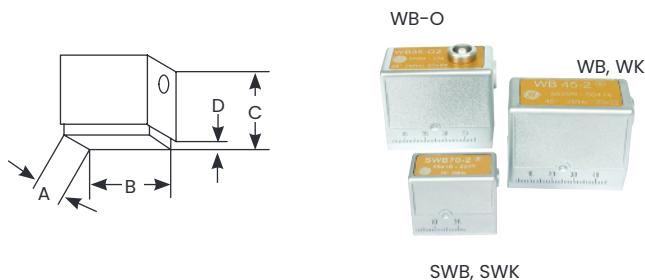


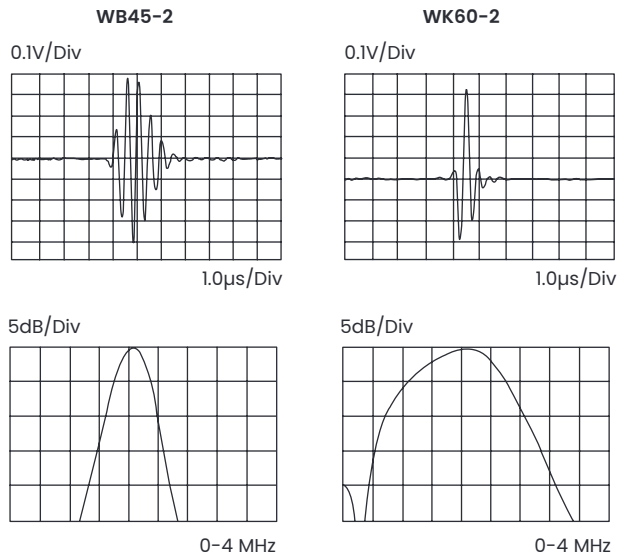
Large angle beam transducers— European standards

Types WB/WK and SWB/SWK

Types WB/WK and SWB/SWK



Case type	A		B		C		D	
	mm	in	mm	in	mm	in	mm	in
Type 20	21.5	0.85	37	1.46	31	1.22	3	0.12
Type 21	29	1.14	53.5	2.11	45	1.77	5	0.20



Typical waveform and frequency spectrum

Type	Order code	a x b		f (MHz)	β (Steel)	N		Notes	Sketch
		mm	in			mm	in		
WB 45-1	0056993	20 x 22	0.79 x 0.87	1	45	45	1.8		Type 21
WB 45-1-ISO	0500207	20 x 22	0.79 x 0.87	1	45	45	1.8	ISO 22232-2 compliant	
WB 45-O1	0057217	20 x 22	0.79 x 0.87	1	45	45	1.8	Top connector	
WB 60-1	0056994	20 x 22	0.79 x 0.87	1	60	45	1.8		
WB 60-1-ISO	0500208	20 x 22	0.79 x 0.87	1	60	45	1.8	ISO 22232-2 compliant	
WB 60-O1	0057218	20 x 22	0.79 x 0.87	1	60	45	1.8	Top connector	
WB 70-1	0056995	20 x 22	0.79 x 0.87	1	70	45	1.8		
WB 70-1-ISO	0500209	20 x 22	0.79 x 0.87	1	70	45	1.8	ISO 22232-2 compliant	
WB 70-O1	0057219	20 x 22	0.79 x 0.87	1	70	45	1.8	Top connector	
WB 35-2	0056998	20 x 22	0.79 x 0.87	2	38	90	3.5		
WB 35-2-ISO	0500054	20 x 22	0.79 x 0.87	2	38	90	3.5	ISO 22232-2 compliant	
WB 35-O2	0057222	20 x 22	0.79 x 0.87	2	38	90	3.5	Top connector	
WB 35-O2ISO	0500058	20 x 22	0.79 x 0.87	2	38	90	3.5	ISO 22232-2 compliant	
WB 45-2	0056999	20 x 22	0.79 x 0.87	2	45	90	3.5		
WB 45-2-ISO	0500055	20 x 22	0.79 x 0.87	2	45	90	3.5	ISO 22232-2 compliant	
WB 45-O2	0057223	20 x 22	0.79 x 0.87	2	45	90	3.5	Top connector	
WB 45-O2ISO	0500059	20 x 22	0.79 x 0.87	2	45	90	3.5	ISO 22232-2 compliant	
WB 60-2	0057000	20 x 22	0.79 x 0.87	2	60	90	3.5		
WB 60-2-ISO	0500056	20 x 22	0.79 x 0.87	2	60	90	3.5	ISO 22232-2 compliant	
WB 60-O2	0057224	20 x 22	0.79 x 0.87	2	60	90	3.5	Top connector	
WB 60-O2ISO	0500060	20 x 22	0.79 x 0.87	2	60	90	3.5	ISO 22232-2 compliant	
WB 70-2	0057001	20 x 22	0.79 x 0.87	2	70	90	3.5		
WB 70-2-ISO	0500057	20 x 22	0.79 x 0.87	2	70	90	3.5	ISO 22232-2 compliant	
WB 70-O2	0057225	20 x 22	0.79 x 0.87	2	70	90	3.5	Top connector	
WB 70-O2ISO	0500280	20 x 22	0.79 x 0.87	2	70	90	3.5	ISO 22232-2 compliant	
WB 80-2	0057002	20 x 22	0.79 x 0.87	2	77	90	3.5		
WB 80-2-ISO	0500278	20 x 22	0.79 x 0.87	2	77	90	3.5	ISO 22232-2 compliant	
WB 80-O2	0057226	20 x 22	0.79 x 0.87	2	77	90	3.5	Top connector	
WB 90-2	0057003	20 x 22	0.79 x 0.87	2	90	90	3.5		
WB 90-2-ISO	0500266	20 x 22	0.79 x 0.87	2	90	90	3.5	ISO 22232-2 compliant	
WB 90-O2	0057227	20 x 22	0.79 x 0.87	2	90	90	3.5	Top connector	

Large angle beam transducers— European standards

Type	Order code	a x b		f (MHz)	β (Steel)	N		Notes	Sketch	
		mm	in			mm	in			
WB 35-4	0057004	20 x 22	0.79 x 0.87	4	38	180	7.1		Type 21	
WB 35-O4	0057228	20 x 22	0.79 x 0.87	4	38	180	7.1	Top connector		
WB 45-4	0057005	20 x 22	0.79 x 0.87	4	45	180	7.1			
WB 45-4-ISO	0500200	20 x 22	0.79 x 0.87	4	45	180	7.1	ISO 22232-2 compliant		
WB 45-O4	0057229	20 x 22	0.79 x 0.87	4	45	180	7.1	Top connector		
WB 60-4	0057006	20 x 22	0.79 x 0.87	4	60	180	7.1			
WB 60-4-ISO	0500201	20 x 22	0.79 x 0.87	4	60	180	7.1	ISO 22232-2 compliant		
WB 60-O4	0057230	20 x 22	0.79 x 0.87	4	60	180	7.1	Top connector		
WB 70-4	0057007	20 x 22	0.79 x 0.87	4	70	180	7.1			
WB 70-4-ISO	0500202	20 x 22	0.79 x 0.87	4	70	180	7.1	ISO 22232-2 compliant		
WB 70-O4	0057231	20 x 22	0.79 x 0.87	4	70	180	7.1	Top connector		
WB 80-4	0057008	20 x 22	0.79 x 0.87	4	77	180	7.1			
WB 80-O4	0057232	20 x 22	0.79 x 0.87	4	77	180	7.1	Top connector		
SWB 45-2	0058414	14 x 14	0.55 x 0.55	2	45	39	1.5			Type 20
SWB 60-2	0058415	14 x 14	0.55 x 0.55	2	60	39	1.5			
SWB 70-2	0058416	14 x 14	0.55 x 0.55	2	70	39	1.5			
SWB 45-5	0058420	14 x 14	0.55 x 0.55	5	45	98	3.9		Type 20	
SWB 60-5	0058421	14 x 14	0.55 x 0.55	5	60	98	3.9			
SWB 70-5	0058422	14 x 14	0.55 x 0.55	5	70	98	3.9			
WK 45-1	0067889	20 x 22	0.79 x 0.87	1	45	45	1.8		Piezocomposite element Type 21	
WK 60-1	0067890	20 x 22	0.79 x 0.87	1	60	45	1.8			
WK 70-1	0067891	20 x 22	0.79 x 0.87	1	70	45	1.8			
WK 45-2	0057011	20 x 22	0.79 x 0.87	2	45	90	3.5			
WK 60-2	0057012	20 x 22	0.79 x 0.87	2	60	90	3.5			
WK 70-2	0057013	20 x 22	0.79 x 0.87	2	70	90	3.5			
SWK 45-2	0058843	14 x 14	0.55 x 0.55	2	45	39	1.5			Piezocomposite element Type 20
SWK 60-2	0058844	14 x 14	0.55 x 0.55	2	60	39	1.5			
SWK 70-2	0058845	14 x 14	0.55 x 0.55	2	70	39	1.5			

Custom configurations are available by special order.

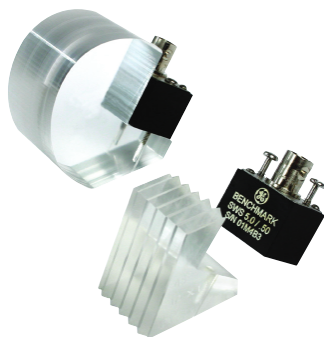
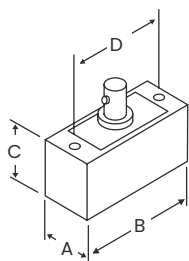
For explanations to the table data, refer to selection criteria on pages 5 through 7.

Accessories

Description	Type	Remark
Cable	PKL2 (0050326)	for WB., WK..
	MPKL2 (0050486)	for SWB., SWK..
Spare sole (1 set = 10 pcs)	WP(E) (0057276)	for WB., WK..
	SWP (0058514)	for SWB., SWK

Large angle beam transducers— North American standards

Types SWS and AWS



Element size		A		B		C		D	
mm	in	mm	in	mm	in	mm	in	mm	in
13 Ø	.50 Ø	18.3	0.72	25.4	1.00	19.1	0.75	20.6	0.81
13 x 25	.50 x 1.0	18.5	0.725	38.4	1.51	19.1	0.75	33.3	1.31
19 x 25	.75 x 1.0	25.4	1.00	38.1	1.5	19.1	0.75	33.3	1.31
25 Ø	1.0	31.0	1.22	41.9	1.65	19.1	0.75	35.1	1.38
16 x 16	.63 x .63	18.5	0.73	31.8	1.25	19.1	0.75	25.4	1.00
16 x 19	.63 x .75	18.5	0.73	31.8	1.25	19.1	0.75	25.4	1.00
19 x 19	.75 x .75	21.6	0.85	31.8	1.25	19.1	0.75	25.4	1.00

Angle beam transducers—types SWS and AWS

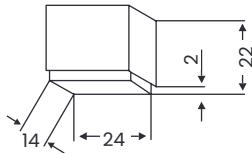
Freq. (MHz)	Element Ø		Order Code					Freq. (MHz)	Element Ø		Order Code							
			Gamma series	Benchmark series	Standard wedge (W = 118-340)	Hi-Temp wedge* (W = 118-340)	Accessories				Gamma series	Benchmark series	Standard wedge (W = 118-340)	Hi-Temp wedge* (W = 118-340)	Accessories			
0.50	25	1.0	113-260-600		W-021 45°	W-081 45°		16 x 16	0.63 x 0.63	113-292-603	113-892-603	W-104 45°	W-105 60°	W-106 70°				
					W-022 60°	W-082 60°						W-023 70°			W-083 70°			
	13	0.5	113-241-600	113-841-600	W-009 45°	W-076 45°				W-010 60°	W-077 60°	W-011 70°	W-078 70°	W-015 45°	W-070 45°	W-016 60°	W-086 60°	W-017 70°
1.0	13 x 25	0.5 x 1	113-291-600	113-891-600	W-051 45°	W-021 45°		13	0.5	113-243-600	113-843-600	W-009 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	W-013 90°
					W-052 60°	W-081 45°						W-015 45°	W-070 45°	W-016 60°	W-086 60°	W-017 70°	W-071 70°	W-019 90°
	19 x 25	0.75 x 1	113-291-605	113-891-605	W-053 70°	W-082 60°				W-054 90°	W-083 70°	W-021 45°	W-081 45°	W-022 60°	W-082 60°	W-023 70°	W-083 70°	W-025 90°
2.25	13 x 25	0.5 x 1	113-292-600	113-892-600	W-021 45°	W-081 45°		19 x 25	0.75 x 1	113-293-600	113-893-600	W-051 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	W-013 90°
					W-022 60°	W-082 60°						W-052 60°	W-086 60°	W-015 45°	W-070 45°	W-016 60°	W-086 60°	W-017 70°
	25	1.0	113-261-600	113-861-600	W-023 70°	W-083 70°				W-025 90°	W-021 45°	W-081 45°	W-022 60°	W-082 60°	W-023 70°	W-083 70°	W-025 90°	
2.25	13 x 25	0.5 x 1	113-292-600	113-892-600	W-021 45°	W-081 45°		25	1.0	113-263-600	113-863-600	W-021 45°	W-081 45°	W-022 60°	W-082 60°	W-023 70°	W-083 70°	W-025 90°
					W-022 60°	W-082 60°						W-021 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	
	19 x 25	0.75 x 1	113-292-605	113-892-605	W-053 70°	W-086 60°				W-054 90°	W-009 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	W-013 90°	
5.0	13 x 25	0.5 x 1	113-294-600	113-894-600	W-051 45°	W-021 45°		19 x 25	0.75 x 1	113-294-600	113-894-600	W-015 45°	W-070 45°	W-016 60°	W-086 60°	W-017 70°	W-071 70°	W-019 90°
					W-052 60°	W-081 45°						W-051 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	
	25	1.0	113-262-600	113-862-600	W-023 70°	W-083 70°				W-025 90°	W-009 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	W-013 90°	
5.0	13 x 25	0.5 x 1	113-294-600	113-894-600	W-021 45°	W-081 45°		25	1.0	113-264-600	113-864-600	W-021 45°	W-081 45°	W-022 60°	W-082 60°	W-023 70°	W-083 70°	W-025 90°
					W-022 60°	W-082 60°						W-021 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	
	19 x 25	0.75 x 1	113-294-605	113-894-605	W-053 70°	W-086 60°				W-054 90°	W-009 45°	W-076 45°	W-010 60°	W-077 60°	W-011 70°	W-078 70°	W-013 90°	

* Duty cycle: at 400°F (200°C), maximum contact time is 10 seconds; cool to ambient before reuse. Note: Standard wedge angles are specified for carbon steel. Custom configurations are available by special order.

Small angle beam transducers— European standards

Type MWB/MWK

Type 23



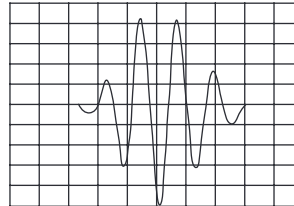
MWB-O



MWB, MWK

MWB45-4

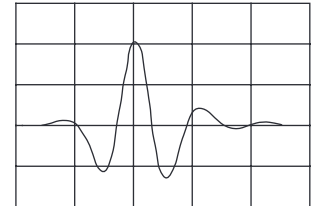
0.2V/Div



0, 2 μ s/Div

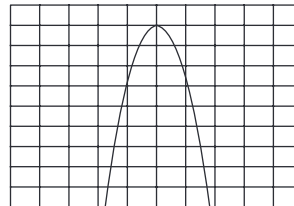
MWK45-4

0.5V/Div



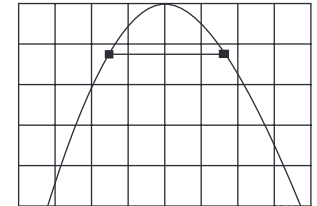
0, 2 μ s/Div

2dB/Div



0-8 MHz

5dB/Div



0-8 MHz

Typical waveform and frequency spectrum

Type	Order code	a x b mm	in	f (MHz)	β (Steel)	N mm	in	Notes	Sketch
MWB 35-2	0056920	8 x 9	0.31 x 0.35	2	38	15	0.6		Type 23
MWB 35-2ISO	0500040	8 x 9	0.31 x 0.35	2	38	15	0.6	ISO 22232-2 compliant	
MWB 35-O2	0057204	8 x 9	0.31 x 0.35	2	38	15	0.6	Top connector	
MWB 35-O2ISO	0500044	8 x 9	0.31 x 0.35	2	38	15	0.6	ISO 22232-2 compliant	
MWB 45-2	0056921	8 x 9	0.31 x 0.35	2	45	15	0.6		
MWB 45-2ISO	0500041	8 x 9	0.31 x 0.35	2	45	15	0.6	ISO 22232-2 compliant	
MWB 45-O2	0057205	8 x 9	0.31 x 0.35	2	45	15	0.6	Top connector	
MWB 45-O2ISO	0500045	8 x 9	0.31 x 0.35	2	45	15	0.6	ISO 22232-2 compliant	
MWB 60-2	0056922	8 x 9	0.31 x 0.35	2	60	15	0.6		
MWB 60-2ISO	0500042	8 x 9	0.31 x 0.35	2	60	15	0.6	ISO 22232-2 compliant	
MWB 60-O2	0057206	8 x 9	0.31 x 0.35	2	60	15	0.6	Top connector	
MWB 60-O2ISO	0500046	8 x 9	0.31 x 0.35	2	60	15	0.6	ISO 22232-2 compliant	
MWB 70-2	0056923	8 x 9	0.31 x 0.35	2	70	15	0.6		
MWB 70-2ISO	0500043	8 x 9	0.31 x 0.35	2	70	15	0.6	ISO 22232-2 compliant	
MWB 70-O2	0057207	8 x 9	0.31 x 0.35	2	70	15	0.6	Top connector	
MWB 70-O2ISO	0500234	8 x 9	0.31 x 0.35	2	70	15	0.6	ISO 22232-2 compliant	
MWB 80-2	0056924	8 x 9	0.31 x 0.35	2	77	15	0.6		
MWB 80-O2	0057208	8 x 9	0.31 x 0.35	2	77	15	0.6	Top connector	
MWB 90-2	0056925	8 x 9	0.31 x 0.35	2	90	15	0.6	Surface wave	

Small angle beam transducers— European standards

Type	Order code	a x b		f (MHz)	β (Steel)	N		Notes	Sketch	
		mm	in			mm	in			
MWB 35-4	0056926	8 x 9	0.31 x 0.35	4	38	30	1.2		Type 23	
MWB 35-4ISO	0500047	8 x 9	0.31 x 0.35	4	38	30	1.2	ISO 22232-2 compliant		
MWB 35-O4	0057210	8 x 9	0.31 x 0.35	4	38	30	1.2	Top connector		
MWB 35-O4ISO	0500235	8 x 9	0.31 x 0.35	4	38	30	1.2	ISO 22232-2 compliant		
MWB 45-4	0056927	8 x 9	0.31 x 0.35	4	45	30	1.2			
MWB 45-4ISO	0500048	8 x 9	0.31 x 0.35	4	45	30	1.2	ISO 22232-2 compliant		
MWB 45-O4	0057211	8 x 9	0.31 x 0.35	4	45	30	1.2	Top connector		
MWB 45-O4ISO	0500236	8 x 9	0.31 x 0.35	4	45	30	1.2	ISO 22232-2 compliant		
MWB 60-4	0056928	8 x 9	0.31 x 0.35	4	60	30	1.2			
MWB 60-4ISO	0500049	8 x 9	0.31 x 0.35	4	60	30	1.2	ISO 22232-2 compliant		
MWB 60-O4	0057212	8 x 9	0.31 x 0.35	4	60	30	1.2	Top connector		
MWB 60-O4ISO	0500237	8 x 9	0.31 x 0.35	4	60	30	1.2	ISO 22232-2 compliant		
MWB 70-4	0056929	8 x 9	0.31 x 0.35	4	70	30	1.2			
MWB 70-4ISO	0500050	8 x 9	0.31 x 0.35	4	70	30	1.2	ISO 22232-2 compliant		
MWB 70-O4	0057213	8 x 9	0.31 x 0.35	4	70	30	1.2	Top connector		
MWB 70-O4ISO	0500238	8 x 9	0.31 x 0.35	4	70	30	1.2	ISO 22232-2 compliant		
MWB 80-4	0056930	8 x 9	0.31 x 0.35	4	7	30	1.2			
MWB 80-O4	0057214	8 x 9	0.31 x 0.35	4	77	30	1.2	Top connector		
MWB 90-4	0056931	8 x 9	0.31 x 0.35	4	90	30	1.2	Surface wave		
MWK 45-2	0067488	8 x 9	0.31 x 0.35	2	45	15	0.6		Piezocomposite element	
MWK 60-2	0067489	8 x 9	0.31 x 0.35	2	60	15	0.6			
MWK 70-2	0067490	8 x 9	0.31 x 0.35	2	70	15	0.6			
MWK 45-4	0058938	8 x 9	0.31 x 0.35	4	45	30	1.2			
MWK 60-4	0058939	8 x 9	0.31 x 0.35	4	60	30	1.2			
MWK 70-4	0058940	8 x 9	0.31 x 0.35	4	70	30	1.2			
										Custom configurations are available by special order.
										For explanations to the table data, refer to selection criteria on pages 5 through 7.

Accessories

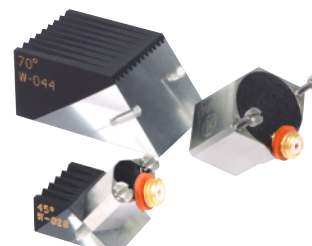
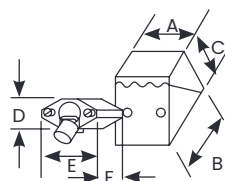
Description	Type	Remark
Cable	MPKL2 (0050486)	for MWB., MWK..
Spare sole (1 set = 10 pcs)	MWP(E) (0057277)	for MWB., MWK..

Small angle beam transducers— North American standards

Type MSWS

Replaceable wedge .25 in (6 mm)												
Wedge angle	A		B		C		D		E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
45°	11.9	0.47	15.2	0.60	7.6	0.30	7.9	.31	12.2	0.48	8.6	0.34
60°	11.9	0.47	16.5	0.65	8.9	0.35	7.9	.31	12.2	0.48	8.6	0.34
70°	11.9	0.47	17.8	0.70	9.7	0.38	7.9	.31	12.2	0.48	8.6	0.34
90°	11.9	0.47	22.9	0.90	9.7	0.38	7.9	.31	12.2	0.48	8.6	0.34

Replaceable wedge .50 in (13 mm)												
Wedge angle	A		B		C		D		E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
45°	18.5	0.73	24.4	0.96	10.7	0.42	14.2	0.56	18.5	0.73	12.7	0.50
60°	18.5	0.73	27.4	1.08	12.7	0.50	14.2	0.56	18.5	0.73	12.7	0.50
70°	18.5	0.73	29.5	1.16	13.7	0.54	14.2	0.56	18.5	0.73	12.7	0.50
90°	18.5	0.73	39.6	1.56	14.7	0.58	14.2	0.56	18.5	0.73	12.7	0.50

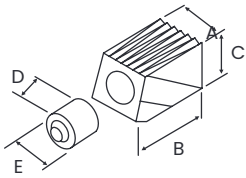


Miniature angle beam transducers—type MSWS (Captive screw mount)

Freq. (MHz)	Element Ø		Order code			Freq. (MHz)	Element Ø		Order code		
	mm	in	Gamma series	Standard wedge	Accessories		mm	in	Gamma series	Standard wedge	Accessories
1.0	13	0.500	113-241-580	118-340-040	45°	6	0.250	113-224-580	118-340-028	45°	Cables BNC 118-140-012
				118-340-042	60°				118-340-030	60°	
				118-340-044	70°				118-340-032	70°	
				118-340-046	80°				118-340-034	80°	
				118-340-048	90°				118-340-036	90°	
2.25	6	0.250	113-222-580	118-340-028	45°	13	0.500	113-244-580	118-340-040	45°	Cables BNC 118-140-012 LEMO-1 118-140-022
				118-340-030	60°				118-340-042	60°	
				118-340-032	70°				118-340-044	70°	
				118-340-034	80°				118-340-046	80°	
				118-340-036	90°				118-340-048	90°	
3.5	13	0.500	113-242-580	118-340-040	45°	6	0.250	113-226-580	118-340-028	45°	Wedge couplant 118-300-740
				118-340-042	60°				118-340-030	60°	
				118-340-044	70°				118-340-032	70°	
				118-340-046	80°				118-340-034	80°	
				118-340-048	90°				118-340-036	90°	
3.5	6	0.250	113-223-580	118-340-028	45°	13	0.500	113-246-580	118-340-040	45°	
				118-340-030	60°				118-340-042	60°	
				118-340-032	70°				118-340-044	70°	
				118-340-034	80°				118-340-046	80°	
				118-340-036	90°				118-340-048	90°	
3.5	13	0.500	113-243-580	118-340-040	45°	6	0.250	113-246-580	118-340-040	45°	
				118-340-042	60°				118-340-042	60°	
				118-340-044	70°				118-340-044	70°	
				118-340-046	80°				118-340-046	80°	
				118-340-048	90°				118-340-048	90°	

Note: Standard wedge angles are specified for carbon steel. Custom configurations are available by special order.

Type MSW-QC



Replaceable wedge 6 mm (.25 in)											
Wedge angle	A mm	A in	B mm	B in	C mm	C in	D mm	D in	E mm	E in	Thread
45°	11.4	0.45	19.1	0.75	9.4	0.37	14.1	0.56	10.7	0.42	3/8 - 32
60°	11.4	0.45	21.3	0.84	11.2	0.44	14.1	0.56	10.7	0.42	3/8 - 32
70°	11.4	0.45	25.4	1.00	12.7	0.50	14.1	0.56	10.7	0.42	3/8 - 32
90°	11.4	0.45	24.1	0.95	12.7	0.50	14.1	0.56	10.7	0.42	3/8 - 32

Replaceable wedge 10 mm (.375 in)											
Wedge angle	A mm	A in	B mm	B in	C mm	C in	D mm	D in	E mm	E in	Thread
45°	14.0	0.55	22.6	0.89	11.9	0.47	14.7	0.58	14.0	0.55	1/2 - 28
60°	14.0	0.55	26.4	1.04	14.0	0.55	14.7	0.58	14.0	0.55	1/2 - 28
70°	14.0	0.55	30.2	1.19	14.7	0.58	14.7	0.58	14.0	0.55	1/2 - 28
90°	14.0	0.55	29.2	1.15	15.5	0.61	14.7	0.58	14.0	0.55	1/2 - 28

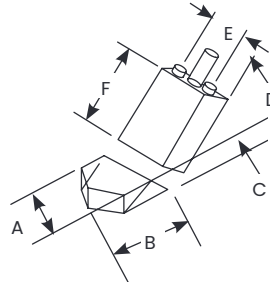
Replaceable wedge 13 mm (.50 in)											
Wedge angle	A mm	A in	B mm	B in	C mm	C in	D mm	D in	E mm	E in	Thread
45°	17.8	0.70	26.7	1.05	14.0	0.55	16.5	0.65	17.8	0.70	5/8 - 24
60°	17.8	0.70	31.5	1.24	16.3	0.64	16.5	0.65	17.8	0.70	5/8 - 24
70°	17.8	0.70	35.8	1.41	17.3	0.68	16.5	0.65	17.8	0.70	5/8 - 24
90°	17.8	0.70	35.3	1.39	18.5	0.73	16.5	0.65	17.8	0.70	5/8 - 24

Miniature angle beam transducers—type MSW-QC (Quick change)

Freq. (MHz)	Element Ø		Order code					Freq. (MHz)	Element Ø		Order code					
			Gamma series	Benchmark series	Alpha series	Standard wedge	Accessories				Gamma series	Benchmark series	Alpha series	Standard wedge	Accessories	
1.0	13	0.500	113-241-590	113-241-591		118-340-210 30°		6	0.250	113-224-590	113-224-591	113-124-591	118-340-200 30°			
						118-340-211 45°							118-340-201 45°			
						118-340-212 60°							118-340-202 60°			
						118-340-213 70°							118-340-203 70°			
						118-340-214 90°							118-340-204 90°			
1.5	10	0.375	113-231-590	113-231-596		118-340-220 30°		5.0	10	0.375	113-234-590	113-234-591	113-134-591	118-340-220 30°		
						118-340-221 45°								118-340-221 45°		
						118-340-222 60°								118-340-222 60°		
						118-340-223 70°								118-340-223 70°		
						118-340-224 90°								118-340-224 90°		
2.25	13	0.500	113-241-595	113-241-596		118-340-210 30°		7.5	10	0.375	113-235-591	113-135-591	118-340-210 30°			
						118-340-211 45°							118-340-211 45°			
						118-340-212 60°							118-340-212 60°			
						118-340-213 70°							118-340-213 70°			
						118-340-214 90°							118-340-214 90°			
3.5	10	0.375	113-233-590	113-233-591		118-340-220 30°		10	10	0.375	113-236-590		118-340-220 30°			
						118-340-221 45°							118-340-221 45°			
						118-340-222 60°							118-340-222 60°			
						118-340-223 70°							118-340-223 70°			
						118-340-224 90°							118-340-224 90°			
5.0	13	0.500	113-242-590	113-242-591		118-340-210 30°		7.5	13	0.500	113-245-591	113-145-591	118-340-210 30°			
						118-340-211 45°							118-340-211 45°			
						118-340-212 60°							118-340-212 60°			
						118-340-213 70°							118-340-213 70°			
						118-340-214 90°							118-340-214 90°			
7.5	6	0.250	113-222-590	113-222-591		118-340-200 30°		10	6	0.250	113-226-590		118-340-200 30°			
						118-340-201 45°							118-340-201 45°			
						118-340-202 60°							118-340-202 60°			
						118-340-203 70°							118-340-203 70°			
						118-340-204 90°							118-340-204 90°			
10	13	0.500	113-243-590	113-243-591		118-340-220 30°		10	13	0.500	113-246-590		118-340-220 30°			
						118-340-221 45°							118-340-221 45°			
						118-340-222 60°							118-340-222 60°			
						118-340-223 70°							118-340-223 70°			
						118-340-224 90°							118-340-224 90°			
15	13	0.500	113-244-590	113-244-591		118-340-210 30°		15	13	0.500	113-247-590		118-340-210 30°			
						118-340-211 45°							118-340-211 45°			
						118-340-212 60°							118-340-212 60°			
						118-340-213 70°							118-340-213 70°			
						118-340-214 90°							118-340-214 90°			

Small angle beam transducers— North American standards

Angle	A		B		C		D		E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
45°	7.9	0.31	6.4	0.25	5.3	0.21	4.8	0.19	5.8	0.23	7.1	0.28
60°	7.9	0.31	10.7	0.42	5.3	0.21	4.8	0.19	5.8	0.23	7.1	0.28
70°	7.9	0.31	10.7	0.42	5.3	0.21	4.8	0.19	5.8	0.23	7.1	0.28
90°	7.9	0.31	18.3	0.72	8.6	0.34	4.8	0.19	5.8	0.23	7.1	0.28



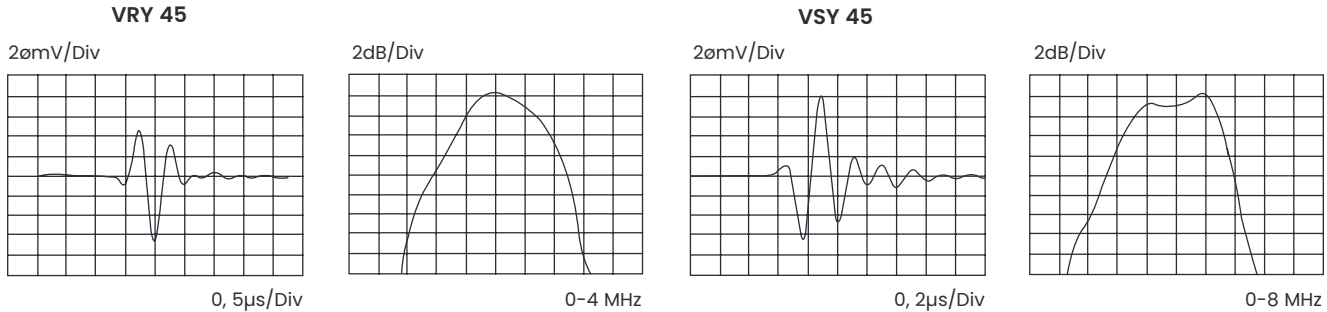
Subminiature angle beam type SMSWS (Screw mount)

Freq. (MHz)	Element Ø		Order code		
	mm	in	Gamma series	Standard wedge	Accessories
2.25	3	0.125	113-212-585	118-340-120 45°	Cable BNC 118-140-047
				118-340-121 60°	
				118-340-122 70°	
				118-340-123 90°	
5.0	3	0.125	113-214-585	118-340-120 45°	Wedge couplant 118-300-740
				118-340-121 60°	
				118-340-122 70°	
				118-340-123 90°	
10.0	3	0.125	113-216-585	118-340-120 45°	
				118-340-121 60°	
				118-340-122 70°	
				118-340-123 90°	

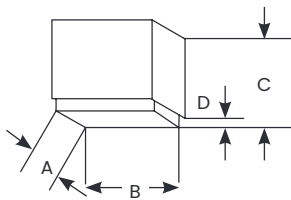
Note: Standard wedge angles are specified for carbon steel. Custom configurations are available by special order.

Angle beam transducers, dual element

Types VS, VRY and VSY



Typical waveform and frequency spectrum



Case type	A		B		C		D	
	mm	in	mm	in	mm	in	mm	in
Type 30	14	0.55	24	0.94	22	0.87	2	0.08
Type 31	29	1.14	53.5	2.1	45	1.77	5	0.20
Type 32	15	0.59	30	1.8	27	1.06		

Type	Order code	a x b		f (MHz)	β (Steel)	F		Notes	Sketch
		mm	in			mm	in		
VS 45	0057660	3.5 x 10	0.14 x 0.39	4	45	10	0.4	ISO 22232-2 compliant	Type 30
VS 45-ISO	0500194	3.5 x 10	0.14 x 0.39	4	45	10	0.4		
VS 60	0057661	3.5 x 10	0.14 x 0.39	4	60	10	0.4		
VS 60-ISO	0500195	3.5 x 10	0.14 x 0.39	4	60	10	0.4		
VS 70	0057662	3.5 x 10	0.14 x 0.39	4	70	10	0.4		
VS 70-ISO	0500196	3.5 x 10	0.14 x 0.39	4	70	10	0.4	ISO 22232-2 compliant	
VRY 45	0057663	10 x 22	0.39 x 0.87	1.8	45	40	1.6	VRY and VSY angles are longitudinal (compression) wave suitable for testing coarse grain materials.	Type 31
VRY 60	0057664	10 x 22	0.39 x 0.87	1.8	60	35	1.4		
VRY 70	0057665	10 x 22	0.39 x 0.87	1.8	70	35	1.4		
VSY 45-2	0067154	5 x 10	0.20 x 0.39	2	45	16	0.6	70° models suitable for creeping wave excitation in mild steel.	Type 32
VSY 60-2	0067155	5 x 10	0.20 x 0.40	2	60	16	0.6		
VSY 70-2	0067156	5 x 10	0.20 x 0.41	2	70	16	0.6		
VSY 45-4	0054577	5 x 10	0.20 x 0.42	4	45	20	0.8		
VSY 60-4	0054578	5 x 10	0.20 x 0.43	4	60	20	0.8		
VSY 70-4	0054579	5 x 10	0.20 x 0.44	4	70	20	0.8		

Custom configurations are available by special order.

For explanations to the table data, refer to selection criteria on pages 5 through 7.

Accessories

Description	Type	Remark
Cable	SEKM2 (0053001)	for VS
	SEKL2 (0050710)	for VRY
	SEKN2 (0053775)	for VSY