

ULTRASONIC TRANSDUCER

STANDARD PRODUCT CATALOG

Phased Arrays | High Temperature | Conventional | Wedges



WHO WE ARE

Sensor Networks, Inc. (SNI) is a Pennsylvania-based technology company specializing in the design and fabrication of industrial ultrasonic transducers and tooling for demanding in-situ test and inspection applications. Engineered for precision, ease of use, and maximum durability, our offerings include ultrasonic transducers, fixtures, couplant-delivery systems, qualification/calibration standards, procedure development, personnel training and instrumentation.

SNI's deep domain expertise enhances NDT solutions through the selection, design, and optimization of the ultrasonic technique. The transducers' efficiency is paramount for converting electrical energy into sound, then coupling and directing that acoustic energy into the test piece to maximize its signal-to-noise ratio.



With well over 1,000 combined years of NDT experience, our team of engineers, technicians, assemblers, and general managers have an extremely deep level of knowledge and background in solving unusual, demanding, and complicated NDT projects.



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PHASED-ARRAY TRANSDUCERS



GENERAL PURPOSE | IMMERSION | DEEP
PENETRATION | SMALL FOOTPRINT | WEDGE
MOUNT | LOW PROFILE | PIPELINE PROBE |
WELD INSPECTION | ANNULAR | GENERAL
PURPOSE | IMMERSION | DEEP PENETRATION |
SMALL FOOTPRINT | WEDGE MOUNT | LOW
PROFILE | PIPELINE PROBE | WELD INSPECTION |
ANNULAR | GENERAL PURPOSE | IMMERSION |
DEEP PENETRATION | SMALL FOOTPRINT |
WEDGE MOUNT | LOW PROFILE | PIPELINE



Phased Array

Small Footprint

Small footprint arrays are designed with small contact area for inspections in tight or confined spaces. They can be used for a large variety of inspections including welds, tubes and pipes, aircraft components, tanks and vessels, and more. Customizations to arrays and wedges can be special ordered to further optimize your inspection requirements.

ARRAYS

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number**	Cable Length
0.25" MSWS	3.5	16	0.016 0.40	0.25 6.25	00-010379	2.5M (8.2 ft.)
	5	16	0.016 0.40	0.25 6.25	00-010380	2.5M (8.2 ft.)
	7.5	16	0.016 0.40	0.25 6.25	00-010867	2.5M (8.2 ft.)
	10	16	0.016 0.40	0.25 6.25	00-011207	2.5M (8.2 ft.)
0.5" MSWS	2.25	32	0.016 0.40	0.50 12.7	00-010340	2.5M (8.2 ft.)
	3.5	32	0.016 0.40	0.50 12.7	00-010381	2.5M (8.2 ft.)
	5	32	0.016 0.40	0.50 12.7	00-010339	2.5M (8.2 ft.)
	10	32	0.016 0.40	0.50 12.7	00-010338	2.5M (8.2 ft.)
A0	5	16	0.016 0.40	0.25 6.25	00-011275	2.5M (8.2 ft.)
	10	16	0.016 0.40	0.25 6.4	00-013027	2.5M (8.2 ft.)
A00	10	16	0.012 0.31	0.20 5	00-010341	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

00-010341
A00 Case



00-010380
0.25" MSWS

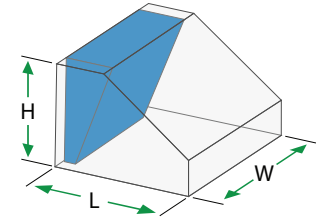


00-010339
0.5" MSWS



WEDGES

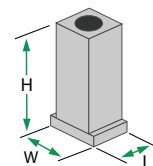
Wedge Type	Description	Part Number	Dimensions		
			Length	Width	Height
0.25" MSWS	REX, 35-75 Shear Wave, Flat	01-010705	0.75 in. 19 mm	0.70 in. 17.8 mm	0.38 in. 9.7 mm
	REX, 35-75 L-WAVE, Flat	01-010977	0.58 in. 14.7 mm	0.70 in. 17.8 mm	0.28 in. 7.1 mm
0.5" MSWS	REX, 35-75 Shear Wave, Flat	01-011015	1.20 in. 30.5 mm	0.95 in. 24.1 mm	0.70 in. 17.8 mm
	REX, 35-75 L-WAVE, Flat	01-011016	0.81 in. 20.6 mm	0.95 in. 24.1 mm	0.35 in. 8.9 mm
A00	30-60 Shear	01-010710	0.83 in. 21.1 mm	0.55 in. 14 mm	0.47 in. 11.9 mm
	45-70 Shear	01-010711	0.83 in. 21.1 mm	0.55 in. 14 mm	0.51 in. 13 mm



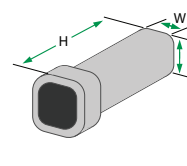
CASE DIMENSIONS

Case Type	Case Dimensions		
	Length	Width	Height
A0	0.41 in. 10.3 mm	0.5 in. 12.6 mm	0.91 in. 23.1 mm
A00	0.31 in. 7.9 mm	0.31 in. 7.9 mm	0.91 in. 23.1 mm
0.25 MSWS	0.5 in. 12.7 mm	0.37 in. 9.4 mm	0.5 in. 12.7 mm
0.5 MSWS	0.76 in. 19.3 mm	0.61 in. 15.5 mm	0.75 in. 19 mm

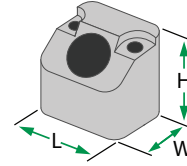
A0



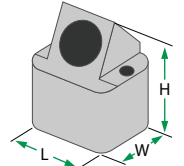
A00



0.25" MSWS



0.5" MSWS





Phased Array

General Purpose Linear

General purpose linear arrays are versatile arrays that optimize a wide range of applications including weld inspection, tube and pipe inspection, turbine blades, rails, pressure vessels, and many more. Varying in frequency, number of elements, and element pitch and elevation, the wide variety of arrays available provide many options when choosing an array for your application. Custom options are available upon request.

ARRAYS

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number	Cable Length
A1	2.25	16	0.030 0.75	0.47 12	00-011419	2.5M (8.2 ft.)
	5	16	0.024 0.60	0.39 10	00-011423	2.5M (8.2 ft.)
	10	32	0.012 0.31	0.28 7	00-011430	2.5M (8.2 ft.)
A10	2.25	8	0.047 1.20	0.39 10	00-013030	2.5M (8.2 ft.)
	3.5	8	0.047 1.20	0.39 10	00-013031	2.5M (8.2 ft.)
	5	16	0.024 0.60	0.39 10	00-011422	2.5M (8.2 ft.)
	5	32	0.012 0.30	0.39 10	00-011651	2.5M (8.2 ft.)
	7.5	32	0.012 0.30	0.39 10	00-013028	2.5M (8.2 ft.)
	10	32	0.012 0.31	0.28 7	00-011429	2.5M (8.2 ft.)
A11	2.25	32	0.024 0.60	0.39 10	00-011781	3.0M (9.2 ft.)
	5	16	0.040 1.00	0.39 10	00-011836	3.0M (9.2 ft.)
	5	32	0.024 0.60	0.39 10	00-010329	2.5M (8.2 ft.)
	5	64	0.012 0.30	0.39 10	00-013036	2.5M (8.2 ft.)
	10	64	0.012 0.30	0.39 10	00-013037	2.5M (8.2 ft.)
	15	64	0.012 0.30	0.39 10	00-013038	2.5M (8.2 ft.)
A12	2.25	64	0.024 0.60	0.39 10	00-011420	2.5M (8.2 ft.)
	2.25	64	0.030 0.75	0.47 12	00-011421	2.5M (8.2 ft.)
	3.5	64	0.024 0.60	0.39 10	00-012459	2.5M (8.2 ft.)
	5	64	0.024 0.60	0.39 10	00-011426	2.5M (8.2 ft.)
	5	128	0.012 0.30	0.39 10	00-013040	2.5M (8.2 ft.)
	10	64	0.024 0.60	0.39 10	00-013039	2.5M (8.2 ft.)
A2	5	64	0.024 0.60	0.39 10	00-011427	2.5M (8.2 ft.)
	10	64	0.024 0.60	0.28 7	00-013041	2.5M (8.2 ft.)
A3	5	16	0.047 1.20	0.47 12	00-011926	2.5M (8.2 ft.)
AM	2.25	16	0.030 0.75	0.47 12	00-010265	2.5M (8.2 ft.)
	5	16	0.024 0.60	0.39 10	00-010266	2.5M (8.2 ft.)
E1	4	16	0.020 0.50	0.35 9	00-010275	2.5M (8.2 ft.)
E2	1.5	16	0.040 1.00	0.47 12	00-010276	2.5M (8.2 ft.)
E3	2.25	16	0.060 1.50	0.75 19	00-010277	2.5M (8.2 ft.)
LM	2.25	64	0.024 0.60	0.39 10	00-010267	2.5M (8.2 ft.)
	5	64	0.024 0.60	0.39 10	00-010268	2.5M (8.2 ft.)
	10	64	0.024 0.60	0.39 10	00-010269	2.5M (8.2 ft.)

00-011422
A10 Case



00-010277
E3 Case



00-010266
AM Case



All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

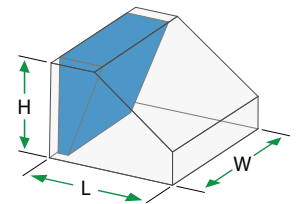


Phased Array

General Purpose Linear

WEDGES

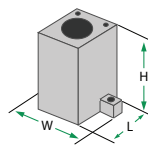
Wedge Type	Description	Part Number	Dimensions					
			Length		Width		Height	
A1	0 Degree Delay, 20mm	01-011733	1.14 in.	29 mm	1.18 in.	30 mm	0.79 in.	20 mm
	N60S (45-70 Shear), flat, porting, wear pins, 8mm gimbal holes	01-011734-IHC	1.20 in.	30.5 mm	1.58 in.	40.1 mm	0.64 in.	16.3 mm
A2	0 Degree Delay, 20mm	01-011741	2.56 in.	65 mm	1.18 in.	30 mm	0.79 in.	20 mm
	N55S (30-70 Shear), flat, porting, wear pins, 8mm gimbal holes	01-011742-IHC	2.70 in.	68.6 mm	1.58 in.	40.1 mm	1.70 in.	43.2 mm
A10	0 Degree Delay, 20mm	01-011735	0.98 in.	24.9 mm	0.91 in.	23.1 mm	0.79 in.	20 mm
	N55S (30-70 Shear), Flat, No porting, No Wear Pins, 8mm gimbal holes	01-013460	0.91 in.	23.1 mm	0.91 in.	23.1 mm	0.56 in.	16.5 mm
	N55S (30-70 Shear), flat, porting, wear pins, 8mm gimbal holes	01-013460-IHC	Contact for dimensions					
	IHC Ring, ported wedge ring with wear pins	01-011514	Contact for dimensions					
A11	0 Degree Delay, 20mm	01-011749	1.38 in.	35.1 mm	0.91 in.	23.1 mm	0.91 in.	23.1 mm
	N55S (30-70 Shear), flat, no porting, 4mm gimbal holes	01-010709	1.63 in.	41.4 mm	0.91 in.	23.1 mm	1.13 in.	28.7 mm
	N55S (30-70 Shear), flat, porting, wear pins, 4mm gimbal holes	01-010709-IHC	Contact for dimensions					
	IHC Ring, ported wedge ring with wear pins	01-012303	Contact for dimensions					
A12	0 Degree Delay, 20mm	01-012517	2.28 in.	57.9 mm	0.91 in.	23.1 mm	0.79 in.	20 mm
	N55S (30-70), flat, no porting, 4mm gimbal holes	01-012516	2.88 in.	73.2 mm	0.91 in.	23.1 mm	1.76 in.	44.7 mm
	N55S (30-70), flat, porting, wear pins, 8mm gimbal holes	01-012516-IHC	Contact for dimensions					
	IHC Ring, ported wedge ring with wear pins	01-012315	Contact for dimensions					
E1	REX, 38.0 DEG INC, Flat, A	01-010293	0.75 in.	19.1 mm	1.10 in.	27.9 mm	0.60 in.	15.2 mm
	REX, 38.0 DEG INC, Flat, B	01-010294	0.65 in.	16.5 mm	1.10 in.	27.9 mm	0.60 in.	15.2 mm
	30-70 Shear	01-011731	0.97 in.	24.6 mm	1.11 in.	28.2 mm	0.59 in.	15 mm
E2	REX, 38.0 DEG INC, Flat, A	01-010295	1.12 in.	28.4 mm	0.82 in.	20.8 mm	0.82 in.	20.8 mm
	REX, 38.0 DEG INC, Flat, B	01-010296	0.77 in.	19.6 mm	0.82 in.	20.8 mm	0.82 in.	20.8 mm
E3	REX, 38.0 DEG INC, Flat	01-010297	1.83 in.	46.5 mm	1.50 in.	38.1 mm	1.29 in.	32.8 mm
AM	0 Degree Delay, 20mm	01-011975	1.25 in.	31.8 mm	1.18 in.	30 mm	0.79 in.	20 mm
	40-70S	01-010703	0.93 in.	23.6 mm	1.18 in.	30 mm	0.47 in.	11.9 mm
	40-70L	01-010531	0.98 in.	24.9 mm	1.18 in.	30 mm	0.92 in.	23.4 mm
LM	0 Degree	01-010706	2.00 in.	50.8 mm	1.10 in.	27.9 mm	0.79 in.	20.1 mm
	40-70S	01-010707	2.60 in.	66 mm	1.10 in.	27.9 mm	1.35 in.	34.3 mm
	40-70L	01-010708	2.27 in.	57.7 mm	1.10 in.	27.9 mm	1.40 in.	35.6 mm



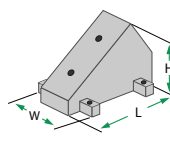
CASE DIMENSIONS

Case Type	Case Dimensions		
	Length	Width	Height
A1	0.67 in. 17 mm	1.09 in. 27.7 mm	0.99 in. 25.1 mm
A2	2.09 in. 53.1 mm	1.14 in. 29 mm	1.36 in. 34.5 mm
A10	0.91 in. 23.1 mm	0.63 in. 16 mm	0.79 in. 20.1 mm
A11	0.98 in. 24.9 mm	0.91 in. 23.1 mm	0.79 in. 20.1 mm
A12	1.77 in. 45 mm	0.91 in. 23.1 mm	0.79 in. 20.1 mm
E1	1.1 in. 27.9 mm	0.59 in. 15 mm	1.06 in. 26.9 mm
E2	0.75 in. 19 mm	0.75 in. 19 mm	1.0 in. 25.4 mm
E3	1.45 in. 36.8 mm	1.25 in. 31.8 mm	1.0 in. 25.4 mm
AM	1.18 in. 30 mm	0.63 in. 16 mm	0.98 in. 24.9 mm
LM	1.69 in. 42.9 mm	1.1 in. 27.9 mm	0.98 in. 24.9 mm

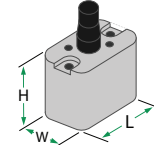
A1



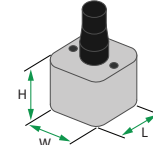
A2



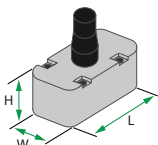
A10



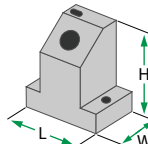
A11



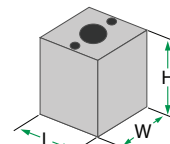
A12



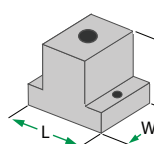
E1



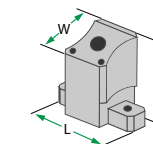
E2



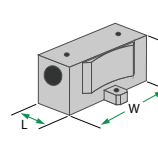
E3



AM



LM





Phased Array

Low Profile - Small Diameter Weld Inspection

Low-profile arrays are designed to inspect small diameter or thin-walled pipes for flaws and defects. A15 and A25 cases are also useful for applications with low clearance at the inspection area. Low-profile wedges optimize the arrays for small-diameter weld inspection. Custom arrays and wedges can be ordered upon request.

00-011212
A15 Case



00-011875
A25 Case



ARRAYS

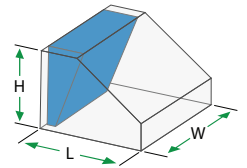
Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number**	Cable Length
A15	5	16	0.020 0.50	0.38 10	00-011211	2.5M (8.2 ft.)
	7.5	16	0.020 0.50	0.38 10	00-011212	2.5M (8.2 ft.)
	7.5	32	0.010 0.25	0.38 10	00-011213	2.5M (8.2 ft.)
	10	16	0.020 0.50	0.38 10	00-011214	2.5M (8.2 ft.)
	10	32	0.010 0.25	0.38 10	00-011215	2.5M (8.2 ft.)
A25	3.5	16	0.030 0.75	0.20 5	00-011857	3.0M (9.2 ft.)
	5	16	0.030 0.75	0.20 5	00-012963	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

WEDGES

Wedge Type	Description	Part Number	Dimensions					
			Length		Width		Height	
A15	SA-N60S-IH, Flat, Porting, No Wear Pins, 0.12" (3mm) Gimbal Holes	01-011230-IH	0.72 in.	18.3 mm	0.86 in.	21.8 mm	0.44 in.	11.2 mm
	SA15-N60S-IH-AOD2.375, Axial OD Cut, Porting, No Wear Pins, 0.12" (3mm) Gimbal Holes	01-011230-IH-AOD2.375	0.72 in.	18.3 mm	0.86 in.	21.8 mm	0.44 in.	11.2 mm
	SA15-N60S-IH-AOD3.50, Axial OD Cut, Porting, No Wear Pins, 0.12" (3mm) Gimbal Holes	01-011230-IH-AOD3.50	0.72 in.	18.3 mm	0.86 in.	21.8 mm	0.44 in.	11.2 mm
	SA15-N60S-IH-AOD4.50, Axial OD Cut, Porting, No Wear Pins, 0.12" (3mm) Gimbal Holes	01-011230-IH-AOD4.50	0.72 in.	18.3 mm	0.86 in.	21.8 mm	0.44 in.	11.2 mm
A25	22-Deg Inc, 3.80-Deg Roof, Flat (Only works with SNI A25 arrays)	01-013122	Contact for dimensions					

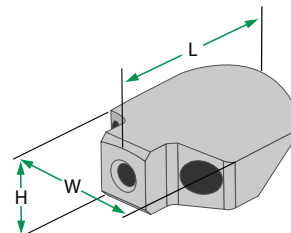
Custom curves on wedges can be done upon request.



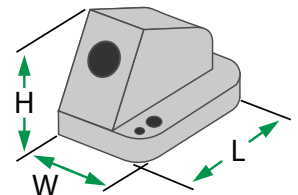
CASE DIMENSIONS

Case Type	Case Dimensions					
	Length		Width		Height	
A15	1.03 in.	26.2 mm	0.86 in.	21.8 mm	0.39 in.	9.9 mm
A25	0.70 in.	17.8 mm	0.47 in.	11.9 mm	0.54 in.	13.7 mm

A15



A25





Phased Array

Pipeline / Girthweld

Pipeline and girthweld arrays are designed to be paired with instruments for automatic inspection systems. Manual inspections can also be conducted with these arrays. They are perfect for scanning large or small diameter pipes for flaws & defects as well as weld integrity inspection. Sensor Networks pipeline and girthweld arrays can be built with any connector and customized for your manual or automated inspection system.

ARRAYS

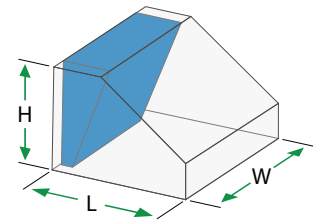
Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number**	Cable Length
A14	5	60	0.040 1.00	0.38 10	00-011425	2.5M (8.2 ft.)
	7.5	60	0.040 1.00	0.38 10	00-011428	2.5M (8.2 ft.)
PWZ1	2.25	60	0.040 1.00	0.38 10	00-013047	2.5M (8.2 ft.)
	5	60	0.040 1.00	0.38 10	00-012896	2.5M (8.2 ft.)
	7.5	60	0.040 1.00	0.38 10	00-012949	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

WEDGES

Wedge Type	Description	Part Number	Dimensions					
			Length		Width		Height	
A14	SA14-N55S, Flat, No Porting, Gimbal Holes: M3, 0.16" (4mm) and 0.16" Slot, 30-70S in CS	01-011740	Contact for dimensions					
PWZ1	SPWZ1-N50S-IHC, 33.7-Deg Inc, Flat	01-010665-IHC	3.23 in.	82 mm	1.5 in.	38.1 mm	1.73 in.	43.9 mm

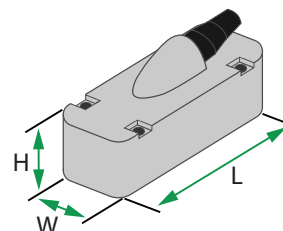
Case Style	Accessory	Part Number
A14	IHC Ring	01-012265



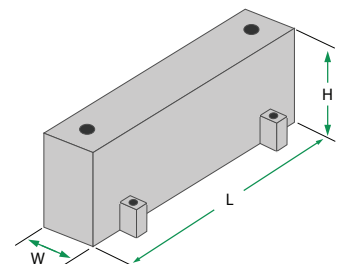
CASE DIMENSIONS

Case Type	Case Dimensions					
	Length		Width		Height	
A14	2.67 in.	67.8 mm	0.91 in.	23.1 mm	0.79 in.	20.1 mm
PWZ1	2.67 in.	67.8 mm	1.02 in.	25.9 mm	1.19 in.	30.2 mm

A14



PWZ1





Phased Array

Weld Inspection

Weld inspection arrays paired with the right phased-array wedge are perfect for conducting inspections on various weld, plate, and forging applications. Various options for arrays and wedges offer the ability to meet and optimize inspection requirements. Custom array and wedge options are available upon request.

ARRAYS

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number**	Cable Length
A4	0.5	16	0.110 2.80	1.02 26	00-011821	5M (16.4 ft.)
	1.5	16	0.110 2.80	1.02 26	00-011416	2.5M (8.2 ft.)
	2.25	16	0.080 2.00	1.26 32	00-011417	2.5M (8.2 ft.)
A5	2.25	32	0.030 0.75	0.94 24	00-011418	2.5M (8.2 ft.)
	5	32	0.024 0.60	0.76 20	00-011424	2.5M (8.2 ft.)
A31	5	32	0.024 0.60	0.39 10	00-011925	2.5M (8.2 ft.)
	7.5	32	0.024 0.60	0.39 10	00-012621	2.5M (8.2 ft.)
	10	32	0.024 0.60	0.39 10	00-013043	2.5M (8.2 ft.)
A32	5	32	0.040 1.00	0.39 10	00-011839	2.5M (8.2 ft.)
	5	64	0.020 0.50	0.39 10	00-011503	2.5M (8.2 ft.)
	10	64	0.020 0.50	0.39 10	00-011924	2.5M (8.2 ft.)
AWS	2.25	16	0.040 1.00	0.63 16	00-010477	2.5M (8.2 ft.)
E1	2	8	0.040 1.00	0.35 9	00-010274	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

00-011821
A4 Case



00-011418
A5 Case



00-011839
A32 Case



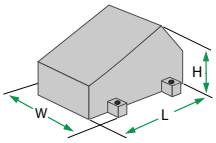


Phased Array

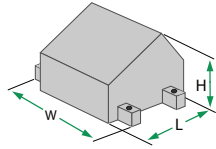
Weld Inspection

CASE DIMENSIONS

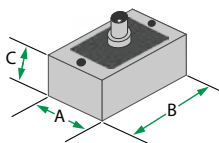
A4



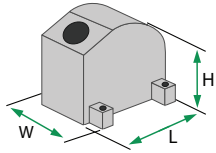
A5



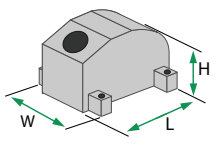
AWS



A31



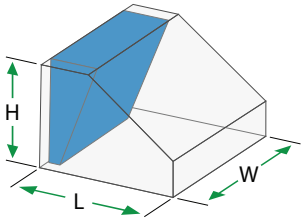
A32



Case Type	Case Dimensions					
	Length		Width		Height	
A4	2.24 in.	56.9 mm	1.81 in.	46 mm	1.18 in.	30 mm
A5	1.14 in.	29 mm	1.69 in.	42.9 mm	0.94 in.	23.9 mm
AWS	1.26 in.	32 mm	0.80 in.	20.3 mm	0.75 in.	19 mm
A31	1.20 in.	30.5 mm	1.10 in.	27.9 mm	0.98 in.	24.9 mm
A32	1.58 in.	40.1 mm	1.10 in.	27.9 mm	1.0 in.	25.4 mm

WEDGES

Wedge Type	Description	Part Number	Dimensions					
			Length		Width		Height	
A4	30-70 Shear	01-011744	3.39 in.	86.1 mm	1.85 in.	47 mm	1.77 in.	45 mm
A5	30-70 Shear	01-011746	1.56 in.	39.6 mm	1.71 in.	43.4 mm	0.63 in.	16 mm
A31	N55S (30-70 shear), flat, no porting, 4mm (0.16") gimbal holes	01-013300	1.91 in.	48.5 mm	1.18 in.	30 mm	1.26 in.	32 mm
	N55S (30-70 shear), flat, porting, wear pins, wear bars, 8mm (0.32") gimbal holes	01-013300-IHC	Contact for dimensions					
A32	N55S (30-70 shear), flat, no porting, 4mm (0.16") gimbal holes	01-013301	2.42 in.	61.5 mm	1.18 in.	30 mm	1.26 in.	32 mm





Phased Array

Ambient Temp - Dual-Linear Phased Array™

DUAL LINEAR

Dual-Linear Phased Array transducers are optimized for corrosion and erosion inspection up to 100°C (212°F). All models provide 32 or more transmit/receive elements that provide larger beam coverage than conventional dual-element transducers allowing for more efficient inspection time. These arrays also provide increased POD for pits in corrosion applications. Replaceable wear plates can be curved to match pipe diameters. See page 23 for High-Temp Dual-Linear Phased Arrays.

Case	Frequency (MHz)	Number of Elements	Element Pitch		Elevation		SNI Part Number	Cable Length
			in	mm	in	mm		
CL	5	32 Transmit 32 Receive	0.060	1.50	0.20	5	00-010863	3.0M (9.2 ft.)
CS	5	32 Transmit 32 Receive	0.030	0.75	0.20	5	00-011200	3.0M (9.2 ft.)
CS	10	64 Transmit 64 Receive	0.014	0.35	0.20	5	00-012676	3.0M (9.2 ft.)
Removable Delay	7.5	32 Transmit 32 Receive	0.060	1.50	0.20	5	00-013062	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

00-010863
CL



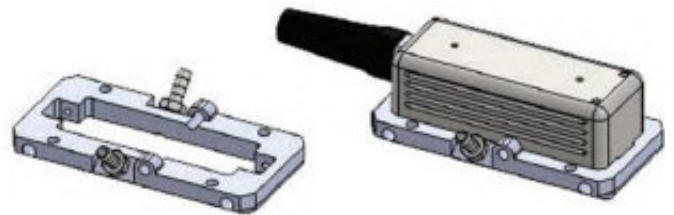
00-012676
CS



WEAR BARS

Case Type	Description	Part Number
CS	Ported Wear Plate, Flat, Porting	01-011541
CL	Ported Wear Plate, Flat, Porting	01-011430
Removable	Removable Sled, 3mm (0.12") gimbal holes	01-011541

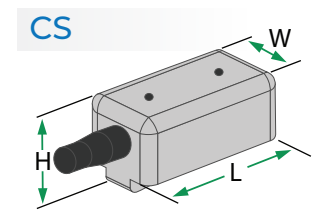
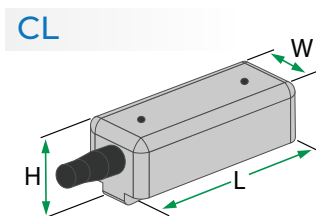
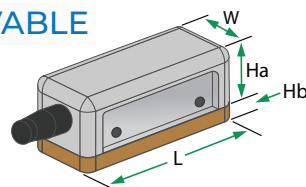
Wear bars and sleds can be curved upon request.
Wear bars can have 3mm (0.12") or 5mm (0.2") gimbal holes.



CASE DIMENSIONS

Case Type	Case Dimensions		
	Width	Length	Height
CL	0.95 in. 24.1 mm	2.58 in. 65.5 mm	1.0 in. 25.4 mm
CS	0.95 in. 24.1 mm	1.61 in. 40.9 mm	1.0 in. 25.4 mm
Removable	1.25 in. 31.8 mm	2.58 in. 65.5 mm	1.20 in. 30.5 mm

REMOVABLE





Phased Array

Linear Contact Membrane

CONTACT MEMBRANE

Contact membrane arrays are linear arrays specially designed and optimized for inspection of threaded bolts or applications with rough surfaces. The membrane allows for effective coupling on those rough surfaces and can be replaced to extend the life of the array. Contact membrane transducers have side-mounted cables but can be special ordered with top-mounted cables.



Illustration of the ceramic in a contact membrane linear array.

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number**	Cable Length
A24	4	16	0.040 1.00	0.63 16	00-011927	2.5M (8.2 ft.)
B S	2	16	0.060 1.50	0.94 24	00-011903	2.5M (8.2 ft.)
	4	16	0.060 1.50	0.94 24	00-011902	2.5M (8.2 ft.)
M B S	2	16	0.025 0.63	0.39 10	00-011714	2.5M (8.2 ft.)
	4	16	0.025 0.63	0.39 10	00-011715	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

00-011927
A24 Case



00-011903
B S Case

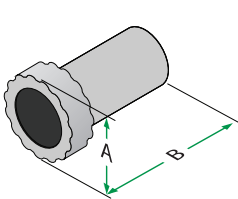


00-011715
M B S Case

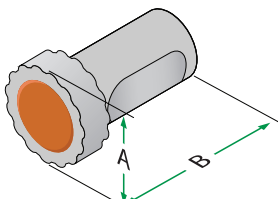


CASE DIMENSIONS

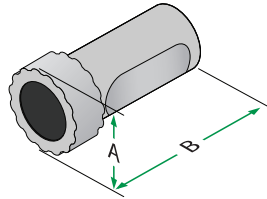
A24



B S



M B S



Case Type	Case Dimensions			
	A		B	
A24	1.07 in.	27.2 mm	1.75 in.	44.5 mm
M B S	0.98 in.	24.9 mm	1.61 in.	40.1 mm
B S	1.77 in.	45 mm	2.41 in.	61.2 mm



Phased Array

Immersion Linear

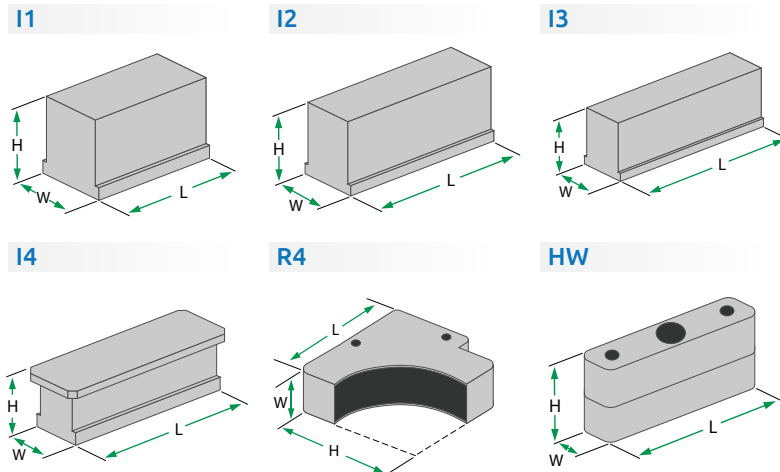
IMMERSION LINEAR

Much like conventional immersion transducers, immersion arrays are used in automatic and manual scanning systems using water or other liquid to couple to parts with complex geometries or large surface areas. Immersion inspection offers near-surface resolution superior to that of contact transducers. Immersion transducers are also effective for inspection of composite materials.

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number**	Cable Length
HW	5	64	0.050 1.27	0.31 8	00-010327	2.5M (8.2 ft.)
I1	5	64	0.024 0.60	0.39 10	00-011431	2.5M (8.2 ft.)
	10	64	0.024 0.60	0.39 10	00-012739	2.5M (8.2 ft.)
I2	5	128	0.024 0.60	0.38 10	00-011432	2.5M (8.2 ft.)
	10	128	0.020 0.50	0.28 7	00-013044	2.5M (8.2 ft.)
I3	2.25	128	0.030 0.75	0.47 12	00-013045	5M (16.4 ft.)
	5	128	0.030 0.75	0.38 10	00-010333	5M (16.4 ft.)
I4	5	64	0.040 1.00	0.28 7	00-012746	3M (9.8 ft.)
	7.5	64	0.040 1.00	0.28 7	00-012745	7M (23 ft.)
Near Wall 1	3.5	64	0.040 1.00	0.28 7	00-010331	5M (16.4 ft.)
	5	64	0.040 1.00	0.28 7	00-010332	5M (16.4 ft.)
Near Wall 3	3.5	128	0.040 1.00	0.28 7	00-013046	2.5M (8.2 ft.)
	5	128	0.040 1.00	0.28 7	00-011929	2.5M (8.2 ft.)
R4	5	32	0.052 1.32	0.24 6	00-010334	5M (16.4 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

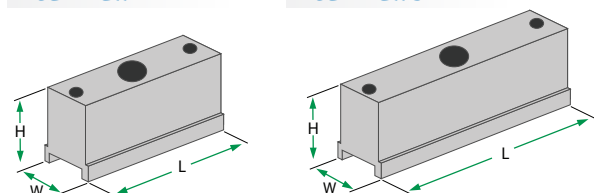
CASE DIMENSIONS



Case Type	Case Dimensions					
	Length		Width		Height	
I1	1.97 in.	50 mm	0.75 in.	19 mm	0.98 in.	24.9 mm
I2	3.27 in.	83.1 mm	0.83 in.	21.1 mm	1.38 in.	35.1 mm
I3	4.02 in.	102.1 mm	0.83 in.	21.1 mm	1.38 in.	35.1 mm
I4	3.08 in.	78.2 mm	0.97 in.	24.6 mm	1.00 in.	25.4 mm
R4	1.67 in.	45.2 mm	0.59 in.	15 mm	1.67 in.	42.4 mm
HW	3.4 in.	86.4 mm	0.5 in.	12.7 mm	1.25 in.	31.8 mm
Near Wall 1	2.6 in.	66 mm	0.75 in.	19 mm	0.98 in.	24.9 mm
Near Wall 3	5.12 in.	130 mm	0.83 in.	21.1 mm	1.38 in.	35.1 mm

Near Wall 1

Near Wall 3





Phased Array

Immersion Annular

IMMERSION ANNULAR

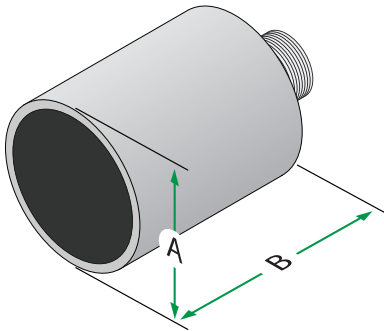
Much like conventional immersion transducers, immersion arrays are used in automatic and manual scanning systems using water or other liquid to couple to parts with complex geometries or large surface areas. Immersion inspection offers near-surface resolution superior to that of contact transducers. Immersion transducers are also effective for inspection of composite materials.



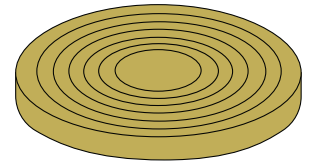
Case	Frequency (MHz)	Number of Elements	Diameter inches	Diameter mm	SNI Part Number**	Cable Length
Annular	5	16	1.0	25.4	00-011892	2.5M (8.2 ft.)
	10	16	1.0	25.4	00-011893	2.5M (8.2 ft.)

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

CASE DIMENSIONS



Case Type	Case Dimensions			
	A		B	
Annular	1.4 in.	35.5 mm	1.6 in.	40.6 mm



Example of the ceramic in an annular array.

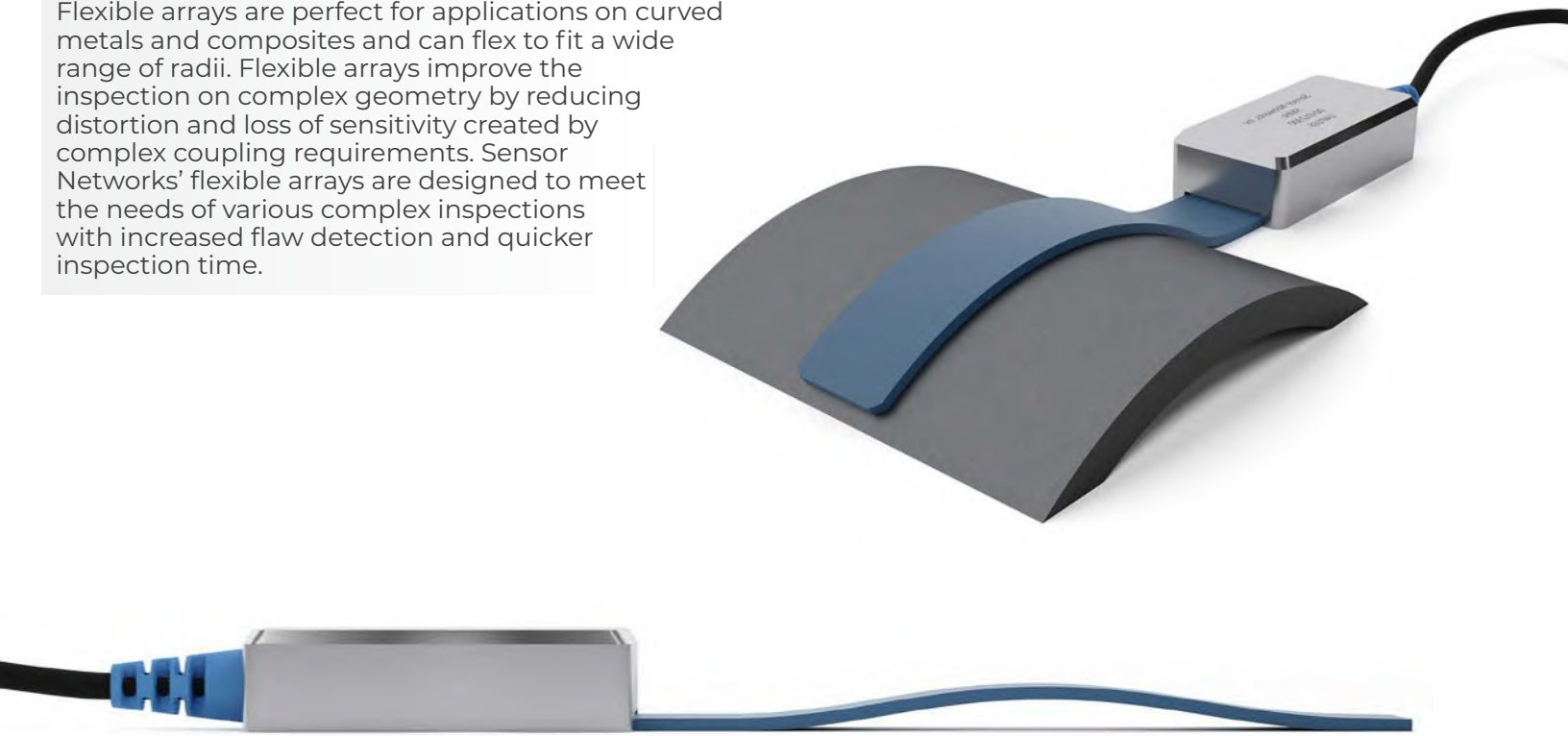


Phased Array

Flexible Array

FLEXIBLE PHASED ARRAY

Flexible arrays are perfect for applications on curved metals and composites and can flex to fit a wide range of radii. Flexible arrays improve the inspection on complex geometry by reducing distortion and loss of sensitivity created by complex coupling requirements. Sensor Networks' flexible arrays are designed to meet the needs of various complex inspections with increased flaw detection and quicker inspection time.



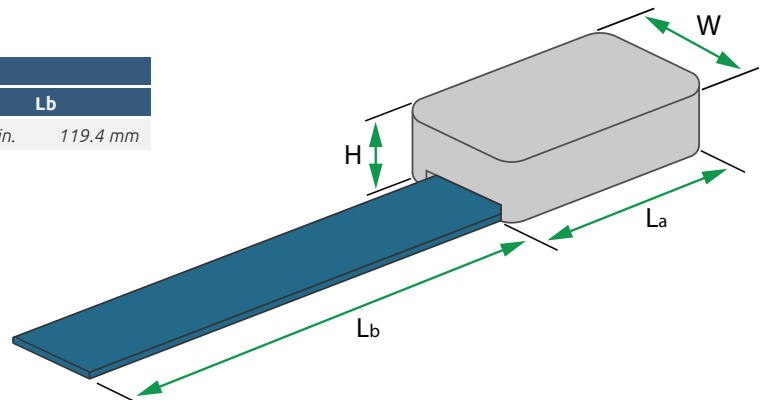
PART NUMBERS

Frequency* (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	Array Description and Application	SNI Part Number
5	64	0.04 1	0.28 7	NDT and thickness measurement of curved surfaces	00-012703
7	64	0.04 1	0.28 7	NDT and thickness measurement of curved surfaces	00-012975

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.
Custom cable length available.

CASE DIMENSIONS

Case Dimensions							
La		H		W		Lb	
2.57 in.	65.3 mm	0.64 in.	16.3 mm	1.27 in.	32.3 mm	4.7 in.	119.4 mm





Phased Array

WheelArray™

WHEELARRAY

The WheelArray is a unique tool and ultrasonic test fixture used to increase inspection productivity of large surface areas associated with composite materials and metal plates. WheelArray is offered in five test frequencies and the wheel can be replaced or swapped out by the end-user in the field.

Prior to inspection, a small quantity of water or other suitable couplant needs to be sprayed on the test area.

Custom WheelArrays can be requested including custom frequency, elements, pitch, cable length, and connector.



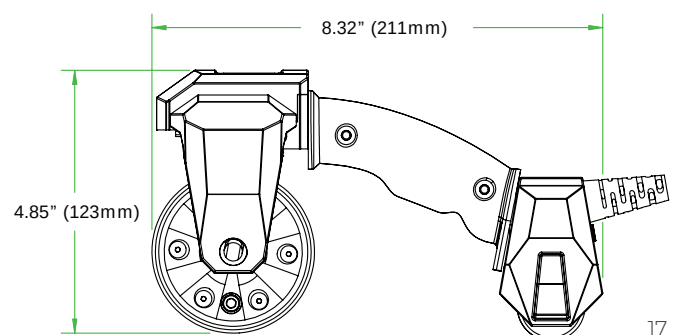
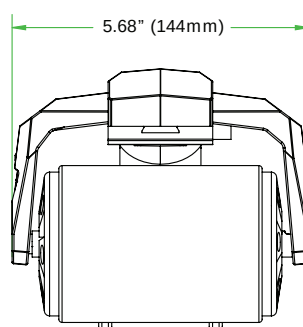
COMPLETE WHEELARRAY KIT

Frequency* (MHz)	Number of Elements	Element Pitch		Elevation		Sound Path		Beam Width		Part Number
		in	mm	in	mm	in	mm	in	mm	
1	32	0.06	1.6	0.47	12	1.0	25.4	2.0	51.2	00-013242
2.25	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013241
3.5	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013076
5	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013073
10	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013081

All arrays come standard with IPEX connectors unless specified. See page 56 for connector types.

REPLACEMENT WHEEL

Frequency* (MHz)	Number of Elements	Element Pitch		Elevation		Sound Path		Beam Width		Part Number
		in	mm	in	mm	in	mm	in	mm	
1	32	0.06	1.6	0.47	12	1.0	25.4	2.0	51.2	00-013233
2.25	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013232
3.5	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013228
5	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013227
10	64	0.03	0.8	0.25	6.4	1.0	25.4	2.0	51.2	00-013229





Matrix Arrays

Dual Matrix and 9x7

MATRIX ARRAYS

Matrix-Array transducers enable enhanced phased-array inspections and full-matrix capture which brings better POD, improved flaw sizing & characterization, enhanced imaging and faster inspection scans. Whether it's a simple 4 x 8 element array for weld inspection or as complicated as an 800-element array for heavy-wall forgings, SNI can prove-out a design in 3D computer simulation and easily change key variables such as frequency and pitch before the final design and fabrication process begins.



Example of a plated 8x4 matrix array ceramic.

DUAL MATRIX

Frequency (MHz)	Number of Elements	Primary Pitch in mm	Secondary Pitch in mm	Array Description and Application	SNI Part Number**	Cable Length	Case
1.5	2x15 5x3 element	0.150 3.80	0.160 4	Dual matrix (T/R) - coarse-grain materials	00-010278	2.5M (8.2 ft.)	E4
2	2x32 16x2 element	0.070 1.75	0.160 4	Dual matrix (T/R) - coarse-grain materials	00-010342	2.5M (8.2 ft.)	E5
4	2x32 16x2 element	0.040 1.00	0.120 3	Dual matrix (T/R) - coarse-grain materials	00-013823	2.5M (8.2 ft.)	A27

9x7

Frequency (MHz)	Number of Elements	Primary Pitch in mm	Secondary Pitch in mm	Array Description and Application	SNI Part Number**	Cable Length	Case
5	63	0.043 1.10	0.043 1.1	General Purpose	00-013821	2.5M (8.2 ft.)	AM
2.25	63	0.070 1.75	0.070 1.75	General Purpose	00-013822	2.5M (8.2 ft.)	AL

00-010278
E4 Case



00-010342
E5 Case



00-013823
A27 Case



* See page 56 for matrix-array transducer connector types.

** When ordering matrix-array transducers, please include the part number followed by the desired connector type (ex. 00-010328 ZPAC).



Matrix Arrays

7x4 and TFM Arrays

7x4

Frequency (MHz)	Number of Elements	Primary Pitch in mm	Secondary Pitch in mm	Array Description and Application	SNI Part Number**	Cable Length	Case
2.25	28	0.106 2.70	0.120 3	General Purpose	00-013824	2.5M (8.2 ft.)	A17

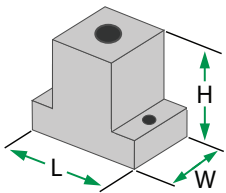
TFM ARRAYS

Case	Frequency (MHz)	Number of Elements	SNI Part Number**	Cable
AL	5	64	00-011904	3.0M (3.3 ft)
		64	00-011905	3.0M (3.3 ft)
	7.5	64	00-012898	3.0M (3.3 ft)
	10	64	00-011906	3.0M (3.3 ft)
		64	00-011907	3.0M (3.3 ft)

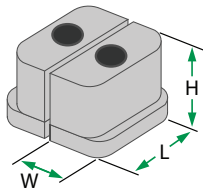
Total Focusing Method (TFM) is an algorithm used to translate the inspection information gathered from Full Matrix Capture (FMC). This process allows for an enhanced imaging by focusing at all points within the inspection area.

CASE DIMENSIONS

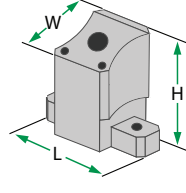
E4



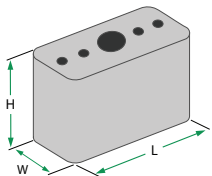
E5



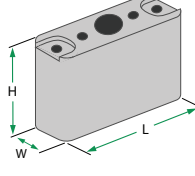
AM



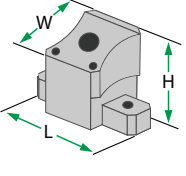
A17



A27



AL



Case Type	Case Dimensions					
	Length		Width		Height	
E4	1.33 in.	33.8 mm	0.65 in.	16.5 mm	1.0 in.	25.4 mm
E5	1.41 in.	35.8 mm	.62 in.	15.7 mm	1.0 in.	25.4 mm
AM	1.18 in.	30 mm	0.63 in.	16 mm	0.98 in.	24.9 mm
A17	1.34 in.	34 mm	0.63 in.	16 mm	0.98 in.	24.9 mm
A27	1.12 in.	28.4 mm	0.39 in.	9.9 mm	0.79 in.	20.1 mm
LM	1.69 in.	42.9 mm	1.1 in.	27.9 mm	0.98 in.	24.9 mm

Wedges for these arrays usually require very specific customization depending on the application. Please contact us to discuss your wedge requirements.

* See page 56 for matrix-array transducer connector types.

** When ordering matrix-array transducers, please include the part number followed by the desired connector type (ex. 00-010328 ZPAC).

STANDARD-TO-HIGH TEMP

UT FLAW DETECTION TRANSDUCERS

Covering Flaw Scanning and Sizing from Standard to Elevated Temperatures all in One Transducer

If you're inspecting or planning to perform on-line, elevated temperature flaw detection using linear phased-array, TOFD or dual-linear arrays for corrosion detection and mapping, SNI has a better solution for you. We have developed and done extensive testing on a family of PAUT arrays, transducers, and wedges that can operate at up to 200°C (392°F) continuous metal-surface temperatures.

Changes in the transducers and the wedge's resultant refracted angle, due to temperature change, is predictable and can be managed and compensated for in the calibration process. The attached data shows the temperature effects on both attenuation, frequency, velocity, and refracted angle. The new transducer designs are engineered with materials capable of transitioning and operating at these higher temperatures associated with on-line Oil & Gas and Power Gen applications thereby enabling the inspection and protecting the user's investment in the various transducers.

ONE

EXTENDED-TEMP-RANGE
TRANSDUCER

CONTINUOUS **200°C**
USE UP TO **392°F**



THREE

INTERCHANGEABLE-
TEMP-RANGE WEDGES

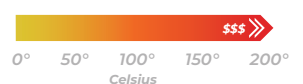
STANDARD
REXOLITE



MID-TEMP
PEEK



HIGH-TEMP
CELAZOLE





High-Temp Linear

A10 & A11 Arrays

High-Temperature Linear Arrays are versatile arrays that optimize a wide range of high-temp applications including weld inspection, tube and pipe inspection, rails, pressure vessels, and many more. These arrays come standard with 2.5 meter (8.2 ft.) cables with IPEX connectors. Wedges for these arrays are available in two options: Mid Temp [100°C to 150°C (212°F to 302°F)] and High Temp [150°C to 200°C (302°F to 392°F)]. Each wedge type is also available in 30-70° and 0° refracted angle models.



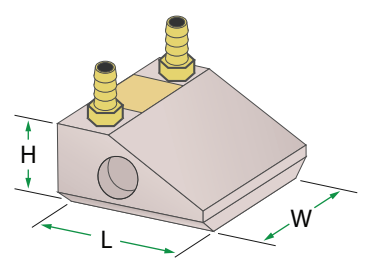
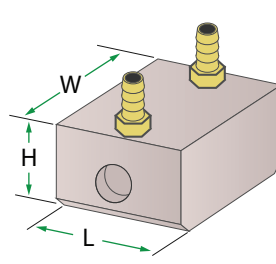
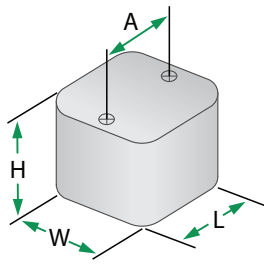
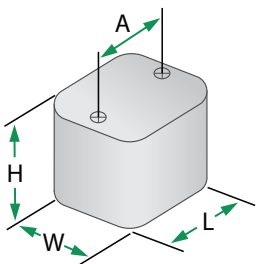
ARRAYS

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number
A10	5	16	0.024 0.60	0.39 10	00-015631
A11	5	32	0.024 0.60	0.39 10	00-015632

WEDGES

Wedges									
Case Style	Temp Range	Angle*	Part Number	Length		Width		Height	
A10	Mid Temp (100°C to 150°C)	0°	01-013350-IHC	0.98 in.	24.9 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
	High Temp (150°C to 200°C)	0°	01-013351-IHC	0.98 in.	24.9 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
	Mid Temp (100°C to 150°C)	N55S (30-70°)	01-013352-IHC	0.91 in.	23.1 mm	1.30 in.	33 mm	0.56 in.	14.2 mm
	High Temp (150°C to 200°C)	N55S (30-70°)	01-013353-IHC	1.40 in.	35.6 mm	1.58 in.	40.1 mm	0.70 in.	17.8 mm
A11	Mid Temp (100°C to 150°C)	0°	01-013355-IHC	1.38 in.	35.1 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
	High Temp (150°C to 200°C)	0°	01-013356-IHC	1.38 in.	35.1 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
	Mid Temp (100°C to 150°C)	N55S (30-70°)	01-013357-IHC	1.63 in.	41.4 mm	1.30 in.	33 mm	1.13 in.	28.7 mm
	High Temp (150°C to 200°C)	N55S (30-70°)	01-013358-IHC	2.25 in.	57.2 mm	1.30 in.	33 mm	1.05 in.	26.7 mm

All wedges come standard with 8mm ø (0.31 in.) gimbal-mounting holes.



Case	Dimensions							
	Length		Width		Height		A (Screw Mounts)	
A10	0.91 in.	23.1 mm	0.63 in.	16 mm	0.79 in.	20.1 mm	0.67 in.	17 mm
A11	0.91 in.	23.1 mm	0.98 in.	24.9 mm	0.79 in.	20.1 mm	0.67 in.	17 mm



High-Temp TOFD

Time-of-Flight Diffraction

The High-Temperature TOFD transducer acts like a conventional TOFD transducer but designed for temperatures up to 200°C (392°F). Time-of-flight diffraction is a method used to determine the size of mid-wall and I.D. cracks in metallic welds. It requires highly-damped, broadband transducers, and wedges that generate refracted longitudinal (L) waves. The high-temp TOFD transducers come standard with a straight-mounted Microdot connector. The TOFD wedge is also designed for use up to 200°C (392°F) and includes two couplant irrigation ports and gimbal-mounting holes.

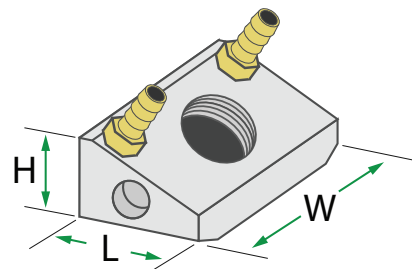
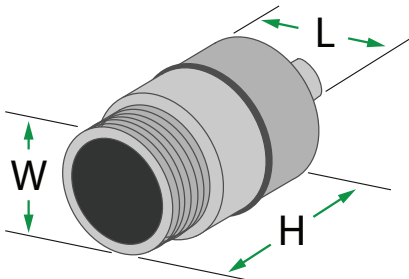


TRANSDUCERS

Case	Frequency (MHz)	Number of Elements	Element Diameter		SNI Part Number
			in	mm	
3/8 - 32	2.25	16	0.250	6.40	00-015636
	5	32	0.250	6.40	00-015635

WEDGES

Wedges			
Case Style	Temp Range	Angle*	Part Number
3/8 - 32	Up to 200°C	45°L	01-013467
	Up to 200°C	60°L	01-013468
	Up to 200°C	70°L	01-013469



Case	Dimensions					
	Length		Width		Height	
3/8 - 32	0.41 in.	10.4 mm	0.37 in.	9.5 mm	0.72 in.	18.3 mm

Wedge	Dimensions					
	Length		Width		Height	
3/8 - 32	0.67 in.	17 mm	1.25 in.	31.8 mm	0.53 in.	13.5 mm

Gimbal-mounting holes: 5mm ø (0.2 in.) and 3mm deep (0.12 in.)



High-Temp Corrosion Array

Dual-Linear Corrosion Array

The High-Temp Dual-Linear Corrosion Array is optimized for corrosion and erosion inspection at elevated temperatures. **The transducer and its replaceable delay line is designed to withstand temperatures up to 200°C (395°F).** This dual array features 32 transmit and 32 receive elements to provide larger beam coverage than conventional dual-element transducers. The transmit and receive element sets have an included angle to provide a pseudo-focusing effect in the inspected material. See page 12 for more ambient temperature dual-linear corrosion array options.



TRANSDUCERS

Case	Frequency (MHz)	Number of Elements	Element Pitch in mm	Elevation in mm	SNI Part Number
CL	5	64 (32 x 2)	0.058 1.50	0.20 5	00-015634

Replaceable Delay

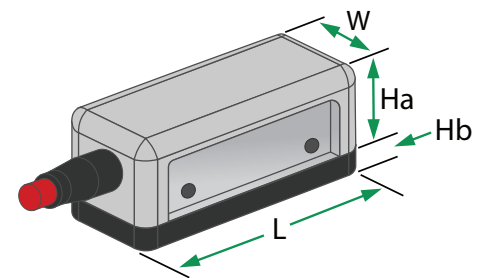
Celazole 01-014525

Sled

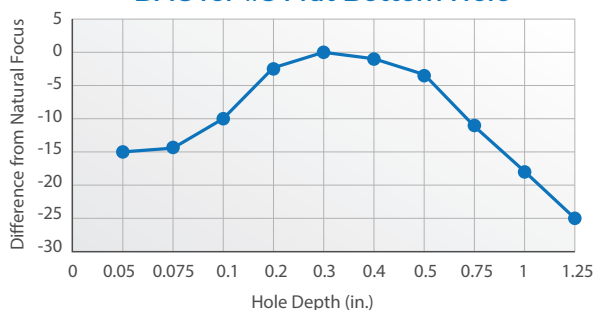
Stainless Steel 01-012570

Case	Dimensions							
	Length		Width		Height A		Height B	
CL	2.58 in.	65.5 mm	1.25 in.	31.8 mm	0.98 in.	24.9 mm	0.22 in.	5.6 mm
CL w/ Sled	2.58 in.	65.5 mm	1.25 in.	31.8 mm	0.98 in.	24.9 mm	0.23 in.	5.8 mm

The sled features 3mm ø (0.12") gimbal holes



DAC for #5 Flat Bottom Hole



High-Temp Dual Linear with optional sled attached.

CONVENTIONAL TRANSDUCERS



CONTACT | DELAY-LINE | ANGLE BEAM |
IMMERSION | CO-POLYMER | DUAL ELEMENT |
HIGH-TEMP | THICKNESS GAUGING | CONTACT |
DELAY-LINE | ANGLE BEAM | IMMERSION |
CO-POLYMER | DUAL ELEMENT | HIGH-TEMP |
THICKNESS GAUGING | CONTACT | DELAY-LINE |
ANGLE BEAM | IMMERSION | CO-POLYMER |
DUAL ELEMENT | HIGH-TEMP | THICKNESS
GAUGING | CONTACT | DELAY-LINE | ANGLE
BEAM | IMMERSION | CO-POLYMER | DUAL



Contact Transducers

CR

CONTACT CR

The larger element sizes of Model CR provide greater scan widths and penetration for applications such as plate, billet, bars, thick-section parts, pipe, and tanks. They have side-mounted BNC connectors and removable comfort grip to reduce operator fatigue. **GP series*** offer the best combination of sensitivity and resolution.



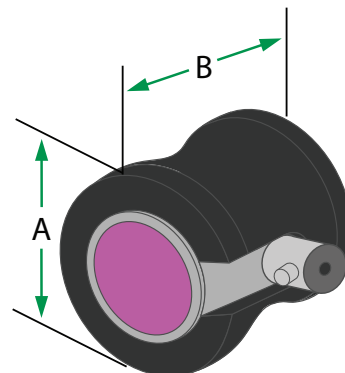
Single-Element Contacts are longitudinal-wave (straight-beam) transducers designed for general purpose manual ultrasonic inspection where test materials are relatively flat and smooth. They provide high sensitivity for better penetration, small-flaw detection, and have abrasion-resistant wear plates for extended service life.

PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number	
	inch	mm	GP	Accessories
1	0.5	12.7	00-010626	Cable BNC - BNC 6-ft (1.83 m) 07-010018
	0.75	19	00-010901	
	1	25.4	00-010902	
2.25	0.5	12.7	00-010616	
	0.75	19	00-010419	
	1	25.4	00-010416	
3.5	0.5	12.7	00-010903	
	0.75	19	00-010904	
	1	25.4	00-010905	
5	0.5	12.7	00-010617	
	0.75	19	00-010906	
	1	25.4	00-010907	
10	0.5	12.7	00-010908	

CASE DIMENSIONS

Element Ø		A		B	
inch	mm				
0.50	12.7	1.5 in.	38.1 mm	1.3 in.	33 mm
0.75	19	1.75 in.	44.5 mm	1.3 in.	33 mm
1	25.4	2.0 in.	50.8 mm	1.4 in.	35.6 mm



*GP = General Purpose.

*See appendix for technical details.



Contact Transducers

F Fingertip

CONTACT F FINGERTIP

Model F are small diameter transducers with side-mounted Microdot connectors. GP series* offer the best combination of sensitivity and resolution for most applications. HR series* are highly damped for applications where high resolution is required. C series* have piezocomposite elements and offer superior penetration in highly-attenuative materials. All Model F transducers feature an ergonomic design for improved operator control and comfort.



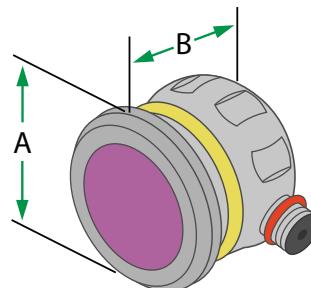
Single-Element Contacts are longitudinal-wave (straight-beam) transducers designed for general purpose manual ultrasonic inspection where test materials are relatively flat and smooth. They provide high sensitivity for better penetration, small-flaw detection, and have abrasion-resistant wear plates for extended service life.

PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number			Accessories
	inch	mm	GP	HR	C	
2.25	0.25	6.4	00-010612		00-011084	Cable MD - BNC 6-ft (1.83 m) 07-010012
	0.375	9.5	00-010618		00-011085	
	0.5	12.7	00-010622		00-011086	
3.5	0.25	6.4	00-010613		00-011087	
	0.375	9.5	00-010619		00-011088	
	0.5	12.7	00-010623		00-011089	
5	0.25	6.4	00-010614	00-010602	00-011090	
	0.375	9.5	00-010620	00-010606	00-011091	
	0.5	12.7	00-010624	00-010610	00-011092	
10	0.25	6.4	00-010615	00-010603		
	0.375	9.5	00-010621	00-010607		

CASE DIMENSIONS

Element Ø		A		B	
inch	mm				
0.25	6.4	0.58 in.	14.7 mm	0.66 in.	16.8 mm
0.375	9.5	0.71 in.	18 mm	0.66 in.	16.8 mm
0.50	12.7	0.83 in.	21.1 mm	0.66 in.	16.8 mm



* GP = General Purpose; HR = High Resolution; C = Composite.
* See appendix for technical details.



Delay-Line Contact

DFR

DFR FINGERTIP DELAY-LINE

Model DFR are small-diameter delay-line transducers with side-mounted Microdot connectors. Removable delay lines and highly damped piezoceramic elements enable measurement of very thin parts or detection of small near-surface flaws. Delay lines can be contoured for improved coupling to I.D. or O.D. curved parts. Custom sizes and shapes also available upon request.

Delay-Line Contacts are single-element, longitudinal-wave (straight beam) transducers designed for detection of near-surface flaws and thickness measurement of thin-section materials. Replaceable delay lines (stand-offs) improve near-surface resolution and extend service life.

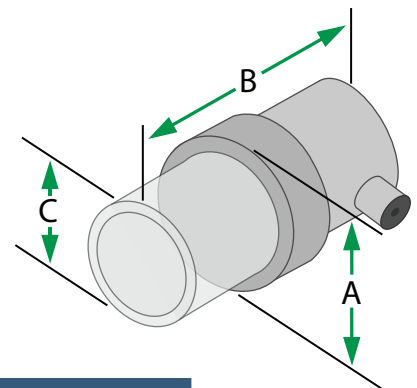


PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number	Delay 10-PK L=.38 in (10mm)	Delay 10-PK L=.5 in (12.7mm)	Accessories
	inch	mm	HR			
2.25	0.25	6.4	00-010940	01-010810	01-010811	Cable MD - BNC 6-ft (1.83 m) 07-010012
	0.5	12.7	00-012301	01-011971	01-011973	
3.5	0.25	6.4	00-010824	01-010810	01-010811	
	0.5	12.7	00-010941	01-011971	01-011973	
5	0.25	6.4	00-010246	01-010810	01-010811	
	0.5	12.7	00-010492	01-011971	01-011973	
10	0.25	6.4	00-010247	01-010810	01-010811	
	0.5	12.7	00-012302	01-011971	01-011973	
15	0.25	6.4	00-011077	01-010810	01-010811	
	0.25	6.4	00-011077	01-010810	01-010811	



Frequency (MHz)	Element Diameter		Part Number	Delay 10-PK L=.41 in (10.4mm)	Accessories
	inch	mm	HR		
Nominal 20MHz	0.125	3.2	00-012300	01-011974	See above



CASE DIMENSIONS

Element Ø									
inch	mm	A		B				C	
				0.38 in. Delay		0.5 in. Delay			
0.125	3.2	0.5 in.	12.7 mm	0.83 in.	21.1 mm	0.95 in.	24.1 mm	0.30 in.	7.6 mm
0.25	6.4	0.5 in.	12.7 mm	0.83 in.	21.1 mm	0.95 in.	24.1 mm	0.30 in.	7.6 mm
0.5	12.7	0.88 in.	22.4 mm	1.03 in.	26.2 mm	1.15 in.	29.2 mm	0.60 in.	15.2 mm
Mini-DFR									
0.125	3.2	0.41 in.	10.4 mm	0.77 in.		19.6 mm		0.19 in.	4.8 mm



Delay-Line Contact

Pencil Probes

Replaceable Delay-Line Pencil Probes

Pencil probes are designed for applications requiring a very small contact face, such as curved turbine blades or thickness measurement from the inside of a pit. They can be used with most flaw detectors and precision thickness gauges. Interchangeable delay lines are tapered to tip diameters of 0.065 inch (1.7mm) and 0.090 inch (2.3mm). Replaceable delay lines are available in packs of 10. The straight model features a removable handle, which also allows it to be used as a fingertip probe. All models have Microdot connectors.



Delay-Line Contacts are single-element, longitudinal-wave (straight beam) transducers designed for detection of near-surface flaws and thickness measurement of thin-section materials. Replaceable delay lines (stand-offs) improve near-surface resolution and extend service life.

PART NUMBERS

Frequency (MHz)	Part Number		
	Straight	45 Degree	90 Degree
7.5	00-011083	00-012296	00-012297
10	00-014008	00-014009	00-014010
15	00-011039	00-012298	00-012299

ACCESSORIES

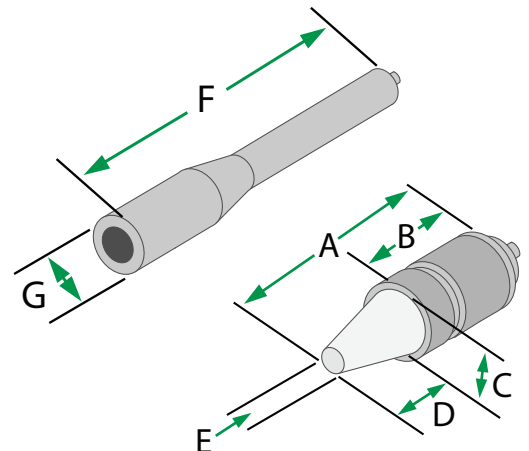
Delay 10-PK .065" (1.7mm) Tip	Delay 10-PK .090" (2.3mm) Tip	Cable MD - BNC
00-012222	00-012221	6-ft (1.83 m) 07-010012

Extension Handle	Knurled Ring
00-012220	06-014005

CASE DIMENSIONS

A	B	C
1.0 in. 25.4 mm	0.60 in. 15.2 mm	0.42 in. 10.7 mm

D	E	F	G
0.4 in. 10.2 mm	0.09 in. 2.3 mm	4.0 in. 101.6 mm	0.42 in. 10.7 mm





Delay-Line Contact

ZIP - Zero Interface Probes

Zero Interface Probes

Zero-Interface Probes (ZIP) are low-frequency delay-line transducers designed to inspect composite material. The special delay lines used are acoustically matched to the composite material which allows for a zero-interface signal, more efficient energy coupling & transmission, and increased near-surface resolution. Replaceable delay lines are available in packs of 5.

ZIP probes are special delay-line contact probes that are single-element longitudinal-wave (straight beam) transducers designed for the detection of near-surface flaws and thickness measurement of thin cross-section materials.



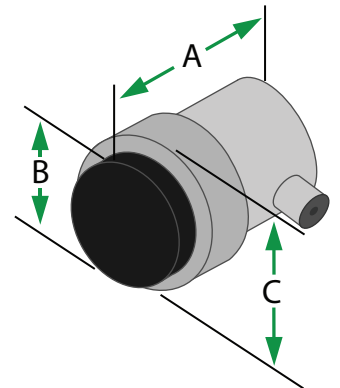
PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number
	inch	mm	PN
0.5	1	25.4	00-012361
1.5	0.375	9.5	00-011173
	0.5	12.7	00-012616

Delay 5-PK .375" (9.5mm) Tip	Delay 5-PK .5" (12.7mm) Tip
01-013488	01-013544

CASE DIMENSIONS

Element Ø		A		B		C	
inch	mm						
0.375	9.5	1.40 in.	35.6 mm	0.46 in.	11.7 mm	0.75 in.	19.1 mm
0.5	12.7	1.14 in.	29 mm	0.63 in.	16 mm	0.87 in.	22.1 mm
1	25.4	1.70 in.	43.2 mm	1.04 in.	26.4 mm	1.45 in.	36.8 mm



Echo of a ZIP Delay



Backwall Echo from a 0.14" (3.6mm) Composite Component with ZIP



Integral-Wedge Angle Beam

MWB+ & MWK+

MWB+ & MWK+ ANGLE BEAM

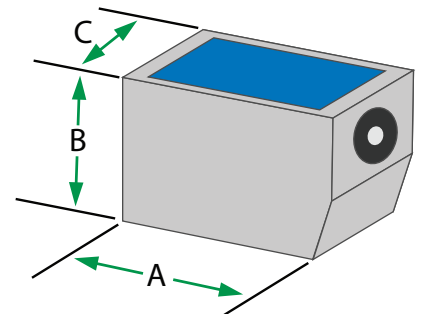
Models MWB+ and MWK+ are small transducers with side or top-mounted Microdot connectors and integral wedges for maximum versatility. **GP series*** (MWB+) offer the best combination of sensitivity and resolution. **C series*** (MWK+) with piezocomposite elements offer superior resolution, penetration and signal-to-noise ratio in highly-attenuative and coarse-grain materials such as austenitic stainless steel or cast iron.



European-Style Angle-Beam Transducers generate shear (transverse) waves at the specified angle in a given test material to detect flaws that cannot be detected by a straight beam transducer. Typical applications include weld inspection, tube and pipe, shafts, turbine blades and wheel rims. Shear waves are produced by refracting a longitudinal wave in a precision-machined acrylic wedge that also minimizes wedge noise.

PART NUMBERS

Frequency (MHz)	Element Dimensions		Angle (Steel)	Connector Location	Part Number		
	inch	mm			GP (MWB+)	C (MWK+)	Accessories
2	0.31 x 0.35	8 x 9	35	Top	00-012227	00-012306	Cables MD - BNC Straight 6-ft (1.83 m) 07-010012 MCX - BNC Straight 6-ft (1.83 m) 07-010007 MCX - BNC Right Angle 6-ft (1.83 m) 07-010008
				Side	00-012226	00-012307	
			45	Top	00-012229	00-012308	
				Side	00-012228	00-012251	
			60	Top	00-012231	00-012309	
				Side	00-012230	00-012252	
			70	Top	00-012233	00-012310	
				Side	00-012232	00-012253	
			80	Top	00-012235	00-012311	
				Side	00-012234	00-012312	
			90	Side	00-012236	00-012313	
				Side	00-012237	00-012315	
4	0.31 x 0.35	8 x 9	35	Top	00-012238	00-012314	6-ft (1.83 m) 07-010007 MCX - BNC Right Angle 6-ft (1.83 m) 07-010008
				Side	00-012237	00-012315	
			45	Top	00-012240	00-012316	
				Side	00-012239	00-012248	
			60	Top	00-012242	00-012317	
				Side	00-012241	00-012249	
			70	Top	00-012244	00-012318	
				Side	00-012243	00-012250	
			80	Top	00-012246	00-012319	
				Side	00-012245	00-012320	
			90	Side	00-012247	00-012321	
				Side	00-012247	00-012321	



Element Dimensions		A		B		C	
inch	mm						
0.31 x 0.35	8 x 9	1.07 in.	27.1 mm	0.86 in.	21.8 mm	0.66 in.	16.8 mm



Integral-Wedge Angle Beam

ABFP

ABFP ANGLE BEAM

Model ABFP are small transducers with side Microdot connectors and integral wedges for maximum versatility. These small transducers are perfect for inspection in hard to reach or restricted areas. C series* with piezocomposite elements offer superior resolution, penetration and signal-to-noise ratio. The piezocomposite also heightens sensitivity and bandwidth.



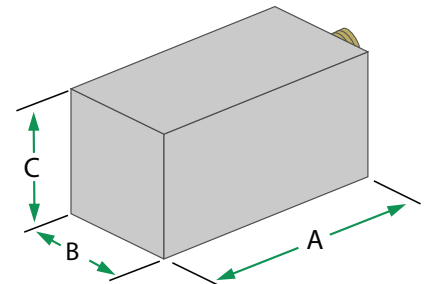
Standard models listed below are designed for inspecting carbon steel. These transducer can be designed to inspect other materials as well as variations in inspection angle. ABFP come standard with side-mounted microdot connectors but can be special ordered with top-mounted connectors if requested.

PART NUMBERS

Frequency (MHz)	Element Size		Part Number				
	inch	mm	45°	60°	70°	90°	Accessories
2.25	0.187 x 0.187	4.75 x 4.75	00-013946	00-013947	00-013948	00-013949	Cable MD - BNC 07-010012
	0.25 x 0.25	6.4 x 6.4	00-013950	00-013951	00-013952	00-013953	
5	0.187 x 0.187	4.75 x 4.75	00-013954	00-013955	00-013956	00-013957	
	0.25 x 0.25	6.4 x 6.4	00-013958	00-013959	00-013960	00-013961	
10	0.187 x 0.187	4.75 x 4.75	00-013962	00-013963	00-013964	00-013965	
	0.25 x 0.25	6.4 x 6.4	00-013966	00-013967	00-013968	00-013969	

CASE DIMENSIONS

Element Dimensions		A		B		C	
inch	mm						
0.187 x 0.187	4.75 x 4.75	0.70 in.	17.8 mm	0.32 in.	8.1 mm	0.50 in.	12.7 mm
0.25 x 0.25	6.4 x 6.4	1.0 in.	25.4 mm	0.50 in.	12.7 mm	0.50 in.	12.7 mm



* C = Composite. See appendix for technical details.



Large Angle Beam

AWS & Wedges

AWS ANGLE-BEAM TRANSDUCERS

Model AWS transducers and wedges meet the requirements of American Welding Society Structural Welding Code D1.1 and Bridge Welding Code D1.5. The transducers are available with piezoceramic elements (GP series*) and piezocomposite elements (C series*).

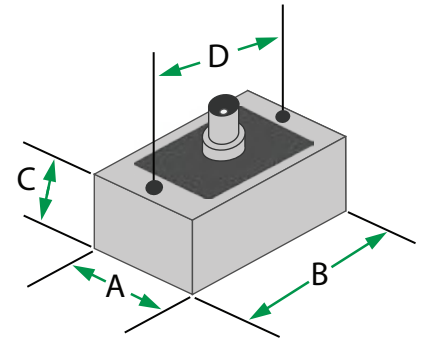


Angle-Beam Transducers and their wedges generate shear (transverse) waves at the specified angle in a given test material to detect flaws that cannot be detected by a straight beam transducer. Typical applications include weld inspection, tube and pipe, shafts, turbine blades and wheel rims. Shear waves are produced by refracting a longitudinal wave in a precision machined acrylic wedge that also minimizes wedge noise.



PART NUMBERS

Frequency (MHz)	Element Dimensions		Part Number			
	inch	mm	GP	C	Wedges	Accessories
2.25	0.625 x 0.625	16 x 16	00-010393	00-010242	45° 01-010414	Cable BNC - BNC 6-ft (1.83 m) 07-010018
					60° 01-010415	
					70° 01-010416	
	0.625 x 0.75	16 x 19	00-010395	00-010394	45° 01-010414	
					60° 01-010415	
					70° 01-010416	
	0.75 x 0.75	19 x 19	00-010397	00-010396	45° 01-010414	
					60° 01-010415	
					70° 01-010416	

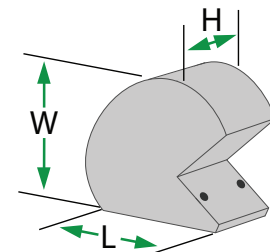


CASE DIMENSIONS

Element Dimensions		A		B		C		D		Thread
inch	mm									
0.625 x 0.625	16 x 16	0.80 in.	20.3 mm	1.26 in.	32 mm	0.75 in.	19.1 mm	1.0 in.	25.4 mm	
0.625 x 0.75	16 x 19	0.80 in.	20.3 mm	1.26 in.	32 mm	0.75 in.	19.1 mm	1.0 in.	25.4 mm	
0.75 x 0.75	19 x 19	0.85 in.	21.6 mm	1.26 in.	32 mm	0.75 in.	19.1 mm	1.0 in.	25.4 mm	

AWS WEDGE DIMENSIONS

Wedge Type	Part Number	Wedge Dimensions			
		Length		Width	
45°	01-010414	1.82 in.	46.2 mm	1.25 in.	31.8 mm
60°	01-010415	1.96 in.	49.8 mm	1.25 in.	31.8 mm
70°	01-010416	2.17 in.	55.1 mm	1.25 in.	31.8 mm





Large Angle Beam

SWS

SWS ANGLE BEAM

Model SWS are designed for general weld inspection and other applications such as pipes, tanks, pressure vessels, forgings and castings. They have top mounted BNC connectors and are available with piezocomposite elements (C series*). Interchangeable acrylic wedges provide maximum versatility and service life.



Angle-Beam Transducers and their wedges generate shear (transverse) waves at the specified angle in a given test material to detect flaws that cannot be detected by a straight-beam transducer. Typical applications include weld inspection, tube and pipe, shafts, turbine blades and wheel rims. Shear waves are produced by refracting a longitudinal wave in a precision machined acrylic wedge that also minimizes wedge noise.

PART NUMBERS

Frequency (MHz)	Element Dimensions				
	inch	mm	C	Wedges	Accessories
0.5	0.5 Ø	12.7 Ø	00-010478	45° 01-010417	Cable BNC - BNC 6-ft (1.83 m) 07-010018
				60° 01-010418	
				70° 01-010419	
	0.5 x 1	12.7 x 25.4	00-010479	45° 01-010425	
				60° 01-010426	
				70° 01-010427	
	0.75 x 1	19 x 25.4	00-010480	45° 01-010428	
				60° 01-010429	
				70° 01-010430	
	1 Ø	25.4 Ø	00-010481	45° 01-010991	
				60° 01-010992	
				70° 01-010993	
1	0.5 Ø	12.7 Ø	00-010445	45° 01-010417	Cable BNC - BNC 6-ft (1.83 m) 07-010018
				60° 01-010418	
				70° 01-010419	
	0.5 x 1	12.7 x 25.4	00-010446	45° 01-010425	
				60° 01-010426	
				70° 01-010427	
	0.75 x 1	19 x 25.4	00-010447	45° 01-010428	
				60° 01-010429	
				70° 01-010430	
	1 Ø	25.4 Ø	00-010448	45° 01-010991	
				60° 01-010992	
				70° 01-010993	
2.25	0.5 Ø	12.7 Ø	00-010449	45° 01-010417	Cable BNC - BNC 6-ft (1.83 m) 07-010018
				60° 01-010418	
				70° 01-010419	
	0.5 x 1	12.7 x 25.4	00-010450	45° 01-010425	
				60° 01-010426	
				70° 01-010427	
	0.75 x 1	19 x 25.4	00-010451	45° 01-010428	
				60° 01-010429	
				70° 01-010430	
	1 Ø	25.4 Ø	00-010452	45° 01-010991	
				60° 01-010992	
				70° 01-010993	
3.5	0.5 Ø	12.7 Ø	00-010453	45° 01-010417	Cable BNC - BNC 6-ft (1.83 m) 07-010018
				60° 01-010418	
				70° 01-010419	
	0.5 x 1	12.7 x 25.4	00-010454	45° 01-010425	
				60° 01-010426	
				70° 01-010427	
	0.75 x 1	19 x 25.4	00-010455	45° 01-010428	
				60° 01-010429	
				70° 01-010430	
	1 Ø	25.4 Ø	00-010456	45° 01-010991	
				60° 01-010992	
				70° 01-010993	
5	0.5 Ø	12.7 Ø	00-010457	45° 01-010417	Cable BNC - BNC 6-ft (1.83 m) 07-010018
				60° 01-010418	
				70° 01-010419	
	0.5 x 1	12.7 x 25.4	00-010458	45° 01-010425	
				60° 01-010426	
				70° 01-010427	
	0.75 x 1	19 x 25.4	00-010459	45° 01-010428	
				60° 01-010429	
				70° 01-010430	
	1 Ø	25.4 Ø	00-010460	45° 01-010991	
				60° 01-010992	
				70° 01-010993	

* C = Composite. See appendix for technical details.





Large Angle Beam

SWS

SWS CASE DIMENSIONS

Element Size									
inch	mm	A		B		C		D	
0.5 Ø	12.7 Ø	0.72 in.	18.3 mm	1.0 in.	25.4 mm	0.75 in.	19 mm	0.81 in.	20.6 mm
0.5 x 1	12.7 x 25.4	0.73 in.	18.5 mm	1.5 in.	38.1 mm	0.75 in.	19 mm	1.31 in.	33.3 mm
0.75 x 1	19 x 25.4	1.0 in.	25.4 mm	1.5 in.	38.1 mm	0.75 in.	19 mm	1.31 in.	33.3 mm
1 Ø	25.4 Ø	1.22 in.	31.0 mm	1.65 in.	41.9 mm	0.75 in.	19 mm	1.38 in.	35.1 mm
								Thread	
								4-40	



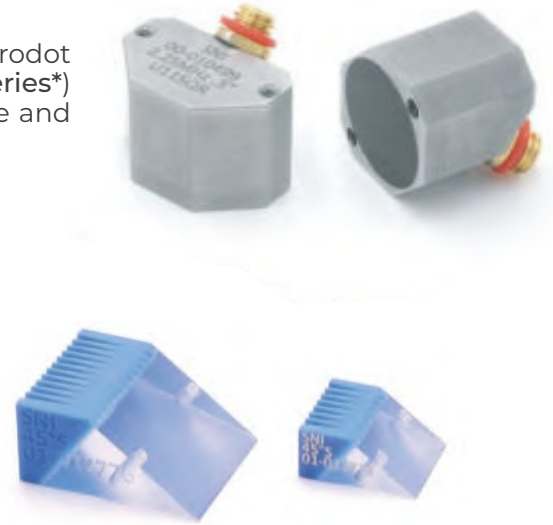
Small Angle Beam

MSWS

MSWS ANGLE-BEAM TRANSDUCERS

Model MSWS have captive screws for wedge attachment and angled Microdot connectors for applications requiring low profile. Piezocomposite (**C series***) offer superior penetration and signal-to-noise ratio in highly-attenuative and coarse-grain materials.

Angle-Beam Transducers and their wedges, generate shear (transverse) waves at the specified angle in a given test material to detect flaws that cannot be detected by a straight-beam transducer. Typical applications include weld inspection, tube and pipe, shafts, turbine blades and wheel rims. Shear waves are produced by refracting a longitudinal wave in a precision machined acrylic wedge that also minimizes wedge noise.



Frequency (MHz)	Element Diameter				
	inch	mm	C	Wedges	Accessories
1	0.5	12.7	00-010497	45° 01-012776	Cable MD - BNC 6-ft (1.83 m) 07-010012
				60° 01-012777	
				70° 01-012778	
2.25	0.25	6.4	00-010498	45° 01-012773	
				60° 01-012774	
				70° 01-012775	
	0.5	12.7	00-010499	45° 01-012776	
				60° 01-012777	
				70° 01-012778	
3.5	0.25	6.4	00-010500	45° 01-012773	
				60° 01-012774	
				70° 01-012775	
	0.5	12.7	00-010501	45° 01-012776	
				60° 01-012777	
				70° 01-012778	
5	0.25	6.4	00-010502	45° 01-012773	
				60° 01-012774	
				70° 01-012775	
	0.5	12.7	00-010503	45° 01-012776	
				60° 01-012777	
				70° 01-012778	
10	0.25	6.4	00-010504	45° 01-012773	
				60° 01-012774	
				70° 01-012775	
	0.5	12.7	00-010505	45° 01-012776	
				60° 01-012777	
				70° 01-012778	

* C = Composite. See appendix for technical details.

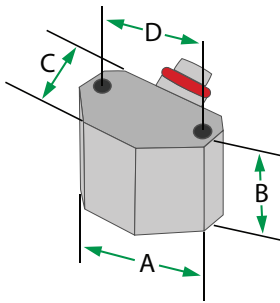


Small Angle Beam

MSWS

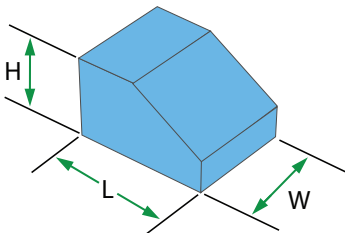
CASE DIMENSIONS

Element Ø										Thread
inch	mm	A		B		C		D		
0.25	6.4	0.48 in.	12.2 mm	0.34 in.	8.6 mm	0.31 in.	7.9 mm	0.38 in.	9.7 mm	
0.5	12.7	0.73 in.	18.5 mm	0.5 in.	12.7 mm	0.56 in.	14.2 mm	0.63 in.	16 mm	



MSWS WEDGE DIMENSIONS

Part Number	Wedge Dimensions					
	Length		Width		Height	
01-012773	0.59 in.	15 mm	0.5 in.	12.7 mm	0.26 in.	6.6 mm
01-012774	0.65 in.	16.5 mm	0.5 in.	12.7 mm	0.30 in.	7.6 mm
01-012775	0.73 in.	18.5 mm	0.5 in.	12.7 mm	0.33 in.	8.4 mm
01-012776	0.93 in.	23.6 mm	0.75 in.	19 mm	0.43 in.	10.9 mm
01-012777	1.05 in.	26.7 mm	0.75 in.	19 mm	0.50 in.	12.7 mm
01-012778	1.18 in.	30 mm	0.75 in.	19 mm	0.54 in.	13.7 mm





Small Angle Beam

TOFD 3/8-32 & 11/16-24

TOFD ANGLE BEAM

Time-Of-Flight Diffraction (TOFD) is a method used to determine the size of cracks in metallic welds. It requires highly-damped, broadband transducers and wedges that generate refracted longitudinal waves (L-waves). SNI's TOFD transducers have state-of-the-art piezocomposite elements (C series*) and Quick Swap screw-in wedge attachment. Straight-mounted connectors are Microdot & MCX (3/8-32 & 11/16-24) or Lemo-00 (M12 case).



3/8-32 (ST1) PART NUMBERS

Frequency (MHz)	Element Diameter inch mm		Part Number				Accessories
			Connector	C	Connector	C	
2.25	0.25	6	Microdot	00-010493	MCX	00-011277	Cables MD - BNC 6-ft (1.83 m) 07-010012
5	0.125	3	Microdot	00-010168	MCX	00-010164	
	0.25	6	Microdot	00-010398	MCX	00-011276	
7.5	0.125	3	Microdot	00-010167	MCX	00-010163	
	0.25	6	Microdot	00-010748	MCX	00-011280	
10	0.125	3	Microdot	00-010166	MCX	00-010162	
	0.25	6	Microdot	00-010387	MCX	00-011278	
15	0.125	3	Microdot	00-010165	MCX	00-010161	
	0.25	6	Microdot	00-010749	MCX	00-011281	

See page 38 for TOFD wedges

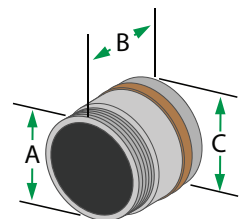
11/16-24 (ST2) PART NUMBERS

Frequency (MHz)	Element Diameter inch mm		Part Number				Accessories
			Connector	C	Connector	C	
2.25	0.375	9.5	Microdot	00-013977	MCX	00-013017	Cables MD - BNC 6-ft (1.83 m) 07-010012
	0.5	12.7	Microdot	00-013008	MCX	00-013018	
5	0.375	9.5	Microdot	00-013021	MCX	00-013022	
	0.5	12.7	Microdot	00-013019	MCX	00-013020	

See page 38 for TOFD wedges

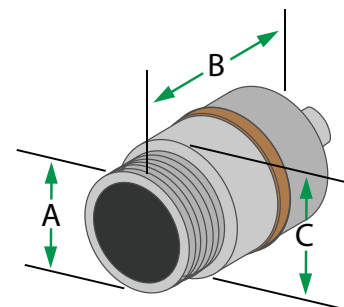
11/16"-24 DIMENSIONS

Element Dimensions		A		B		C	
inch	mm						
0.375	9.5	0.62 in.	15.8 mm	0.68 in.	17.3 mm	0.70 in.	17.8 mm
0.5	12.7	0.62 in.	15.8 mm	0.68 in.	17.3 mm	0.70 in.	17.8 mm



3/8"-32 DIMENSIONS

Element Dimensions		A		B		C	
inch	mm						
0.125	3	0.37 in.	9.4 mm	0.72 in.	18.3 mm	0.41 in.	10.4 mm
0.25	6	0.37 in.	9.4 mm	0.72 in.	18.3 mm	0.41 in.	10.4 mm



* C = Composite. See appendix for technical details.



Small Angle Beam

TOFD M12

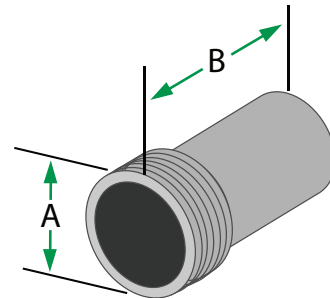
M12 PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number		
	inch	mm	Connector	C	Accessories
2.25	0.25	6	Lemo-00	00-011897	Cables Lemo-00 - BNC 6-ft (1.83 m) 07-010014
5	0.125	3	Lemo-00	00-010299	
	0.25	6	Lemo-00	00-010300	
10	0.125	3	Lemo-00	00-010298	
	0.25	6	Lemo-00	00-010386	
15	0.125	3	Lemo-00	00-010631	
	0.25	6	Lemo-00	00-013016	

See page 38 for TOFD wedges

M12 DIMENSIONS

Element Dimensions		A		B	
inch	mm				
0.125	3	0.37 in.	9.4 mm	0.72 in.	18.3 mm
0.25	6	0.37 in.	9.4 mm	0.72 in.	18.3 mm





Small Angle Beam

TOFD Wedges

3/8-32 WEDGES

Angle	Thread	Additional Info	Part Number
45° L	3/8 - 32	Single Port with Adjustable Wear Pins	01-010666
60° L	3/8 - 32	Single Port with Adjustable Wear Pins	01-010667
70° L	3/8 - 32	Single Port with Adjustable Wear Pins	01-010668
45° L	3/8 - 32		01-011597
60° L	3/8 - 32		01-011598
70° L	3/8 - 32		01-011599
45° L	3/8 - 32	Dual Ports with Adjustable Wear Pins	01-012235
60° L	3/8 - 32	Dual Ports with Adjustable Wear Pins	01-012236
70° L	3/8 - 32	Dual Ports with Adjustable Wear Pins	01-012237
45° L	3/8 - 32	Dual Ports, Stainless Steel Housing	01-012264
60° L	3/8 - 32	Dual Ports, Stainless Steel Housing	01-012263
70° L	3/8 - 32	Dual Ports, Stainless Steel Housing	01-011993

3/8-32 WEDGE SIZING

L		W		H		Diagram Reference
1.06 in.	27 mm	1.0 in.	25.4 mm	0.52 in.	13.2 mm	1
1.06 in.	27 mm	1.0 in.	25.4 mm	0.52 in.	13.2 mm	
1.06 in.	27 mm	1.0 in.	25.4 mm	0.52 in.	13.2 mm	
0.83 in.	21.1 mm	1.25 in.	31.8 mm	0.50 in.	12.7 mm	2
0.83 in.	21.1 mm	1.25 in.	31.8 mm	0.50 in.	12.7 mm	
0.83 in.	21.1 mm	1.25 in.	31.8 mm	0.50 in.	12.7 mm	
0.83 in.	21.1 mm	1.25 in.	31.8 mm	0.50 in.	12.7 mm	3
0.83 in.	21.1 mm	1.25 in.	31.8 mm	0.50 in.	12.7 mm	
0.83 in.	21.1 mm	1.25 in.	31.8 mm	0.50 in.	12.7 mm	
0.67 in.	17 mm	1.25 in.	31.8 mm	0.53 in.	13.5 mm	3
0.67 in.	17 mm	1.25 in.	31.8 mm	0.53 in.	13.5 mm	
0.67 in.	17 mm	1.25 in.	31.8 mm	0.53 in.	13.5 mm	

11/16-24 WEDGES

Angle	Thread	Additional Info	Part Number
45° L	11/16 - 24		01-011594
60° L	11/16 - 24		01-010595
70° L	11/16 - 24		01-011596
45° L	11/16 - 24	Dual Ports with Adjustable Wear Pins	01-012269
60° L	11/16 - 24	Dual Ports with Adjustable Wear Pins	01-012270
70° L	11/16 - 24	Dual Ports with Adjustable Wear Pins	01-012271

11/16-24 WEDGE SIZING

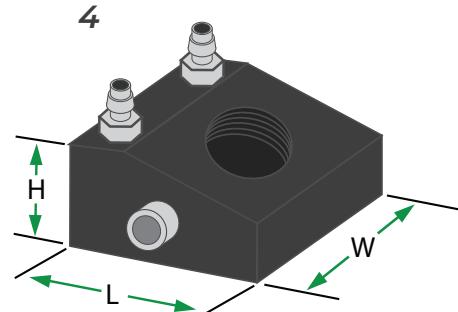
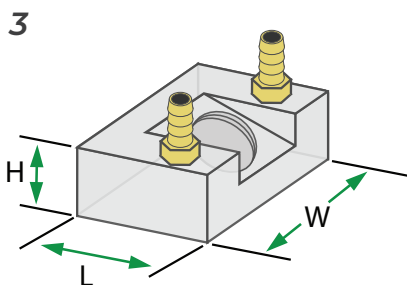
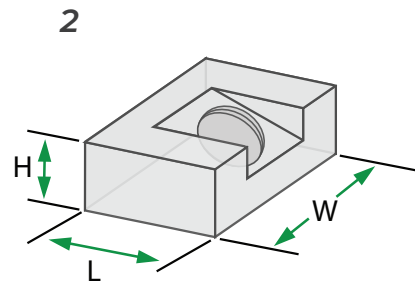
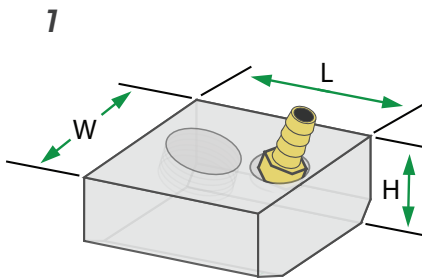
L		W		H		Diagram Reference
1.0 in.	25.4 mm	1.25 in.	31.8 mm	0.63 in.	16 mm	2
1.0 in.	25.4 mm	1.25 in.	31.8 mm	0.63 in.	16 mm	
1.0 in.	25.4 mm	1.25 in.	31.8 mm	0.63 in.	16 mm	
1.0 in.	25.4 mm	1.25 in.	31.8 mm	0.63 in.	16 mm	3
1.0 in.	25.4 mm	1.25 in.	31.8 mm	0.63 in.	16 mm	
1.0 in.	25.4 mm	1.25 in.	31.8 mm	0.63 in.	16 mm	

M12 WEDGES

Angle	Thread	Additional Info	Part Number
45° L	M12	Carbon Steel, 7.1mm Delay, Dual Ported	01-010334
60° L	M12	Carbon Steel, 7.1mm Delay, Dual Ported	01-010335
70° L	M12	Carbon Steel, 7.0mm Delay, Dual Ported	01-010336

M12 WEDGE SIZING

L		W		H		Diagram Reference
0.79 in.	20.1 mm	1.18 in.	30 mm	0.57 in.	14.5 mm	4
0.79 in.	20.1 mm	1.18 in.	30 mm	0.57 in.	14.5 mm	
0.79 in.	20.1 mm	1.18 in.	30 mm	0.57 in.	14.5 mm	





Small Angle Beam

QS



PART NUMBERS

Frequency (MHz)	Element Diameter		C**	Accessories
	inch	mm		
1	0.375	9.5	00-010137 MD or MCX	Cables MD - BNC 6-ft (1.83 m) 07-010012 MCX - BNC Straight 6-ft (1.83 m) 07-010007 MCX - BNC Right Angle 6-ft (1.83 m) 07-010008
	0.5	12.7	00-010138 MD or MCX	
1.5	0.25	6.4	00-010216 MD or MCX	
	0.375	9.5	00-010217 MD or MCX	
	0.5	12.7	00-010218 MD or MCX	
2.25	0.25	6.4	00-010122 MD or MCX	
	0.375	9.5	00-010123 MD or MCX	
	0.5	12.7	00-010124 MD or MCX	

Chart continues on page 41

QS ANGLE-BEAM TRANSDUCERS

Model QS features Quick Swap screw-in wedge attachment. They are available with top-mounted Microdot (MD) or new MCX low-profile swivel connectors. Piezocomposite (C series*) offer superior penetration and signal-to-noise ratio in highly-attenuative and coarse-grain materials.

Angle-Beam Transducers and their wedges, generate shear (transverse) waves at the specified angle in a given test material to detect flaws that cannot be detected by a straight-beam transducer. Typical applications include weld inspection, tube and pipe, shafts, turbine blades and wheel rims. Shear waves are produced by refracting a longitudinal wave in a precision-machined acrylic wedge that also minimizes wedge noise.

* C = Composite. See appendix for technical details.

** When ordering QS transducers, please include the part number followed by the connector type (MD or MCX)



Small Angle Beam

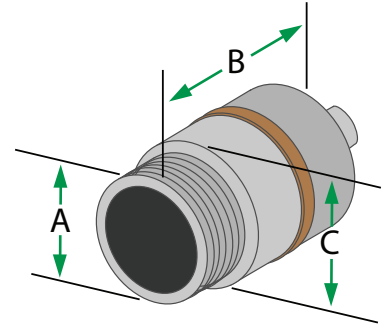
QS & QS Wedges

PART NUMBERS CONTINUED

Frequency (MHz)	Element Diameter		C**	Accessories
	inch	mm		
3.5	0.25	6.4	00-010125 MD or MCX	Cables MD - BNC 6-ft (1.83 m) 07-010012 MCX - BNC Right Angle 6-ft (1.83 m) 07-010008
	0.375	9.5	00-010126 MD or MCX	
	0.5	12.7	00-010127 MD or MCX	
5	0.25	6.4	00-010128 MD or MCX	
	0.375	9.5	00-010129 MD or MCX	
	0.5	12.7	00-010130 MD or MCX	
7.5	0.25	6.4	00-010131 MD or MCX	
	0.375	9.5	00-010132 MD or MCX	
	0.5	12.7	00-010133 MD or MCX	
10	0.25	6.4	00-010134 MD or MCX	
	0.375	9.5	00-010135 MD or MCX	
	0.5	12.7	00-010136 MD or MCX	

CASE DIMENSIONS

Element Ø		A	B	C
inch	mm			
0.25	6.4	3/8 - 32 UNEF	0.58 in. 14.7 mm	0.43 in. 10.9 mm
0.375	9.5	1/2 - 28 UNEF	0.58 in. 14.7 mm	0.54 in. 13.7 mm
0.5	12.7	5/8 - 24 UNEF	0.65 in. 16.5 mm	0.69 in. 17.5 mm



QS STANDARD WEDGES

Element Diameter		Standard Wedges			
		Angle	Carbon Steel	Stainless Steel	Aluminum
0.25	6.4	30°	01-012100		
		45°	01-012101	01-010636	01-010840
		60°	01-012102	01-010637	01-010841
		70°	01-012103	01-010638	01-010842
0.375	9.5	30°	01-012104		
		45°	01-012105	01-010640	01-010713
		60°	01-012106	01-010641	01-010838
		70°	01-012107	01-010642	01-010839
0.5	12.7	30°	01-012108		
		45°	01-012109	01-010644	01-010527
		60°	01-012110	01-010645	01-010528
		70°	01-012111	01-010646	01-010529

QS SHORT INDEX WEDGES

Element Diameter		Short Index Wedges			
		Angle	Carbon Steel	Stainless Steel	Aluminum
0.25	6.4	45°	01-012116	01-012128	01-010480
		60°	01-012117	01-012129	01-010481
		70°	01-012118	01-012130	01-010482
0.375	9.5	45°	01-012120	01-012132	01-010484
		60°	01-012121	01-012133	01-010485
		70°	01-012122	01-012134	01-010486
0.5	12.7	45°	01-012124	01-012136	01-010488
		60°	01-012125	01-012137	01-010489
		70°	01-012126	01-012138	01-010490

** When ordering QS transducers, please include the part number followed by the connector type (MD or MCX)

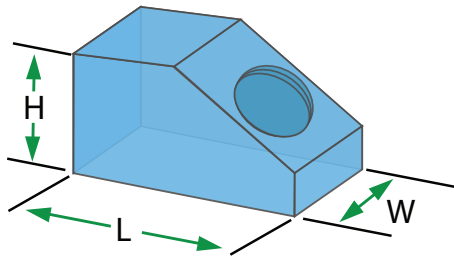


Small Angle Beam

QS Wedge Dimensions

QS STANDARD WEDGE DIMENSIONS

Wedge Type	Part Number	Wedge Dimensions			
		Length	Width	Height	
Carbon Steel	01-012100	0.70 in. 17.78 mm	0.45 in. 11.4 mm	0.37 in. 9.4 mm	
Carbon Steel	01-012101	0.75 in. 19 mm	0.45 in. 11.4 mm	0.39 in. 9.9 mm	
Carbon Steel	01-012102	0.84 in. 21.3 mm	0.45 in. 11.4 mm	0.44 in. 11.2 mm	
Carbon Steel	01-012103	1.0 in. 25.4 mm	0.45 in. 11.4 mm	0.50 in. 12.7 mm	
Carbon Steel	01-012104	0.83 in. 21.1 mm	0.55 in. 14 mm	0.47 in. 11.9 mm	
Carbon Steel	01-012105	0.89 in. 22.6 mm	0.55 in. 14 mm	0.47 in. 11.9 mm	
Carbon Steel	01-012106	1.04 in. 26.4 mm	0.55 in. 14 mm	0.55 in. 14 mm	
Carbon Steel	01-012107	1.19 in. 30.2 mm	0.55 in. 14 mm	0.58 in. 14.7 mm	
Carbon Steel	01-012108	0.98 in. 24.9 mm	0.70 in. 17.8 mm	0.55 in. 14 mm	
Carbon Steel	01-012109	1.05 in. 26.7 mm	0.70 in. 17.8 mm	0.55 in. 14 mm	
Carbon Steel	01-012110	1.24 in. 31.5 mm	0.70 in. 17.8 mm	0.64 in. 16.3 mm	
Carbon Steel	01-012111	1.41 in. 35.8 mm	0.70 in. 17.8 mm	0.68 in. 17.3 mm	

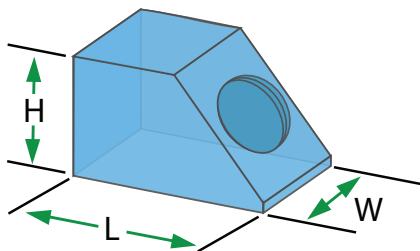


Wedge Type	Part Number	Wedge Dimensions			
		Length	Width	Height	
Stainless Steel	01-010636	0.75 in. 19 mm	0.45 in. 11.4 mm	0.43 in. 10.9 mm	
Stainless Steel	01-010637	0.84 in. 21.3 mm	0.45 in. 11.4 mm	0.47 in. 11.9 mm	
Stainless Steel	01-010638	1.0 in. 25.4 mm	0.45 in. 11.4 mm	0.52 in. 13.2 mm	
Stainless Steel	01-010640	0.89 in. 22.6 mm	0.55 in. 14 mm	0.51 in. 13 mm	
Stainless Steel	01-010641	1.04 in. 26.4 mm	0.55 in. 14 mm	0.56 in. 14.2 mm	
Stainless Steel	01-010642	1.19 in. 30.2 mm	0.55 in. 14 mm	0.61 in. 15.5 mm	
Stainless Steel	01-010644	1.05 in. 26.7 mm	0.70 in. 17.8 mm	0.63 in. 16 mm	
Stainless Steel	01-010645	1.24 in. 31.5 mm	0.70 in. 17.8 mm	0.67 in. 17 mm	
Stainless Steel	01-010646	1.41 in. 35.8 mm	0.70 in. 17.8 mm	0.71 in. 18 mm	

Wedge Type	Part Number	Wedge Dimensions			
		Length	Width	Height	
Aluminum	01-010840	0.75 in. 19 mm	0.45 in. 11.4 mm	0.43 in. 10.9 mm	
Aluminum	01-010841	0.84 in. 21.3 mm	0.45 in. 11.4 mm	0.47 in. 11.9 mm	
Aluminum	01-010842	1.0 in. 25.4 mm	0.45 in. 11.4 mm	0.52 in. 13.2 mm	
Aluminum	01-010713	0.89 in. 22.6 mm	0.55 in. 14 mm	0.51 in. 13 mm	
Aluminum	01-010838	1.04 in. 26.4 mm	0.55 in. 14 mm	0.56 in. 14.2 mm	
Aluminum	01-010839	1.19 in. 30.2 mm	0.55 in. 14 mm	0.61 in. 15.5 mm	
Aluminum	01-010527	1.05 in. 26.7 mm	0.70 in. 17.8 mm	0.63 in. 16 mm	
Aluminum	01-010528	1.24 in. 31.5 mm	0.70 in. 17.8 mm	0.67 in. 17 mm	
Aluminum	01-010529	1.41 in. 35.8 mm	0.70 in. 17.8 mm	0.71 in. 18 mm	

QS SHORT INDEX WEDGE DIMENSIONS

Wedge Type	Part Number	Short Index Wedge Dimensions			
		Length	Width	Height	
Carbon Steel	01-012116	0.62 in. 15.7 mm	0.45 in. 11.4 mm	0.39 in. 9.9 mm	
Carbon Steel	01-012117	0.75 in. 19 mm	0.45 in. 11.4 mm	0.45 in. 11.4 mm	
Carbon Steel	01-012118	0.80 in. 20.3 mm	0.45 in. 11.4 mm	0.50 in. 12.7 mm	
Carbon Steel	01-012120	0.78 in. 19.8 mm	0.55 in. 14 mm	0.47 in. 11.9 mm	
Carbon Steel	01-012121	0.85 in. 21.6 mm	0.55 in. 14 mm	0.55 in. 14 mm	
Carbon Steel	01-012122	0.97 in. 24.6 mm	0.55 in. 14 mm	0.57 in. 14.5 mm	
Carbon Steel	01-012124	0.90 in. 22.9 mm	0.70 in. 17.8 mm	0.55 in. 14 mm	
Carbon Steel	01-012125	1.06 in. 26.9 mm	0.70 in. 17.8 mm	0.64 in. 16.3 mm	
Carbon Steel	01-012126	1.17 in. 29.7 mm	0.70 in. 17.8 mm	0.70 in. 17.8 mm	



Wedge Type	Part Number	Short Index Wedge Dimensions			
		Length	Width	Height	
Stainless Steel	01-012128	0.62 in. 15.7 mm	0.45 in. 11.4 mm	0.39 in. 9.9 mm	
Stainless Steel	01-012129	0.75 in. 19 mm	0.45 in. 11.4 mm	0.47 in. 11.9 mm	
Stainless Steel	01-012130	0.80 in. 20.3 mm	0.45 in. 11.4 mm	0.50 in. 12.7 mm	
Stainless Steel	01-012132	0.78 in. 19.8 mm	0.55 in. 14 mm	0.47 in. 11.9 mm	
Stainless Steel	01-012133	0.85 in. 21.6 mm	0.55 in. 14 mm	0.55 in. 14 mm	
Stainless Steel	01-012134	1.02 in. 25.9 mm	0.55 in. 14 mm	0.59 in. 15 mm	
Stainless Steel	01-012136	0.90 in. 22.9 mm	0.70 in. 17.8 mm	0.55 in. 14 mm	
Stainless Steel	01-012137	1.06 in. 26.9 mm	0.70 in. 17.8 mm	0.64 in. 16.3 mm	
Stainless Steel	01-012138	1.17 in. 29.7 mm	0.70 in. 17.8 mm	0.67 in. 17 mm	

Wedge Type	Part Number	Short Index Wedge Dimensions			
		Length	Width	Height	
Aluminum	01-010480	0.62 in. 15.7 mm	0.45 in. 11.4 mm	0.39 in. 9.9 mm	
Aluminum	01-010481	0.75 in. 19 mm	0.45 in. 11.4 mm	0.47 in. 11.9 mm	
Aluminum	01-010482	0.80 in. 20.3 mm	0.45 in. 11.4 mm	0.50 in. 12.7 mm	
Aluminum	01-010484	0.78 in. 19.8 mm	0.55 in. 14 mm	0.47 in. 11.9 mm	
Aluminum	01-010485	0.85 in. 21.6 mm	0.55 in. 14 mm	0.55 in. 14 mm	
Aluminum	01-010486	1.02 in. 25.9 mm	0.55 in. 14 mm	0.59 in. 15 mm	
Aluminum	01-010488	0.90 in. 22.9 mm	0.70 in. 17.8 mm	0.55 in. 14 mm	
Aluminum	01-010489	1.06 in. 26.9 mm	0.70 in. 17.8 mm	0.64 in. 16.3 mm	
Aluminum	01-010490	1.17 in. 29.7 mm	0.70 in. 17.8 mm	0.67 in. 17 mm	



Immersion Transducers

Immersion Transducers are typically used in automatic and manual scanning systems using water or other liquid as a coupling medium to enable the inspection of parts with complex geometries and with near-surface resolution superior to that of contact transducers. Spherical (point) or cylindrical (line) focusing can further improve sensitivity and resolution. Focal length must be specified.



Frequency (Mhz)		Element Ø (Inches)				
		1	0.75	0.5	0.375	0.25
1	Near	4.3	2.4	1.1		
	Min	2.0	1.5	0.75 ²		
	Max	2.75	1.75	0.75 ²		
2.25	Near	9.6	5.4	2.4	1.4	0.6
	Min	2.0	1.5	1.0	0.75	0.375 ^{2,3}
	Max	6.0	3.5	1.5	1.0	0.375 ^{2,3}
3.5	Near	15.0	8.4	3.7	2.1	0.9
	Min	2.0	1.5	1.0	0.75	0.375 ³
	Max	8.0	5.5	2.25	1.25	0.5
5	Near	21.0	12.0	5.4	3.0	1.3
	Min	2.0	1.5	1.0	0.75	0.5
	Max	8.0 ¹	7.5	3.5	2.0	0.75
10	Near		24.0	10.7	6.0	2.7
	Min		1.5	1.0	0.75	0.5
	Max		8.0 ¹	6.0	4.0	1.5
15	Near			16.0	9.0	4.0
	Min			1.0	0.75	0.5
	Max			6.0 ¹	5.0	2.0

Please choose your Part number from the following charts based on Case Type, Transducer Frequency and Element Diameter. The Part Number on the charts specifies these attributes.

To Specify the Focal Length (in inches) and Focal Type (Spherical or Cylindrical) you desire: Edit the X.X S and Y.YC suffixes shown in the chart to match your requirements.

(ex. The suffix for a 2.0" Spherical focus is changed from X.XS to 2.0S;
The suffix for a 3.0" Cylindrical Focus is changed from Y.YC to 3.0C)

NF = Non-focused (flat)
S = Spherical focus
C = Cylindrical focus

Near = Nearfield Length in water
Min = Minimum recommended focal length in water
Max = Maximum recommended focal length in water

All focal lengths are listed in inches of water from the reflection off a flat stainless steel reflector. Divide by 4 for the approximate distance in steel.

Focal lengths are offered in 0.25" increments between the Min and Max listed. Focal lengths outside the recommended limits can be ordered, but on a best effort basis only.

¹ Achievable focal lengths of these models are shorter compared to their nearfield length due to attenuation and other effects at long water paths. Longer focal lengths can be ordered, but on a best effort basis.

² Max and Min focal lengths are the same for these models due to the physics and geometry of this combination.

³ A focal length other than the normal 0.25" increment is offered in this combination.

Please confirm your focal length in your applications: Use of probes with F-Numbers under 4.0 (near the minimum focal length listed on this chart) can introduce other wave modes and/or be less effective since acoustic energy at the edge of the beam may be at relatively high incident angles. F-Number = Focal Length/Element Diameter.

(Example: 2.0" Focus probe with 0.375" element = 2.0"/0.375" = F-Number = 5.3)



Immersion Transducers

I1

I1 IMMERSION

Model I1 are small-diameter, pencil-type transducers with straight-mounted Microdot connectors. Because the connectors are not waterproof, sealing with non-water-soluble grease is recommended. **GP series*** offer the best combination of sensitivity and resolution for general applications. **HR series*** are highly damped for applications where high resolution is required. **C series*** have piezocomposite elements and offer superior penetration, resolution and signal-to-noise ratio in highly-attenuative and coarse-grain materials.



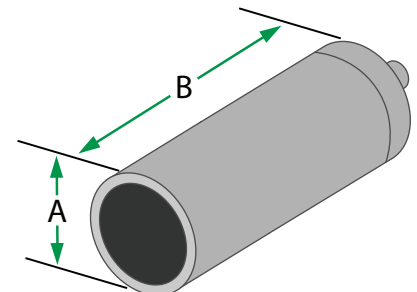
Immersion Transducers are typically used in automated and manual-scanning systems using water or other liquid as a coupling medium. This enables the inspection of parts with complex geometries and near-surface resolution superior to that of contact transducers. Spherical (point) or cylindrical (line) focusing can further improve sensitivity and resolution. Focal length and focal type must be specified.

PART NUMBERS

Frequency (MHz)	Element Diameter		Focus	Part Number			Accessories
	inch	mm		GP	HR	C	
2.25	0.25	6.4	None	00-011300 NF	00-011301 NF	00-011302 NF	Cable MD - BNC 6-ft (1.83 m) 07-010012
			Spherical	00-011300 X.XS	00-011301 X.XS	00-011302 X.XS	
			Cylindrical	00-011300 Y.YC	00-011301 Y.YC	00-011302 Y.YC	
5	0.25	6.4	None	00-011303 NF	00-010593 NF	00-010711 NF	
			Spherical	00-011303 X.XS	00-010593 X.XS	00-010711 X.XS	
			Cylindrical	00-011303 Y.YC	00-010593 Y.YC	00-010711 Y.YC	
10	0.25	6.4	None	00-010822 NF	00-010377 NF	00-010823 NF	
			Spherical	00-010822 X.XS	00-010377 X.XS	00-010823 X.XS	
			Cylindrical	00-010822 Y.YC	00-010377 Y.YC	00-010823 Y.YC	
15	0.25	6.4	None		00-010596 NF	00-011304 NF	
			Spherical		00-010596 X.XS	00-011304 X.XS	
			Cylindrical		00-010596 Y.YC	00-011304 Y.YC	

CASE DIMENSIONS

Element Ø		A		B	
inch	mm				
0.25	6.4	0.38 in.	9.7 mm	1.25 in.	31.8 mm



* GP = General Purpose; HR = High Resolution; C = Composite.
 * See appendix for technical details.



Immersion Transducers

I2, I3, I4

I2, I3, I4 IMMERSION

All model I2, I3 and I4 transducers have straight-mounted waterproof UHF connectors. Available I2 element diameters are 0.25, 0.375 and 0.5 inch (6, 10 and 13 mm). I3 have 0.75 inch (19 mm) and I4 have 1.0 inch (25 mm) element diameters. **GP series*** offer the best combination of sensitivity and resolution for general applications. **HR series*** are highly-damped for applications where high resolution is required. **C series*** have piezocomposite elements and offer superior penetration, resolution and signal-to-noise ratio in highly-attenuative and coarse-grain materials.



PART NUMBERS

Frequency (MHz)	Element Diameter		Case	Focus	Part Number		
	inch	mm			GP	HR	C
1	0.75	19	I3	None	00-011201 NF		00-011313 NF
				Spherical	00-011201 X.XS		00-011313 X.XS
				Cylindrical	00-011201 Y.YC		00-011313 Y.YC
	1	25.4	I4	None	00-011314 NF		00-010683 NF
				Spherical	00-011314 X.XS		00-010683 X.XS
				Cylindrical	00-011314 Y.YC		00-010683 Y.YC
2.25	0.25	6.4	I2	None	00-011315 NF	00-011316 NF	00-011317 NF
				Spherical	00-011315 X.XS	00-011316 X.XS	00-011317 X.XS
				Cylindrical	00-011315 Y.YC	00-011316 Y.YC	00-011317 Y.YC
	0.375	9.5	I2	None	00-011318 NF	00-011319 NF	00-011144 NF
				Spherical	00-011318 X.XS	00-011319 X.XS	00-011144 X.XS
				Cylindrical	00-011318 YC	00-011319 YC	00-011144 Y.YC
	0.5	12.7	I2	None	00-010830 NF	00-011114 NF	00-011320 NF
				Spherical	00-010830 X.XS	00-011114 X.XS	00-011320 X.XS
				Cylindrical	00-010830 Y.YC	00-011114 Y.YC	00-011320 Y.YC
	0.75	19	I3	None	00-011321 NF	00-011322 NF	00-011146 NF
				Spherical	00-011321 X.XS	00-011322 X.XS	00-011146 X.XS
				Cylindrical	00-011321 Y.YC	00-011322 Y.YC	00-011146 Y.YC
	1	25.4	I4	None	00-011323 NF	00-011324 NF	00-011353 NF
				Spherical	00-011323 X.XS	00-011324 X.XS	00-011353 X.XS
				Cylindrical	00-011323 Y.YC	00-011324 Y.YC	00-011353 Y.YC
3.5	0.25	6.4	I2	None	00-011325 NF	00-011326 NF	00-011327 NF
				Spherical	00-011325 X.XS	00-011326 X.XS	00-011327 X.XS
				Cylindrical	00-011325 Y.YC	00-011326 Y.YC	00-011327 Y.YC
	0.375	9.5	I2	None	00-011328 NF	00-011329 NF	00-011141 NF
				Spherical	00-011328 X.XS	00-011329 X.XS	00-011141 X.XS
				Cylindrical	00-011328 Y.YC	00-011329 Y.YC	00-011141 Y.YC
	0.5	12.7	I2	None	00-011330 NF	00-011331 NF	00-010858 NF
				Spherical	00-011330 X.XS	00-011331 X.XS	00-010858 X.XS
				Cylindrical	00-011330 Y.YC	00-011331 Y.YC	00-010858 Y.YC
	0.75	19	I3	None	00-011332 NF	00-011333 NF	00-011334 NF
				Spherical	00-011332 X.XS	00-011333 X.XS	00-011334 X.XS
				Cylindrical	00-011332 Y.YC	00-011333 Y.YC	00-011334 Y.YC
	1	25.4	I4	None	00-011335 NF	00-011336 NF	00-010586 NF
				Spherical	00-011335 X.XS	00-011336 X.XS	00-010586 X.XS
				Cylindrical	00-011335 Y.YC	00-011336 Y.YC	00-010586 Y.YC

Chart continues on page 46

Immersion Transducers are typically used in automated and manual-scanning systems using water or other liquid as a coupling medium. This enables the inspection of parts with complex geometries and near-surface resolution superior to that of contact transducers. Spherical (point) or cylindrical (line) focusing can further improve sensitivity and resolution. Focal length and focal type must be specified.

VELOCITY TESTING

Frequency (MHz)	Element Diameter		Case	Focus	C
	inch	mm			
5	0.25	6.4	I2	None	00-011403
	0.375	9.5	I2	None	00-011404
	0.5	12.7	I2	None	00-010437

* GP = General Purpose; HR = High Resolution; C = Composite.

* See appendix for technical details.



Immersion Transducers

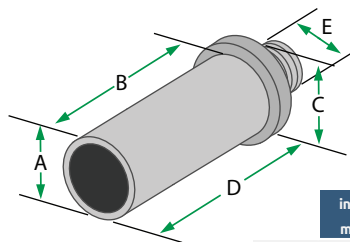
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PART NUMBERS CONTINUED

Frequency (MHz)	Element Diameter		Case	Focus	Part Number		
	inch	mm			GP	HR	C
5	0.25	6.4	I2	None	00-011337 NF	00-011351 NF	00-011338 NF
				Spherical	00-011337 X.XS	00-011351 X.XS	00-011338 X.XS
				Cylindrical	00-011337 Y.YC	00-011351 Y.YC	00-011338 Y.YC
	0.375	9.5	I2	None	00-011339 NF	00-011340 NF	00-010679 NF
				Spherical	00-011339 X.XS	00-011340 X.XS	00-010679 X.XS
				Cylindrical	00-011339 Y.YC	00-011340 Y.YC	00-010679 Y.YC
	0.5	12.7	I2	None	00-010778 NF	00-010594 NF	00-011013 NF
				Spherical	00-010778 X.XS	00-010594 X.XS	00-011013 X.XS
				Cylindrical	00-010778 Y.YC	00-010594 Y.YC	00-011013 Y.YC
	0.75	19	I3	None	00-010585 NF	00-011341 NF	00-010868 NF
				Spherical	00-010585 X.XS	00-011341 X.XS	00-010868 X.XS
				Cylindrical	00-010585 Y.YC	00-011341 Y.YC	00-010868 Y.YC
	1	25.4	I4	None	00-011152 NF	00-011350 NF	00-011153 NF
				Spherical	00-011152 X.XS	00-011350 X.XS	00-011153 X.XS
				Cylindrical	00-011152 Y.YC	00-011350 Y.YC	00-011153 Y.YC
10	0.25	6.4	I2	None	00-011352 NF	00-010833 NF	00-011342 NF
				Spherical	00-011352 X.XS	00-010833 X.XS	00-011342 X.XS
				Cylindrical	00-011352 Y.YC	00-010833 Y.YC	00-011342 Y.YC
	0.375	9.5	I2	None	00-010825 NF	00-010644 NF	00-011343 NF
				Spherical	00-010825 X.XS	00-010644 X.XS	00-011343 X.XS
				Cylindrical	00-010825 Y.YC	00-010644 Y.YC	00-011343 Y.YC
	0.5	12.7	I2	None	00-010595 NF	00-011349 NF	00-011344 NF
				Spherical	00-010595 X.XS	00-011349 X.XS	00-011344 X.XS
				Cylindrical	00-010595 Y.YC	00-011349 Y.YC	00-011344 Y.YC
	0.75	19	I3	None	00-011148 NF	00-010369 NF	00-011345 NF
				Spherical	00-011148 X.XS	00-010369 X.XS	00-011345 X.XS
				Cylindrical	00-011148 Y.YC	00-010369 Y.YC	00-011345 Y.YC
	1	25.4	I4	None	00-011149 NF	00-011149 NF	00-011346 NF
				Spherical	00-011149 X.XS	00-011149 X.XS	00-011346 X.XS
				Cylindrical	00-011149 Y.YC	00-011149 Y.YC	00-011346 Y.YC
15	0.25	6.4	I2	None		00-010597 NF	00-011347 NF
				Spherical		00-010597 X.XS	00-011347 X.XS
				Cylindrical		00-010597 Y.YC	00-011347 Y.YC
	0.375	9.5	I2	None		00-010774 NF	
				Spherical		00-010774 X.XS	
				Cylindrical		00-010774 Y.YC	

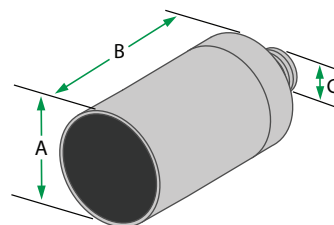
CASE DIMENSIONS

I2



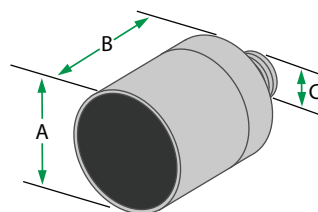
	Element Ø			
	inch mm	0.25 6.4	0.375 9.5	0.5 12.7
A		0.63 in. 16 mm	0.63 in. 16 mm	0.63 in. 16 mm
B		1.4 in. 35.6 mm	1.4 in. 35.6 mm	1.4 in. 35.6 mm
C		0.73 in. 18.5 mm	0.73 in. 18.5 mm	0.73 in. 18.5 mm
D		1.55 in. 39.4 mm	1.55 in. 39.4 mm	1.55 in. 39.4 mm
E		5/8 - 24 UNEF		

I3



	Element Ø	
	inch mm	0.75 19
A		1.0 in. 25.4 mm
B		1.3 in. 33 mm
C		5/8 - 24 UNEF

I4



	Element Ø	
	inch mm	1 25.4
A		1.25 in. 31.8 mm
B		1.35 in. 34.3 mm
C		5/8 - 24 UNEF



Immersion Transducers

IR

IR IMMERSION

Immersion Transducers are typically used in automatic and manual scanning systems using water or other liquid as a coupling medium to enable the inspection of parts with complex geometries and near-surface resolution superior to that of contact transducers. Spherical (point) or cylindrical (line) focusing can further improve sensitivity and resolution. Focal length and focal type must be specified.

Model IR transducers have right-angle-mounted waterproof UHF connectors and small case design for applications where space is limited. Available element diameters are 0.25, 0.375 and 0.5 inch (6, 10 and 13 mm). **GP series*** offer the best combination of sensitivity and resolution for general applications. **HR series*** are highly damped for applications where high resolution is required. **C series*** have piezocomposite elements and offer superior penetration, resolution and signal-to-noise ratio in highly attenuative and coarse grain materials.



PART NUMBERS

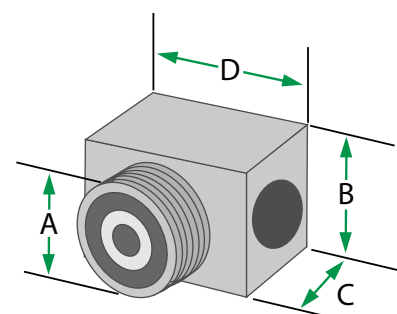
Frequency (MHz)	Element Diameter		Focus	Part Number		
	inch	mm		GP	HR	C
2.25	0.25	6.4	None	00-011385 NF	00-011386 NF	00-011387 NF
			Spherical	00-011385 X.XS	00-011386 X.XS	00-011387 X.XS
			Cylindrical	00-011385 Y.YC	00-011386 Y.YC	00-011387 Y.YC
	0.375	9.5	None	00-011388 NF	00-011389 NF	00-011390 NF
			Spherical	00-011388 X.XS	00-011389 X.XS	00-011390 X.XS
			Cylindrical	00-011388 Y.YC	00-011389 Y.YC	00-011390 Y.YC
	0.5	12.7	None	00-011391 NF	00-011392 NF	00-011393 NF
			Spherical	00-011391 X.XS	00-011392 X.XS	00-011393 X.XS
			Cylindrical	00-011391 Y.YC	00-011392 Y.YC	00-011393 Y.YC
5	0.25	6.4	None	00-011394 NF	00-011395 NF	00-011396 NF
			Spherical	00-011394 X.XS	00-011395 X.XS	00-011396 X.XS
			Cylindrical	00-011394 Y.YC	00-011395 Y.YC	00-011396 Y.YC
	0.375	9.5	None	00-011397 NF	00-011398 NF	00-011399 NF
			Spherical	00-011397 X.XS	00-011398 X.XS	00-011399 X.XS
			Cylindrical	00-011397 Y.YC	00-011398 Y.YC	00-011399 Y.YC
	0.5	12.7	None	00-011400 NF	00-011401 NF	00-011402 NF
			Spherical	00-011400 X.XS	00-011401 X.XS	00-011402 X.XS
			Cylindrical	00-011400 Y.YC	00-011401 Y.YC	00-011402 Y.YC

VELOCITY TESTING

Frequency (MHz)	Element Diameter		Focus	C
	inch	mm		
5	0.25	6.4	None	00-010591
	0.375	9.5	None	00-010438
	0.5	12.7	None	00-010475

CASE DIMENSIONS

Element Ø		A	B	C	D
inch	mm				
0.25	6.4	5/8 - 24 UNEF	0.75 in. 19 mm	0.75 in. 19 mm	0.94 in. 23.9 mm
0.375	9.5	5/8 - 24 UNEF	0.75 in. 19 mm	0.75 in. 19 mm	0.94 in. 23.9 mm
0.5	12.7	5/8 - 24 UNEF	0.75 in. 19 mm	0.75 in. 19 mm	0.94 in. 23.9 mm



*GP = General Purpose; HR = High Resolution; C = Composite.
* See appendix for technical details.



Immersion Transducers

Paintbrush

PAINTBRUSH IMMERSION

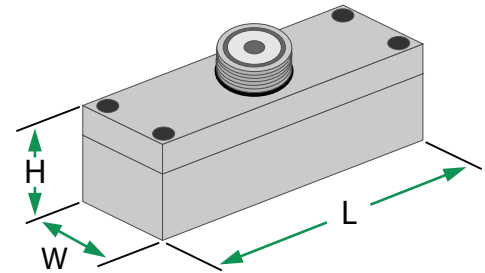
Paintbrush Transducers are single-element immersion transducers which give a greater scanning width than conventional transducers with round or rectangular elements. They are often used in scanning tanks where large plates, bars, and other parts are tested which have large surface areas. Their large coverage decreases scan time dramatically. Like other conventional probes, they can be ordered with GP*, HR* or C* performance and are available in flat or cylindrical focuses.



PART NUMBERS

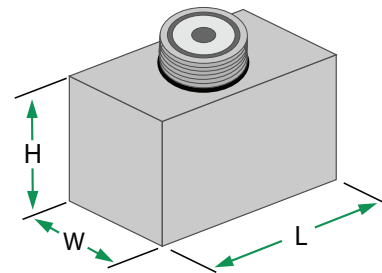
Frequency (MHz)	Element Dimensions		Focus	Part Number
	Short Axis	Long Axis		HR
10	0.25 in (6.4 mm)	2.5 in (63.5 mm)	Flat	00-010590 NF
			Cylindrical	00-010590 Y.YC

Element Dimensions		H	L	W
inch	mm			
0.25 x 2.5	6.4 x 63.5	0.65 in. 16.5 mm	2.85 in. 72.4 mm	0.75 in. 19 mm



Frequency (MHz)	Element Dimensions		Focus	Part Number
	Short Axis	Long Axis		HR
10	0.25 in (6.4 mm)	1 in (25.4 mm)	Flat	00-010175 NF
			Cylindrical	00-010175 Y.YC

Element Dimensions		H	W	L
inch	mm			
0.25 x 1	6.4 x 25.4	0.95 in. 24.1 mm	0.75 in. 19 mm	1.5 in. 38.1 mm



The majority of paintbrush transducers are built to specific customer requirements. These are a few examples of SNI Paintbrush Transducers but do not represent our full capabilities. Please contact us for specific transducer requests.

* GP = General Purpose; HR = High Resolution; C = Composite.
* See appendix for technical details.



Membrane Transducers

MEMBRANE TRANSDUCERS

The water-filled flexible membrane transducer maximizes the defect response on irregular entry surfaces, enhancing the ability to inspect irregularly shaped components with better penetration and resolution.

The current low-frequency models (1.5, 2.25, and 3.5 MHz) were designed to inspect carbon composite in the aerospace industry - but this technique is applicable to many other applications and materials.

The transducer is customizable for an easy and accurate inspection process. The membrane is replaceable and available in two materials - UltraFlex (for maximum conformability) and UltraWear (for maximum wear). The membrane can also be filled with water or Glycol liquid (for cold environments).



PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number	Mebranes
	inch	mm		
1.5	0.25	6.4	00-013863	See H20 Membrane Chart
	0.50	12.7	00-013866	See H20 Membrane Chart
2.25	0.25	6.4	00-013864	See H20 Membrane Chart
	0.50	12.7	00-013867	See H20 Membrane Chart
3.5	0.25	6.4	00-013865	See H20 Membrane Chart
	0.50	12.7	00-013868	See H20 Membrane Chart



MEMBRANES

Part Number (Pack of 12)	Fits	Thickness	Material	Characteristics
01-013016	0.25" Element Transducer	50 Micron (.002")	UltraFlex	Most flexible, highly conformable, most protrusion. Recommended for static position testing due to higher coefficient of friction.
01-012373	0.25" Element Transducer	50 Micron (.002")	UltraWear	More Wear Resistant, medium conformability & protrusion. Recommended for scanning due to lower coefficient of friction.
01-012359	0.25" Element Transducer	100 Micron (.004")	UltraWear	Most wear resistant, less conformability & protrusion. Recommended for scanning on flatter objects, less likely choice.
01-013018	0.50" Element Transducer	50 Micron (.002")	UltraFlex	Most flexible, highly conformable, most protrusion. Recommended for static position testing due to higher coefficient of friction.
01-012375	0.50" Element Transducer	50 Micron (.002")	UltraWear	More Wear Resistant, medium conformability & protrusion. Recommended for scanning due to lower coefficient of friction.
01-013018	0.50" Element Transducer	100 Micron (.004")	UltraWear	Most wear resistant, less conformability & protrusion. Recommended for scanning on flatter objects, less likely choice.



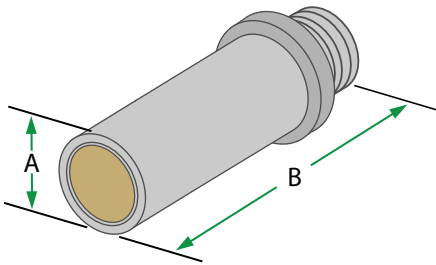
Co-Polymer Transducer

Co-Polymer Transducers

Co-Polymer transducers, also known as PVdF transducers, have a wide bandwidth and short impulse response. Variations in focusing can be requested either as unfocussed, cylindrical or spherical. Standard frequency ranges between 5MHz and 15MHz. Higher frequencies can be requested but there are other limitations beyond 15MHz.

Typical applications include immersion scanning of components for small or near-surface defects in:

- Aerospace forgings
- Small-diameter bar stock
- Acoustic microscopy
- Thickness gauging of precision, thin-walled tubing



Element Ø		A		B	
inch	mm				
0.4	10.2	0.62 in.	15.75 mm	2.05 in.	52.1 mm

Co-Polymer transducers are manufactured based on specific customer requirements. Please contact us for co-polymer transducer requests.



Dual Element

ADP

ADP Dual-Element Contact Transducers

Model ADP are small-diameter, low-profile transducers with 2 fixed co-axial cables and come standard with potted BNC connectors but are also available with Lemo-00. They are especially suitable for flaw detection and thickness measurement on pitted, curved, and irregular surfaces. Because the elements are mounted on internal delay lines they can be contoured to fit I.D. or O.D. curved surfaces. All ADPs are **C series*** which has piezocomposite elements and offer superior penetration, resolution and signal-to-noise ratio in highly attenuative and coarse grain materials.



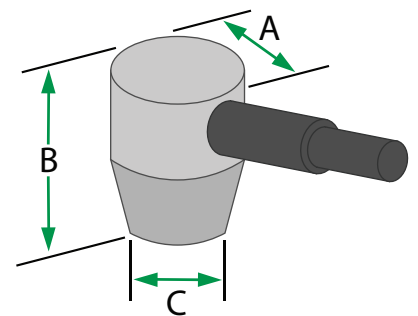
Dual-Element Contacts are longitudinal-wave (straight beam) transducers designed for near-surface and thin range flaw detection and thickness measurement. Two elements, one transmitter and one receiver, are mounted at an included (roof) angle to improve signal-to-noise ratio (SNR) and optimize near-surface resolution.

PART NUMBERS

Frequency (MHz)	Element Diameter		Part Number (Cable option)	
	inch	mm	Potted BNC	Potted Lemo-00
2.25	0.25	6.4	00-011405	00-011405-LEMO
	0.375	9.5	00-011406	00-011406-LEMO
	0.5	12.7	00-011407	00-011407-LEMO
3.5	0.25	6.4	00-011408	00-011408-LEMO
	0.375	9.5	00-011409	00-011409-LEMO
	0.5	12.7	00-011410	00-011410-LEMO
5	0.25	6.4	00-010656	00-010656-LEMO
	0.375	9.5	00-010655	00-010655-LEMO
	0.5	12.7	00-011411	00-011411-LEMO
10	0.25	6.4	00-011412	00-011412-LEMO
	0.375	9.5	00-011413	00-011413-LEMO
	0.5	12.7	00-011414	00-011414-LEMO

CASE DIMENSIONS

Element Ø		A		B		C	
inch	mm						
0.25	6.4	0.50 in.	12.7 mm	0.64 in.	16.3 mm	0.28 in.	7.1 mm
0.375	9.5	0.62 in.	15.7 mm	0.64 in.	16.3 mm	0.41 in.	10.4 mm
0.5	12.7	0.75 in.	19 mm	0.68 in.	17.3 mm	0.60 in.	15.2 mm



* C = Composite.

* See appendix for technical details.



Dual Element

DU

DU Dual-Element Contact Transducers

Model DU are general purpose dual-element transducers with side-mounted Microdot connectors. Replaceable/ interchangeable delay lines and cross-talk barriers greatly extend versatility, cost-effectiveness, service life and can be contoured to fit I.D. or O.D. curved surfaces.

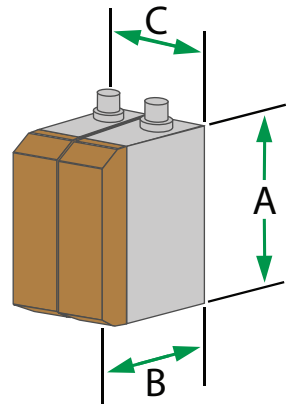
Dual-Element Contacts are longitudinal-wave (straight beam) transducers designed for near-surface and thin-range flaw detection and thickness measurement. Two elements, one transmitter and one receiver, are mounted at an included (roof) angle to improve signal-to-noise ratio and optimize near-surface resolution.



DU PART NUMBERS

Frequency (MHz)	Element Dimensions		Part Number		
	inch	mm	C	Delay Set	Accessories
2.25	0.5 x 0.5	12.7 x 12.7	00-012322	01-010740	Dual Cable
	0.5 x 1	12.7 x 25.4	00-012323	01-010741	MD - BNC
5	0.5 x 0.5	12.7 x 12.7	00-010487	01-010740	6-ft (1.83 m)
	0.5 x 1	12.7 x 25.4	00-010584	01-010741	07-010030

Element Dimensions							
inch	mm	A		B		C	
0.5 x 0.5	12.7 x 12.7	0.89 in.	22.6 mm	0.92 in.	23.4 mm	0.78 in.	19.8 mm
0.5 x 1	12.7 x 25.4	1.39 in.	35.3 mm	0.92 in.	23.4 mm	0.78 in.	19.8 mm

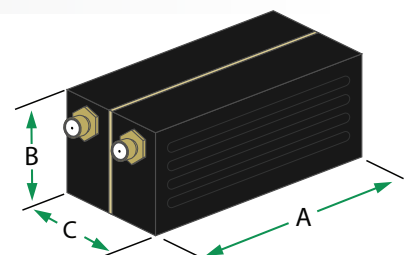


DU-F PART NUMBERS

Frequency (MHz)	Element Dimensions		Part Number	
	inch	mm	C	Accessories
2.25	0.5 x 0.5	12.7 x 12.7	00-013899	Dual Cable
	0.5 x 1	12.7 x 25.4	00-013900	MD - BNC
5	0.5 x 0.5	12.7 x 12.7	00-013898	6-ft (1.83 m)
	0.5 x 1	12.7 x 25.4	00-011499	07-010012

Element Dimensions							
inch	mm	A		B		C	
0.5 x 0.5	12.7 x 12.7	0.89 in.	22.6 mm	0.7 in.	17.8 mm	0.78 in.	19.8 mm
0.5 x 1	12.7 x 25.4	1.39 in.	35.3 mm	0.7 in.	17.8 mm	0.78 in.	19.8 mm

DU-F model transducers are an alternative to the regular DU dual element series. They are constructed with composite ceramic and integral delays and offer a lower price entry point that the standard DU models. They are effective with coarse grain/attenuative materials when a single transducer inspection is not viable.





DHT-400

HIGH-TEMP DUAL ELEMENT

FOR THICKNESS MEASUREMENTS ON ROUGH OR CORRODED SURFACES

The SensorScan Model DHT-400 Ultrasonic Transducer is a general-purpose sensor for measuring the remaining wall thickness on rough metal ID and OD surfaces due to corrosion and/or erosion. The transducer can be used intermittently (50% duty cycle) over a wide temperature range from 0 to 932°F (-17.8 to 500°C) and continuously from 0 to 400°F (-17.8 to 204°C). The minimum and maximum thickness in steel is 0.04" (1.0mm) and 10" (254mm).

Typical applications include its use with common digital thickness gauges or flaw detectors on boiler/furnace tubes, pipes, tanks, vessels, structures and other safety-critical components at power plants, refineries, mid- and up-stream Oil & Gas assets, and chemical facilities.

The DHT-400 is compatible with all major instruments and flaw detectors.



— Extension Wand

DHT-400

DHT-400	Frequency (Nominal)	Connector	Probe & Cable Kits	
			DHT-400 + Lemo-00 Connector Cable (standard)	DHT-400 + Olympus Probe Rec. Connector Cable (standard)
00-012543	5MHz	MD Connector	01-030180	01-030182
00-030003	5MHz	MCX Connector	01-030181	01-030183

ACCESSORIES

Cool Hand	Extension Wand
06-016467	06-016468

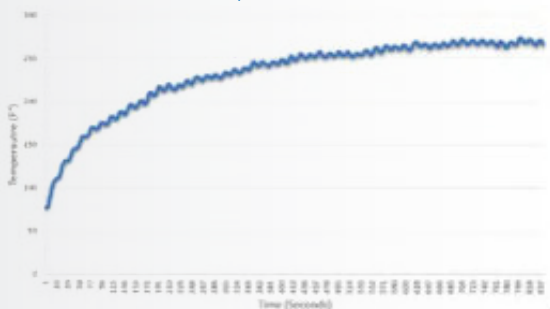


Cool Hand —

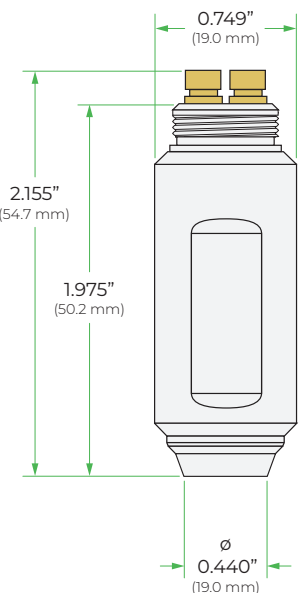
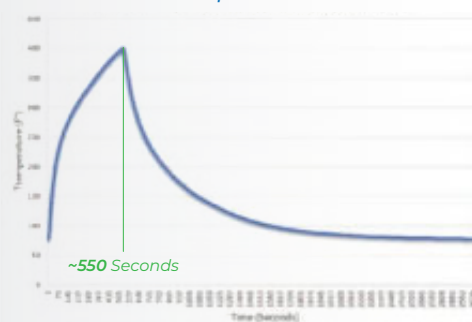
Cable Options

Cable Options				
Lemo-00 Connector (Standard)	Olympus Probe Recognition Connector (Standard)	BNC Connector (Standard)	Lemo-00 Connector (Armored)	Olympus Probe Recognition Connector (Armored)
07-010245	07-010246	07-036032	07-036033	07-036034
07-036036	07-036037	07-036038	07-036039	07-036040

5 Sec. Contact, 10 Sec off at 932°F



400°F Heat Up at 932°F



▲ This chart shows a 33% duty cycle at 5 seconds on and 10 seconds off. The DHT-400 plateaus at ~270°F which keeps the sensitive elements from ever reaching 400°F.

▲ At 932°F continuous surface contact temp, it takes over 9 minutes for the sensitive solder joints within the transducer to get to a 400°F.



Thickness Gauging

Single Element, Dual Element, Phased Array

PRECISION (SINGLE ELEMENT) THICKNESS GAUGING TRANSDUCERS

For use with commercial thickness gauges and flaw detection instruments.

Model	Transducer Type	Contact Diameter inch mm	Measuring Range in Steel	Nominal Frequency	SNI Part Number
Alpha2 DFR +	Delay Line Removable	0.3 7.6	0.007 to 1 inch 0.18 to 25.4 mm	15 MHz	00-010417
CA211 +	Standard Contact	0.75 19	0.60 to 20 inch 1.5 to 508 mm	5 MHz	00-010415
Alpha2 F +	Small Contact	0.375 9.7	0.60 to 10 inch 1.5 to 254 mm	10 MHz	00-010625
Alpha2 Mini DFR +	Thin Range Delay Line	0.19 4.8	0.005 to 0.2 inch 0.13 to 5.1 mm	20 MHz	00-010589
Pencil Probe	Delay Line Pencil Case	0.065 or 0.090 1.7 or 2.3	0.008 to 0.175 inch 0.20 to 0.44 mm	15 MHz	00-011039

00-010415
CA211 +



CORROSION (DUAL ELEMENT) THICKNESS GAUGING TRANSDUCERS

For use with commercial corrosion thickness gauges and flaw detection instruments.

Model	Transducer Type	Contact Diameter inch mm	Measuring Range in Steel*	Nominal Frequency	SNI Part Number
FH2E +	Fingertip	0.375 9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-010424
FH2E + TM	Fingertip	0.375 9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-013934
FH2E + WR	Fingertip Wear Resistant	0.55 14	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-010565
FH2E + MD	Fingertip	0.375 9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-011017
FH2E + M	Fingertip Small Diameter	0.28 7.1	0.030 to 1.0 inch 0.76 to 25.4 mm	7.5 MHz	00-010675
FH2E + with BNC	Fingertip	0.375 9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-010532
FH2E + BT	Studded Boiler Tube	0.375 9.7	0.060 to 2.0 inch 1.5 to 50.8 mm	7.5 MHz	00-010676
DA 512 +	Fingertip	0.295 7.5	0.024 to 2.4 inch 0.6 to 61 mm	7.5 MHz	00-010638
SNI 525	Potted Fingertip	0.2 5	0.025 to 2 inch 0.6 to 50.8 mm	10 MHz	00-012223
FS 512+	Fingertip	0.295 7.5	0.016 to 1.5 inch 0.4 to 38.1 mm	15 MHz	00-013987
SNI 560	Elevated Temperature	0.63 16 mm	0.060 to 8.0 inch** 1.52 to 203.2 mm	5 MHz	00-012533

00-010424
FH2E +



00-013934
FH2E + TM



* The measurement range is dependent on the part's material type, geometry, surface condition, and temperature. Another consideration is proper selection of couplant.

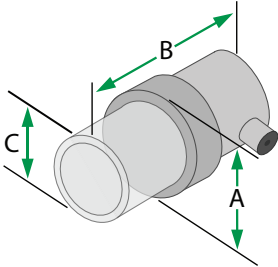
** With intermittent contact, the maximum part's surface temperature for the SNI 560 is 450°F (232°C)



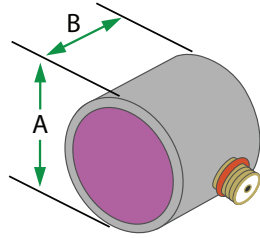
Thickness Gauging

Case Dimensions

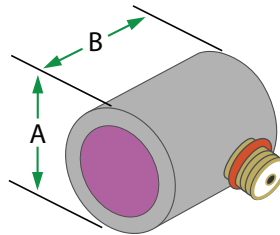
Alpha2 DFR +



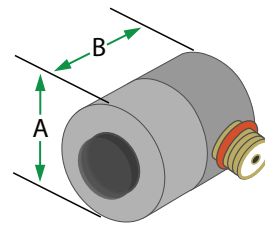
CA211 +



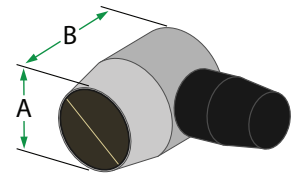
Alpha2 F +



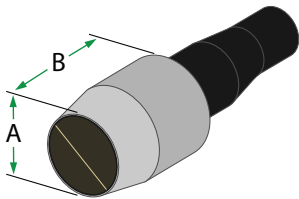
Alpha2 Mini DFR +



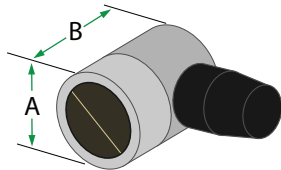
FH2E +



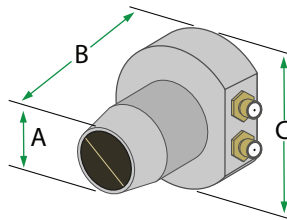
FH2E + TM



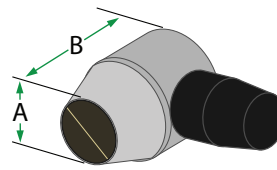
FH2E + WR



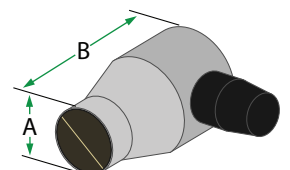
FH2E + MD



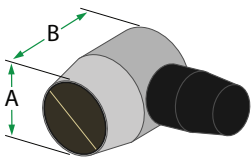
FH2E + M



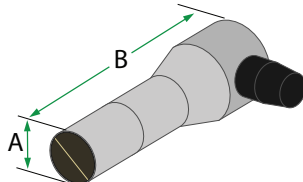
FS 512+



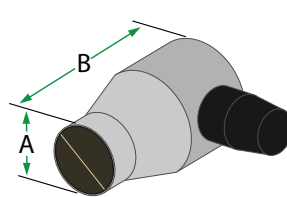
FH2E + w/ BNC



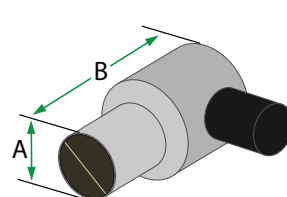
FH2E + BT



DA 512 +



SNI 525



Case Type	Case Dimensions					
	A		B		C	
Alpha2 DFR +	0.51 in.	13 mm	0.83 in.	21.1 mm	0.3 in.	7.6 mm
CA211 +	0.75 in.	19.1 mm	0.65	16.5 mm		
Alpha2 F +	0.5 in.	12.7 mm	0.65	16.5 mm		
Alpha2 Mini DFR +	0.4 in.	10.2 mm	0.46 in.	11.7 mm		
FH2E +	0.38 in.	9.7 mm	0.73 in.	18.5 mm		
FH2E + TM	0.38 in.	9.7 mm	0.93 in.	23.6 mm		
FH2E + WR	0.54 in.	13.7 mm	0.73 in.	18.5 mm		
FH2E + MD	0.38 in.	9.7 mm	1.04 in.	26.4 mm	1.0 in.	25.4 mm

Case Type	Case Dimensions					
	A		B		C	
FH2E + M	0.28 in.	7.1 mm	0.725 in.	18.4 mm		
FS 512+	0.29 in.	7.4 mm	0.67 in.	17 mm		
FH2E + w/ BNC	0.38 in.	9.7 mm	0.73 in.	18.5 mm		
FH2E + BT	0.38 in.	9.7 mm	2.0 in.	50.8 mm		
DA 512 +	0.29 in.	7.4 mm	0.67 in.	17 mm		
SNI 525	0.2 in.	5.1 mm	0.79 in.	20.1 mm		
Pencil Probe	See page 28 for Pencil Probe Dimensions					



Accessories

Cables, Adapters, and Splitters

CABLES

Cable	Material	Length	Part Number
BNC - BNC	RG58	6-ft (1.83 m)	07-010018
BNC - MD	RG174 TPR	6-ft (1.83 m)	07-010012
BNC - MCX	RG174 TPR	6-ft (1.83 m)	07-010007
BNC - 00-Lemo	RG174 TPR	6-ft (1.83 m)	07-010014
00-Lemo - MD	RG174 TPR	6-ft (1.83 m)	07-010028
00-Lemo - 00-Lemo	RG174 TPR	6-ft (1.83 m)	07-010034

Cable	Material	Length	Part Number
00-Lemo - MCX	RG174 TPR	6-ft (1.83 m)	07-010035
BNC - MCX (RA)	RG174 TPR	6-ft (1.83 m)	07-010008
Dual BNC - Dual MD	RG174 TPR	6-ft (1.83 m)	07-010030
Dual 00-Lemo - Dual MD	RG174 TPR	6-ft (1.83 m)	07-010032
Lemo 1 - MD	RG174 TPR	6-ft (1.83 m)	07-020176
Lemo 1 - BNC	RG174 TPR	6-ft (1.83 m)	07-020175

CONVENTIONAL ADAPTERS

Adaptors	Part Number
BNC Female to Female RF Adaptor	10-012572
Male Lemo-00 to Female BNC Adapter	10-010850
Female Lemo-00 to Male BNC Adapter	10-010891
Male BNC to Female Right Angle BNC Adapter	10-010938
Female BNC to Male Lemo-00 Adapter	10-010790

PAUT CONNECTORS

- IPEX
- ZPAC
- Hypertronics
- Mentor
- Phasor
- Others available upon request



(L to R) Hypertronics, ZPAC, IPEX

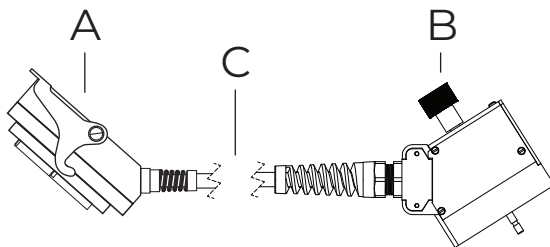
PAUT SPLITTERS & ADAPTERS

Sensor Networks can make splitters and extension cables with any phased-array connector types and lengths that you need. To order a splitter or extension cable, contact us and provide us with the information based on the prompt below.

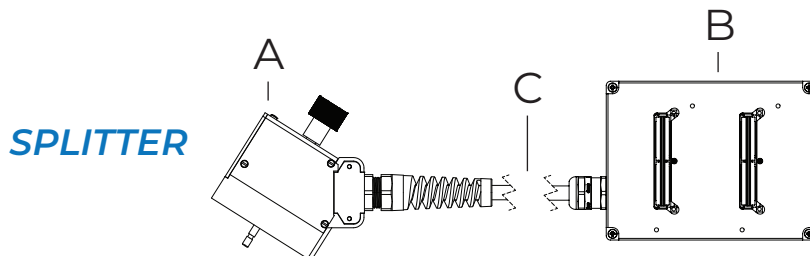
The connector type for end A (Array Side): _____

The connector type for end B (Instrument Side): _____

The cable length needed is: _____



ADAPTER



SPLITTER

MICRODOT —

BNC —

LEMO-00 —

LEMO1 —

MCX* —

RIGHT-ANGLE MCX* —

*MCX connectors are snap-in and can swivel, preventing the risk of back threading.



Screws

Wedge and Delay-Line Attachment Screws

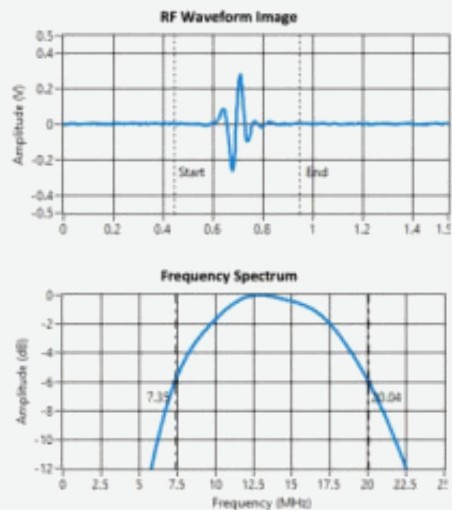
Ref #	Case	Captive	Thread Size	Length		SNI #
				in	mm	
1	.25 in. MSWS	Yes	#1-64	0.63	15.88	10-010174
	.5 in. MSWS	Yes	#1-64	0.63	15.88	
2	A1	Yes	M3	0.39	10	06-010685
	A2	Yes	M3	0.39	10	
	A4	Yes	M3	0.39	10	
	A5	Yes	M3	0.39	10	
	A31	Yes	M3	0.39	10	
	A32	Yes	M3	0.39	10	
	AL	Yes	M3	0.39	10	
	AM	Yes	M3	0.39	10	
	E1	Yes	M3	0.39	10	
	LM	Yes	M3	0.39	10	
3	A10	Yes	M3	0.87	22	10-010724
	A11	Yes	M3	0.87	22	
	A12	Yes	M3	0.87	22	
	A14	Yes	M3	0.87	22	
	A27	Yes	M3	0.87	22	
4	A15	Yes	#1-64	0.19	4.76	10-010564
5	A25	Yes	#0-80	0.25	6.35	06-016930
6	CL (Dual-Linear)	NO	M2	0.3	8	10-010895
	CS	NO	M2	0.3	8	
7	E2	Yes	#1-72	0.5	12.7	06-014227
8	E3	Yes	#4-40	0.5	12.7	10-010252
	E4	Yes	#4-40	0.5	12.7	
9	E5	Yes	#2-56	0.37	9.5	10-010960
10	PWZ1	Yes	M3	0.63	16	06-016925
11	AWS/SWS	Yes	#4-40	1	25	10-010173
12	DU	NO	#2-56	0.56	14.29	10-010961
13	DU-F	NO	#2-56	0.25	6.35	10-010962
Kit		Includes 10 each of all 13 screws				10-011037





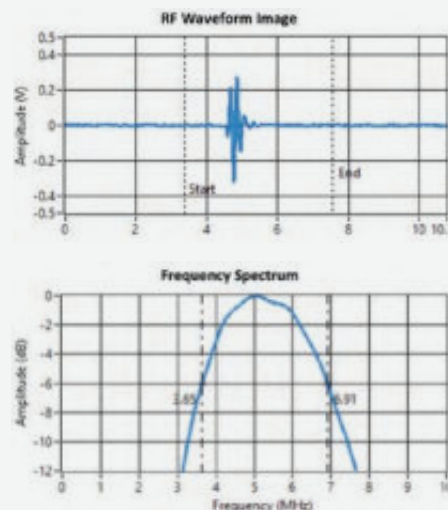
Appendix

High Resolution Series



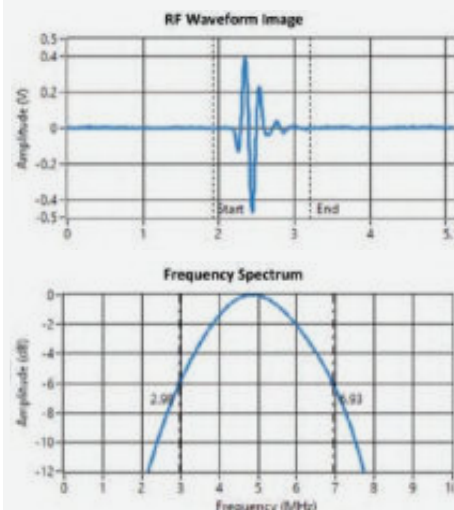
HR: High Resolution Series of transducers are highly damped and recommended for applications where enhanced axial and near-surface resolution are more important. Generally includes thickness measurement and near-surface flaw detection. HR series have less sensitivity than the GP or C series with -6db frequency bandwidth of 50-100% range.

General Purpose Series



GP: General Purpose Series of transducers are recommended for most applications and have a good trade-off between sensitivity and resolution. They have a medium frequency bandwidth of 40-65% at -6db but with more ring-down cycles in the waveform.

Composite or Piezo-composite Series



C: Composite (Piezocomposite) Series of transducers have superior sensitivity and penetration especially in highly-attenuative materials. C Series have both higher resolution, sensitivity, and have wide bandwidth (60-120% at -6db) due to the lower acoustic impedance of the material. They couple more efficiently into plastic wedges, delay lines, and water.

Transducer Certification

Ultrasonic Transducer Certification

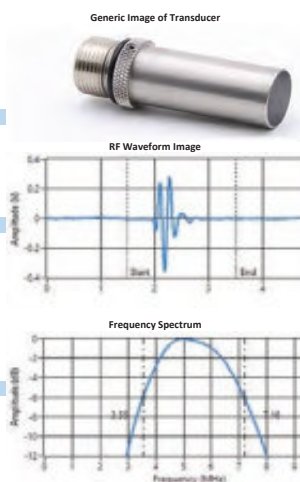


Transducer Information	
*Part Number:	00-010778NF
*Serial Number:	778PRETESTK2
Transducer Description:	I-12.5MHz-50"-GP-NF-UHF
Frequency:	5MHz
Element Size:	.50"

Transducer Measurements per ASTM E1065	
Date:	Jun 4, 2018
Time:	6:44 PM
Operator:	DEH
**Transducer Disposition:	PASS
Relative Sensitivity:	68dB
Center Frequency:	5.37MHz
-6dB Bandwidth:	67.66%

Test Setup & Conditions	
Test Procedure Number:	Tp
Test Object:	3" H2O-SST
Pulser Settings	
Repetition Rate:	4
Pulse Amplitude:	5
Pulse Energy:	2 - LowZ
Damping:	9
Receiver Settings	
Mode:	Pulse Echo
Gain:	10 + 1
Low Pass Filter (MHz):	35 MHz
High Pass Filter (MHz):	1 MHz

Customer



Test Equipment	
Pulser/Receiver:	IDPR300
Pulser Serial Number:	DA0901
Pulser Calibration Due Date:	Dec 14, 2018
Oscilloscope Model:	DPO2022B
Oscilloscope Serial Number:	C030032
Oscilloscope Calibration Due Date:	Oct 12, 2018
Software:	1.2.0
Cable:	6FT RG-58

*Please reference Transducer Part Number and Serial Number in any correspondence

Ultrasonic Beam Profile

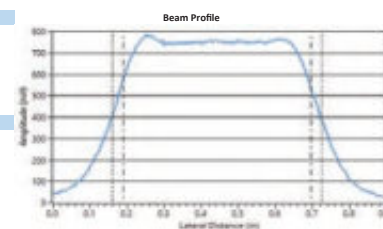


Transducer Information	
*Part Number:	XDCR100N
*Serial Number:	U11CA7
Transducer Description:	XDCR 100, .75" DIA, 5 MHz, 2.5" CYL FCL 13A-1967_B CASE
Frequency:	5MHz
Element Size:	.75"

Transducer Measurements per ASTM E1065	
Date:	Jun 4, 2019
Time:	10:18 AM
Operator:	KPH
Transducer Disposition:	PASS
-3dB Beam length (in):	0.505"

Test Setup & Conditions	
Test Procedure Number:	1/4" SST ROD
Test Object:	3.0"
Water Path (in):	3.0"
Pulser Settings	
Repetition Rate:	4
Pulse Amplitude:	5
Pulse Energy:	2 - LowZ
Damping:	9
Receiver Settings	
Mode:	Pulse Echo
Gain:	20 + 2
Low Pass Filter (MHz):	35 MHz
High Pass Filter (MHz):	1 MHz
Special Notes:	

*Please reference Transducer Part Number and Serial Number in any correspondence



Test Equipment	
Pulser/Receiver:	JSR DPR300
Pulser Serial Number:	DA0901
Pulser Calibration Date:	Dec 19, 2019
Oscilloscope Model:	DPO2022B
Oscilloscope Serial Number:	C030032
Oscilloscope Calibration Date:	Oct 11, 2019
Software:	1.0.3
Cable:	6FT RG-58



Appendix

Phased-Array Transducer Certification

Linear Phased Array Ultrasonic Transducer Certification



Phone: 814-466-7207
Website: www.sensornetworksinc.com

Transducer Information

*Part Number: 00-010848
*Serial Number: U11795
Transducer Description:
D1, 10.0MHz, 0.6mm x 10mm

Probe Type: D1
Housing: QUICK
Frequency: 10.0MHz
Element Pitch: 0.6mm
Element Elevation: 10mm
Number of Elements: 32
Cable Jacket: N/A
Cable Length: N/A
Connector Type: DISCONNECT

Transducer Measurements per ASTM E1065

Date: 10/29/2018
Time: 9:25:00AM
Operator: KYLE RYAN
**Transducer Disposition: PASS
Average Relative Sensitivity: -48dB
Average Center Frequency: 9.80MHz
Average -6dB Bandwidth: 66.30%

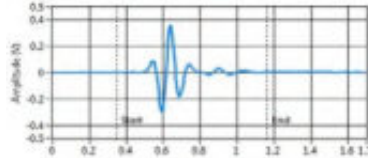
Test Setup & Conditions

Test Procedure Number: TP-010848
Test Object: 1/2" REX BW
Pulse Settings
Pulse Width: 40ns
Pulse Voltage: -12.3V

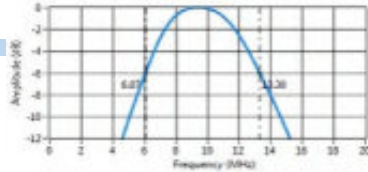
Image of Transducer



Typical RF Waveform and Frequency Spectrum (Element 16)



Frequency Spectrum



Test Equipment

Acquisition Unit: TC3
Acq. Unit Serial Number: 17054368
Acq. Unit Calibration Due Date: April 06, 2019
Hardware Version: 1.1
Software: 1.2.3
Adapter: IPEX

Linear Phased Array Ultrasonic Transducer Certification



Phone: 814-466-7207
Website: www.sensornetworksinc.com

Transducer Information

*Part Number: 00-010536-SMT
*Serial Number: U115CV
Transducer Description:
5MHz, 28EL, 1.6mmP X 10mm, 30m
CBL, Rectangular

Probe Type:
Housing: Rectangular
Frequency: 5.0MHz
Element Pitch: 1.6 mm
Element Elevation: 10 mm
Number of Elements: 28
Cable Jacket: PU
Cable Length: 30M
Connector Type: SAMTEC

Transducer Measurements per ASTM E1065

Date: 6/13/2018
Time: 9:20:55AM
Operator: KYLE RYAN
**Transducer Disposition: PASS
Average Relative Sensitivity: -45dB
Average Center Frequency: 4.80MHz
Average -6dB Bandwidth: 78.70%

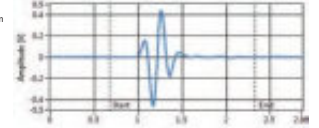
Test Setup & Conditions

Test Procedure Number: TP
Test Object: 20mm REX BW
Pulse Settings
Pulse Width: 100ns
Pulse Voltage: -12.3V

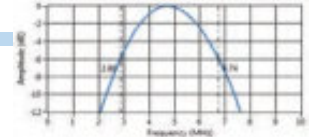
Image of Transducer



Typical RF Waveform and Frequency Spectrum (Element 14)



Frequency Spectrum



Test Equipment

Acquisition Unit: TC3
Acq. Unit Serial Number: 17054368
Acq. Unit Calibration Due Date: April 06, 2019
Hardware Version: 1.1
Software: 1.2.1
Adapter: 07-020155

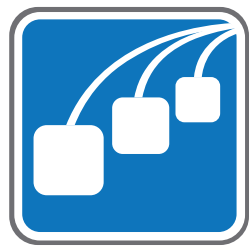
Special Notes:

*Please reference Transducer Part Number and Serial Number in any correspondence

**This item was manufactured and tested according to product specific parameters. The "Pass" Disposition confirms that all steps in the manufacturing process were completed satisfactorily and that all test requirements were satisfied.

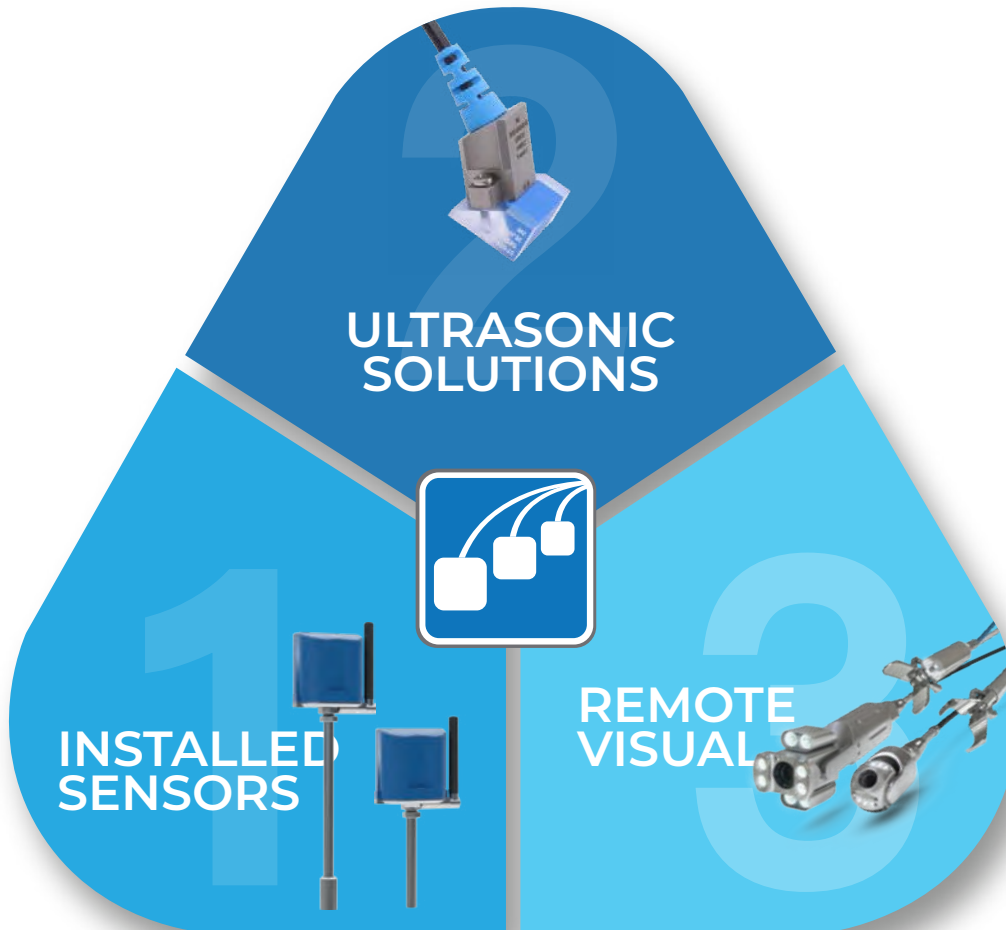
NDTS

All SensorScan® Transducers carry a one-year warranty from the date of purchase, for the original owner, covering defects in materials and workmanship.



SENSOR[®] NETWORKS, INC

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HIGH-TEMPERATURE

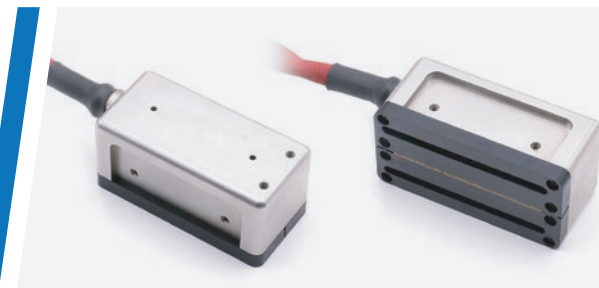
高温超音波探傷用トランスデューサー

-  フェーズドアレイ
-  TOFD
-  腐食検査用デュアルリニアアレイ
-  ウェッジ

常温から高温まで、 欠陥検出とサイジングを 1つの探触子でカバー

高温材料に対するフェーズドアレイ、TOFD、デュアルリニアアレイを用いた腐食検査や超音波探傷をお考えなら、SNIはより良いソリューションを提供することができます。私たちは、金属表面の温度が200℃まで動作可能なフェーズドアレイ探触子、ウェッジを開発し、様々なテストを行っています。

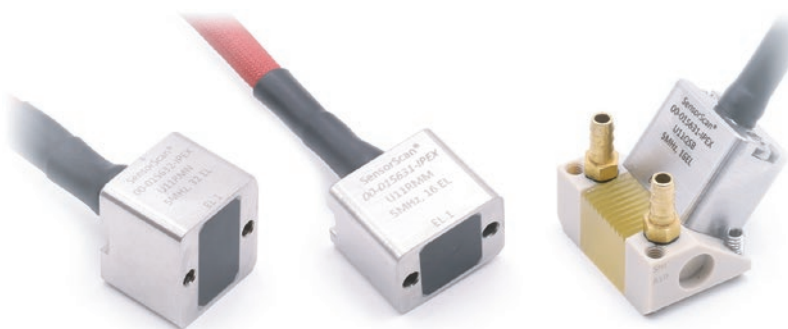
温度変化によるトランスデューサーとウェッジの屈折角の変化は計算可能であり、キャリブレーションを行うことで管理・補正することができます。添付のデータは材料温度が減衰量、周波数、音速、屈折角のいずれについても影響することを示しています。新しい探触子は製油所や発電所などの高温環境下でも使用できるように設計されており、様々な手法の超音波探傷を行うことが可能となります。





フェーズドアレイ リニア: 縦波・横波

高温用アレイは、溶接部検査、チューブやパイプの検査、レール、圧力容器など、さまざまな高温アプリケーションを適切にサポートする汎用性の高い探触子です。これらの探触子には、IPEXコネクタ付き2.5 mのケーブルが標準仕様で取り付けられています。ウェッジには中温用(100℃～150℃)と高温用(150℃～200℃)の2つの仕様があります。また、各ウェッジの種類には、屈折角30～70°と0°のモデルが用意されています。



探触子

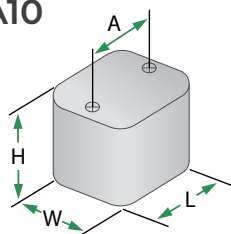
ケース タイプ	周波数 (MHz)	エレメント数	エレメントピッチ		エレベーション		製品コード
			in	mm	in	mm	
A10	5	16	0.024	0.6	0.39	10	00-015631
A11	5	32	0.024	0.6	0.39	10	00-015632

ウェッジ

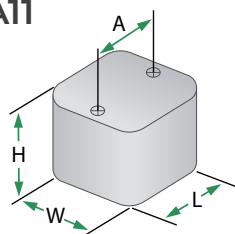
ウェッジ									
ケース	使用温度範囲	屈折角*	製品コード	L		W		H	
A10	Mid Temp (100°C to 150°C)	0°	01-013350-IHC	0.98 in.	24.9 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
A10	High Temp (150°C to 200°C)	0°	01-013351-IHC	0.98 in.	24.9 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
A10	Mid Temp (100°C to 150°C)	N55S (30-70°)	01-013352-IHC	0.91 in.	23.1 mm	1.30 in.	33 mm	0.56 in.	14.2 mm
A10	High Temp (150°C to 200°C)	N55S (30-70°)	01-013353-IHC^	1.4 in.	35.6 mm	1.58 in.	40.1 mm	0.7 in.	17.8 mm
A11	Mid Temp (100°C to 150°C)	0°	01-013355-IHC	1.38 in.	35.1 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
A11	High Temp (150°C to 200°C)	0°	01-013356-IHC	1.38 in.	35.1 mm	1.58 in.	40.1 mm	0.79 in.	20.1 mm
A11	Mid Temp (100°C to 150°C)	N55S (30-70°)	01-013357-IHC	1.63 in.	41.4 mm	1.30 in.	33 mm	1.13 in.	28.7 mm
A11	High Temp (150°C to 200°C)	N55S (30-70°)	01-013358-IHC^	2.25 in.	57.2 mm	1.30 in.	33 mm	1.05 in.	26.7 mm

すべてのウェッジには、ポート、ウェアピン、8mm Ø (0.315 in.) 3mm 深さのジナルマウントホールが標準装備されています。ご希望により、これらの機能を省いたウェッジを特別注文することも可能です。

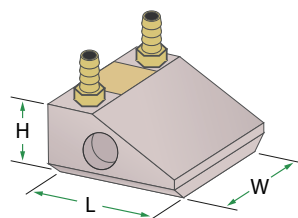
A10



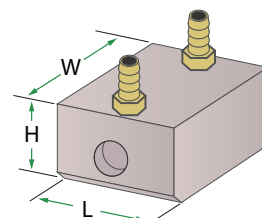
A11



30-70° ウェッジ



0° ウェッジ



ケース	寸法						
	L		W		H		A (固定ネジ間隔)
A10	0.91 in.	23.1 mm	0.63 in.	16 mm	0.79 in.	20.1 mm	0.67 in. 17 mm
A11	0.91 in.	23.1 mm	0.98 in.	24.9 mm	0.79 in.	20.1 mm	0.67 in. 17 mm

* ウェッジの屈折角はカスタマイズ可能
^ ウェッジの寸法は変更になる場合があります



TOFD

高温用TOFD探触子は、従来のTOFD探触子と同様に使用できますが、最高200℃までの温度に対応するように設計されています。TOFD法は、金属溶接部の溶接欠陥の大きさを測定するために使用される手法です。屈折縦波(L波)を発生させるダンピング性能が良く広帯域の探触子とウェッジが必要です。高温用TOFD探触子は、ストレートマウントのマイクロドットコネクタが標準装備されています。また、TOFDウェッジは200℃までの温度でできるように設計されており、2つの給水口とジンバルマウントホールを備えています。

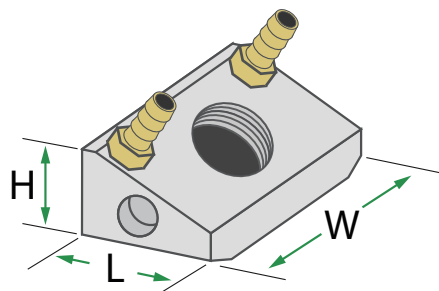
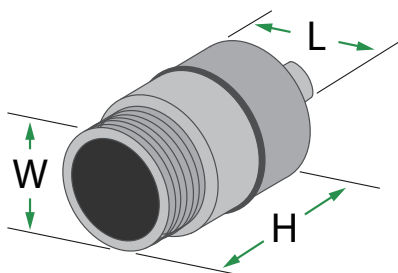


探触子

ケース タイプ	周波数 (MHz)	振動子φ		製品コード
		in	mm	
3/8 - 32	2.25	0.25	6.4	00-015636
3/8 - 32	5	0.25	6.4	00-015635

ウェッジ

ケース タイプ	使用温度範囲	屈折角*	製品コード
3/8 - 32	最大 200℃	45° 縦波	01-013467
3/8 - 32	最大 200℃	60° 縦波	01-013468
3/8 - 32	最大 200℃	70° 縦波	01-013469



ケース	寸法					
	L		W		H	
3/8 - 32	0.41 in.	10.4 mm	0.37 in.	9.5 mm	0.72 in.	18.3 mm

ウェッジ	寸法					
	L		W		H	
3/8 - 32	0.67 in.	17 mm	1.25 in.	31.75 mm	0.53 in.	13.5 mm

ジンバル取り付け穴: Ø5mm (0.2 in.)、深さ3mm (0.12 in.)



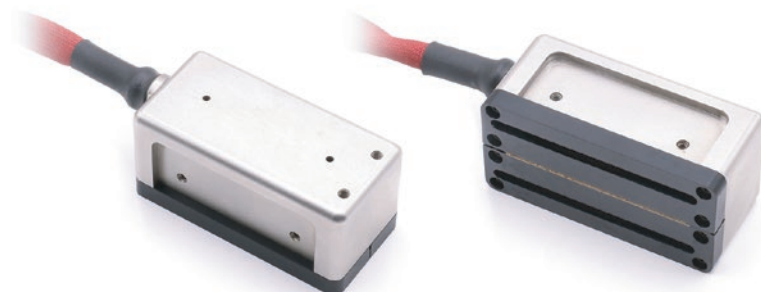


デュアルリニア 腐食検査用アレイ

高温用デュアルリニアアレイは、高温での腐食/浸食検査用に設計されています。

トランスデューサーと交換可能なディレイラインは、200℃までの温度に耐えられるように設計されています。このデュアルアレイは32個の送信エレメントと32個の受信エレメントを備えており、従来の二振動子探触子よりも大きなビーム範囲を確保することができます。

送信エレメントと受信エレメントの間には角度がついており、被検査材に焦点効果をもたせています。



探触子

ケース タイプ	周波数 (MHz)	エレメント数	エレメントピッチ		エレベーション		製品コード
			in	mm	in	mm	
CL	5	64 (32 x 2)	0.058	1.5	0.20	5	00-015634

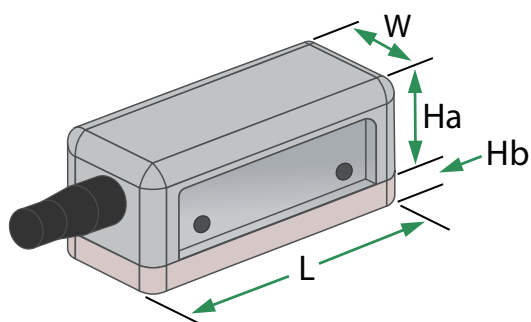
交換用ディレイ

セラゾール	01-014525
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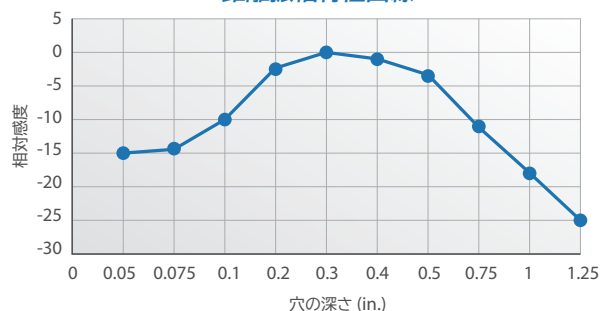
寸法

ケース	寸法							
	L		W		Ha		Hb	
CL	2.58 in.	65.5 mm	1.25 in.	31.8 mm	0.98 in.	24.9 mm	0.22 in.	5.6 mm

取り付け穴間隔 : 1.4 in. (35.6 mm)



距離振幅特性曲線





中温・高温 テストデータ

中温用ウェッジ

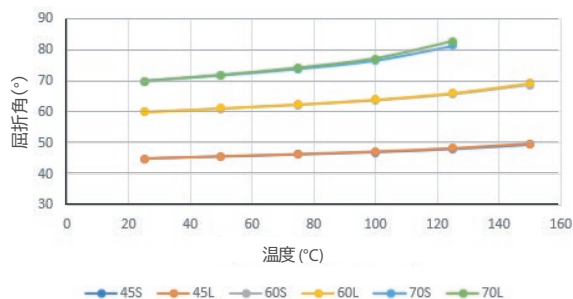
ピーク (ナチュラル)*

100°C - 150°C (212°F - 302°F)

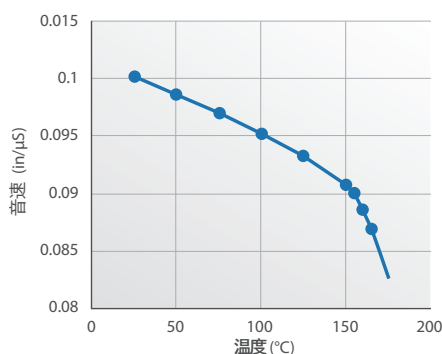
- ・ A10 & A11 ケース用ウェッジ
- ・ TOFDウェッジ
- ・ デュアルリニアアレイ用ディレイライン

ピーク						
温度 (°C)	音速 (in./μs)	25 (°C)との音速変化率	エコー高さ 80% 時のゲイン	25 (°C)とのビーム路程変化率	周波数 (MHz)	25 (°C)との周波数変化率
25	0.100	0.00	21.5	0.00	4.1	0.00
50	0.099	1.60	22	2.33	4.03	1.71
75	0.097	3.19	22.5	4.65	3.96	3.41
100	0.095	4.89	23	6.98	3.86	5.85
125	0.093	6.89	24	11.63	3.59	12.44
150	0.091	9.38	29.5	37.21	2.76	32.68
175	0.083	17.56			1.22	70.24

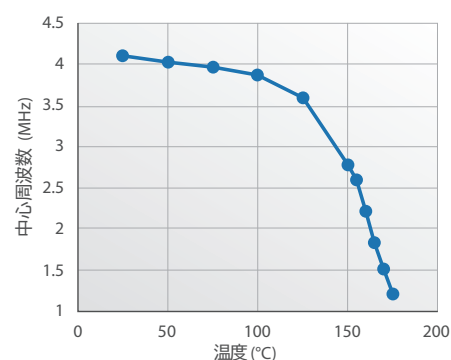
屈折角 vs. 温度



音速 vs. 温度



中心周波数 vs. 温度



高温用ウェッジ

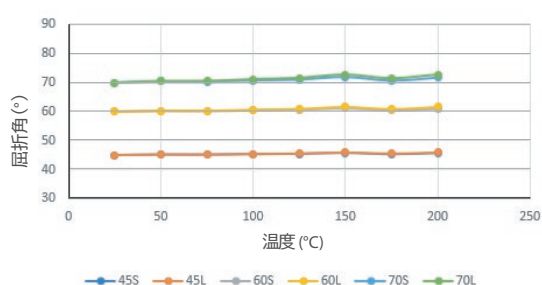
セラゾール U-60*

150°C - 200°C (302°F - 392°F)

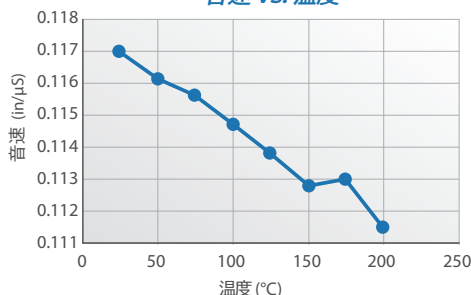
- ・ A10 & A11 ケース用ウェッジ
- ・ TOFDウェッジ
- ・ デュアルリニアアレイ用ディレイライン

セラゾール U-60						
温度 (°C)	音速 (in./μs)	25 (°C)との音速変化率	エコー高さ 80% 時のゲイン	25 (°C)とのビーム路程変化率	周波数 (MHz)	25 (°C)との周波数変化率
25	0.117	0.00	16	0.00	4.88	0.00
50	0.116	0.77	16	0.00	4.8	1.64
75	0.116	1.20	16.5	3.13	4.76	2.46
100	0.115	1.97	17.5	9.38	4.66	4.51
125	0.114	2.65	19.5	21.88	4.27	12.50
150	0.113	3.68	23.5	46.88	3.86	20.90
175	0.113	3.42	29.5	84.38	3.91	19.88
200	0.112	4.53	39	143.75	6.05	-23.98

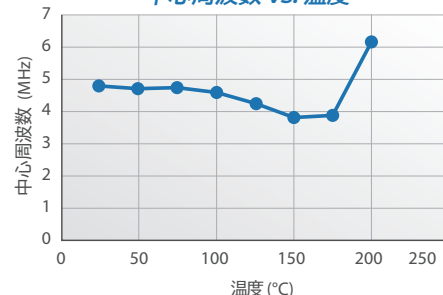
屈折角 vs. 温度



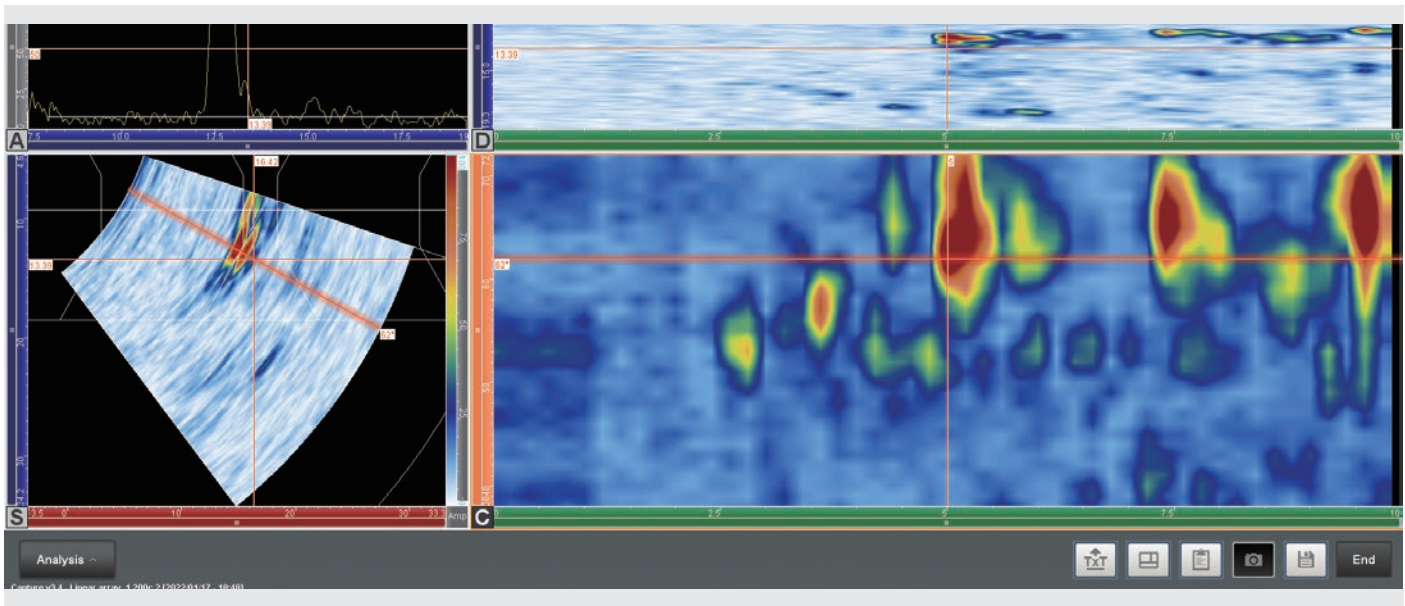
音速 vs. 温度



中心周波数 vs. 温度



200℃で探傷を行った直径10インチ(254mm)×厚さ3/8インチ(9.7mm)の炭素鋼パイプの実際の溶接欠陥



画像提供：Eddyfi

高温用探触子・ウェッジ製品一覧

	製品コード	商品概要
リニアアレイ	00-015631	16エレメント 高温用 200℃, 5MHz, 16EL, 0.6mmP x 10mm, 2.5mケーブル, A10, IPEXコネクタ
	00-015632	16エレメント 高温用 200℃, 5MHz, 16EL, 1.0mmP x 10mm, 2.5mケーブル, A11, IPEXコネクタ
腐食検査用アレイ	00-015634	64エレメント 高温用 200℃, 5MHz, 腐食検査用, 1.5mmP, 3.0mケーブル, IPEXコネクタ, 脱着式ディレイライン
TOFD	00-015635	一振動子, 高温用 200℃, TOFD用, 振動子径 0.25", 5MHz, Microdotコネクタ, 3/8-32 ネジ取り付け式
	00-015636	一振動子, 高温用 200℃, TOFD用, 振動子径0.25", 2.25MHz, Microdotコネクタ, 3/8-32 ネジ取り付け式
ウェッジ*	01-013350-IHC	ピーク, 中温用, 屈折角0°(垂直探傷用), A10
	01-013351-IHC	セラゾール, 高温用, 屈折角0°(垂直探傷用), A10
	01-013352-IHC	ピーク, 中温用, 屈折角30-70°S, N55S, A10
	01-013353-IHC	セラゾール, 高温用, 屈折角30-70°S, N55S, A10
	01-013355-IHC	ピーク, 中温用, 屈折角0°(垂直探傷用), A11
	01-013356-IHC	セラゾール, 高温用, 屈折角0°(垂直探傷用), A11
	01-013357-IHC	ピーク, 中温用, 屈折角30-70°S, N55S, A11
	01-013358-IHC	セラゾール, 高温用, 屈折角30-70°S, N55S, A11
	01-013467	ウェッジ, TOFD用, 縦波屈折角45°, 3/8-32 ネジ取り付け式, SSTハウジング, 給水口2個, 高温用200℃
	01-013468	ウェッジ, TOFD用, 縦波屈折角60°, 3/8-32 ネジ取り付け式, SSTハウジング, 給水口2個, 高温用200℃
	01-013469	ウェッジ, TOFD用, 縦波屈折角70°, 3/8-32 ネジ取り付け式, SSTハウジング, 給水口2個, 高温用200℃
	01-014525	腐食検査アレイ用, セラゾール, 高温用

* すべてのウェッジは、屈折角のカスタマイズや曲面用のR加工が可能です。

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