5.0	0.50	13	M109-RM, M109-SM
5.0	0.25	6	M110-RM , M110-SM
10	0.25	6	M112-RM, M112-SM
10	0.125	3	M1016-RM
20	0.125	3	M116-RM, M116-SM
20	0.125	3	M116H-RM**

RM = Right Angle Microdot; SM = Straight Microdot; SB = Straight BNC

\*High Penetration Transducer

\*\*Only use with Holder, P/N 2133



# SONOPEN® TRANSDUCERS



The Sonopen® transducer has a replaceable delay line that is tapered to a small contact area. This transducer makes reliable thickness measurements in applications such as turbine blades, threads on plastic bottle necks and tight radii on plastic containers. High-temperature Sonopen delay lines are also available.

Frequency MHz	Nominal Element Size		Transducer Part Numbers		
	inches	mm	Straight Handle	Right Angle Handle	45° Handle
15	0.125	3	V260-SM	V260-RM	V260-45

Sonopen Replaceable Delay Lines		
Tip diameter		Part Number
inches	mm	
0.080	2.0	DLP-3
0.060	1.5	DLP-302
0.080	2.0	DLP-301*

### Spring Loaded Holder

SLH-V260-SM\*

\* For use with V260-SM only.

\* High temperature delay for use up to 350° F (175° C)

# DELAY LINE TRANSDUCERS

Panametrics-NDT Microscan delay line transducers provide excellent performance on very thin materials, elevated temperatures or in applications that require a high degree of thickness resolution.

Frequency (MHz)	Element Diameter		Transducer Part Number	Holders
	inches	mm		
0.5	1.00	25	M2008	—
2.25	0.50	13	M207-RB	—
5.0	0.50	13	M206-RB	—
5.0	0.25	6	M201-RM	—
5.0	0.25	6	M201H-RM	2127
10	0.25	6	M202-RM, M202-SM	—
10	0.25	6	M202H-RM	2127
10	0.125	3	M203-RM, M203-SM	—
20	0.125	3	M208-RM, M208-SM	—
20	0.125	3	M208H-RM	2133
20	0.125	3	M2055*	—
30	0.25	6	V213-BC-RM*	—

\* Delay line is not replaceable on these transducers.



# REPLACEABLE DELAY LINES

## STANDARD DELAY LINES

Standard delay lines are used in many applications. Special conditions such as high surface temperature, curvature of the material or hard-to-access areas may require the use of special delay lines.

Element Diameter		Delay Line Part Number	Maximum Thickness Measurement Limit*					
inches	mm		Steel - Mode 2		Steel - Mode 3		Plastic - Mode 2	
			inches	mm	inches	mm	inches	mm
0.50	13	DLH-2	1.0	25	0.5	13	0.5	13
0.25	6	DLH-1	1.0	25	0.5	13	0.5	13
0.125	3	DLH-3	0.5	13	0.2	5	0.2	5

\* Exact range depends on material sound velocity, transducer frequency, part geometry and surface condition.

## HIGH TEMPERATURE DELAY LINES

High temperature delay lines function as a protective buffer between the hot surface of the test piece and the transducer's crystal. At elevated temperatures, intermittent contact is recommended to protect the transducer from thermal damage.

Element Diameter		High Temperature Delays		
inches	mm	To 350 °F (175 °C)	To 500 °F (260 °C)	To 900 °F (480 °C)
0.50	13	DLHT-201	DLHT-2	DLHT-2G
0.25	6	DLHT-101	DLHT-1	DLHT-1G
0.125	3	DLHT-301	DLHT-3	DLHT-3G



# IMMERSION TRANSDUCERS



Panometrics-NDT Microscan immersion transducers are designed to transmit and receive ultrasound in water. Thickness measurements by immersion technique are often preferred when the test piece has a complex geometry or in online applications. Typical offline applications include wall thickness measurements on small diameter plastic or metal tubing, scanned or rotary measurements and thickness measurements on sharply curved parts. Transducer focusing may be necessary depending on the application.

Frequency (MHz)	Element Diameter		Transducer Part Number
	inches	mm	
2.25	0.50	13	M306-SU
5.0	0.50	13	M309-SU
5.0	0.25	6	M310-SU
10	0.25	6	M312-SU
15	0.25	6	M313-SU
20	0.125	3	M316-SU

## BUBBLERS

We offer bubblers for easy implementation of immersion testing. They act as a holder for the transducers to maintain consistent water flow from transducer to test surface, and prevent the accumulation of air bubbles on the transducer face.

Part Number	Opening		Water Path		Fits Transducer Part Number
	inches	mm	inches	mm	
B100	0.125	3	1.250	32	M310A-SM, M312A-SM, M316A-SM
B103**	0.350	9	0.575	14.5	M310-SU, M312-SU, M313-SU, M316-SU
B103W	0.550	14	0.775	19.7	M306-SU, M309-SU
B103A**	0.350	9	0.575	14.5	same as B103

\*\* The B103 has a V-notch shaped opening; the B103A and B103W are flat. Case diameter is 0.63 in (16 mm) and the length is 1.53 in (38.86 mm)

## BUBBLER TRANSDUCER ASSEMBLY

Handheld bubbler transducers are available in either 20 MHz (V316B) or 10 MHz (V312B). They are immersion transducers that screw onto a bubbler assembly (B120), which has a replaceable stainless steel tip and a water feed tube. They offer high resolution and easy access inspection of thin materials.

Frequency (MHz)	Nominal Element Size		Focal Length		Transducer Part Number	Bubbler Assembly	Replacement Tip	Flexible Tip
	inches	mm	inches	mm				
10	0.25	6	1.00	25	V312B-RM	B120	B120-TIP	B120-FLEX-TIP
20	0.125	3	0.75	19	V316B-RM	B120	B120-TIP	B120-FLEX-TIP

# RBS-1 IMMERSION TANK

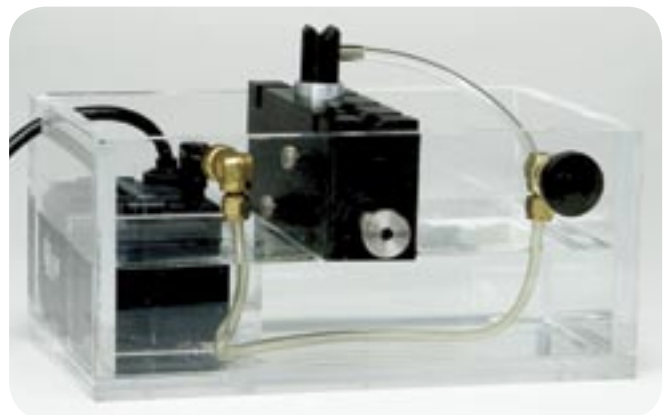
Panometrics-NDT RBS-1 immersion tank is designed to simplify ultrasonic thickness measurements using immersion techniques. It consists of a clear acrylic tank, a submersible pump and a transducer fixture in a single, portable unit. It is ideal for offline thickness measurements on metal, glass and plastic products such as small containers, pipe or tubing, sheets or plates or machined parts.

### TANK

- 5.5 x 12 x 8 in (140 x 305 x 200 mm)
- 0.83 gallon (3.1 liter) capacity

### PUMP

- 0 to 0.25 gallons (0 to 0.9 liters) per minute
- 115 or 230 V, 30 Watt (voltage range 90 to 135 VAC), 50 to 60 Hz
- Submersible (ground fault interrupter circuit recommended)



## COUPLANTS

The use of couplant is almost always necessary to provide acoustic coupling between the transducer and the test piece. We offer various types of couplants to suit virtually all applications.



Part Number	Description	Volume	Application
A2	Propylene Glycol	2 oz (0.06 liter)	General purpose couplant for smooth surfaces. Chemically non-reactive, does not evaporate quickly. The maximum recommended temperature is 200 °F (90 °C)
AP		1 pint (0.47 liter)	
AQ		1 quart (0.95 liter)	
AG		1 gallon (3.78 liter)	
B2	Glycerin	2 oz (0.06 liter)	General purpose, more viscous and has a high acoustic impedance making it the preferred couplant for rough surfaces and highly attenuating materials.
BQ		1 quart (0.95 liter)	
C2	Silicone Oil	2 oz (0.06 liter)	General purpose, non-corrosive, does not evaporate and is insoluble in water.
D12	Gel Type	12 ounces (0.35 liter)	Rough surfaces such as sand-cast metals and fiberglass layups. Weld inspections, overhead surfaces or vertical walls.
DG		1 gallon (3.78 liter)	
D-5G		5 gallons (18.90 liter)	
E-2	Ultratherm	2 oz (0.06 liter)	500 to 1,000 °F (260 to 540 °C) remains a stable liquid or paste without boiling off
G-2	Medium Temp	2 oz (0.06 liter)	0 to 600 °F (-12 to 315 °C) easy removal at high temperatures, non-toxic and biodegradable.
SWC	Shear Wave	4 oz (0.12 liter)	Normal Incidence Shear Wave, non-toxic, water soluble organic substance of very high viscosity.
HP-G	Powdered Couplant	Makes 1 gallon (3.78 liter)	Bulk couplant: Customize the viscosity by adding different amounts of water. Temperature range for this couplant is 32 to 130 °F (0 to 54 °C). Can be winterized by mixing with windshield washer fluid.
HP-G-C		Makes 1 gallon (3.78 liter)	

## CALIBRATION TEST BLOCKS

Test blocks are necessary for the calibration of ultrasonic thickness gages and should be used to maintain and verify the accuracy, dependability and reliability of ultrasonic measurements. Blocks are held to tighter tolerances than called out in ASTM E797 code. Metric test blocks are available.

Part Number	Material	Steps
2211E	304 Stainless Steel	.100, .200, .300, .400 and .500 in
2212E	1018 Carbon Steel	.250, .500, .750, .400 and 1.00 in
2213E	7075-T6 Aluminum	.100, .200, .300, .400 and .500 in
2214E	1018 Carbon Steel	.100, .200, .300, .400 and .500 in
2214M	1018 Carbon Steel	2.5, 5.0, 7.5, 10.0 and 12.5 mm



# TRANSDUCER CABLES



Olympus-NDT offers a wide selection of transducer cables suitable for all ultrasonic thickness gaging instrumentation.

Part Number	Connectors	Available Lengths
LCM-74-X	Small LEMO® 00 to Microdot®	3 ft (0.9 m), 4 ft (1.2 m), 6 ft (1.8 m)
LCB-74-X	Small LEMO® 00 to BNC	3 ft (0.9 m), 4 ft (1.2 m), 6 ft (1.8 m)
BCM-74-X	BNC to Microdot®	3 ft (0.9 m), 4 ft (1.2 m), 6 ft (1.8 m)
LCU-74-X	LEMO® 00 to UHF	3 ft (0.9 m)

X=length of cable, please specify from available lengths (3, 4 or 6).

## Standard



- Standard cables are recommended for normal usage.

## Heavy Duty – Teflon®



- Heavy duty, Teflon® (HD) transducer cables may provide durability and longer life.

## Waterproof



- Waterproof (W) cables are recommended in many tests with immersion transducers. These cables provide a waterproof connection good to about 30 ft (10 m) of fresh water. At greater depths, special cables are available.

## Heavy Duty – Armored PVC Jacket



- Heavy duty, armored PVC jacket (HDAP) transducer cables have a spiral stainless steel jacket with a solid PVC coating. Maximum length is 20 ft (7 m).

## Heavy Duty – Armored Silicone Jacket



- Heavy duty, armored super flexible silicone jacket (HDAS) transducer cables combine a spiral stainless steel jacket with a heavy silicone coating for great flexibility. Length can be specified up to 20 ft (7 m).

## Heavy Duty – Stainless Steel



- Heavy duty, armored stainless steel jacket (SSA) transducer cables are recommended for heavy and industrial use provide flexibility, protection and long life.

Our website [www.olympusNDT.com](http://www.olympusNDT.com) has a complete listing of well-trained, experienced manufacturer's representatives in North America and a network of agents and direct offices in most industrial locations around the world.

# OLYMPUS

Printed 2/2006  
 © 2006 Olympus NDT, All Rights Reserved.  
 \*All specifications are subject to change without notice.  
 Panametrics, Panametrics-NDT and the Panametrics-NDT logo are trademarks of Panametrics Inc.  
 Other company or product names mentioned in this document may be trademarks or registered trademarks of their respective companies

Olympus NDT  
 48 Woerd Ave, Waltham, MA U.S.A.  
 TEL 781-419-3900 • 800 225-8330 in North America  
 e-mail: [pana@olympusNDT.com](mailto:pana@olympusNDT.com)

[WWW.OLYMPUSNDT.COM](http://WWW.OLYMPUSNDT.COM)