ULTRASONIC TRANSDUCER CATALOG

Standard • Custom • Applications Engineering

SENSOR® NETWORKS, INC
Inspection, Testing & Asset-Integrity Solutions

INTECH NDE
Inspection Solutions

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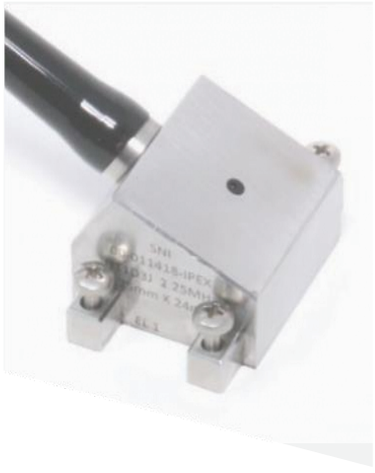
PHASED-ARRAY
TRANSDUCERS



WEDGE MOUNT | LOW PROFILE | PIPELINE

Phased Array
General Purpose Linear

GENERAL PURPOSE

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.

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	SNI Part Number	Case
1.5	16	0.040	1.00	0.47	12	00-010276	E2
2.25	8	0.047	1.20	0.39	10	00-013030	A10
2.25	16	0.030	0.75	0.47	12	00-010265	AM
2.25	16	0.030	0.75	0.47	12	00-011419	A1
2.25	16	0.060	1.50	0.75	19	00-010277	E3
2.25	32	0.024	0.60	0.39	10	00-011781	A11
2.25	64	0.024	0.60	0.39	10	00-010267	LM
2.25	64	0.024	0.60	0.39	10	00-011420	A12
2.25	64	0.030	0.75	0.47	12	00-011421	A2
3.5	8	0.047	1.20	0.39	10	00-013031	A10
3.5	64	0.024	0.60	0.39	10	00-012459	A12
4	16	0.020	0.50	0.35	9	00-010275	E1
5	16	0.024	0.60	0.39	10	00-010266	AM
5	16	0.024	0.60	0.39	10	00-011422	A10
5	16	0.024	0.60	0.39	10	00-011423	A1
5	16	0.024	0.60	0.39	10	00-013029	A10
5	16	0.040	1.00	0.39	10	00-011836	A11
5	16	0.047	1.20	0.47	12	00-011926	A3
5	32	0.012	0.30	0.39	10	00-011651	A10
5	32	0.024	0.60	0.39	10	00-010329	A11
5	64	0.012	0.30	0.39	10	00-013036	A11
5	64	0.024	0.60	0.39	10	00-011768	A12
5	64	0.024	0.60	0.39	10	00-010268	LM
5	64	0.024	0.60	0.39	10	00-011426	A12
5	64	0.024	0.60	0.39	10	00-011427	A2
5	128	0.012	0.30	0.39	10	00-013040	A12
7.5	32	0.012	0.30	0.39	10	00-013028	A10

Chart continues on page 6

00-011422
A10 Case

00-010277
E3 Case

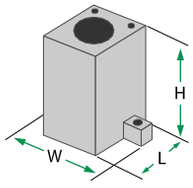
00-010266
AM Case

Phased Array
General Purpose Linear

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	SNI Part Number	Case
10	32	0.012	0.31	0.28	7	00-011429	A10
10	32	0.012	0.31	0.28	7	00-011430	A1
10	64	0.012	0.30	0.39	10	00-013037	A11
10	64	0.024	0.60	0.28	7	00-013041	A2
10	64	0.024	0.60	0.39	10	00-013039	A12
10	64	0.024	0.60	0.39	10	00-010269	LM
15	64	0.012	0.30	0.39	10	00-013038	A11

CASE DIMENSIONS

A1



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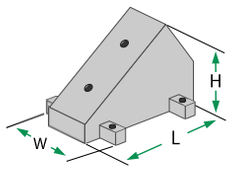

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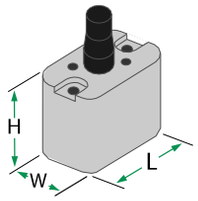

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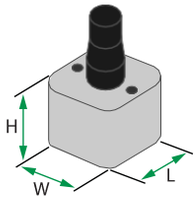

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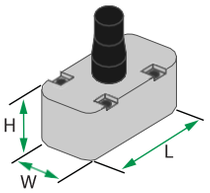
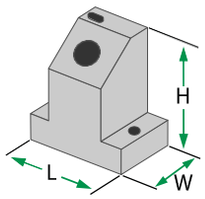


E1



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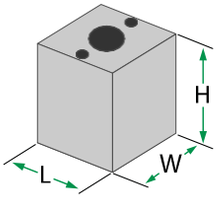

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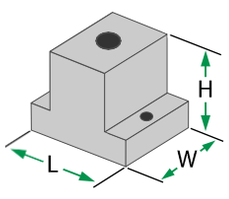
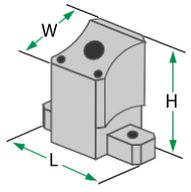
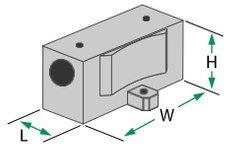


AM



LM

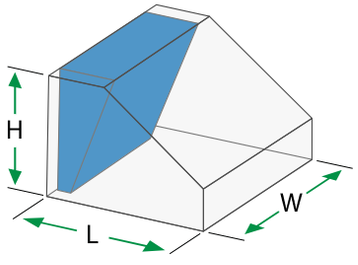


Case Type	Case Dimensions					
	Length		Width		Height	
A1	0.67 in.	17 mm	1.09 in.	27.7 mm	0.99 in.	25.1 mm
A2	2.09 in.	53.1 mm	1.14 in.	29 mm	1.36 in.	34.5 mm
A10	0.91 in.	23.1 mm	0.63 in.	16 mm	0.79 in.	20.1 mm
A11	0.98 in.	24.9 mm	0.91 in.	23.1 mm	0.79 in.	20.1 mm
A12	1.77 in.	45 mm	0.91 in.	23.1 mm	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

Phased Array
General Purpose Linear

WEDGES

Wedge Type	Description	Part Number	Dimensions					
			Length		Width		Height	
A1	0 Degree	01-011733	1.14 in.	29 mm	1.18 in.	30 mm	0.79 in.	20.1 mm
	45-70 Shear	01-011734	1.20 in.	30.5 mm	1.58 in.	40.1 mm	0.64 in.	16.3 mm
A2	0 Degree	01-011741	2.56 in.	65 mm	1.18 in.	30 mm	0.79 in.	20.1 mm
	30-70 Shear	01-011742	2.70 in.	68.6 mm	1.58 in.	40.1 mm	1.70 in.	43.2 mm
A10	0 Degree	01-011735	0.98 in.	24.9 mm	0.91 in.	23.1 mm	0.79 in.	20.1 mm
	30-70 Shear	01-010944	0.91 in.	23.1 mm	0.91 in.	23.1 mm	0.56 in.	16.5 mm
	30-70 Shear with Built-In IHC	01-010944-P	Contact for dimensions					
	IHC Ring	01-011514	Contact for dimensions					
A11	0 Degree	01-011749	1.38 in.	35.1 mm	0.91 in.	23.1 mm	0.91 in.	23.1 mm
	30-70 Shear	01-010709	1.63 in.	41.4 mm	0.91 in.	23.1 mm	1.13 in.	28.7 mm
	30-70 Shear with Built-In IHC	01-010709-P	Contact for dimensions					
	IHC Ring	01-012303	Contact for dimensions					
A12	0 Degree	01-011737	2.28 in.	57.9 mm	0.91 in.	23.1 mm	0.79 in.	20.1 mm
	30-70 Shear	01-011738	2.88 in.	73.2 mm	0.91 in.	23.1 mm	1.76 in.	44.7 mm
	30-70 Shear with Built-In IHC	01-011738-P	Contact for dimensions					
	IHC Ring	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	01-011975	1.25 in.	31.8 mm	1.18 in.	30 mm	0.79 in.	20.1 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



ACCESSORIES

Accessory	Case Style	Part Number
IHC Ring	A10	01-011514
IHC Ring	A11	01-012303
IHC Ring	A12	01-012315

Phased Array
Weld Inspection

WELD INSPECTION ARRAYS

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.

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

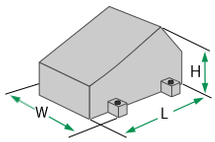
00-011821
A4 Case

00-011418
A5 Case

00-011839
A32 Case

CASE DIMENSIONS

A4



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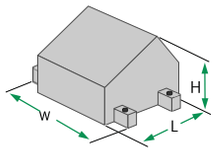
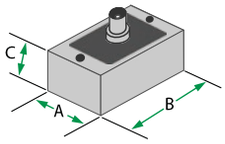


AWS



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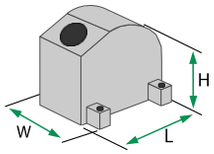
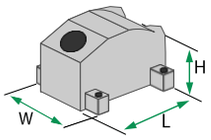


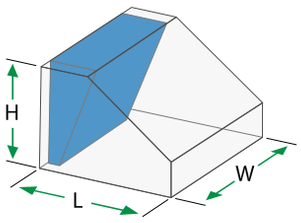
A32



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	*45-70 Shear*	*01-011469*	*1.56 in.*	*39.6 mm*	*1.71 in.*	*43.4 mm*	*0.63 in.*	*16 mm*
A31	*30-70 Shear*	*01-010943*	*1.91 in.*	*48.5 mm*	*1.18 in.*	*30 mm*	*1.26 in.*	*32 mm*
	30-70 Shear with Ports and Wear Pins	*01-010943-P*	*Contact for dimensions*					
A32	*30-70 Shear*	*01-011554*	*2.42 in.*	*61.5 mm*	*1.18 in.*	*30 mm*	*1.26 in.*	*32 mm*



Phased Array

Low Profile - Small Diameter Weld Inspection

LOW PROFILE

Low-profile arrays are designed to inspect small diameter or thin-walled pipes for flaws and defects. A15 and A25 cases are also usefull 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.

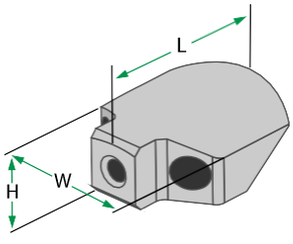
00-011212
A15 Case

00-011875
A25 Case

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	SNI Part Number**	Case
5	16	0.020	0.50	0.38	10	00-011211	A15
5	16	0.030	0.75	0.20	5	00-012963	A25
7.5	16	0.020	0.50	0.38	10	00-011212	A15
7.5	32	0.010	0.25	0.38	10	00-011213	A15
10	16	0.020	0.50	0.38	10	00-011214	A15
10	32	0.010	0.25	0.38	10	00-011215	A15

CASE DIMENSIONS

A15



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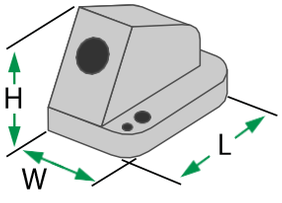
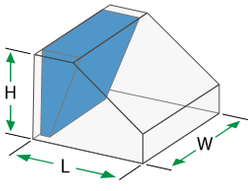


Case Type	Case Dimensions					
	Length		Width		Height	
A15	1.03 in.	26.2 mm	0.86 in.	21.8 mm	0.39 in.	9.9 mm
A25	0.70 in.	17.8 mm	0.47 in.	11.9 mm	0.54 in.	13.7 mm

WEDGES

Wedge Type	Part Number	Dimensions					
		Length		Width		Height	
A15	01-011229	0.72 in.	18.3 mm	0.86 in.	21.8 mm	0.44 in.	11.2 mm
A25	01-011744	Contact for dimensions					



Phased Array
Pipeline / Girthweld

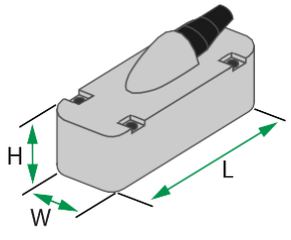
PIPELINE / GIRTHWELD

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.

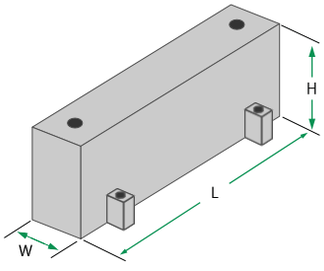
Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	SNI Part Number**	Case
2.25	60	0.040	1.00	0.38	10	00-013047	PWZ1
5	60	0.040	1.00	0.38	10	00-011425	A14
5	60	0.040	1.00	0.38	10	00-012712	PWZ1
7.5	60	0.040	1.00	0.38	10	00-011428	A14
7.5	60	0.040	1.00	0.38	10	00-010107	PWZ1

CASE DIMENSIONS

A14

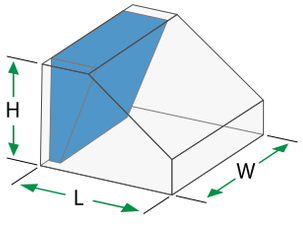


PWZ1



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

WEDGES



Wedge Type	Description	Part Number	Dimensions					
			Length		Width		Height	
A14		Contact for details						
PWZ1	30-70 Shear	01-010665	3.23 in.	82 mm	1.5 in.	38.1 mm	1.73 in.	43.9 mm

ACCESSORIES

Accessory	Case Style	Part Number
IHC Ring	A14	01-012265

Phased Array
Small Footprint

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.

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	SNI Part Number**	Case
2.25	32	0.016	0.40	0.50	12.7	00-010340	.5 in. MSWS
3.5	32	0.016	0.40	0.50	12.7	00-010381	.5 in. MSWS
3.5	16	0.016	0.40	0.25	6.25	00-010379	.25 in. MSWS
5	16	0.016	0.40	0.25	6.25	00-011275	A0
5	16	0.016	0.40	0.25	6.25	00-010380	.25 in. MSWS
5	32	0.016	0.40	0.50	12.7	00-010339	.5 in. MSWS
7.5	16	0.016	0.40	0.25	6.25	00-010867	.25 in. MSWS
10	16	0.012	0.31	0.20	5	00-010341	A00
10	16	0.016	0.40	0.25	6.4	00-013027	A0
10	16	0.016	0.40	0.25	6.25	00-011207	.25 in. MSWS
10	32	0.016	0.40	0.50	12.7	00-010338	.5 in. MSWS

00-010341
A00 Case

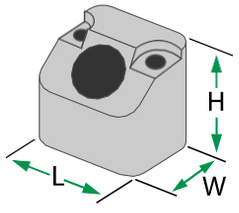
00-010380
.25 in. MSWS

00-010339
.5 in. MSWS

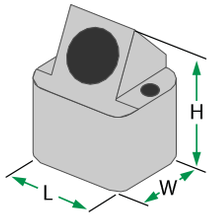
CASE DIMENSIONS

Case Type	Case Dimensions Length		Width		Height	
0	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

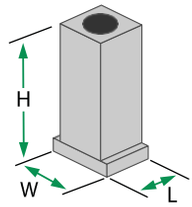
0.25 MSWS



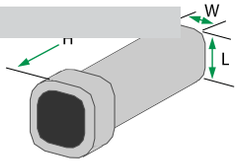
0.5 MSWS



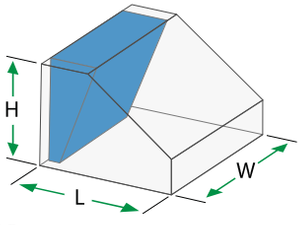
A0



A00



WEDGES



Wedge Type	Description	Part Number	Dimensions Length		Width		Height	
MSWS 1/4"	REX, 35-75 Shear, Flat	01-010705	0.75 in.	19 mm	0.70 in.	17.8 mm	0.38 in.	9.7 mm
MSWS 1/4"	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
MSWS 1/2"	REX, 35-75 Shear, Flat	01-011015	1.20 in.	30.5 mm	0.95 in.	24.1 mm	0.70 in.	17.8 mm
MSWS 1/2"	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
A00	45-70 Shear	01-010711	0.83 in.	21.1 mm	0.55 in.	14 mm	0.51 in.	13 mm

Phased Array

Dual-Linear Phased Array™

DUAL LINEAR

Dual-Linear Phased Array transducers are optimized for corrosion and erosion inspection. All models provide 32 transmit and 32 recieve 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 be curved to match pipe diameters.

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	Array Description and Application	SNI Part Number	Case
5	32 Transmit 32 Receive	0.060	1.50	0.20	5	Dual linear, corrosion inspection	00-010863	CL

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	Array Description and Application	SNI Part Number	Case
5	32 Transmit 32 Receive	0.030	0.75	0.20	5	Dual linear, corrosion inspection	00-011200	CS

Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	Array Description and Application	SNI Part Number	Case
10	32 Transmit 32 Receive	0.014	0.35	0.20	5	Dual linear, corrosion inspection	00-012676	CS

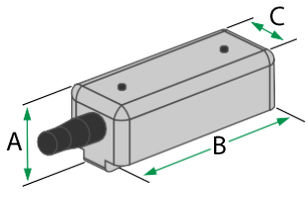
00-010863
CL

00-012676
CS

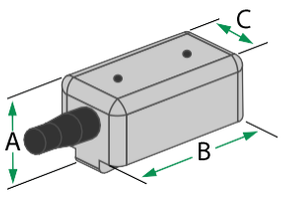
CASE DIMENSIONS

Case Type	Case Dimensions					
	Length		Width		Height	
CL	0.95 in.	65.5 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

CL



CS



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.

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

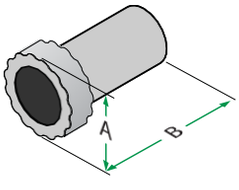
00-011927
A24 Case

00-011903
B S Case

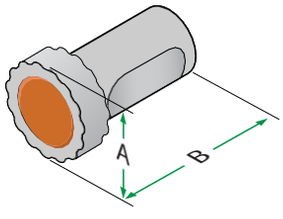
00-011715
MB S Case

CASE DIMENSIONS

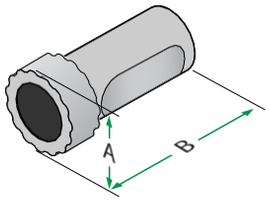
A24



B S



MB S



Case Type	Case Dimensions A		B	
A24	1.07 in.	27.2 mm	1.75 in.	44.5 mm
MB 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

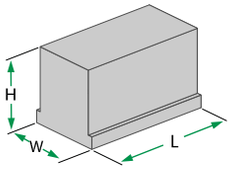
IMMERSION LINEAR

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.

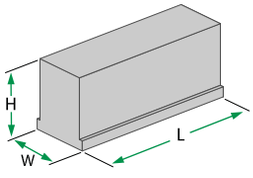
Frequency (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation mm	SNI Part Number**	Case
2.25	128	0.030	0.75	0.47	12	00-013045	I3
3.5	64	0.040	1.00	0.28	7	00-010331	Near Wall 1
3.5	128	0.040	1.00	0.28	7	00-013046	Near Wall 3
5	64	0.040	1.00	0.28	7	00-010332	Near Wall 1
5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

CASE DIMENSIONS

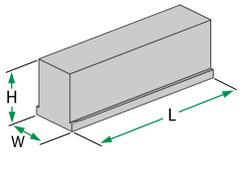
I1



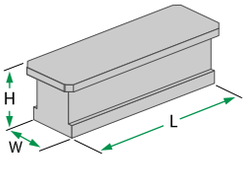
I2



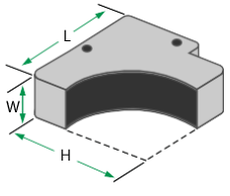
I3



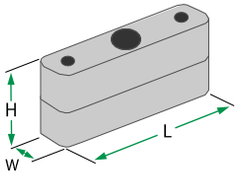
I4



R4

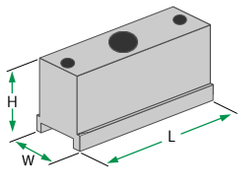


HW

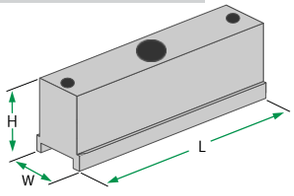


Case Type	Case Dimensions					
	Length		Width		Height	
I1	1.97 in.	50 mm	0.75 in.	19 mm	0.98 in.	24.9 mm
I2	3.27 in.	83.1 mm	0.83 in.	21.1 mm	1.38 in.	35.1 mm
I3	4.02 in.	102.1 mm	0.83 in.	21.1 mm	1.38 in.	35.1 mm
I4	3.08 in.	78.2 mm	0.97 in.	24.6 mm	1.00 in.	25.4 mm
R4	1.67 in.	45.2 mm	0.59 in.	15 mm	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



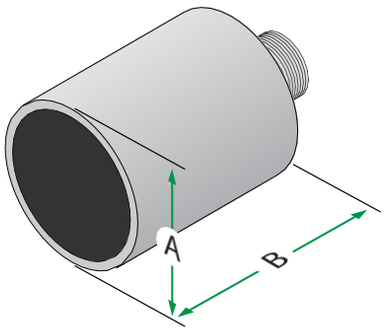
Phased Array
Immersion Annular

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.

Frequency (MHz)	Number of Elements	Element Diameter inches	Element Diameter mm	SNI Part Number**	Case
5	*16*	*1.0*	*25.4*	*00-011892*	*Annular*
10	*16*	*1.0*	*25.4*	*00-011893*	*Annular*

CASE DIMENSIONS



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

Phased Array
Matrix Arrays

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

10x6

Frequency (MHz)	Number of Elements	Primary Pitch in	Primary Pitch mm	Secondary Pitch in	Secondary Pitch mm	Array Description and Application	SNI Part Number**	Price
1	60	0.108	2.75	0.181	4.6	1" x 1" Aperature, Primary Axis Steering in Wedge: +/-26 DEG, Secondary: +/-15 DEG	00-013818	Contact for price
2.25	60	0.063	1.60	0.083	2.1	0.6" x 0.5" Aperature, Primary Axis Steering in Wedge: +/-20 DEG, Secondary: +/-15 DEG	00-013819	Contact for price
4	60	0.043	1.1	0.067	1.7	0.45" x 0.4" Aperature, Primary Axis Steering in Wedge: +/-16 DEG, Secondary: +/-10 DEG	00-013820	Contact for price

00-010278
E4 Case

00-010342
E5 Case

00-013823
A27 Case

**See page 52 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).*

Phased Array
Matrix Arrays

9x7

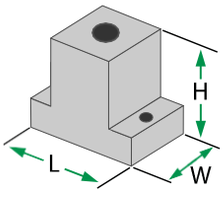
Frequency (MHz)	Number of Elements	Primary Pitch in	Primary Pitch mm	Secondary Pitch in	Secondary Pitch mm	Array Description and Application	SNI Part Number**	Price	Case
5	63	0.043	1.10	0.043	1.1	General Purpose	00-013821	Contact for price	AM
2.25	63	0.070	1.75	0.070	1.75	General Purpose	00-013822	Contact for price	AL

7x4

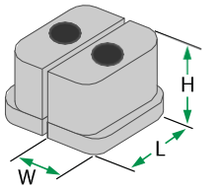
Frequency (MHz)	Number of Elements	Primary Pitch in	Primary Pitch mm	Secondary Pitch in	Secondary Pitch mm	Array Description and Application	SNI Part Number**	Price	Case
2.25	28	0.106	2.70	0.120	3	General Purpose	00-013824	Contact for price	A17

CASE DIMENSIONS

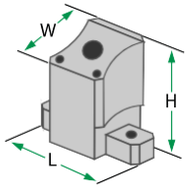
E4



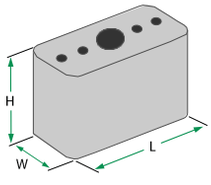
E5



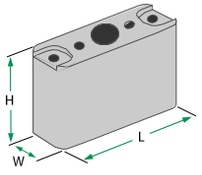
AM



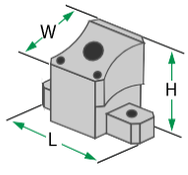
A17



A27



AL

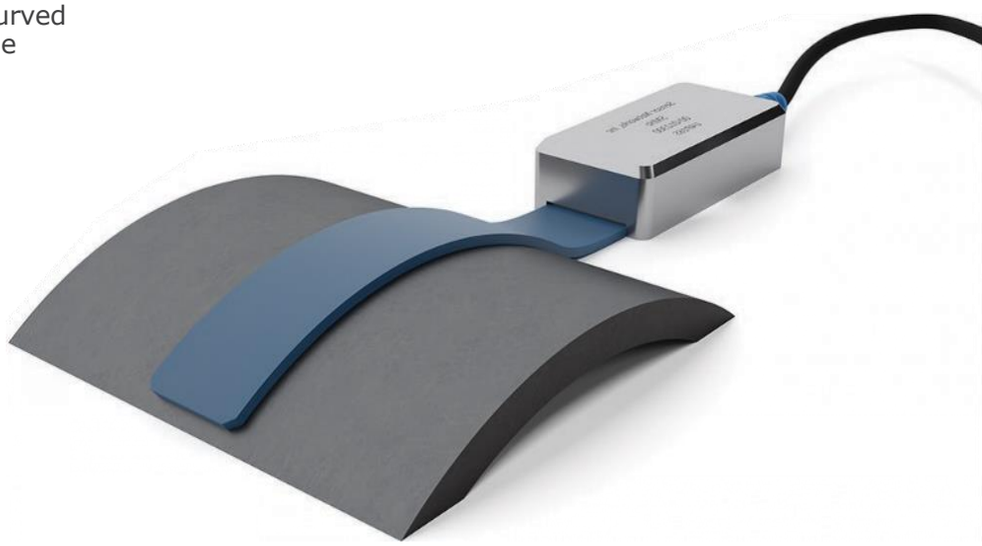


Case Type	Case Dimensions					
	Length		Width		Height	
E4	1.33 in.	33.8 mm	0.65 in.	16.5 mm	1.0 in.	25.4 mm
E5	1.41 in.	35.8 mm	.62 in.	15.7 mm	1.0 in.	25.4 mm
AM	1.18 in.	30 mm	0.63 in.	16 mm	0.98 in.	24.9 mm
A17	1.34 in.	34 mm	0.63 in.	16 mm	0.98 in.	24.9 mm
A27	1.12 in.	28.4 mm	0.39 in.	9.9 mm	0.79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

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.

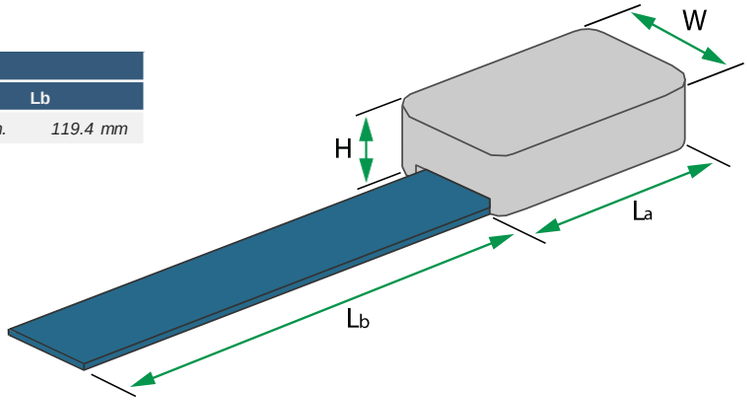


PART NUMBERS

Frequency* (MHz)	Number of Elements	Element Pitch in	Element Pitch mm	Elevation in	Elevation 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*

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*



CONVENTIONAL
TRANSDUCERS

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.

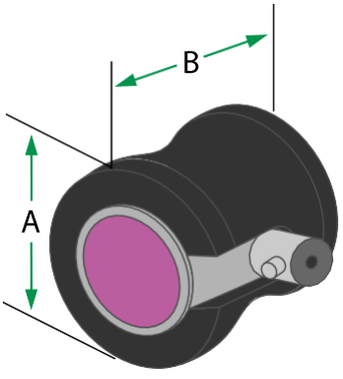
Single-Element Contacts are longitudinal-wave (straight-beam) transducers designed for general purpose manual ultrasonic inspection where test materials are relatively flat and smooth. They provide high sensitivity for better penetration, small-flaw detection, and have abrasion-resistant wear plates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

PART NUMBERS

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

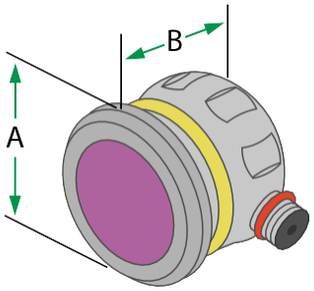
Single-Element Contacts are longitudinal-wave (straight-beam) transducers designed for general purpose manual ultrasonic inspection where test materials are relatively flat and smooth. They provide high sensitivity for better penetration, small-flaw detection, and have abrasion-resistant wear plates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

PART NUMBERS

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

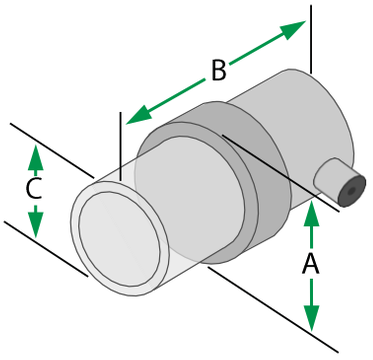
Model DFR are small-diameter delay-line transducers with side-mounted Microdot connectors. Removable delay lines and highly damped piezoceramic elements enable measurement of very thin parts or detection of small near-surface flaws. Delay lines can be contoured for improved coupling to I.D. or O.D. curved 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 inch	Element Diameter mm	Part Number HR	Delay 10-PK L=.38 in (10mm)	Delay 10-PK L=.5 in (12.7mm)	Accessories
2.25	0.25	6.4	00-010940	01-010810	01-010811	
	0.5	12.7	00-012301	01-011971	01-011973	
3.5	0.25	6.4	00-010824	01-010810	01-010811	Cable MD - BNC
	0.5	12.7	00-010941	01-011971	01-011973	
5	0.25	6.4	00-010246	01-010810	01-010811	6-ft (1.83 m) 07-010012
	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	

Frequency (MHz)	Element Diameter inch	Element Diameter mm	Accessories
Nominal 20MHz	0.125	3.2	See above



CASE DIMENSIONS

Element Ø inch	Element Ø mm	A		B 0.38 in. Delay		B 0.5 in. Delay		C	
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

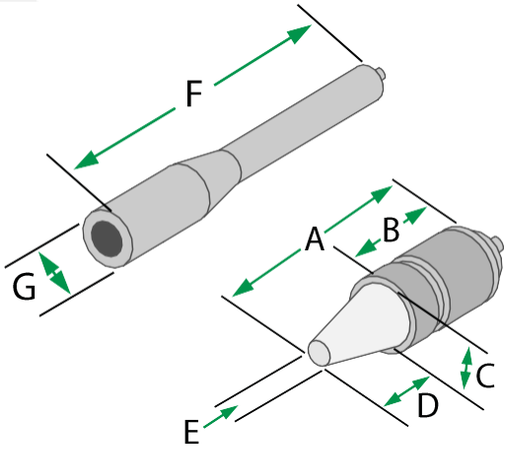
Delay 10-PK .065" (1.7mm) Tip	Delay 10-PK .090" (2.3mm) Tip	Cable MD - BNC
00-012222	00-012221	6-ft (1.83 m)

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

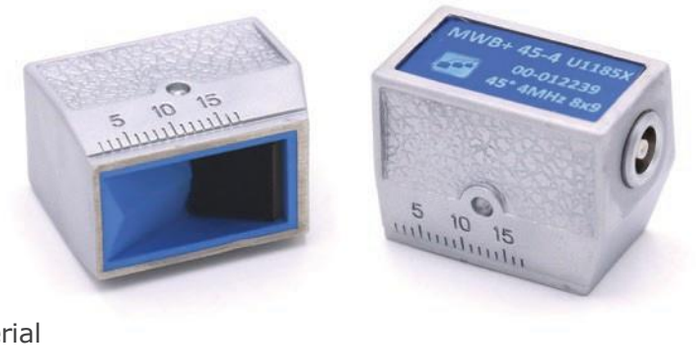


Integral-Wedge Angle Beam

MWB+ & MWK+

MWB+ & MWK+ ANGLE BEAM

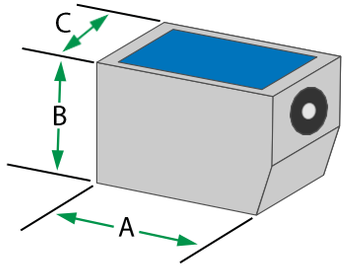
Models MWB+ and MWK+ are small transducers with side or top-mounted Microdot connectors and integral wedges for maximum versatility. GP series* (MWB+) offer the best combination of sensitivity and resolution. C series* (MWK+) with piezocomposite elements offer superior resolution, penetration and signal-to-noise 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	Element Dimensions		Angle	Connector	Part Number		
(MHz)	inch	mm	(Steel)	Location	GP (MWB+)	C (MWK+)	Accessories
2	0.31 x 0.35	8 x 9	35	Top	00-012227	00-012306	
				Side	00-012226	00-012307	
			45	Top	00-012229	00-012308	
				Side	00-012228	00-012251	Cables
			60	Top	00-012231	00-012309	MD - BNC
				Side	00-012230	00-012252	Straight
			70	Top	00-012233	00-012310	6-ft (1.83 m)
				Side	00-012232	00-012253	07-010012
			80	Top	00-012235	00-012311	
				Side	00-012234	00-012312	MCX - BNC
			90	Side	00-012236	00-012313	Straight
4	0.31 x 0.35	8 x 9	35	Top	00-012238	00-012314	6-ft (1.83 m)
				Side	00-012237	00-012315	07-010007
			45	Top	00-012240	00-012316	
				Side	00-012239	00-012248	MCX - BNC
			60	Top	00-012242	00-012317	Right Angle
				Side	00-012241	00-012249	6-ft (1.83 m)
			70	Top	00-012244	00-012318	07-010008
				Side	00-012243	00-012250	
			80	Top	00-012246	00-012319	
				Side	00-012245	00-012320	
			90	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 hightens sensitivity and bandwidth.

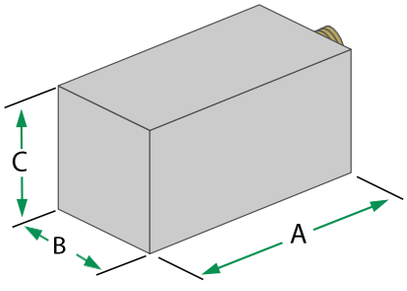
Standard models listed below are designed for inspecting carbon steel. Transducer can be designed to inspect other materials as well as variations in inspection angle. ABFP come standard with side-mounted microdot connectors but can be special ordered with top-mounted connectors if requested.

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	
	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	Cable
	0.25 x 0.25	6.4 x 6.4	00-013958	00-013959	00-013960	00-013961	MD - BNC
10	0.187 x 0.187	4.75 x 4.75	00-013962	00-013963	00-013964	00-013965	07-010012
	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



Large Angle Beam
AWS & Wedges

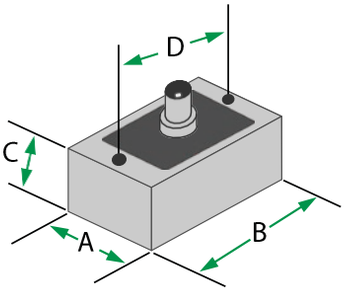
AWS ANGLE-BEAM TRANSDUCERS

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

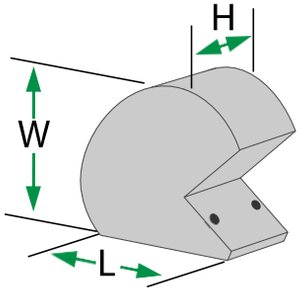


CASE DIMENSIONS

Element Dimensions inch	Element Dimensions mm	A		B		C		D		Thread
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	4-40
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		Height	
AWS	01-010414	1.82 in.	46.2 mm	1.25 in.	31.8 mm	1.91 in.	48.5 mm
AWS	01-010415	1.96 in.	49.8 mm	1.25 in.	31.8 mm	1.91 in.	48.5 mm
AWS	01-010416	2.17 in.	55.1 mm	1.25 in.	31.8 mm	2.16 in.	54.9 mm

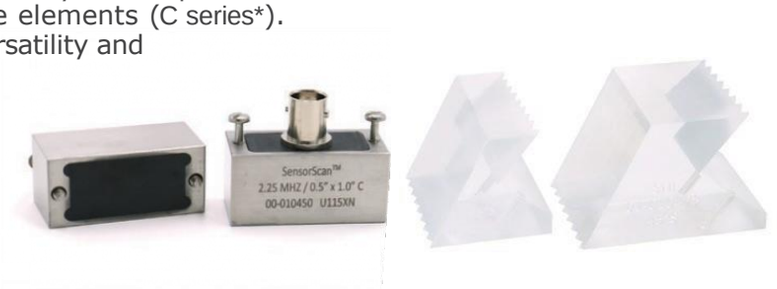


*C = Composite; GP = General Purpose. See appendix for technical details.

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.

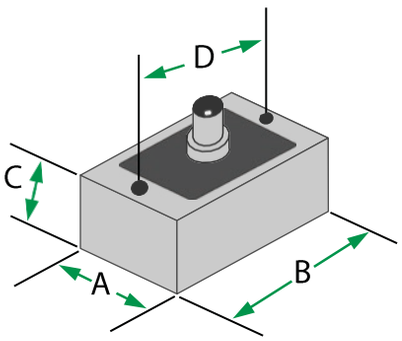
PART NUMBERS

Frequency (MHz)	Element Dimensions inch	mm	C	Wedges	Accessories
0.5	0.5 Ø	12.7 Ø	00-010478	45° 01-010417 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	Cable BNC - BNC 6-ft (1.83 m)
1	0.5 Ø	12.7 Ø	00-010445	45° 01-010417 60° 01-010418 70° 01-010419	07-010018
	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	

Chart continues on page 29

Large Angle Beam
SWS

Frequency (MHz)	Element Dimensions inch	Element Dimensions mm	C	Wedges	Accessories
2.25	0.5 Ø	12.7 Ø	00-010449	45° 01-010417 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	Cable BNC - BNC 6-ft (1.83 m)
3.5	0.5 Ø	12.7 Ø	00-010453	45° 01-010417 60° 01-010418 70° 01-010419	07-010018
	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 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	



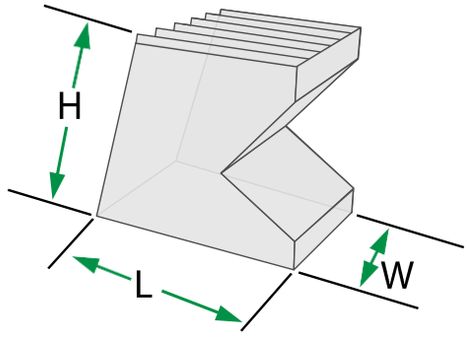
Element Size inch	Element Size mm	A		B		C		D	
0.5 Ø	12.7 Ø	0.72 in.	18.3 mm	1.0 in.	25.4 mm	0.75 in.	19 mm	0.81 in.	20.6 mm
0.5 x 1	12.7 x 25.4	0.73 in.	18.5 mm	1.5 in.	38.1 mm	0.75 in.	19 mm	1.31 in.	33.3 mm
0.75 x 1	19 x 25.4	1.0 in.	25.4 mm	1.5 in.	38.1 mm	0.75 in.	19 mm	1.31 in.	33.3 mm
1 Ø	25.4 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

Large Angle Beam
SWS Wedges

SWS WEDGE DIMENSIONS

Wedge Type	Part Number	Wedge Dimensions					
		Length		Width		Height	
SWS	01-010417	1.35 in.	34.3 mm	1.1 in.	30 mm	1.3 in.	33 mm
SWS	01-010418	1.53 in.	38.9 mm	1.1 in.	30 mm	1.3 in.	33 mm
SWS	01-010419	1.82 in.	46.2 mm	1.1 in.	30 mm	1.3 in.	33 mm
SWS	01-010425	1.35 in.	34.3 mm	1.6 in.	40.6 mm	1.3 in.	33 mm
SWS	01-010426	1.53 in.	38.9 mm	1.6 in.	40.6 mm	1.3 in.	33 mm
SWS	01-010427	1.82 in.	46.2 mm	1.6 in.	40.6 mm	1.3 in.	33 mm
SWS	01-010428	2.1 in.	53.3 mm	1.5 in.	38.1 mm	1.5 in.	38.1 mm
SWS	01-010429	2.3 in.	48.4 mm	1.5 in.	38.1 mm	1.5 in.	38.1 mm
SWS	01-010430	2.59 in.	65.8 mm	1.5 in.	38.1 mm	1.5 in.	38.1 mm
SWS	01-010991	2.05 in.	52.1 mm	1.65 in.	41.9 mm	1.5 in.	38.1 mm
SWS	01-010992	2.24 in.	56.9 mm	1.65 in.	41.9 mm	1.5 in.	38.1 mm
SWS	01-010993	2.6 in.	66 mm	1.65 in.	41.9 mm	1.5 in.	38.1 mm
SWS	01-012357	1.9 in.	48.3 mm	1.5 in.	38.1 mm	1.5 in.	38.1 mm
SWS	01-012759	1.35 in.	34.3 mm	1.1 in.	30 mm	1.3 in.	33 mm
SWS	01-012760	1.35 in.	34.3 mm	1.6 in.	40.6 mm	1.3 in.	33 mm
SWS	01-012761	2.36 in.	60 mm	1.65 in.	41.9 mm	1.5 in.	38.1 mm



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.

PART NUMBERS

Frequency (MHz)	Element Diameter inch	mm	C	Wedges	Accessories
1	0.5	12.7	00-010497	45° 01-012776 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	Cable MD - BNC 6-ft (1.83 m) 07-010012
	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	

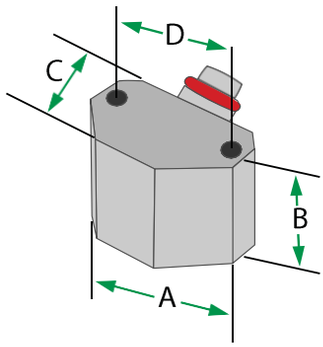
**C = Composite. See appendix for technical details.*

Small Angle Beam

MSWS & Wedges

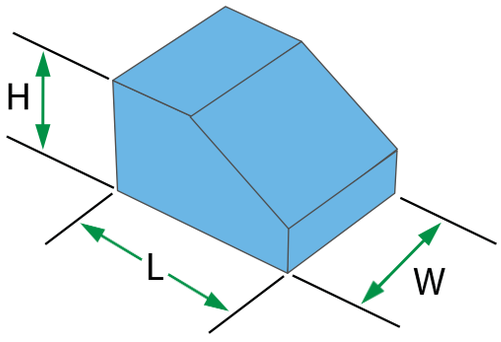
CASE DIMENSIONS

Element Ø		A		B		C		D		Thread
inch	mm									
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	1-64
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

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

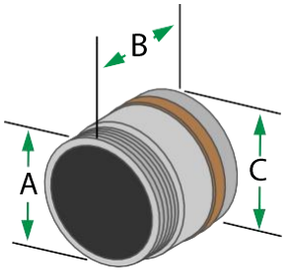
Frequency (MHz)	Element Diameter inch	Element Diameter mm	Part Number Connector	Part Number C	Part Number Connector	Part Number C	Accessories
2.25	0.25	6	Microdot	00-010493	MCX	00-011277	
5	0.125	3	Microdot	00-010168	MCX	00-010164	
	0.25	6	Microdot	00-010398	MCX	00-011276	
7.5	0.125	3	Microdot	00-010167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

11/16-24 PART NUMBERS

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

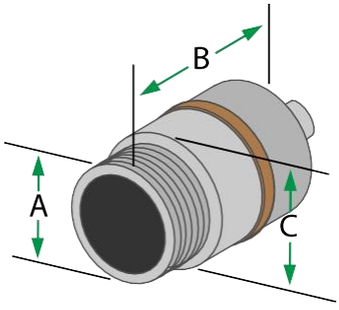
11/16-24 DIMENSIONS

Element Dimensions inch	Element Dimensions mm	A		B		C	
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 inch	Element Dimensions mm	A		B		C	
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.

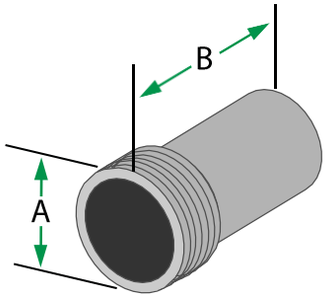
Small Angle Beam
TOFD M12

M12 PART NUMBERS

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

M12 DIMENSIONS

Element Dimensions inch	mm	A		B	
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
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	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	
0.83 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	
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
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	

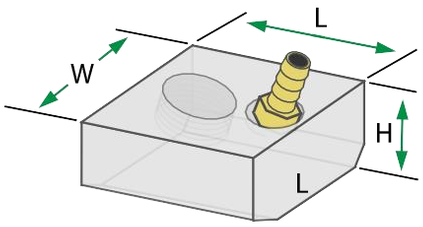
M12 WEDGES

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
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	

1



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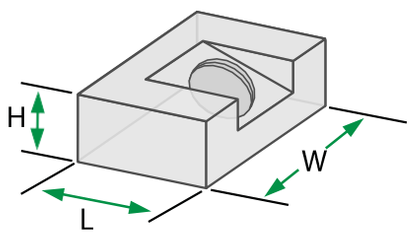

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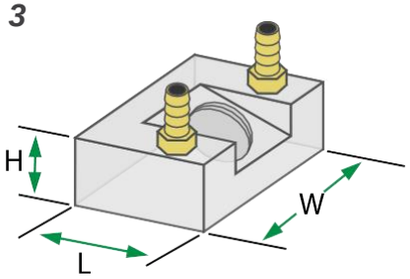

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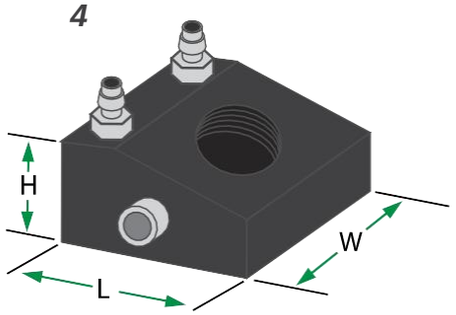


Small Angle Beam
QS

PART NUMBERS

Frequency (MHz)	Element Diameter inch	Element Diameter mm	C**	Accessories
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	
	0.25	6.4	00-010216 MD or MCX	
1.5	0.375	9.5	00-010217 MD or MCX	
	0.5	12.7	00-010218 MD or MCX	
	0.25	6.4	00-010122 MD or MCX	
2.25	0.375	9.5	00-010123 MD or MCX	
	0.5	12.7	00-010124 MD or MCX	

Chart continues on page 37

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

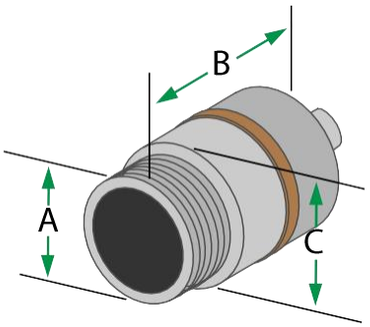
PART NUMBERS CONTINUED

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

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

CASE DIMENSIONS

Element Ø inch	mm	A	B		C	
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 inch	mm	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

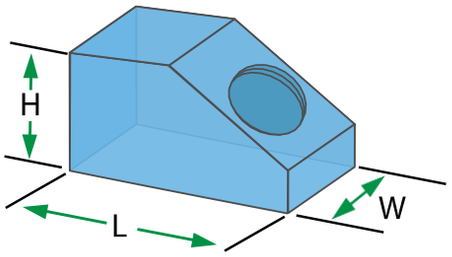
Element Diameter inch	mm	Short Index Wedges Angle	Carbon Steel	Stainless Steel	Aluminum
0.25	6.4	45°	01-012116	01-012128	01-010480
		60°	01-012117	01-012129	01-010481
		70°	01-012118	01-012130	01-010482
0.375	9.5	45°	01-012120	01-012132	01-010484
		60°	01-012121	01-012133	01-010485
		70°	01-012122	01-012134	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

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.	17.8 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

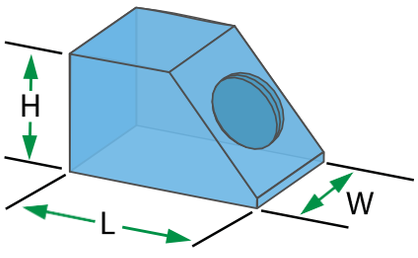


Wedge Type	Part Number	Wedge Dimensions					
		Length		Width		Height	
Stainless Steel	01-010636	0.75 in.	19 mm	0.45 in.	11.4 mm	0.43 in.	10.9 mm
Stainless Steel	01-010637	0.84 in.	21.3 mm	0.45 in.	11.4 mm	0.47 in.	11.9 mm
Stainless Steel	01-010638	1.0 in.	25.4 mm	0.45 in.	11.4 mm	0.52 in.	13.2 mm
Stainless 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 suffices 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 limites 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 waterpaths. 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

11 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.

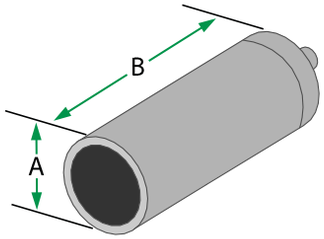
Immersion Transducers are typically used in automated and manual-scanning systems using water or other liquid as a coupling medium. This enables the inspection of parts with complex geometries and near-surface resolution superior to that of contact transducers. Spherical (point) or cylindrical (line)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

PART NUMBERS

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

CASE DIMENSIONS

Element Ø inch	Element Ø mm	A		B	
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

12, 13, 14 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 inch	mm	Case	Focus	Part Number 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
	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 Y.YC	00-011144 Y.YC
2.25	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
	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
3.5	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 42

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 inch	mm	Case	Focus	C
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

I2, I3, I4

PART NUMBERS CONTINUED

Frequency (MHz)	Element Diameter inch	Element Diameter mm	Case	Focus	Part Number GP	Part Number HR	Part Number 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
	0.25	6.4	I2	None		00-011149 NF	00-011346 NF
				Spherical		00-011149 X.XS	00-011346 X.XS
				Cylindrical		00-011149 Y.YC	00-011346 Y.YC
15	0.375	9.5	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
	0.5	12.7	I2	None		00-010774 NF	
				Spherical		00-010774 X.XS	
				Cylindrical		00-010774 Y.YC	

CASE DIMENSIONS

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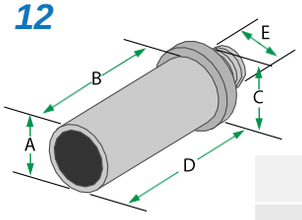

	Element Ø 0.25 / 6.4	Element Ø 0.375 / 9.5	Element Ø 0.5 / 12.7
A	0.63 in. / 16 mm	0.63 in. / 16 mm	0.63 in. / 16 mm
B	1.4 in / 35.6 mm	1.4 in / 35.6 mm	1.4 in / 35.6 mm
C	0.73 in. / 18.5 mm	0.73 in. / 18.5 mm	0.73 in. / 18.5 mm
D	1.55 in. / 39.4 mm	1.55 in. / 39.4 mm	1.55 in. / 39.4 mm
E	5/8 - 24 UNEF		

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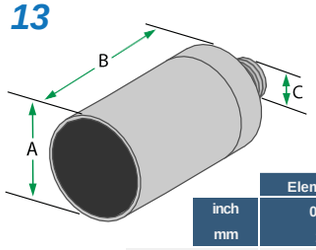

	Element Ø 0.75 / 19
A	1.0 in. / 25.4 mm
B	1.3 in. / 33 mm
C	5/8 - 24 UNEF

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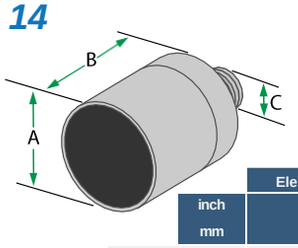


	Element Ø 1 / 25.4
A	1.35 in. / 34.3 mm
B	1.25 in. / 31.8 mm
C	5/8 - 24 UNEF

Immersion Transducers
IR

1R 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.

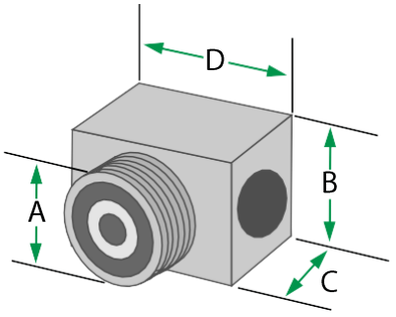
Model IR transducers have right-angle-mounted waterproof UHF connectors and small case design for applications where space is limited. Available element diameters are 0.25, 0.375 and 0.5 inch (6, 10 and 13 mm). GP series* offer the best combination of sensitivity and resolution for general applications. 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	Element Diameter			Part Number		
(MHz)	inch	mm	Focus	GP	HR	C
			None	00-011385 NF	00-011386 NF	00-011387 NF
	0.25	6.4	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
			None	00-011388 NF	00-011389 NF	00-011390 NF
2.25	0.375	9.5	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
			None	00-011391 NF	00-011392 NF	00-011393 NF
	0.5	12.7	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
			None	00-011394 NF	00-011395 NF	00-011396 NF
	0.25	6.4	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
			None	00-011397 NF	00-011398 NF	00-011399 NF
5	0.375	9.5	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
			None	00-011400 NF	00-011401 NF	00-011402 NF
	0.5	12.7	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	Element Diameter			
(MHz)	inch	mm	Focus	C
	0.25	6.4	None	00-010591
5	0.375	9.5	None	00-010438
	0.5	12.7	None	00-010475



CASE DIMENSIONS

Element Ø								
inch	mm	A	B		C		D	
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

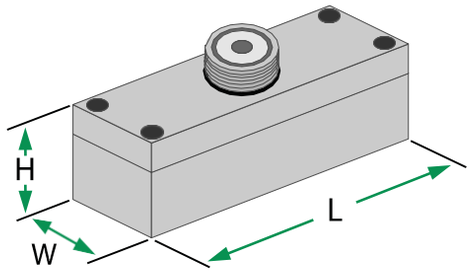
PAINTBRUSH IMMERSION

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

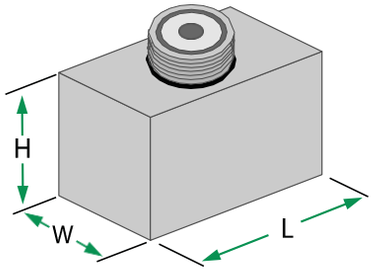
Frequency (MHz)	Element Dimensions		Focus	Part Number
	Short Axis	Long Axis		HR
10	**0.25 in** (6.4 mm)	**2.5 in** (63.5 mm)	Flat	00-010590 NF
			Cylindrical	00-010590 Y.YC

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 capabilites. Please contact us for specific transducer requests.

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

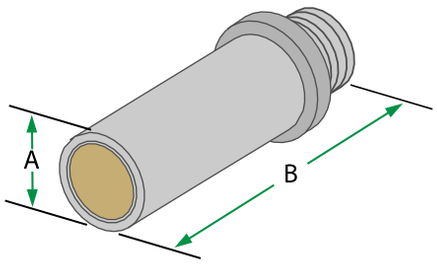
Co-Polymer Transducer

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

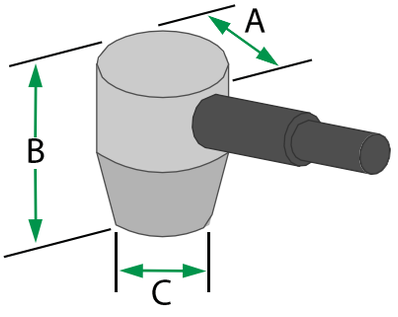
ADP Dual-Element Contact Transducers

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

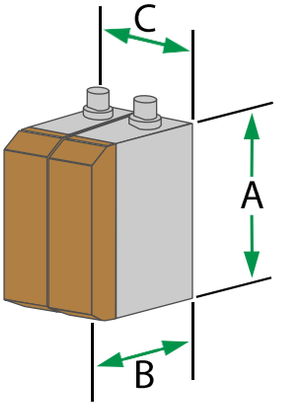
DU Dual-Element Contact Transducers

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	Element Dimensions		Part Number		
(MHz)	inch	mm	GP	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



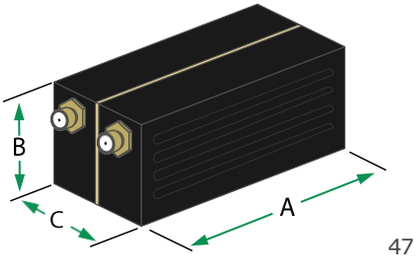
Element Dimensions		A		B		C	
inch	mm						
0.5 x 0.5	12.7 x 12.7	0.89 in.	22.6 mm	0.92 in.	23.4 mm	0.78 in.	19.8 mm
0.5 x 1	12.7 x 25.4	1.39 in.	35.3 mm	0.92 in.	23.4 mm	0.78 in.	19.8 mm

DU-F PART NUMBERS

Frequency	Element Dimensions		Part Number	
(MHz)	inch	mm	GP	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

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.

Element Dimensions		A		B		C	
inch	mm						
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



DHT-400
HIGH-TEMP DUAL ELEMENT

FOR THICKNESS MEASUREMENTS ON ROUGH OR CORRODED SURFACES

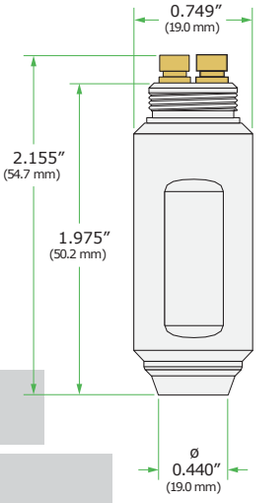
The SensorScan Model DHT-400 Ultrasonic Transducer is a general-purpose sensor for measuring the remaining wall thickness on rough metal ID and OD surfaces due to corrosion and/or erosion. The transducer can be used intermittently (50% duty cycle) over a wide temperature range from 0 to 932°F (-17.8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

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.

part numbers

	Transducer	Probe & Cable Kits	
Item	*DHT-400*	*DHT-400 + Lemo-00 Connector Cable (standard)*	*DHT-400 + Olympus Probe Rec. Connector Cable (standard)*
MD Connector	*00-012543*	*01-030180*	*01-030182*
MCX Connector	*00-030003*	*01-030181*	*01-030183*

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*



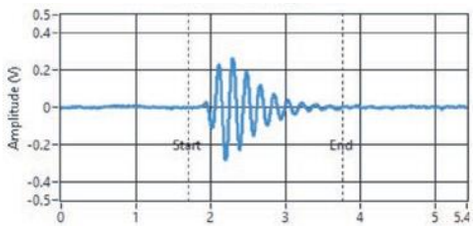
specifications

frequency	5 MHz (nominal)
delay roof angle	5 degree (10 degree included)
connector type	MD #10-32 (2x) or MCX (2x)
contact diameter	0.440” (11.2 mm)
min. and max thickness (steel)	Min.: 0.040” (1.0 mm), Max: 10” (254 mm)
continuous use temperature	400°F (204°C)
maximum contact temperature	932°F (500°C) intermittent

duty cycle	50% at 10 seconds (max recommended)
cable options	5 ft. (1.52m) standard & armored cable
cable connector options	Lemo-00, Olympus- & Krautkramer-style gauge
compatible instuments	38DL PLUS, 37DL PLUS, 36DL PLUS, DMS GO, All Flaw Detectors
DHT-400 case	Delivered in a hard-shell case for field use

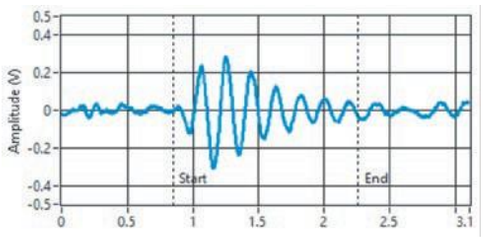
RF Waveform:

Backwall signal from 1" steel block

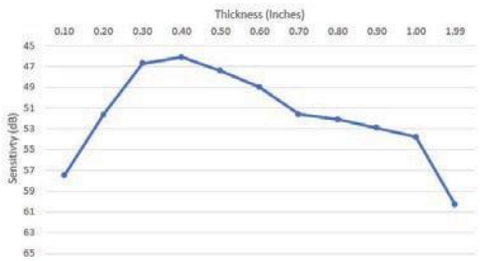


RF Waveform:

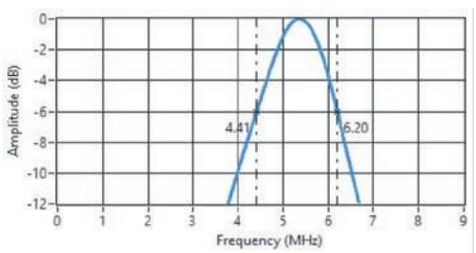
#2 FBH @ 0.5"



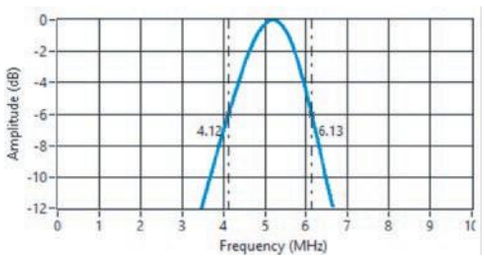
DAC Curve



Frequency Spectrum

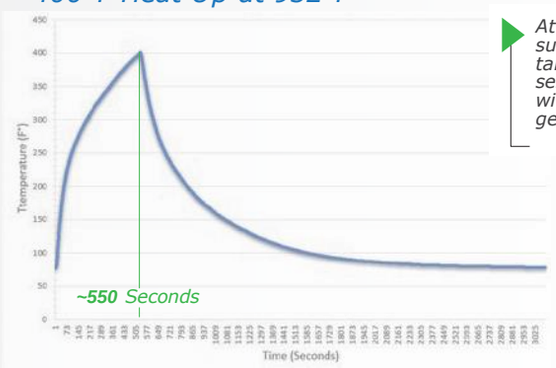


Frequency Spectrum



Thermal-cycle testing

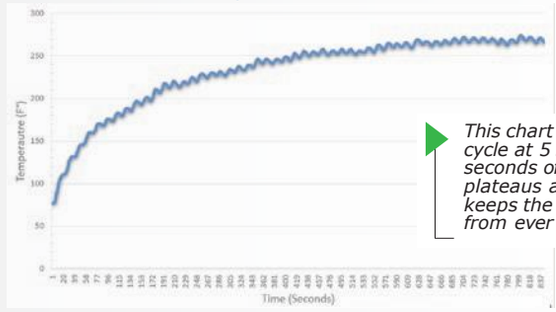
400°F Heat Up at 932°F



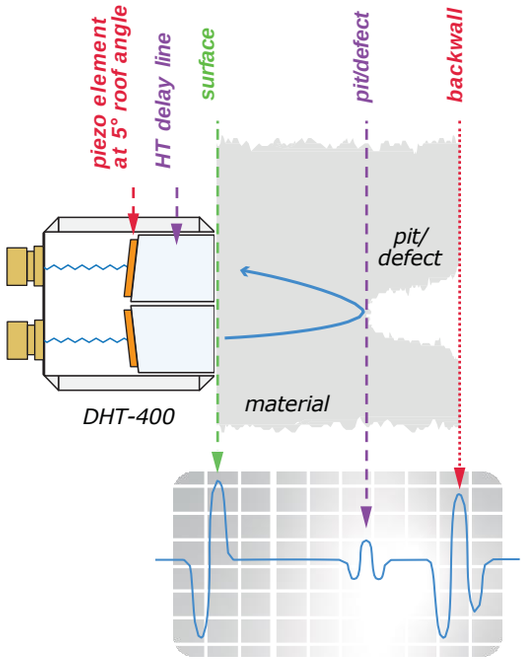
At 932°F continuous surface contact temp, it takes over 9 minutes for the sensitive solder joints within the transducer to get to a 400°F.

At a 50% duty cycle of 10 seconds, the DHT-400's sensitive elements never get to 400°F.

5 Sec. Contact, 10 Sec off 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.



The two 5° roof angles create a pseudo- focusing effect thereby increasing the transducer's sensitivity for pit-like defects.

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	Contact Diameter 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	0.38	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.

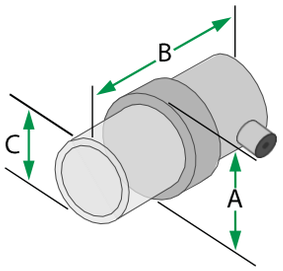
Model	Transducer Type	Contact Diameter inch	Contact Diameter mm	Measuring Range in Steel	Nominal Frequency	SNI Part Number
FH2E +	Fingertip	0.38	9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-010424
FH2E + TM	Fingertip	0.38	9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-013934
FH2E + WR	Fingertip 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	0.38	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	0.38	9.7	0.030 to 2.0 inch 0.76 to 50.8 mm	7.5 MHz	00-010532
FH2E + BT	Studded Boiler Tube	0.38	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

00-010424
FH2E +

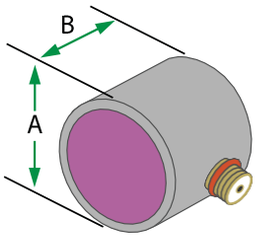
00-013934
FH2E +TM

Thickness Gauging
Case Dimensions

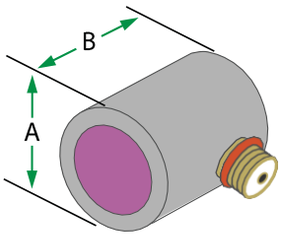
Alpha2 DFR +



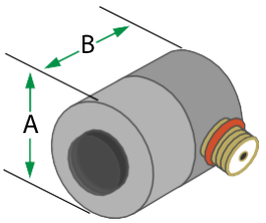
CA211 +



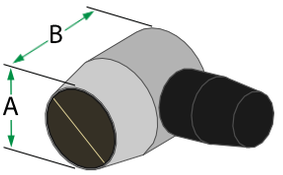
Alpha2 F +



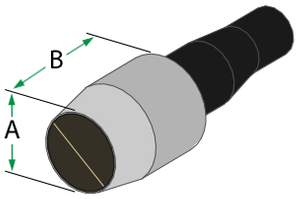
Alpha2 Mini DFR +



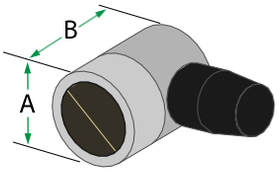
FH2E +



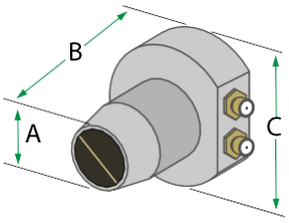
FH2E + TM



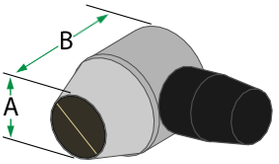
FH2E + WR



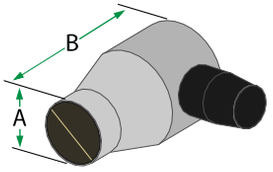
FH2E + MD



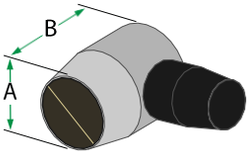
FH2E + M



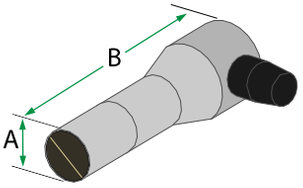
FS 512+



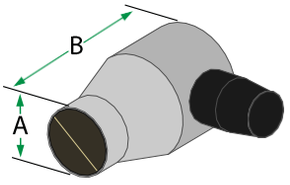
FH2E + w/ BNC



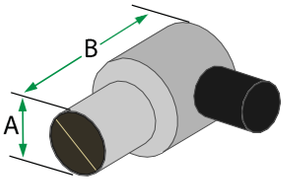
FH2E + BT



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 24 for Pencil Probe Dimensions*				

Accessories
Conventional Wedges & Cables

Matrix/Phased-Array Transducer Connector Types

SNI can build any phased-array transducer with:

(L to R) IPEX, ZPAC, Hypertronics

Other Connector Options:

- **Mentor**
- **Phasor**
- **Others available upon request**

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*

MCX CONNECTORS

MCX connectors are snap-in and can swivel, preventing the risk of back threading. (Shown below with 90° cable connector)

Wedge Technology
Terminology & Capabilities

ANATOMY OF A PRECISION-ENGINEERED
UT WEDGE

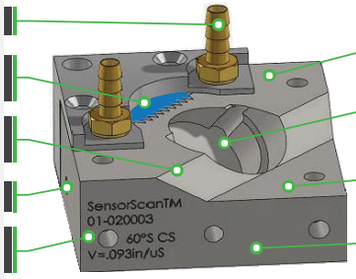
Couplant Irrigation Ports

Low-Noise-Blue™ Dampening Material

Refracted-Angle Spec in 0.25-Degree Increments

Gimbal Mount Points

Certifications of Conformity Available Upon Request



Noise-Reduction Design with CIVA

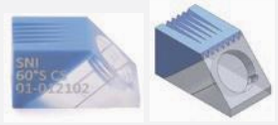
For Any Transducer Size from SNI or Other Manufacturer

Accuracy in CAD/CAM: Dimensional and Angular Tolerances

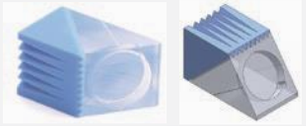
Various Wedge Materials Available

WEDGE VARIATIONS

Standard Shearwave
Normal Inspections

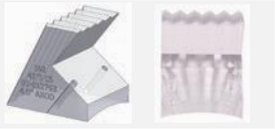


Short Index
Allows closer inspection proximity to a joint, seam or weld crown

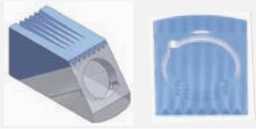


Integral-Wedge Transducer
Specialty transducer-wedge combined for tight-area weld or other applications

Axial OD
Inspecting circumferential features from the pipe's OD

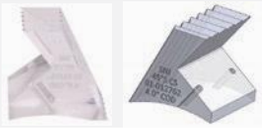


Axial ID
Inspecting circumferential features from the pipe's ID

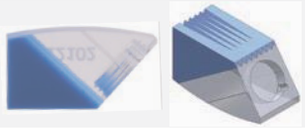


Dual Wedge
Wedges designed for dual-element transducers

Circumferential OD
Inspecting axial features from the pipe's OD

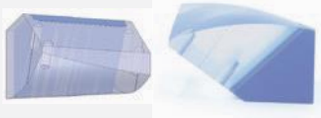


Circumferential ID
Inspecting axial features from the pipe's ID

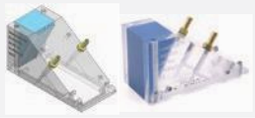


TOFD
Time-of-flight diffraction inspections

Skew
Twist or rotate a radiused wedge on a radiused surface



PAUT Standard Wedge
Standard & highly customized, engineered wedge solutions for any manufacturer's transducers



Enhanced Features
- *Irrigation Ports*
- *Gimbal Mounts*
- *Hardened Wear Pins*

CURVE AND SKEW

Axial OD

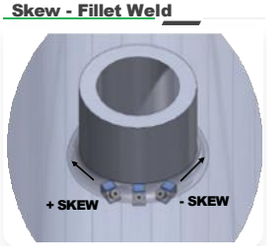
Circumferential OD

Axial ID

Circumferential ID

Skew - Base Metal

Skew - Fillet Weld



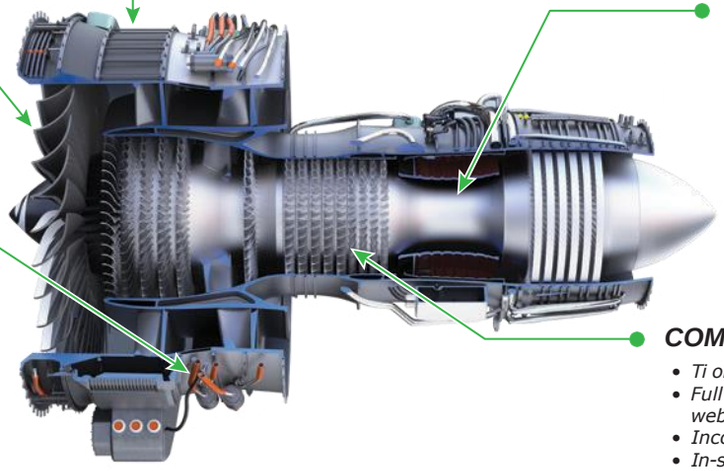
Applications

NEW MAKE, ON- & OFF-WING AERO-ENGINE

FAN CASE
- *Corrosion of aluminum case*
- *Delaminations in composite cases*

FAN BLADES
- *Composite delamination*
- *Disbonds of metal edges*
- *Titanium midspan cracking*
- *Dovetail cracking*

HIGH- AND LOW-PRESSURE TURBINE COMPONENTS
- *Inconel or rene disks both in-situ and part level*
- *Full volumetric inspections of bores and webs using phased array*
- *In-situ inspection of inconel shafts for cracking*

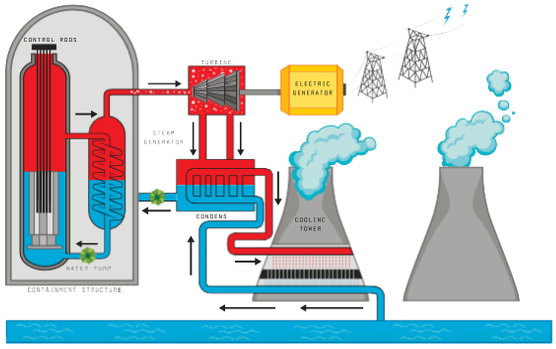


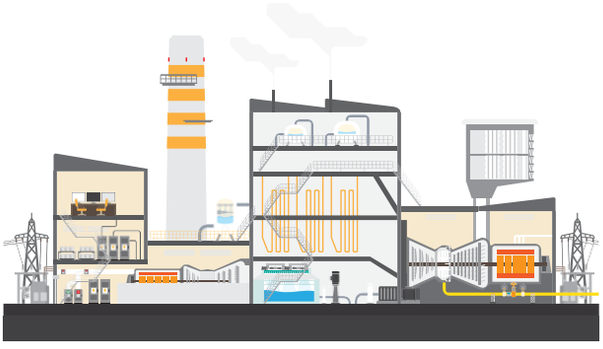
TUBING
- *Fuel tubes, oil supply tubes, oil scavenge tubes, air ducts*
- *Tube braze joints for LOF and cracking*
- *Wall thickness for erosion and wear*
- *Cracking due to vibration*

COMPRESSOR COMPONENTS
- *Ti or inconel spools and disks*
- *Full volumetric inspections of bores and webs using phased array*
- *Inconel shafts*
- *In-situ blade dovetail cracking*

POWER GENERATION

NUCLEAR FUEL AND POWER
- *High-frequency immersion transducers for fuel-rod flaw detection and thickness gauging*
- *Custom conventional and phased-array transducers for bolt inspection*
- *Wide range of standard and phased-array transducers for piping and vessel weld examinations*
- *EPRI table-1qualified probes for piping & bolts*
- *Standard & custom single- and dual-element transducers for cast stainless steel casings*
- *Steam generator tube ID_bore inspection at new-build and ISI*
- *Rotor bore exams of steam turbine shaft*
- *Gas void detection in primary or secondary coolant systems*





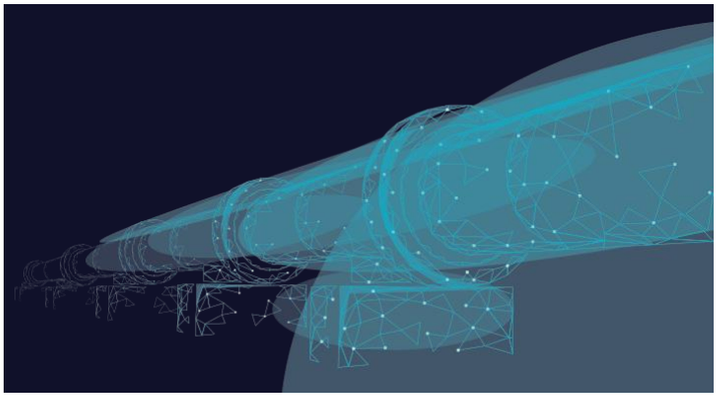
FOSSIL PLANT INCLUDING GAS TURBINE, CO-GEN & COMBINED CYCLE
- *Wide range of conventional and PAUT transducers for new construction and ISI exams*
- *Phased array corrosion mapping using DLA & zero-degree manual and robotic scanning*
- *Misc. weld inspection - conventional and phased array*
- *Manual or phased array bolt / flange inspection on flanges, BOPs, etc.*
- *On-stream corrosion / erosion monitoring of elbows and high-pressure piping systems*
- *Rotor bore exams of steam turbine shaft*
- *Boiler tube thickness profiling and weld inspections*

SNI has deep domain knowledge & expertise in these major industry segments.

OIL & GAS

UPSTREAM

- *Low temp / general thickness gauging for erosion monitoring at the well head for both on / offshore*
- *Phased array corrosion mapping using DLA & zero-degree manual and robotic scanning*
- *Misc. weld inspection - conventional and phased array*
- *Manual or phased array bolt / flange inspection on flanges, BOPs, etc.*
- *IS - Erosion monitoring risers, elbows, T's etc.*



MIDSTREAM

NEW CONSTRUCTION:

- *Phased array weld inspection - FMC/TFM*
- *Dissimilar metal / clad inspection - phased array/TOFD*
- *IS - area monitoring on low lying areas or critical flow locations based on topography or flow*

ASSET INTEGRITY:

- *Misc. weld inspection - conventional and phased array*
- *Low temp / general thickness gauging for erosion monitoring at the well head for both on / offshore*
- *Phased array corrosion mapping using DLA & zero-degree manual and robotic scanning - FMC / TFM*
- *Crack sizing using misc. conventional and phased array*
- *IS - monitoring pits, active areas, low spots, or locations which have previously failed to monitor. Microbiologically induced corrosion (MIC), FAC (flow accelerated corrosion), etc.*
- *SCC - Stress Corrosion Cracking*
- *Flange Face Inspections*
- *Bolt Inpection*

DOWNSTREAM

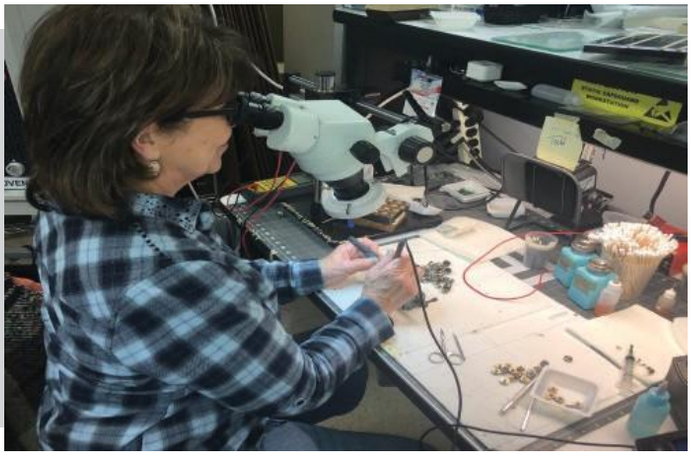
- *High-temp general thickness gauging for corrosion*
- *Phased array corrosion mapping using DLA & zero-degree manual and robotic scanning*
- *Misc. weld inspection - conventional and phased array*
- *High end PA inspections:*
    - *HTHA - high temperature hydrogen attack*
    - *High temp conventional and phased array corrosion or weld inspection - FMC / TFM*
    - *Small diameter tube and boiler inspection*
    - *Flange and bolt inspection*
- *Monitoring high corrosion / erosion or bad actor locations to compare integrity operating windows (IOWs), hard to access locations, or locations which would lend themselves to more timely and accurate data to produce a corrosion rate at .001" reolution*

Custom Capabilities
Custom Transducer Examples

Successful Ultrasonic Applications Engineering

is the result of three major elements:

- Experience
- Capabilities
- Process

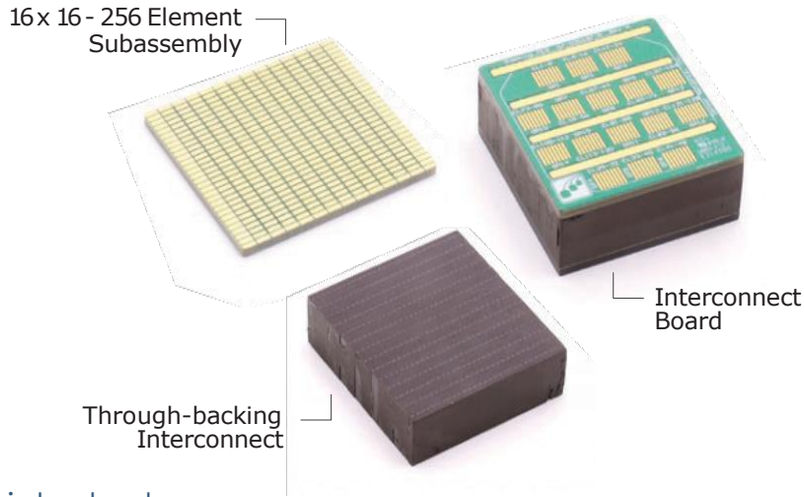


Small Diameter ID Bore Probes:
Shear-wave, L-wave, duals and tandem types

5MHz PAUT:
92-element transducer for bar testing machines

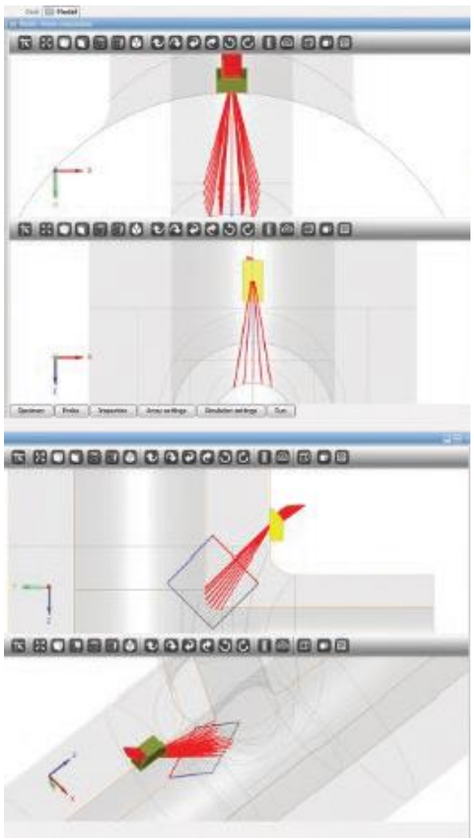
1.5MHz PAUT:
Replaceable wear face on phased-array probe

256 Element Matrix Array
+Subassemblies



Applications Engineering

Sensor Networks, Inc. uses industry-preferred design and simulation tools to create an optimized mechanical, electrical, and ultrasonic model of the inspection task, including its scan plan.



- **SolidWorks:** Parametric 3D CAD and Mechanical Properties Modeling
- **AutoCad:** 2D CAD and Ray-Tracing
- **CIVA:** Acoustic-Beam Modeling and Delay-Law Calculation for Conventional and Phased Arrays
- **PiezoCad:** Transducer Construction and Performance Modeling
- **Field II:** Transducer Construction and Performance Modeling

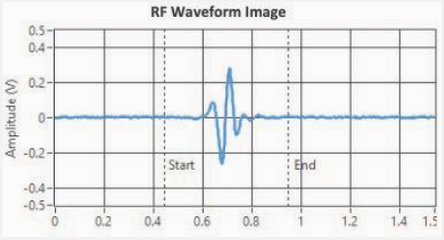
Vertically Integrated Design & Build Capabilities

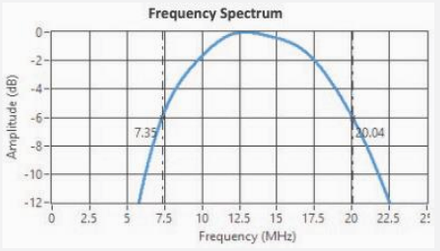
◀ In-house ceramic fabrication capabilities enable rapid prototyping of complex, piezo-composite materials. This capability creates a fast and efficient project turn around.

▲ In-house CAD/CAM capabilities, including our 5-axis CNC Mill and CNC Lathe, allows for rapid prototyping of complex shapes in most engineering materials.

Appendix

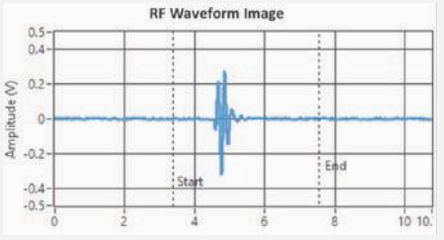
High Resolution Series

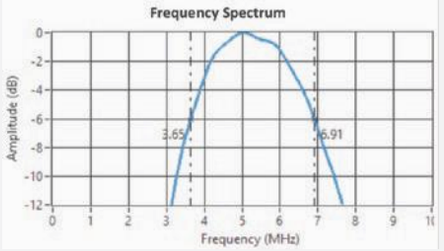




HR: High Resolution Series of transducers are highly damped and recommended for applications where enhanced axial and near-surface resolution are more important. Generally includes thickness measurement and near-surface flaw detection. HR series have less sensitivity than the GP or C series with -6db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

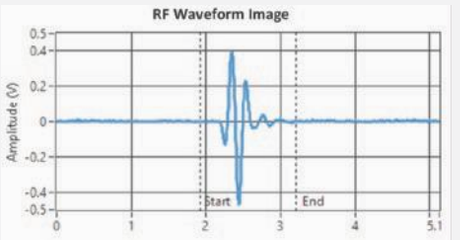
General Purpose Series

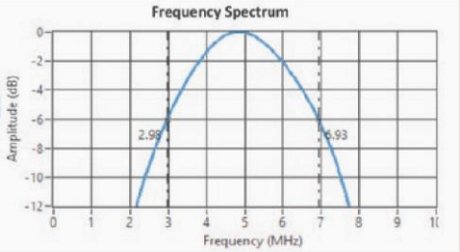




GP: General Purpose Series of transducers are recommended for most applications and have a good trade-off between sensitivity and resolution. They have a medium frequency bandwidth of 40-65% at -6db but with more ring-down cycles in the waveform.

Composite or Piezo-composite Series





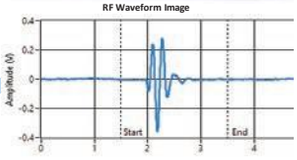
C: Composite (Piezocomposite) Series of transducers have superior sensitivity and penetration especially in highly-attenuative materials. C Series have both higher resolution, sensitivity, and have wide bandwidth (60-120% at -6db) due to the lower acoustic impedance of the material. They couple more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

Transducer Certification

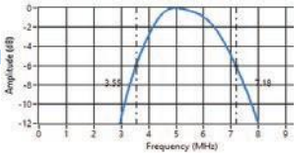
Ultrasonic Transducer Certification

Generic Image of Transducer

RF Waveform Image



Frequency Spectrum



Transducer Information	
*Part Number:	00-010778NF
*Serial Number:	778PRETESTk2
Transducer Description:	I-I2-5Mhz-.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" H20-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

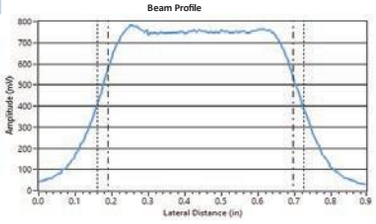
*Please reference Transducer Part Number and Serial Number in any correspondence

Ultrasonic Beam Profile

Transducer Information	
*Part Number:	XDCR100N
*Serial Number:	U11CA7
Transducer Description:	XDCR 100, .75" DIA, 5 MHz, 2.5" OL FCS, 13A-1967_B .O6E
Frequency:	5MHz
Element Size:	.75"

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

Beam Profile



Test Setup & Conditions	
Test Procedure Number:	
Test Object:	1/4" SST ROD
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:	

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

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

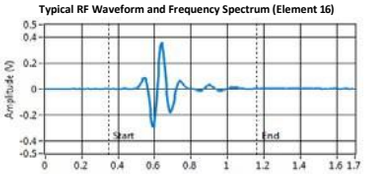
Appendix

Phased-Array Transducer Certification

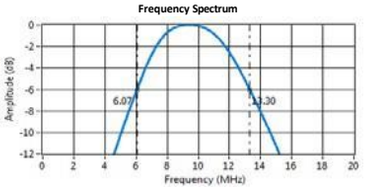
Linear Phased Array Ultrasonic Transducer Certification

Image of Transducer

Typical RF Waveform and Frequency Spectrum (Element 16)



Frequency Spectrum



Transducer Information	
*Part Number:	00-010848
*Serial Number:	U1179S
Transducer Description:	D1, 10.0MHz, 0.6mm x 10mm
Probe Type:	D1
Housing:	QUICK CONNECT
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%

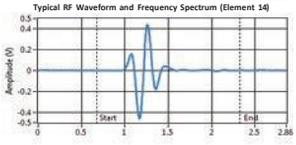
Test Setup & Conditions	
Test Procedure Number:	TP-010848
Test Object:	1/2" REX BW
Pulser Settings	
Pulse Width:	40ns
Pulse Voltage:	-12.3V

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

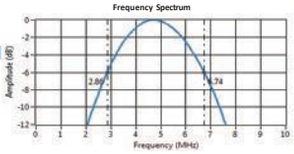
Linear Phased Array Ultrasonic Transducer Certification

Image of Transducer

Typical RF Waveform and Frequency Spectrum (Element 14)



Frequency Spectrum



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
Pulser Settings	
Pulse Width:	100ns
Pulse Voltage:	-12.3V

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

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