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SensorScan®

EPRI Table 1 Qualified Transducers

Please Note: These tables are informational only and are not to be used to select equipment for examinations. Only the actual qualified procedure and its accompanying Table 1 shall be used for examinations.

SNI Document Control Date: March 1, 2021

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Reactor Pressure Vessels & Bolting

Manufacturer:		Epoch 650	Procedure:	PDI-UT-2	
		Olympus	Material:	Ferritic Bolting	
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	45	Shear	0.25	2.25	
00-010122	60	Shear	0.25	2.25	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010124	70	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010128	70	Shear	0.25	5	
00-010129	45	Shear	0.375	5	
00-010129	60	Shear	0.375	5	
00-010129	70	Shear	0.375	5	

Instrument:		Epoch 600	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	70	Shear	0.25	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010217	45	Shear	0.375	1.5	

Instrument:		Epoch 650	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010128	70	Shear	0.25	5	
00-010130	45	Shear	0.5	5	
00-010217	45	Shear	0.375	1.5	
00-010217	60	Shear	0.375	1.5	

Instrument:		USN 60 SW	Procedure:		PDI-UT-2
Manufacturer:		GEIT	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010036	45	Longitudinal	2 (10x18) mm	2	
00-010062	60	Longitudinal	2 (15x25) mm	2	
00-010063	70	Longitudinal	2 (15x25) mm	2	
00-010065	60	Longitudinal	2 (20x34) mm	2	
00-010066	70	Longitudinal	2 (20x34) mm	2	

Instrument:		Epoch 600	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping with IGSCC
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010217	45	Shear	0.375	1.5	

Instrument:		Epoch 650	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping with IGSCC
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010217	45	Shear	0.375	1.5	
00-010217	60	Shear	0.375	1.5	

Instrument:		USN 60 SW	Procedure:		PDI-UT-4
Manufacturer:		GEIT	Material:		Ferritic Bolting
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010114	70	Shear	.437 x .700"	5	
00-010114	85	Longitudinal	2(.160 x .630")	5	
00-010115	70	Shear	.375 x .500"	2.25	
00-010115	85	Longitudinal	2(.118 x .472")	5	
00-010116	70	Shear	.500 x .750"	5	
00-010116	85	Longitudinal	2(.200 x .400")	5	

Instrument:		Epoch 650	Procedure:		PDI-UT-5
Manufacturer:		Olympus	Material:		Ferritic Bolting
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010908	0	Longitudinal	0.5	10	

Instrument:		USN 60 SW	Procedure:		PDI-UT-5
Manufacturer:		GEIT	Material:		Ferritic Bolting
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010908	0	Longitudinal	0.5	10	

Instrument:		USN 60 SW ND A18	Procedure:		PDI-UT-5
Manufacturer:		GEIT	Material:		Ferritic Bolting
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010908	0	Longitudinal	0.5	10	

Piping

Instrument:		Epoch 650	Procedure:		PDI-UT-1
Manufacturer:		Olympus	Material:		Ferritic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	45	Shear	0.25	2.25	
00-010122	60	Shear	0.25	2.25	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010124	70	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010128	70	Shear	0.25	5	
00-010129	45	Shear	0.375	5	
00-010129	60	Shear	0.375	5	
00-010129	70	Shear	0.375	5	
00-010130	45	Shear	0.5	5	
00-010130	60	Shear	0.5	5	
00-010130	70	Shear	0.5	5	
00-010450	45	Shear	.5 x 1.0	2.25	
00-010450	60	Shear	.5 x 1.0	2.25	
00-010450	70	Shear	.5 x 1.0	2.25	

Instrument:		USM 36 SW	Procedure:		PDI-UT-1
Manufacturer:		GEIT	Material:		Ferritic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	45	Shear	0.25	2.25	
00-010122	60	Shear	0.25	2.25	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010124	70	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010128	70	Shear	0.25	5	
00-010129	45	Shear	0.375	5	
00-010129	60	Shear	0.375	5	
00-010129	70	Shear	0.375	5	
00-010130	45	Shear	0.5	5	
00-010130	60	Shear	0.5	5	
00-010130	70	Shear	0.5	5	

Instrument:		USN 60 ND A18	Procedure:		PDI-UT-1
Manufacturer:		GEIT	Material:		Ferritic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	45	Shear	0.25	2.25	
00-010122	60	Shear	0.25	2.25	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010124	70	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010128	70	Shear	0.25	5	
00-010129	45	Shear	0.375	5	
00-010129	60	Shear	0.375	5	
00-010129	70	Shear	0.375	5	
00-010130	45	Shear	0.5	5	
00-010130	60	Shear	0.5	5	
00-010130	70	Shear	0.5	5	
00-010450	45	Shear	.5 x 1.0	2.25	
00-010450	60	Shear	.5 x 1.0	2.25	
00-010450	70	Shear	.5 x 1.0	2.25	

Instrument:		USN 60 SW	Procedure:		PDI-UT-1
Manufacturer:		GEIT	Material:		Ferritic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	45	Shear	0.25	2.25	
00-010122	60	Shear	0.25	2.25	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010124	70	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010128	70	Shear	0.25	5	
00-010129	45	Shear	0.375	5	
00-010129	60	Shear	0.375	5	
00-010129	70	Shear	0.375	5	
00-010130	45	Shear	0.5	5	
00-010130	60	Shear	0.5	5	
00-010130	70	Shear	0.5	5	

Instrument:		Epoch 600	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010065	60	Longitudinal	2(20 x 34) mm	2	
00-010066	70	Longitudinal	2(20 x 34) mm	2	
00-010122	70	Shear	0.25	2.25	
00-010128	45	Shear	0.25	5	
00-010128	60	Shear	0.25	5	
00-010129	45	Shear	0.375	5	
00-010129	70	Shear	0.375	5	
00-010130	45	Shear	0.5	5	
00-010144	70	Longitudinal	2(24 x 42) mm	1.5	
00-010217	45	Shear	0.375	1.5	
00-011567	70	Longitudinal	2(10 x 18) mm	2	
00-011569	60	Longitudinal	2(20 x 34) mm	1.5	
00-011570	70	Longitudinal	2(20 x 34) mm	1.5	

Instrument:		Epoch 650	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010068	60	Longitudinal	2(24 x 42) mm	2	
00-010069	70	Longitudinal	2(24 x 42) mm	2	
00-010098	60	Longitudinal	2(8 x 14) mm	2	
00-010099	70	Longitudinal	2(8 x 14) mm	2	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010123	70	Shear	3.75	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010128	45	Shear	0.25	5	
00-010130	45	Shear	0.5	5	
00-010141	70	Longitudinal	2(7 X 10) mm	2	
00-010217	45	Shear	0.375	1.5	
00-010217	60	Shear	0.375	1.5	
00-010450	45	Shear	.5 X 1.0	2.25	
00-010450	60	Shear	.5 X 1.0	2.25	
00-010450	70	Shear	.5 X 1.0	2.25	
00-011563	60	Longitudinal	2(8 x 14) mm	1.5	
00-011564	70	Longitudinal	2(8 x 14) mm	1.5	

Instrument:		USM 36 SW	Procedure:		PDI-UT-2
Manufacturer:		GEIT	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010064	70	Longitudinal	2(24 x 42) mm	2	
00-010068	60	Longitudinal	2(24 x 42) mm	2	
00-010098	60	Longitudinal	2(8 x 14) mm	2	
00-010143	60	Longitudinal	2(24 x 42) mm	1.5	
00-010144	70	Longitudinal	2(24 x 42) mm	1.5	
00-011564	70	Longitudinal	2(8 x 14) mm	1.5	
00-011566	60	Longitudinal	2(10 x 18) mm	2	
00-011567	70	Longitudinal	2(24 x 42) mm	2	

Instrument:		USN 60 ND A18	Procedure:		PDI-UT-2
Manufacturer:		GEIT	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010122	60	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-010123	60	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	70	Shear	0.5	2.25	
00-010130	60	Shear	0.5	5	
00-010217	45	Shear	0.375	1.5	
00-010217	60	Shear	0.375	1.5	
00-010217	70	Shear	0.375	1.5	
00-010450	45	Shear	.5 x 1.0	2.25	
00-010450	60	Shear	.5 x 1.0	2.25	
00-010450	70	Shear	.5 x 1.0	2.25	

Instrument:		USN 60 SW	Procedure:		PDI-UT-2
Manufacturer:		GEIT	Material:		Austenitic Piping
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010063	70	Longitudinal	2(15 x 25) mm	2	
00-010065	60	Longitudinal	2(20 x 34) mm	2	
00-010066	70	Longitudinal	2(20 x 34) mm	2	
00-011099	70	Longitudinal	2(8 x 14) mm	2	
00-010122	45	Shear	0.25	2.25	
00-010122	60	Shear	0.25	2.25	
00-010122	70	Shear	0.25	2.25	
00-010123	45	Shear	0.375	2.25	
00-012123	60	Shear	0.375	2.25	
00-012123	70	Shear	0.375	2.25	
00-010124	45	Shear	0.5	2.25	
00-010124	60	Shear	0.5	2.25	
00-010128	70	Shear	0.25	5	
00-010144	70	Longitudinal	2(24 x 42) mm	1.5	
00-010216	45	Shear	0.25	1.5	
00-010216	60	Shear	0.25	1.5	
00-010216	70	Shear	0.25	1.5	
00-010217	45	Shear	0.375	1.5	
00-010217	60	Shear	0.375	1.5	
00-010217	70	Shear	0.375	1.5	
00-011493	40	Shear	.5 x 1	1.5	
00-011493	45	Shear	.5 x 1	1.5	
00-011493	51	Shear	.5 x 1	1.5	
00-011493	60	Shear	.5 x 1	1.5	
00-011493	65	Shear	.5 x 1	1.5	
00-011563	60	Longitudinal	2(8 x 14) mm	1.5	
00-011564	70	Longitudinal	2(8 x 14) mm	1.5	

Instrument:		Epoch 600	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping with IGSCC
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010217	45	Shear	0.375	1.5	
00-011572	70	Longitudinal	2(15 x 25) mm	1.5	

Instrument:		Epoch 650	Procedure:		PDI-UT-2
Manufacturer:		Olympus	Material:		Austenitic Piping with IGSCC
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010217	45	Shear	0.375	1.5	
00-010217	60	Shear	0.375	1.5	

Instrument: USM 36 SW		Procedure: PDI-UT-2		
Manufacturer: GEIT		Material: Austenitic Piping with IGSCC		
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)
00-011572	70	Longitudinal	2(15 x 25) mm	1.5

Instrument: USN 60 SW		Procedure: PDI-UT-2		
Manufacturer: GEIT		Material: Austenitic Piping with IGSCC		
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)
00-010217	45	Shear	0.375	1.5
00-011571	60	Longitudinal	2(15 x 25) mm	1.5

Instrument: USN 60 ND A18		Procedure: PDI-UT-3		
Manufacturer: GEIT		Material: Ferritic Piping		
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)
00-010122	45	Shear	0.25	2.25
00-010122	60	Shear	0.25	2.25
00-010122	70	Shear	0.25	2.25
00-010123	45	Shear	0.375	2.25
00-010123	60	Shear	0.375	2.25
00-010123	70	Shear	0.375	2.25
00-010124	45	Shear	0.5	2.25
00-010124	60	Shear	0.5	2.25
00-010124	70	Shear	0.5	2.25
00-010128	45	Shear	0.25	5
00-010128	60	Shear	0.25	5
00-010128	70	Shear	0.25	5
00-010129	45	Shear	0.375	5
00-010129	60	Shear	0.375	5
00-010129	70	Shear	0.375	5
00-010130	45	Shear	0.5	5
00-010130	60	Shear	0.5	5
00-010130	70	Shear	0.5	5

Instrument:		USN 60 ND A18		Procedure:		PDI-UT-3	
Manufacturer:		GEIT		Material:		Austenitic Piping	
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)			
00-010122	45	Shear	0.25	2.25			
00-010122	60	Shear	0.25	2.25			
00-010122	70	Shear	0.25	2.25			
00-010123	45	Shear	0.375	2.25			
00-010123	60	Shear	0.375	2.25			
00-010123	70	Shear	0.375	2.25			
00-010124	45	Shear	0.5	2.25			
00-010124	60	Shear	0.5	2.25			
00-010124	70	Shear	0.5	2.25			
00-010128	45	Shear	0.25	5			
00-010128	60	Shear	0.25	5			
00-010128	70	Shear	0.25	5			
00-010129	45	Shear	0.375	5			
00-010129	60	Shear	0.375	5			
00-010129	70	Shear	0.375	5			
00-010130	45	Shear	0.5	5			
00-010130	60	Shear	0.5	5			
00-010130	70	Shear	0.5	5			
00-010216	45	Shear	0.25	1.5			
00-010216	60	Shear	0.25	1.5			
00-010216	70	Shear	0.25	1.5			
00-010217	45	Shear	0.375	1.5			
00-010217	60	Shear	0.375	1.5			
00-010217	70	Shear	0.375	1.5			

Instrument:		USN 60 ND A18		Procedure:		PDI-UT-3	
Manufacturer:		GEIT		Material:		Austenitic Piping with IGSCC	
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)			
00-010122	45	Shear	0.25	2.25			
00-010122	60	Shear	0.25	2.25			
00-010123	45	Shear	0.375	2.25			
00-010123	60	Shear	0.375	2.25			
00-010123	70	Shear	0.375	2.25			
00-010128	45	Shear	0.25	5			
00-010128	60	Shear	0.25	5			
00-010129	45	Shear	0.375	5			
00-010129	60	Shear	0.375	5			
00-010129	70	Shear	0.375	5			

Instrument:		USN 60 SW	Procedure:		PDI-UT-10
Manufacturer:		GEIT	Material:		Dissimilar Metal Welds
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010036	45	Longitudinal	2(10 x 18) mm	2	
00-010037	60	Longitudinal	2(10 x 18) mm	2	
00-010044	40	Longitudinal	2(7 x 10) mm	2	
00-010045	40	Longitudinal	2(8 x 14) mm	2	
00-010046	45	Longitudinal	2(8 x 14) mm	2	
00-010073	27	Longitudinal	2(10 x 18) mm	1.5	
00-010061	45	Longitudinal	2(15 x 25) mm	2	
00-010062	60	Longitudinal	2(15 x 25) mm	2	
00-010089	40	Longitudinal	2(15 x 25) mm	2	
00-010090	55	Longitudinal	2(15 x 25) mm	2	
00-010091	50	Longitudinal	2(15 x 25) mm	2	
00-010093	36	Longitudinal	2(10 x 18) mm	2	
00-010094	36	Longitudinal	2(15 x 25) mm	1.5	
00-010095	51	Longitudinal	2(15 x 25) mm	2	
00-010096	58	Longitudinal	2(15 x 25) mm	2	
00-010097	73	Longitudinal	2(15 x 25) mm	2	
00-010098	60	Longitudinal	2(8 x 14) mm	2	
00-010099	70	Longitudinal	2(8 x 14) mm	2	
00-010100	45	Longitudinal	2(8 x 14) mm	2	
00-010122	33	Shear	0.25	2.25	
00-011242	50	Longitudinal	2(15 x 25) mm	2	
00-011243	65	Longitudinal	2(15 x 25) mm	2	
00-011244	45	Longitudinal	2(15 x 25) mm	1.5	
00-011522/00-011254	36	Longitudinal	2(25 x 25) mm	1	
00-011522/00-011255	36	Longitudinal	2(25 x 25) mm	1	
00-011575	35	Longitudinal	2(8 x 14) mm	2	
00-011576	33	Longitudinal	2(10 x 18) mm	2	
00-011621	36	Longitudinal	2(20 x 34) mm	1	
00-011624	65	Longitudinal	2(15 x 25) mm	2	
00-011625	40	Longitudinal	2(15 x 25) mm	1.5	

Instrument:		USN 60 SW	Procedure:		PDI-UT-10
Manufacturer:		GEIT	Material:		Dissimilar Metal Welds
SNI Part Number	Angle °	Mode	Size (inches)	Nominal Frequency (MHz)	
00-010036	45	Longitudinal	2 (10x18) mm	2	
00-010037	60	Longitudinal	2 (10x18) mm	2	
00-010044	40	Longitudinal	2 (7x10) mm	2	
00-010045	40	Longitudinal	2 (8x14) mm	2	
00-010046	45	Longitudinal	2 (8x14) mm	2	
00-010073	27	Longitudinal	2 (10x18) mm	1.5	

Please see www.utcatalog.com for SNI's latest catalog including wedge part numbers and dimensions.



Precision Design & Fabrication Superior Performance Fast Delivery

ANATOMY OF A PRECISION-ENGINEERED UT WEDGE

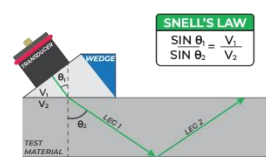
- Couplant Irrigation Ports
- Low-Noise-Blue™ Dampening Material
- Refracted-Angle Spec in 0.25-Degree Increments
- Gimbal Mount Points
- Certifications of Conformity Available Upon Request
- Noise-Reduction Design with CIVA
- For Any Transducer Size from SNI or Other Manufacturer
- Accuracy in CAD/CAM: Dimensional and Angular Tolerances
- Various Wedge Materials Available

Standard Shearwave <i>Normal Inspections</i> 	Short Index <i>Allows closer inspection proximity to a joint, seam or weld crown</i> 	Integral-Wedge Transducer <i>Specialty transducer-wedge combined for tight-area weld or other applications</i>
Axial OD <i>Inspecting circumferential features from the pipe's OD</i> 	Axial ID <i>Inspecting circumferential features from the pipe's ID</i> 	Dual Wedge <i>Wedges designed for dual-element transducers</i>
Circumferential OD <i>Inspecting axial features from the pipe's OD</i> 	Circumferential ID <i>Inspecting axial features from the pipe's ID</i> 	TOFD <i>Time-of-flight diffraction inspections</i>
Skew <i>Twist or rotate a radiused wedge on a radiused surface</i> 	PAUT Standard Wedge <i>For phased-array transducers with any of the above-listed features</i> 	Enhanced Features <ul style="list-style-type: none"> Irrigation Ports Gimbal Mounts Hardened Wear Pins

Axial OD 	Circumferential OD
Axial ID 	Circumferential ID
Skew - Base Metal 	Skew - Fillet Weld

WEDGES, REFRACTION, AND SNELL'S LAW

Snell's Law: In 1621, the Dutch astronomer Willebrord Snellius (1580-1626) — Snell — derived a mathematically equivalent form, that remained unpublished during his lifetime. Snell's law (the law of refraction) is a formula used to describe the relationship between the angles of incidence and refraction, when referring to light, sound or other waves passing through a boundary between two different isotropic media, such as water, glass, or air. It is the law which is used in ray tracing to compute the angles of incidence or refraction. Snell's law states that the ratio of the sines of the angles of incidence and refraction is equivalent to the ratio of phase velocities in the two media, or equivalent to the reciprocal of the ratio of the indices of refraction.



The Wedge - UT wedges are used in industrial NDT inspections to introduce the transducer's acoustic energy at a non-perpendicular angle thereby allowing the sound beam to be transmitted at a more-optimized angle within the test part. The wave mode and angle is selected to maximize the ability to identify and size defects based on the test part's material, defect type, and orientation.

Surface or Rayleigh Waves travel the surface of test material penetrating to a depth of one wavelength. Surface waves are generated when a longitudinal wave intersects a surface near the second critical angle and they travel at a velocity between .87 and .95 of a shear wave. Rayleigh waves are useful because they are very sensitive to surface defects and they follow the surface around curves. Because of this, Rayleigh waves can be used to inspect areas that other waves might have difficulty reaching.

Longitudinal or L-waves can be created exclusively by using incident angles greater than 0 degrees from surface but less than the first critical angle. Acoustic velocity of the ultrasound, in the test material is constant and independent of frequency and is referred as the longitudinal velocity.

Shear or S-Waves are created when the first critical angle is exceeded. Shear waves travel at ~ 60% of the speed of L-waves and can co-exist with L-Waves. When the 2nd critical angle is reached, L-waves will no longer be generated and only shear waves will propagate in the test material.

*Radiused wedges address new code requirement: ASME BPV Section V Article 4, T-432.2 for curved surfaces <14" (350 mm) diameter.

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