



PHASED ARRAY UT PROBES AND WEDGES

Product Catalog



*Standardized Designs
and Advanced Technology*

www.zetec.com

About ZETEC

ZETEC, founded in 1968, is the leading provider of nondestructive evaluation (NDE) inspection solutions based on integrated multi-method technologies - eddy current, ultrasonic (UT), phased array UT, remote field, and magnetic flux leakage. The company portfolio includes a complete line of systems, instrumentation, software products, supplies, calibration, repair, training, and inspection services, all offered worldwide. ZETEC, a trusted partner in mission critical inspection applications, is headquartered in Snoqualmie, Washington with offices in Quebec City, Quebec, Canada; Seoul, Korea; Beijing, China; and Paris, France.

ZETEC's innovative approach has completely redefined the potential of phased array UT technology by enabling highly efficient and more flexible inspection solutions. With a wealth of high-quality phased array UT instruments, ZETEC offers a complete line of standard phased array UT probes and wedges in order to get the most out of your system.

ZETEC has the expertise and engineering skills to support you for any challenging inspections with dedicated custom designs for your phased array UT probes and wedges.

For more information about ZETEC's products and services:
visit www.zetec.com or contact us at info@zetec.com

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Introduction to Phased Array UT

Phased array (PA) technology allows to control the acoustic characteristics (refracted angle, focal distance, aperture, etc.) of ultrasonic beams through software. Compared to conventional ultrasonic testing (UT) methods, this opens a series of new possibilities:

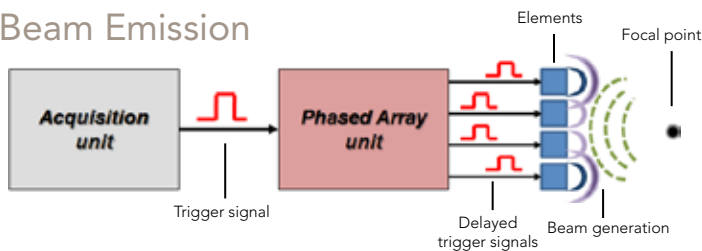
- Multiple refracted angles and focal distances can be generated simultaneously by a single search unit;
- Ultrasonic beams can be electronically moved over the length of the PA probe, without any mechanical movement;
- By using multiple ultrasonic beams, the probability of detection can be increased;
- Automated or semi-automated inspection methods can be implemented more efficiently.

ZETEC offers a complete line of inspection systems and probes which allow you to fully exploit the capabilities of PA UT and help you perform more efficient and reliable inspections.

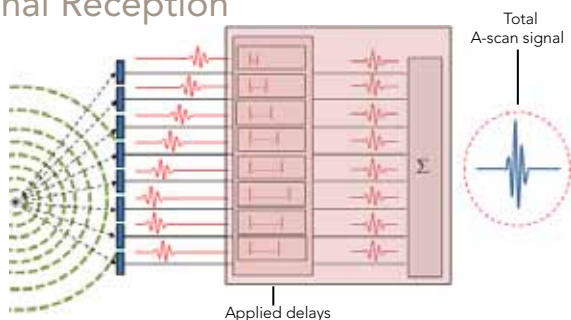
PHYSICAL PRINCIPLES

A phased array probe consists of a series of piezo-composite elements, which can be excited independently one from the others. By precisely controlling the time delays between the excitation of the individual elements, ultrasonic beams of various angles, focal distances and aperture can be transmitted in the inspected specimen. The returning echo from a reflector is detected by each elements of the PA probe at a slightly different time. The individual echo signals are then time-shifted before being summed up. The result of this process is an A-scan that emphasizes the response from the desired focal point.

Beam Emission



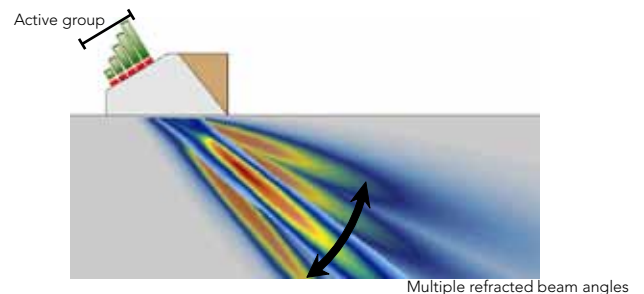
Signal Reception



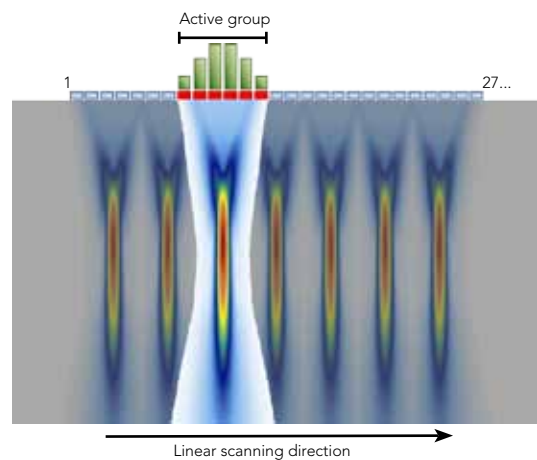
PA PROBE CONFIGURATIONS

ZETEC's standard probes are offered in two main configurations:

- **Azimuthal:** Probes that are optimized to produce multiple refracted beam angles



- **Linear:** Long transducers that are optimized for electronically moving the active aperture along the probe

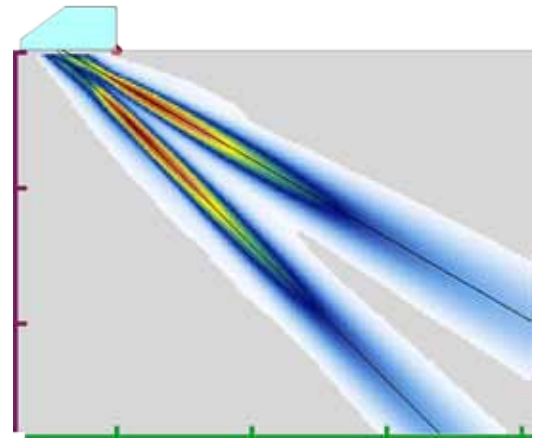


BENEFIT OF BEAM SIMULATION

Acoustic beam simulation allows you to compute, visualize and characterize the energy distribution of the acoustic beam generated by your phased array probe.

The UltraVision® software offers all the tools to validate your acoustic beam characteristics for inspection of both simple specimens and more complex surfaces.

In order to make it easy for you to select the phased array probe(s) that you need for your specific inspections, this catalog shows acoustic beam simulations of typical LW and SW configurations with each of our standard phased array probes, in the case of natural focusing conditions, and relevant quantitative information about the acoustic field is provided.



Standard Phased Array Probes and Wedges

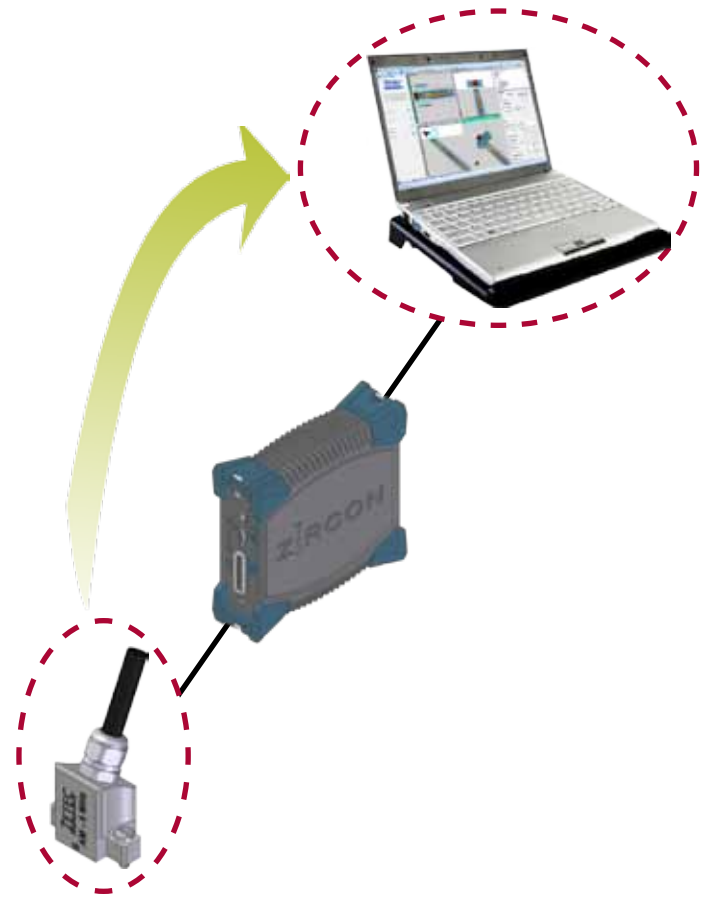
PROBES

ZETEC's standard phased array UT probes are offered in 6 different sizes. Special care was put in their design in order to provide you with an ergonomic casing with captive screws for easy fixation on wedges or scanning mechanism.

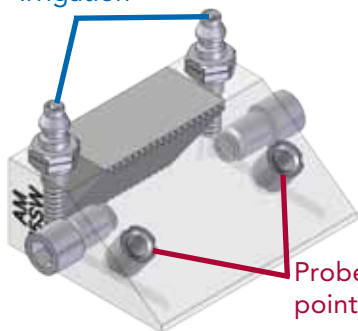
The frequencies of the standard probes range from 1.5 to 10 MHz, covering a wide spectrum of applications: inspection of thin welded parts, inspection of thick stainless steel specimens, efficient corrosion mapping for large inspection surfaces, etc.

When used with ZETEC's ZIRCON™ 32/128PR PA equipment and the UltraVision® software, you can take advantage of the auto probe recognition in order to quickly and easily upload all your essential probe parameters thus simplifying your setup creation process.

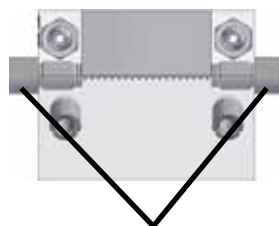
All probes come with a standard 5-meter (16.4-foot) cable and can be equipped with various types of connectors. A series of connector adaptors and splitters are also available to allow the operation of the probes on multiple equipments.



Irrigation



Probe Fixation points



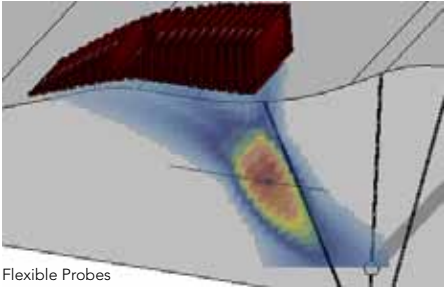
Wedge Grip Points

WEDGES

ZETEC also offers a complete line of wedges to complement its phased array UT probes. Designed to tackle a number of applications, the wedges come equipped with irrigation and easy fixation points for easy interface with a scanning mechanism.

Although all wedges listed here are designed for flat specimens, you can ask for custom contouring of the contact surface for cylinder shape parts.

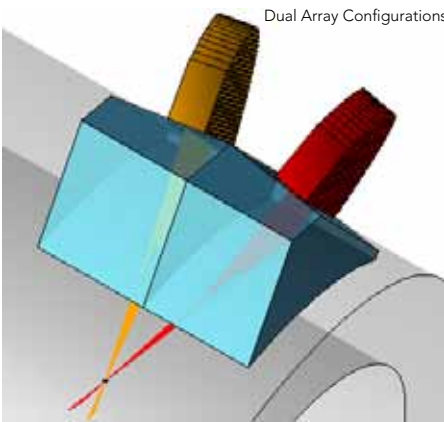
Custom Phased Array Probes and Wedges



Flexible Probes

In addition to the standard probe models, Zetec can provide you with engineering services for design and manufacturing of custom phased array probes and wedges or minor modifications to standard probes and wedges.

ZETEC has the expertise and experience to assist you in determining the most appropriate transducers and wedges for your inspection.



Dual Array Configurations

Regardless of the application, ZETEC is able to provide you the probes and wedges you need:

- 1D Linear and 2D Matrix arrays
- Dual configuration of 1D Linear and 2D Matrix arrays
- Low-frequency probes
- Dedicated contour wedges
- And much more...

2D Matrix Arrays

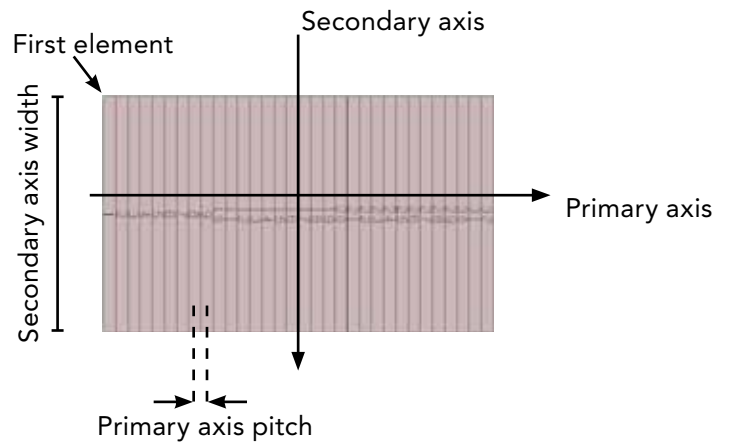


Glossary

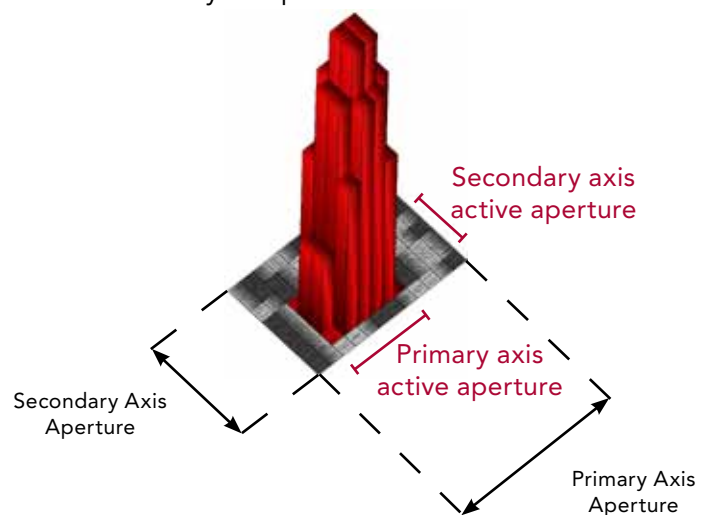
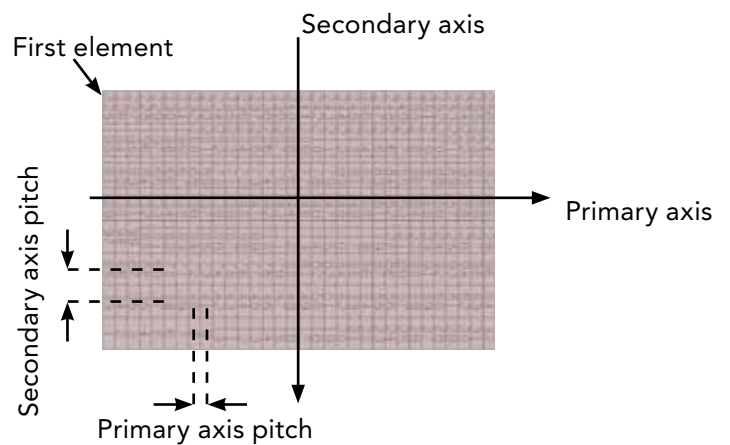
The following definitions contain all the essential information necessary to understand the different parameters of phased array probes and wedges.

- **Frequency**
Theoretical central frequency of the ultrasonic pulse generated by your probe
- **Primary Axis**
Axis along which the individual elements are aligned for 1D linear probe
- **Secondary Axis**
Axis perpendicular to the primary axis of a probe
- **Number of Elements (Primary Axis)**
Total number of elements aligned along the primary axis
- **Number of Elements (Secondary Axis)**
Total number of elements aligned along the secondary axis (2D Matrix Array only)
- **Primary Axis Pitch**
Center-to-center distance between two consecutive elements along the primary axis
- **Secondary Axis Pitch**
Center-to-center distance between two consecutive elements along the secondary axis (2D Matrix Array only)
- **Primary Axis Aperture**
Dimension of the probe surface along the primary axis
- **Secondary Axis Aperture**
Dimension of the probe surface along the secondary axis

1D Linear Array



2D Matrix Array

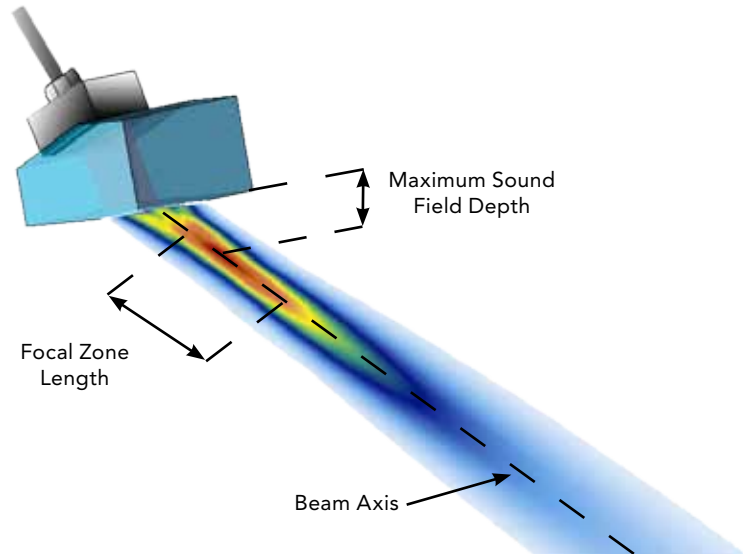


- **Active Aperture**
Group of elements effectively used for the generation and reception of an ultrasonic beam

- **Near Field Length**
Distance along the beam axis from the probe surface to the position where the maximum sound field intensity is reached

- **Maximum Sound Field Depth**
Depth at which the maximum sound field intensity on the beam axis is reached

- **Focal Zone Length**
Distance along the beam axis between the positions before and beyond the focal point (maximum intensity) where the sound field intensity is reduced by 6 dB

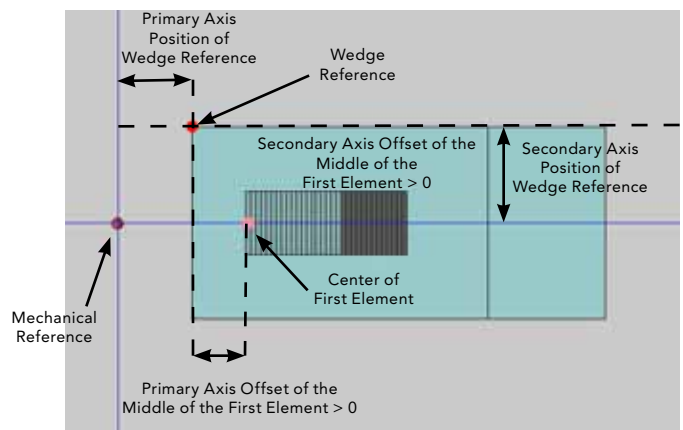
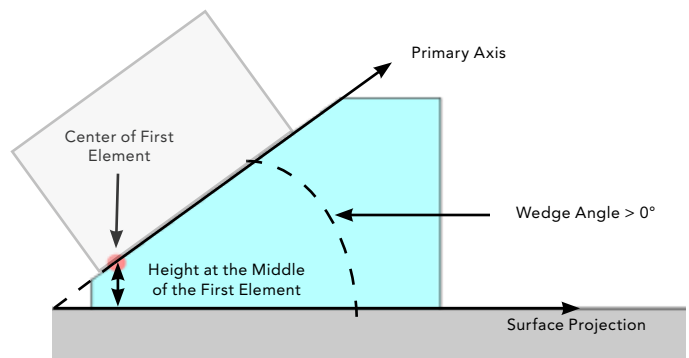


- **Wedge Angle**
Angle between the primary axis of the probe and the flat projection of the specimen surface along the mechanical axis (scan or index)

- **Height at the Middle of the First Element (H1)**
Height of the first element of the probe when placed on a wedge

- **Primary Axis Offset at the Middle of the First Element (X1)**
Position along the primary axis of the first element of the probe from the wedge reference

- **Secondary Axis Offset at the Middle of the First Element (Y1)**
Position along the secondary axis of the first element of the probe from the wedge reference



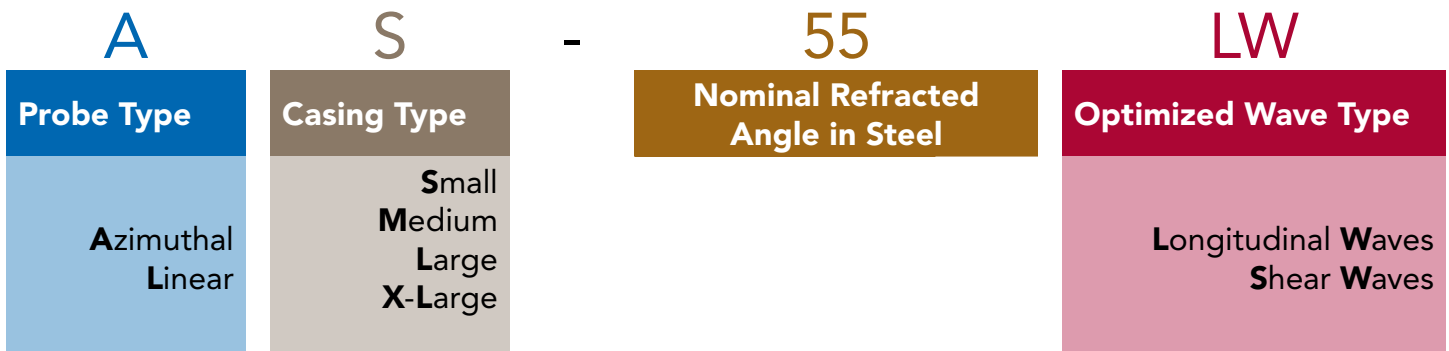
Nomenclature

Probes



Probe Type	Casing Type	Frequency (MHz)	Number of Elements	Page
Type A	Small	5.0	12	2
		7.5	12	4
		10.0	16	6
Type A	Medium	2.25	16	8
		3.5	16	10
		5.0	16	12
		10.0	32	14
Type A	Large	3.5	32	16
		5.0	32	18
Type A	X-Large	1.5	32	20
		2.25	32	22
Type L	Medium	2.25	64	26
		3.5	64	30
		5.0	64	34
		10.0	64	38
Type L	Large	2.25	128	42
		3.5	128	46
		5.0	128	50
		10.0	128	54

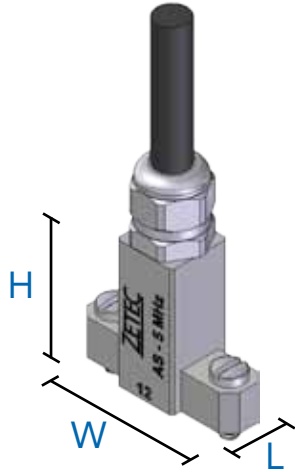
Wedges



Probes for Azimuthal Scanning



Type A - Small - 5 MHz



Features & Benefits

- Small footprint
- Optimized for thin welded parts
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

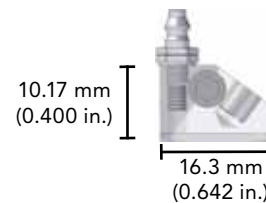
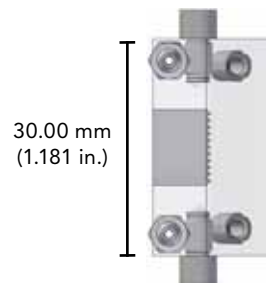
Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AS-5MHz-*	5.0	12	0.6 mm (0.024 in.)	7.2 mm (0.283 in.)	7.2 mm (0.283 in.)	11.0 mm (0.433 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

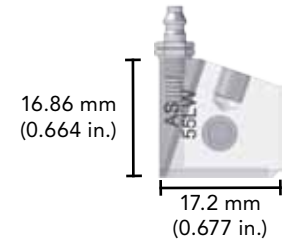
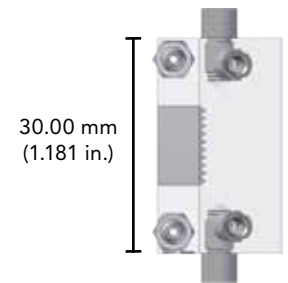
(*) : -ZIRCON or -DYNARAY



Type A - Small / 55SW



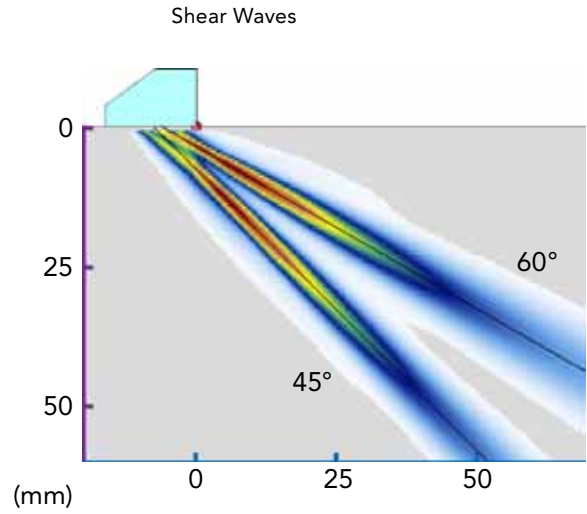
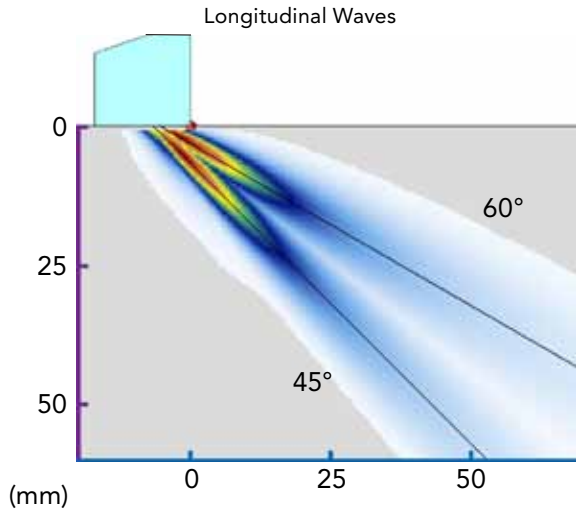
Type A - Small / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AS-55LW	LW	Type A - Small / 55LW	55°	30° to 70°
AS-55SW	SW	Type A - Small / 55SW	55°	40° to 70°

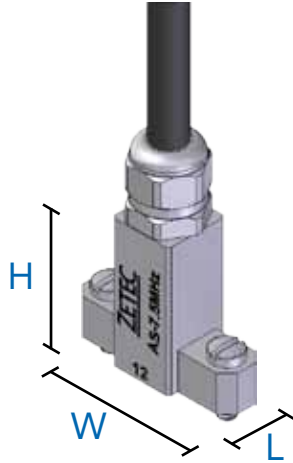
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	12 elements (1 to 12)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	5.00 mm (0.197 in.)	12.00 mm (0.472 in.)	2.00 mm (0.079 in.)	7.00 mm (0.275 in.)
Focal Zone Length	20.49 mm (0.807 in.)	44.55 mm (1.754 in.)	16.10 mm (0.634 in.)	40.92 mm (1.611 in.)
Dimension in the Incident Plane	2.40 mm (0.094 in.)	2.45 mm (0.085 in.)	2.64 mm (0.096 in.)	2.77 mm (0.109 in.)
Dimension in the Perpendicular Plane	4.00 mm (0.157 in.)	4.00 mm (0.157 in.)	4.00 mm (0.157 in.)	4.00 mm (0.157 in.)

Type A - Small - 7.5 MHz



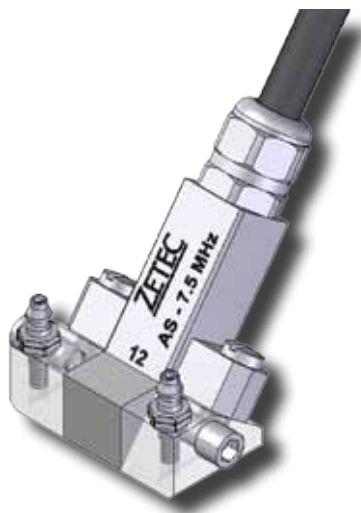
Features & Benefits

- Small footprint
- Optimized for thin welded parts
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

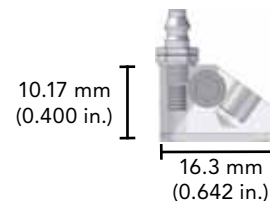
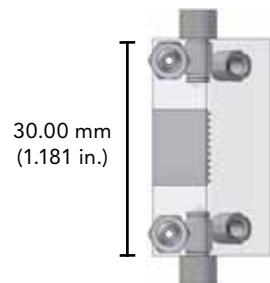
Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AS-7.5MHz-*	7.5	12	0.6 mm (0.024 in.)	7.2 mm (0.283 in.)	7.2 mm (0.283 in.)	11.0 mm (0.433 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

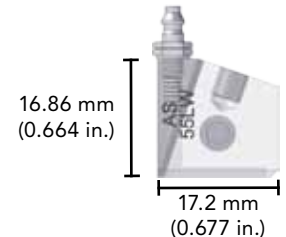
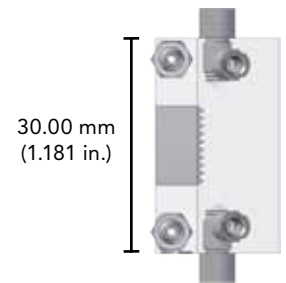
(*) : -ZIRCON or -DYNARAY



Type A - Small / 55SW



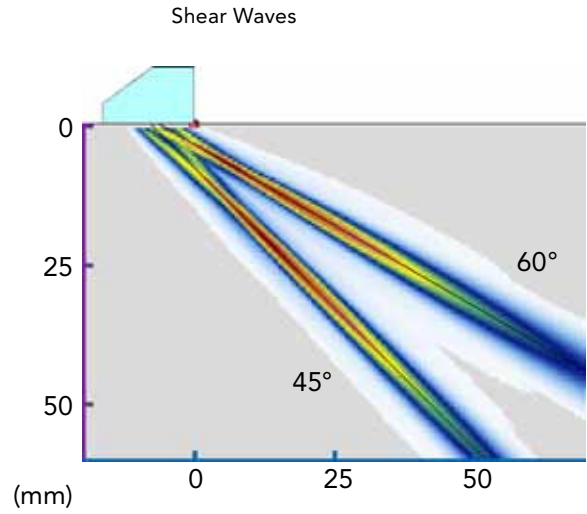
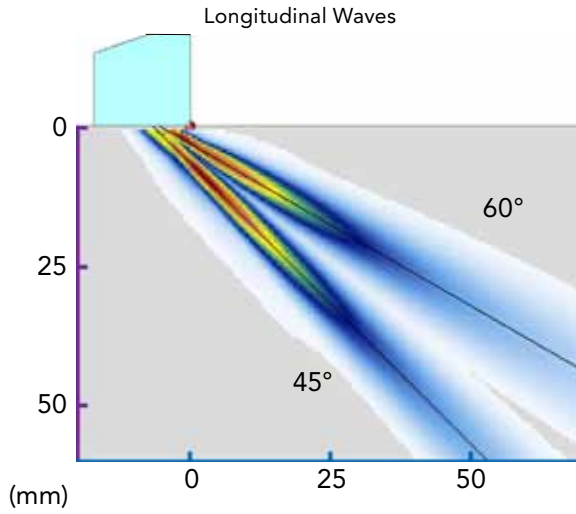
Type A - Small / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AS-55LW	LW	Type A - Small / 55LW	55°	30° to 70°
AS-55SW	SW	Type A - Small / 55SW	55°	40° to 70°

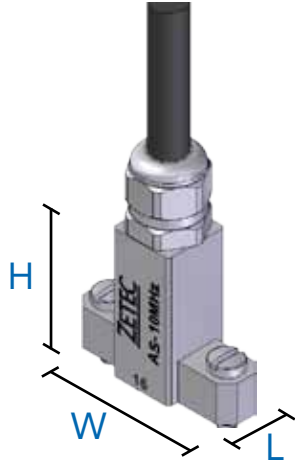
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	12 elements (1 to 12)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	10.00 mm (0.394 in.)	20.00 mm (0.787 in.)	2.00 mm (0.079 in.)	7.00 mm (0.275 in.)
Focal Zone Length	33.94 mm (1.336 in.)	64.35 mm (2.533 in.)	25.72 mm (1.013 in.)	58.85 mm (2.317 in.)
Dimension in the Incident Plane	2.27 mm (0.089 in.)	2.40 mm (0.094 in.)	2.50 mm (0.098 in.)	2.66 mm (0.105 in.)
Dimension in the Perpendicular Plane	4.00 mm (0.157 in.)	4.00 mm (0.157 in.)	5.00 mm (0.197 in.)	5.00 mm (0.197 in.)

Type A - Small - 10 MHz



Features & Benefits

- Small footprint
- Optimized for thin welded parts
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

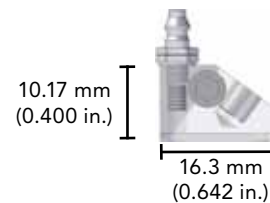
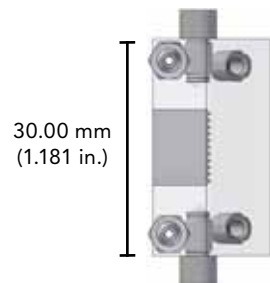
Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AS-10MHz-*	10.0	16	0.31 mm (0.012 in.)	4.96 mm (0.195 in.)	5.00 mm (0.197 in.)	11.0 mm (0.433 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

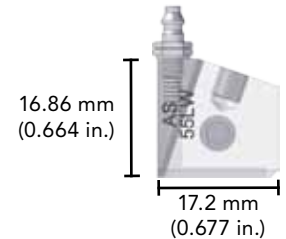
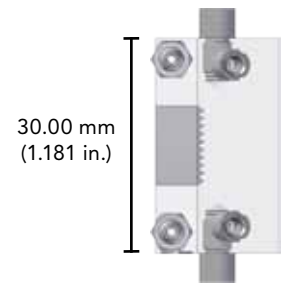
(*) : -ZIRCON or -DYNARAY



Type A - Small / 55SW



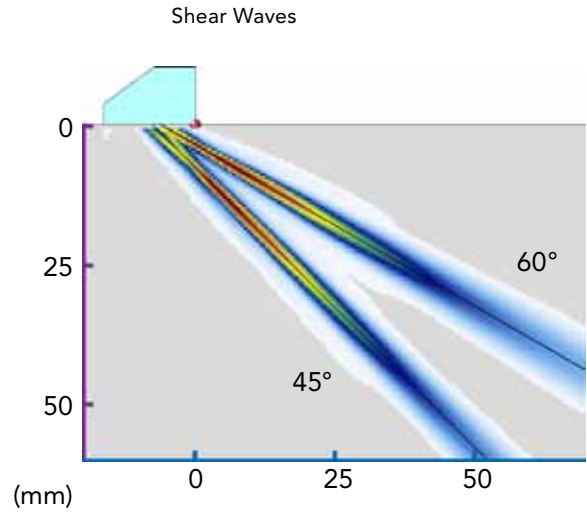
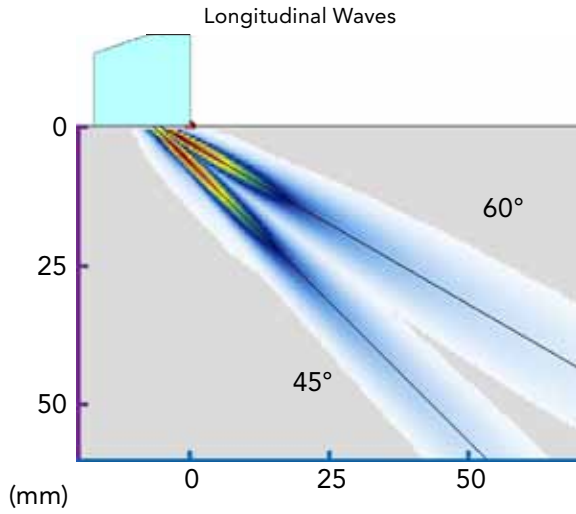
Type A - Small / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AS-55LW	LW	Type A - Small / 55LW	55°	30° to 70°
AS-55SW	SW	Type A - Small / 55SW	55°	40° to 70°

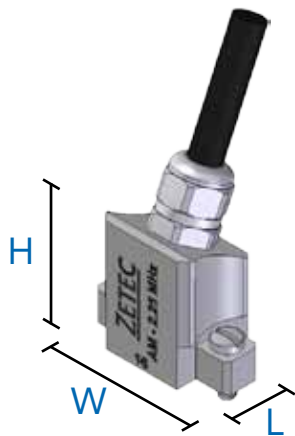
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	16 elements (1 to 16)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	4.50 mm (0.177 in.)	11.00 mm (0.433 in.)	2.00 mm (0.079 in.)	6.50 mm (0.256 in.)
Focal Zone Length	18.73 mm (0.737 in.)	42.07 mm (1.656 in.)	14.31 mm (0.563 in.)	38.26 mm (1.506 in.)
Dimension in the Incident Plane	1.55 mm (0.061 in.)	1.87 mm (0.074 in.)	1.84 mm (0.072 in.)	1.91 mm (0.075 in.)
Dimension in the Perpendicular Plane	2.00 mm (0.079 in.)	2.00 mm (0.079 in.)	3.00 mm (0.118 in.)	3.00 mm (0.118 in.)

Type A - Medium - 2.25 MHz



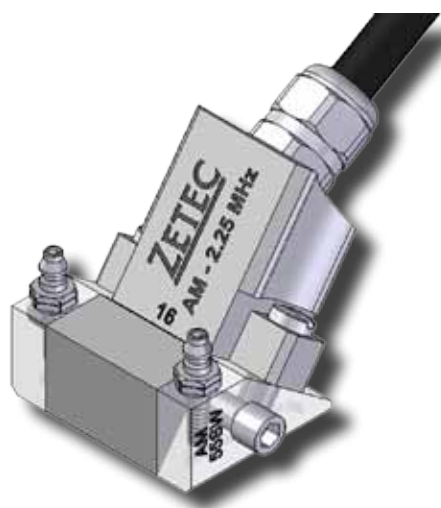
Features & Benefits

- Small footprint
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

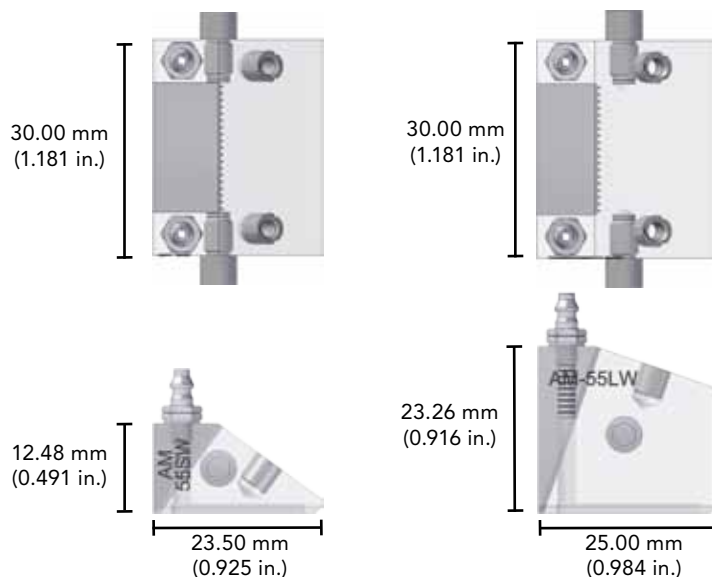
Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch (mm)	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AM-2.25MHz-*	2.25	16	0.75 mm (0.030 in.)	12.00 mm (0.472 in.)	12.00 mm (0.472 in.)	16.0 mm (0.630 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY



Type A - Medium / 55SW

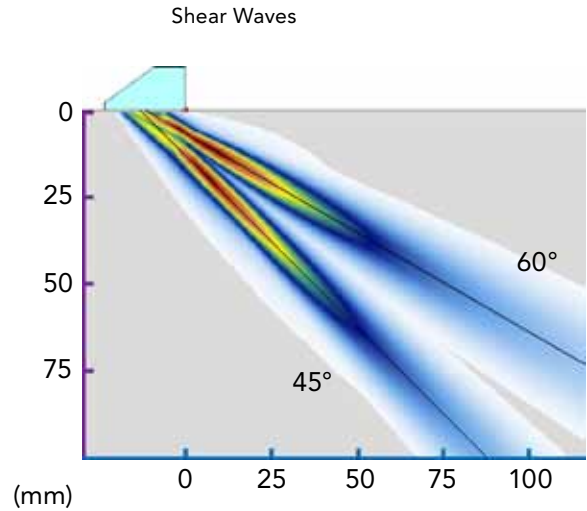
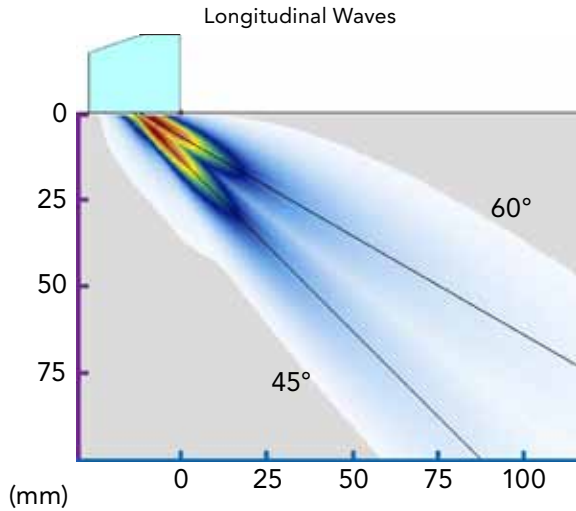
Type A - Medium / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AM-55LW	LW	Type A - Medium / 55LW	55°	30° to 70°
AM-55SW	SW	Type A - Medium / 55SW	55°	40° to 70°

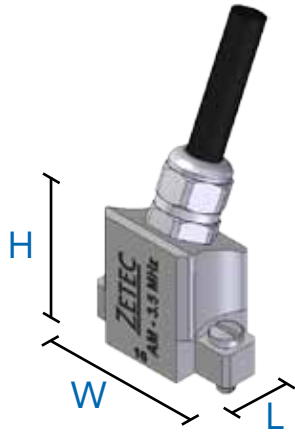
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	16 elements (1 to 16)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	5.50 mm (0.217 in.)	20.00 mm (0.787 in.)	2.00 mm (0.079 in.)	11.00 mm (0.433 in.)
Focal Zone Length	26.47 mm (1.042 in.)	61.53 mm (2.422 in.)	20.90 mm (0.823 in.)	56.53 mm (2.226 in.)
Dimension in the Incident Plane	4.45 mm (0.175 in.)	4.50 mm (0.177 in.)	4.44 mm (0.175 in.)	4.90 mm (0.193 in.)
Dimension in the Perpendicular Plane	7.00 mm (0.276 in.)	6.00 mm (0.236 in.)	8.00 mm (0.315 in.)	8.00 mm (0.315 in.)

Type A - Medium - 3.5 MHz



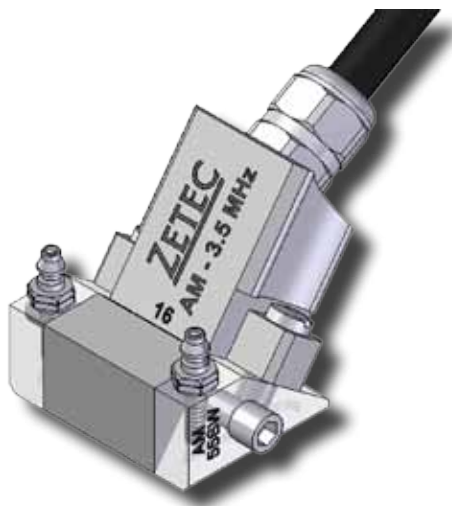
Features & Benefits

- Small footprint
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

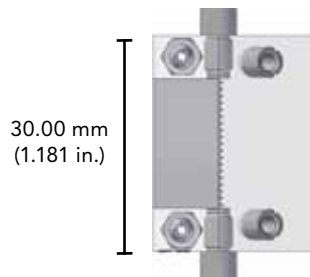
Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AM-3.5MHz-*	3.5	16	0.60 mm (0.024 in.)	9.60 mm (0.378 in.)	10.00 mm (0.374 in.)	16.0 mm (0.630 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

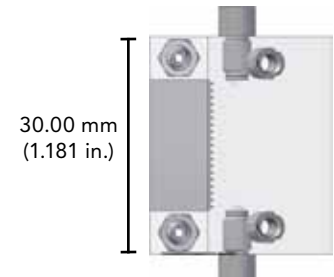
(*) : -ZIRCON or -DYNARAY



Type A - Medium / 55SW



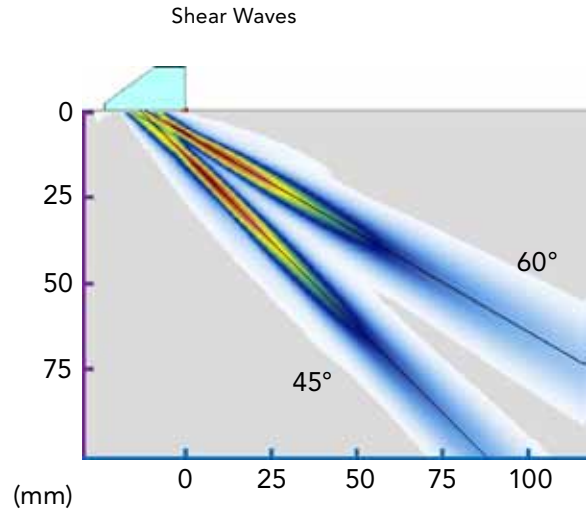
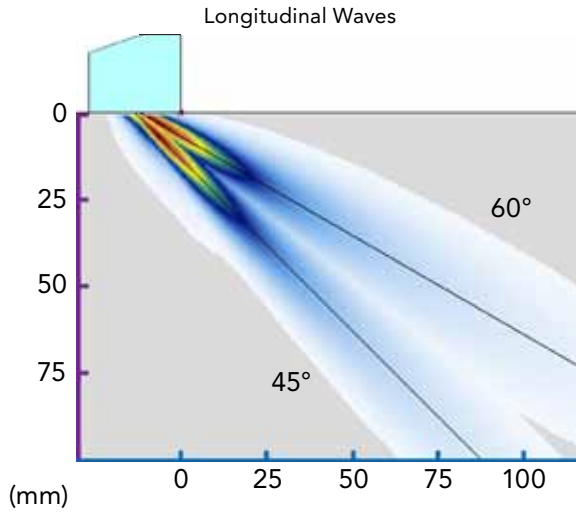
Type A - Medium / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AM-55LW	LW	Type A - Medium / 55LW	55°	30° to 70°
AM-55SW	SW	Type A - Medium / 55SW	55°	40° to 70°

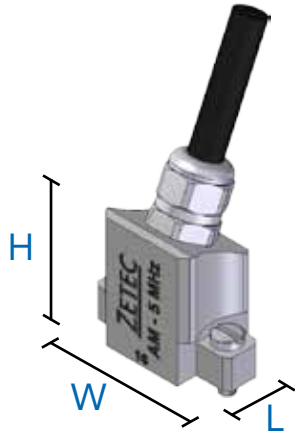
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	16 elements (1 to 16)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	6.50 mm (0.256 in.)	19.00 mm (0.748 in.)	1.00 mm (0.039 in.)	6.00 mm (0.236 in.)
Focal Zone Length	28.25 mm (1.112 in.)	65.41 mm (2.575 in.)	22.91 mm (0.902 in.)	56.11 mm (2.209 in.)
Dimension in the Incident Plane	3.86 mm (0.152 in.)	3.88 mm (0.153 in.)	3.73 mm (0.147 in.)	3.89 mm (0.153 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	7.00 mm (0.276 in.)	6.00 mm (0.236 in.)

Type A - Medium - 5 MHz



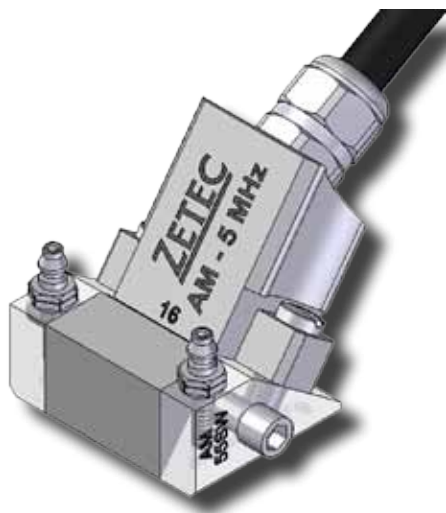
Features & Benefits

- Small footprint
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

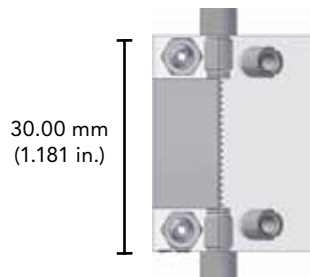
Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AM-5MHz-*	5.0	16	0.60 mm (0.024 in.)	9.60 mm (0.378 in.)	10.00 mm (0.374 in.)	16.0 mm (0.630 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

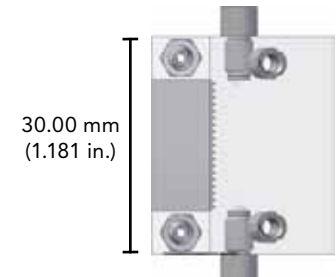
(*) : -ZIRCON or -DYNARAY



Type A - Medium / 55SW



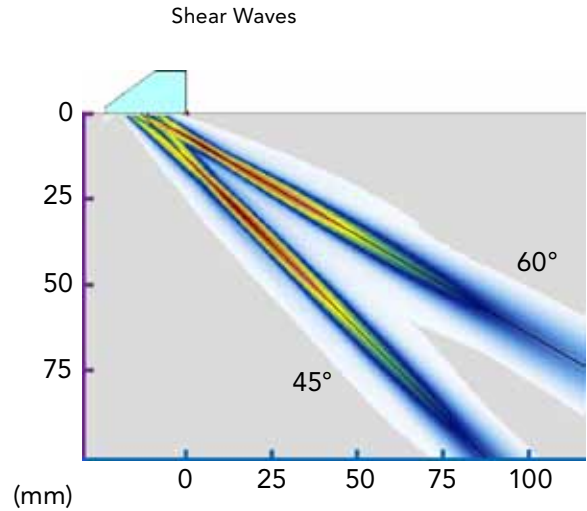
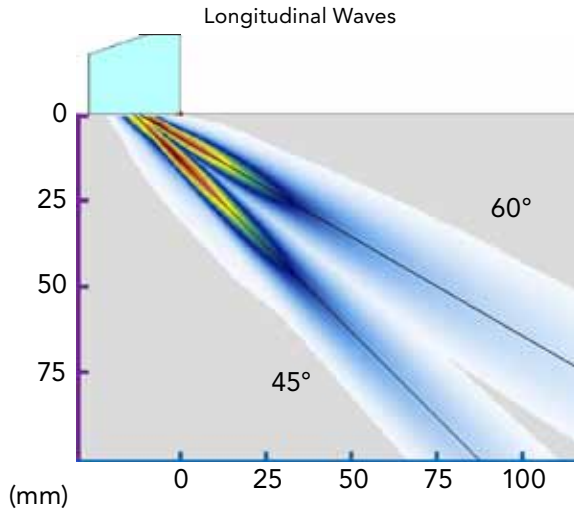
Type A - Medium / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AM-55LW	LW	Type A - Medium / 55LW	55°	30° to 70°
AM-55SW	SW	Type A - Medium / 55SW	55°	40° to 70°

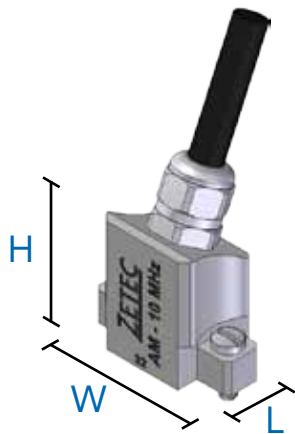
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	16 elements (1 to 16)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	12.00 mm (0.472 in.)	26.00 mm (1.024 in.)	2.50 mm (0.098 in.)	9.50 mm (0.374 in.)
Focal Zone Length	43.83 mm (1.726 in.)	93.69 mm (3.689 in.)	32.40 mm (1.276 in.)	77.64 mm (3.057 in.)
Dimension in the Incident Plane	3.68 mm (0.145 in.)	4.24 mm (0.167 in.)	3.47 mm (0.137 in.)	3.92 mm (0.154 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	7.00 mm (0.276 in.)	7.00 mm (0.276 in.)	7.00 mm (0.276 in.)

Type A - Medium - 10 MHz



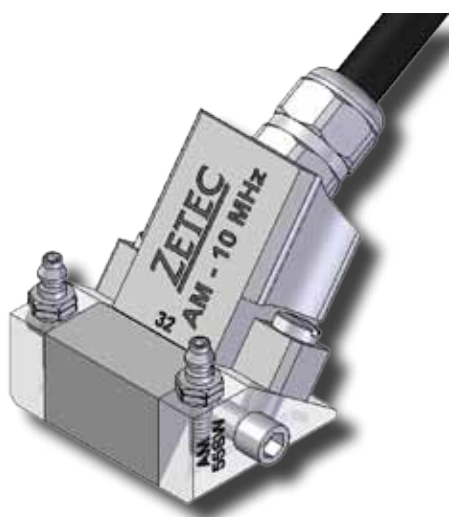
Features & Benefits

- Small footprint
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

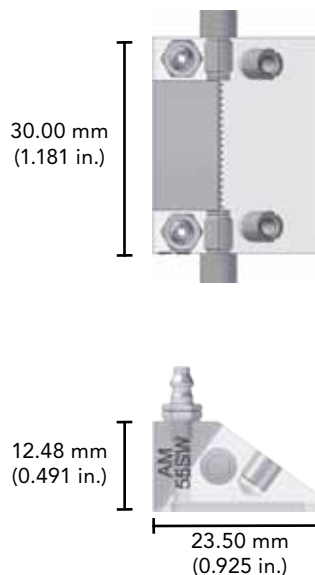
Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AM-10MHz*	10.0	32	0.31 mm (0.012 in.)	9.92 mm (0.391 in.)	10.00 mm (0.394 in.)	16.0 mm (0.630 in.)	30.0 mm (1.181 in.)	25.0 mm (0.984 in.)

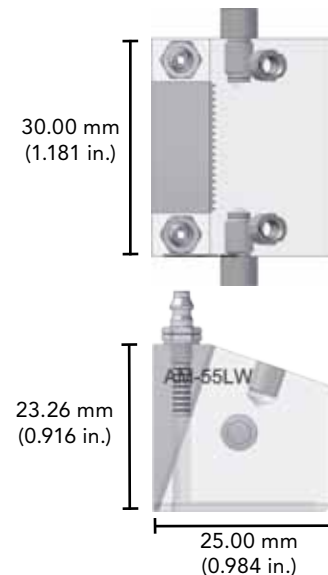
(*) : -ZIRCON or -DYNARAY



Type A - Medium / 55SW



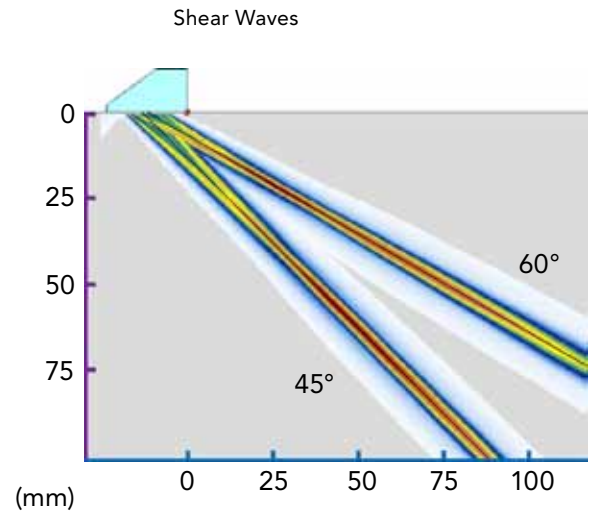
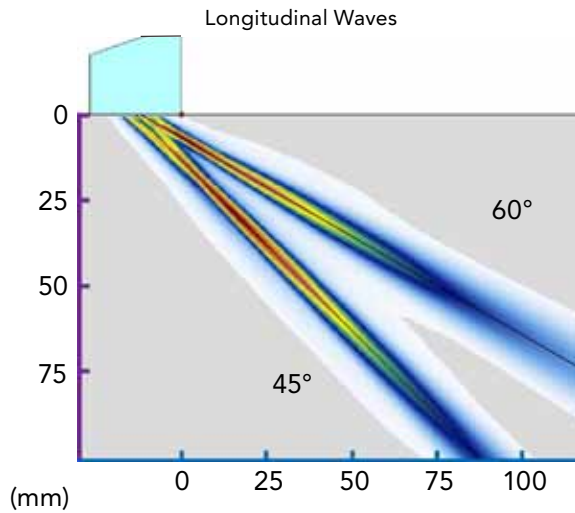
Type A - Medium / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AM-55LW	LW	Type A - Medium / 55LW	55°	30° to 70°
AM-55SW	SW	Type A - Medium / 55SW	55°	40° to 70°

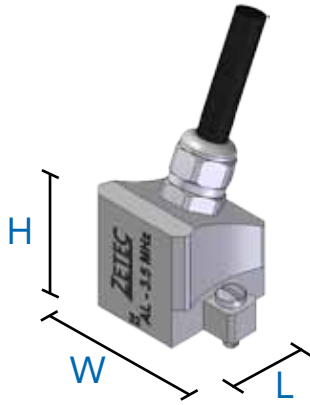
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (1 to 32)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	29.00 mm (1.142 in.)	32.00 mm (1.260 in.)	7.00 mm (0.276 in.)	21.50 mm (0.846 in.)
Focal Zone Length	95.81 mm (3.772 in.)	191.63 mm (7.544 in.)	69.14 mm (2.722 in.)	158.69 mm (6.248 in.)
Dimension in the Incident Plane	4.60 mm (0.181 in.)	5.30 mm (0.209 in.)	3.35 mm (0.132 in.)	4.37 mm (0.172 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	7.00 mm (0.276 in.)	7.00 mm (0.276 in.)	8.00 mm (0.315 in.)

Type A - Large - 3.5 MHz



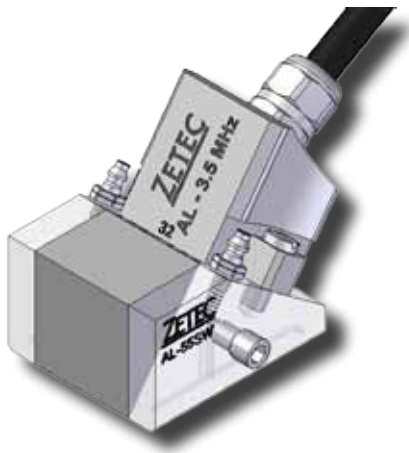
Features & Benefits

- Large active aperture for high acoustic energy
- Adapted for inspection of thick carbon steel specimens
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

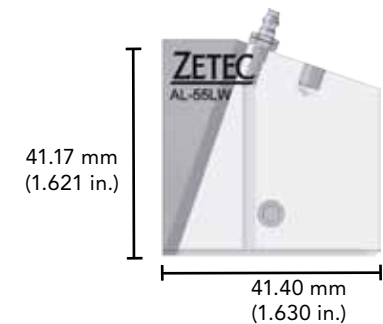
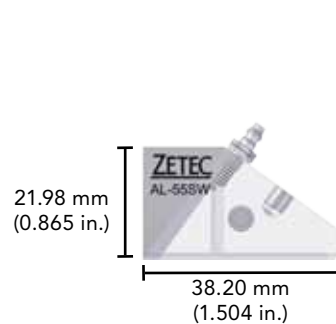
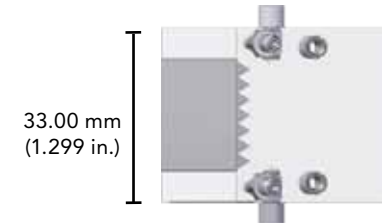
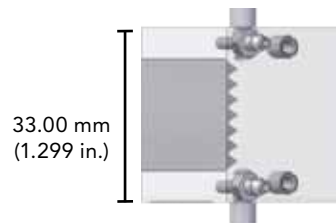
Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AL-3.5MHz-*	3.5	32	0.60 mm (0.024 in.)	19.20 mm (0.756 in.)	15.00 mm (0.591 in.)	24.0 mm (0.945 in.)	33.0 mm (1.299 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY



Type A - Large / 55SW

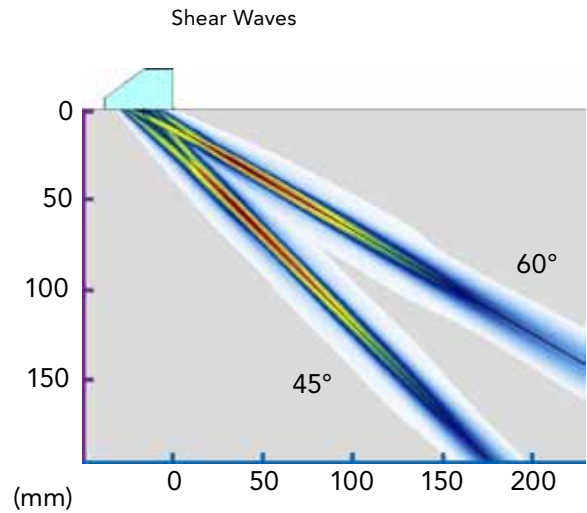
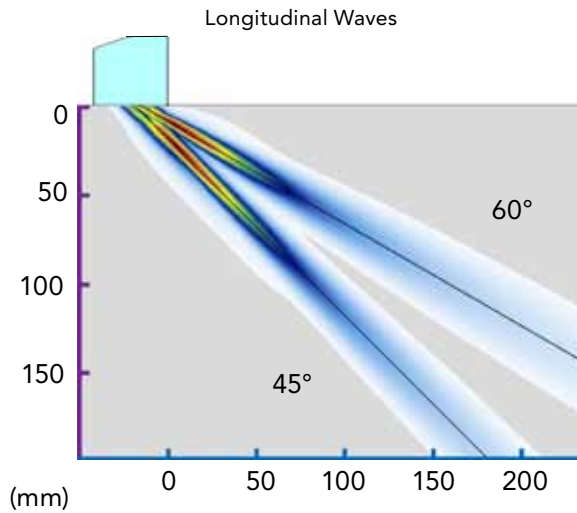
Type A - Large / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AL-55LW	LW	Type A - Large / 55LW	55°	30° to 70°
AL-55SW	SW	Type A - Large / 55SW	55°	40° to 70°

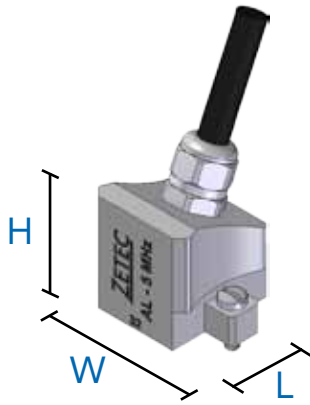
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (1 to 32)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	24.00 mm (0.945 in.)	54.50 mm (2.146 in.)	11.00 mm (0.433 in.)	29.00 mm (1.142 in.)
Focal Zone Length	81.31 mm (3.201 in.)	165.46 mm (6.514 in.)	67.25 mm (2.647 in.)	145.42 mm (5.725 in.)
Dimension in the Incident Plane	6.39 mm (0.252 in.)	6.72 mm (0.265 in.)	5.64 mm (0.222 in.)	6.02 mm (0.237 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	8.00 mm (0.315 in.)	8.00 mm (0.315 in.)

Type A - Large - 5 MHz



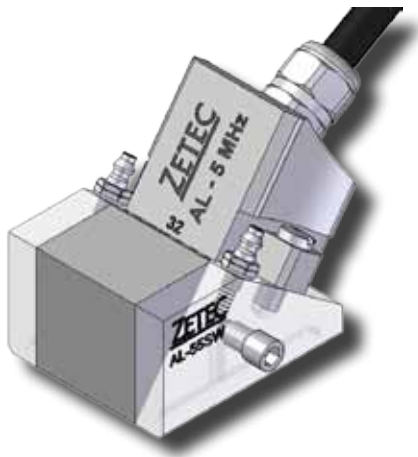
Features & Benefits

- Large active aperture for high acoustic energy
- Adapted for inspection of thick carbon steel specimens
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

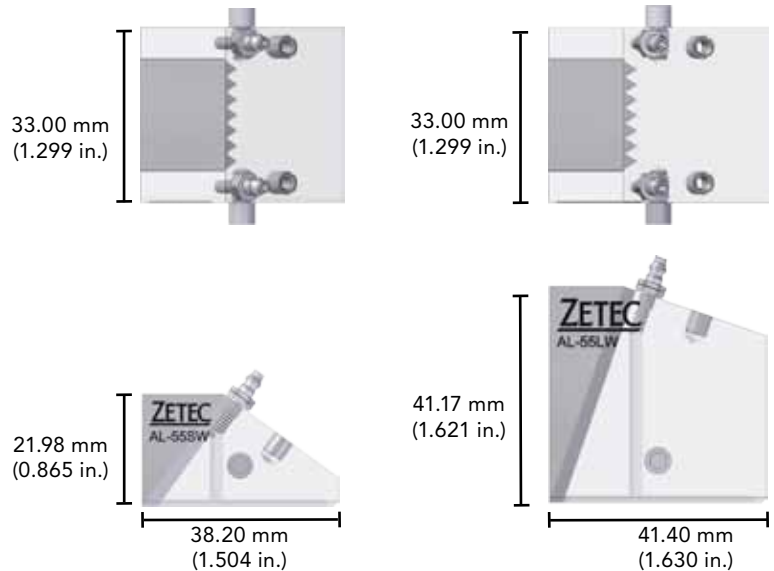
Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AL-5MHz-*	5.0	32	0.60 mm (0.024 in.)	19.20 mm (0.756 in.)	15.00 mm (0.591 in.)	24.0 mm (0.945 in.)	33.0 mm (1.299 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY



Type A - Large / 55SW

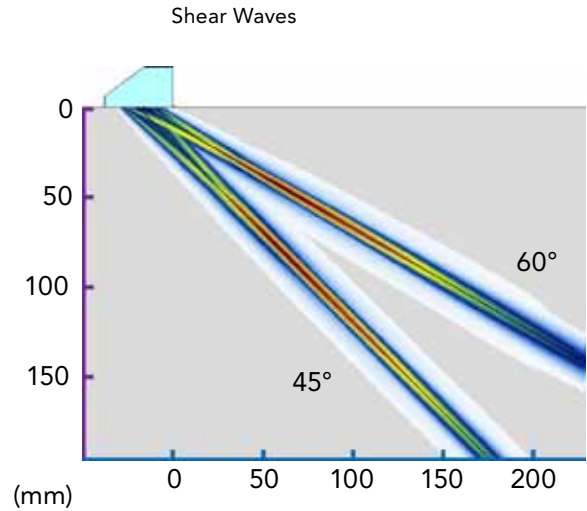
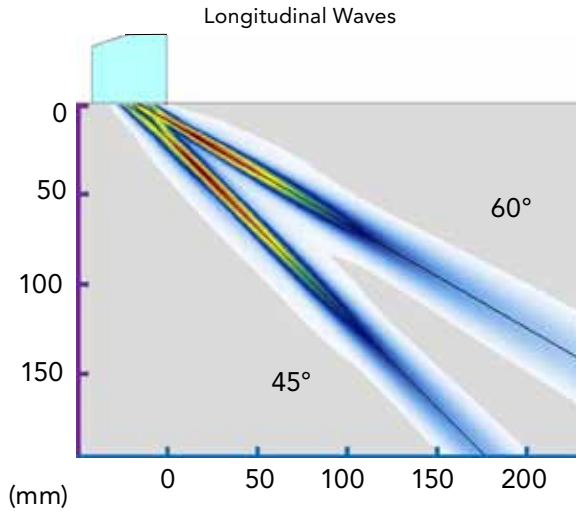
Type A - Large / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AL-55LW	LW	Type A - Large / 55LW	55°	30° to 70°
AL-55SW	SW	Type A - Large / 55SW	55°	40° to 70°

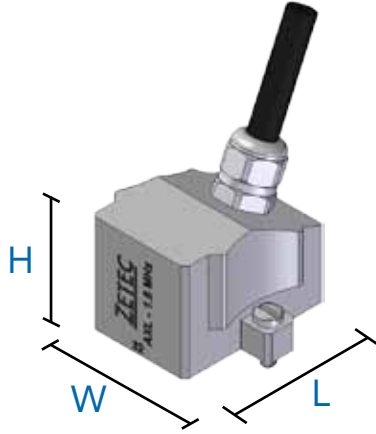
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (1 to 32)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	39.00 mm (1.535 in.)	73.50 mm (2.894 in.)	18.00 mm (0.709 in.)	43.50 mm (1.713 in.)
Focal Zone Length	120.56 mm (4.746 in.)	221.68 mm (8.728 in.)	99.95 mm (3.935 in.)	208.55 mm (8.211 in.)
Dimension in the Incident Plane	6.39 mm (0.252 in.)	6.03 mm (0.237 in.)	5.90 mm (0.232 in.)	6.52 mm (0.257 in.)
Dimension in the Perpendicular Plane	7.00 mm (0.276 in.)	6.00 mm (0.236 in.)	9.00 mm (0.354 in.)	9.00 mm (0.354 in.)

Type A - X-Large - 1.5 MHz



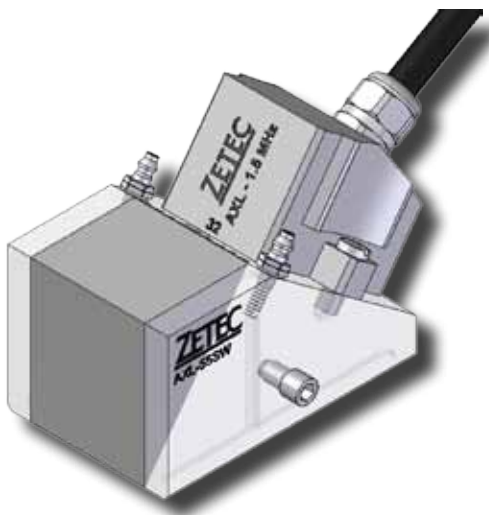
Features & Benefits

- Large active aperture for high acoustic energy
- Adapted for inspection of thick stainless steel specimens
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

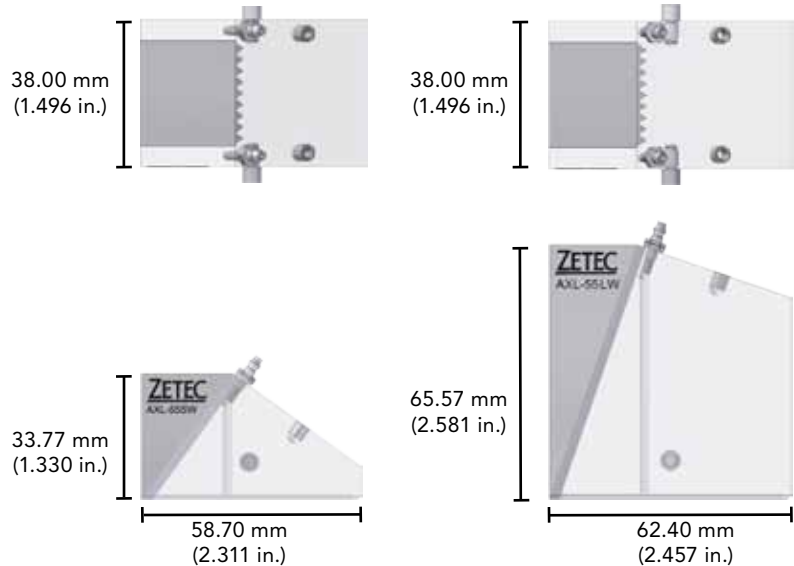
Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AXL-1.5MHz-*	1.5	32	1.00 mm (0.039 in.)	32.00 mm (1.260 in.)	20.00 mm (0.787 in.)	36.0 mm (1.417 in.)	38.0 mm (1.496 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY



Type A - Xlarge / 55SW

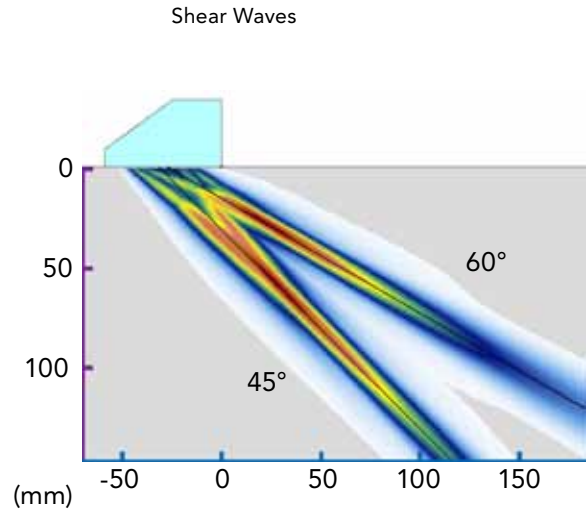
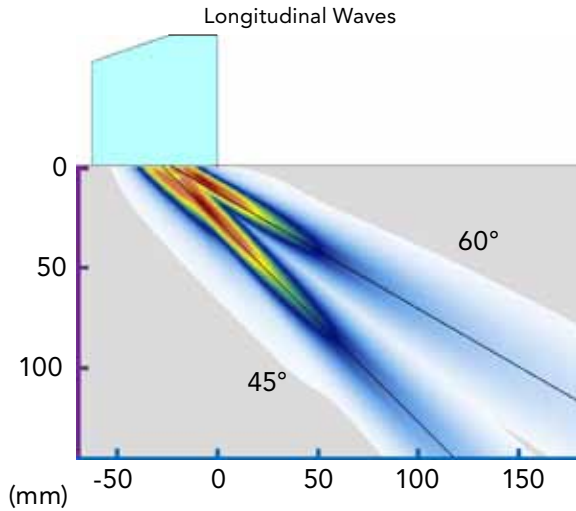
Type A - Xlarge / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AXL-55LW	LW	Type A - Xlarge / 55LW	55°	30° to 70°
AXL-55SW	SW	Type A - Xlarge / 55SW	55°	40° to 70°

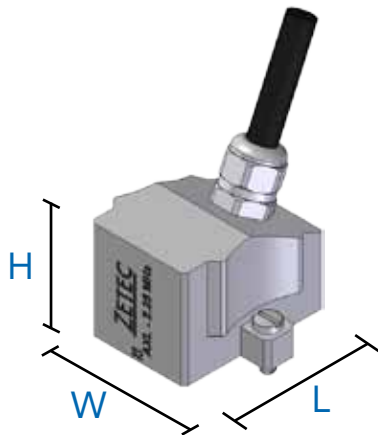
Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (1 to 32)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	18.00 mm (0.709 in.)	56.50 mm (2.224 in.)	6.50 mm (0.256 in.)	29.00 mm (1.142 in.)
Focal Zone Length	85.95 mm (3.384 in.)	175.75 mm (6.919 in.)	61.50 mm (2.421 in.)	161.46 mm (6.357 in.)
Dimension in the Incident Plane	13.75 mm (0.541 in.)	14.65 mm (0.577 in.)	8.98 mm (0.354 in.)	8.65 mm (0.341 in.)
Dimension in the Perpendicular Plane	10.00 mm (0.394 in.)	10.00 mm (0.394 in.)	8.00 mm (0.315 in.)	8.00 mm (0.315 in.)

Type A - X-Large - 2.25 MHz



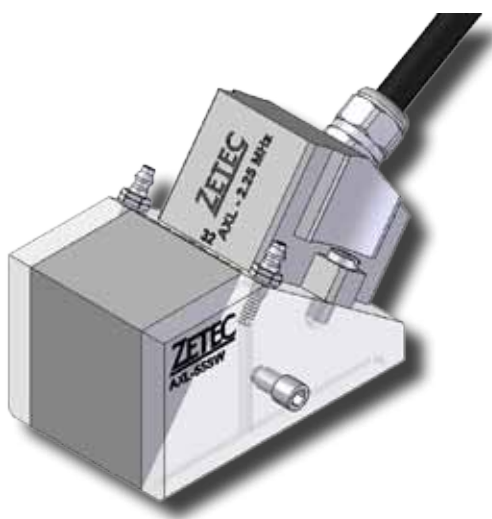
Features & Benefits

- Large active aperture for high acoustic energy
- Adapted for inspection of thick stainless steel specimens
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

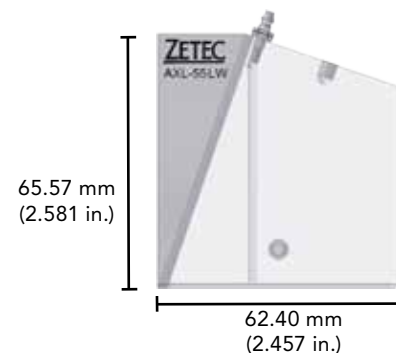
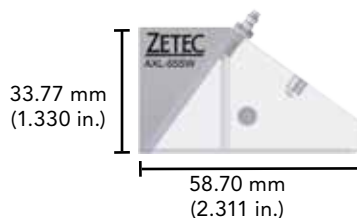
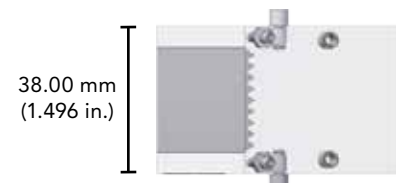
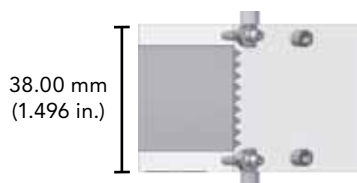
Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
AXL-2.25MHz-*	2.25	32	1.00 mm (0.039 in.)	32.00 mm (1.260 in.)	20.00 mm (0.787 in.)	36.0 mm (1.417 in.)	38.0 mm (1.496 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY



Type A - Xlarge / 55SW

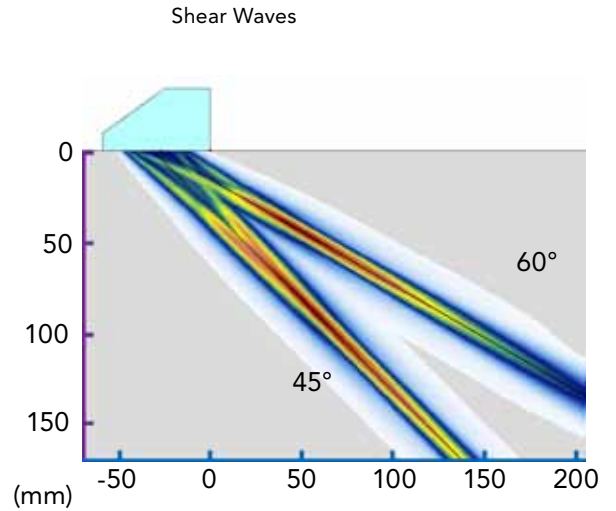
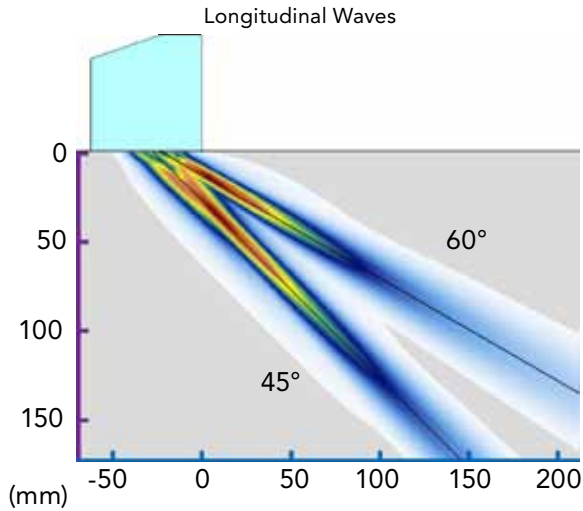
Type A - Xlarge / 55LW



Recommended Wedges

Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
AXL-55LW	LW	Type A - Xlarge / 55LW	55°	30° to 70°
AXL-55SW	SW	Type A - Xlarge / 55SW	55°	40° to 70°

Acoustic Beam Simulation



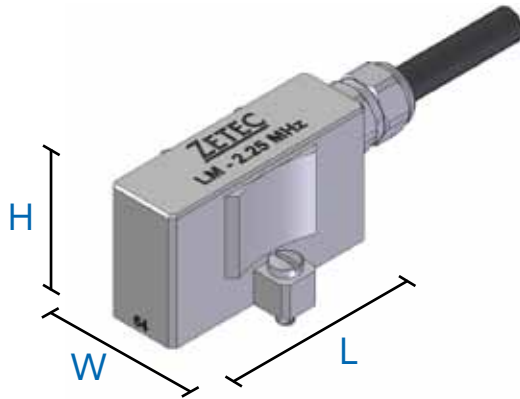
Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (1 to 32)			
	45°		60°	
Angle				
Wave Type	LW	SW	LW	SW
Maximum Sound Field Depth	33.00 mm (1.299 in.)	88.00 mm (3.465 in.)	14.50 mm (0.571 in.)	40.00 mm (1.575 in.)
Focal Zone Length	124.46 mm (4.900 in.)	235.83 mm (9.285 in.)	82.94 mm (3.265 in.)	181.44 mm (7.143 in.)
Dimension in the Incident Plane	12.37 mm (0.487 in.)	12.70 mm (0.500 in.)	8.00 mm (0.315 in.)	8.02 mm (0.316 in.)
Dimension in the Perpendicular Plane	9.00 mm (0.354 in.)	10.00 mm (0.394 in.)	8.00 mm (0.315 in.)	8.00 mm (0.315 in.)

Probes for Linear Scanning



Type L - Medium - 2.25 MHz



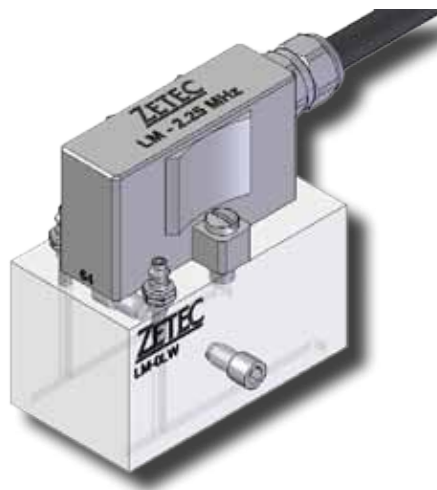
Features & Benefits

- Large aperture for linear scan
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LM-2.25MHz-*	2.25	64	0.60 mm (0.024 in.)	38.40 mm (1.512 in.)	10.00 mm (0.394 in.)	43.0 mm (1.693 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

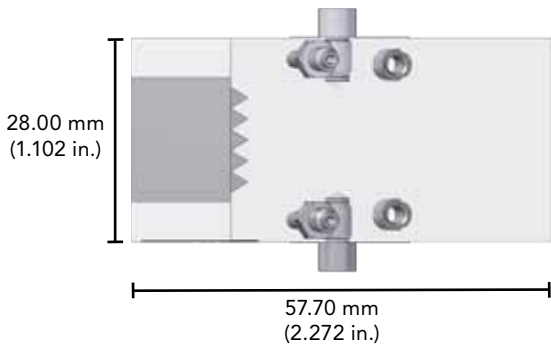


Recommended Wedges

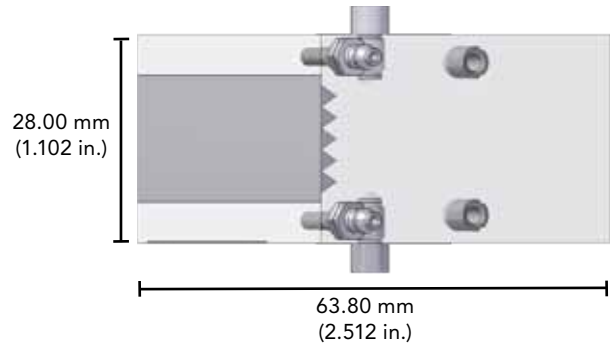
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LM-0LW	LW	Type L - Medium / 0LW	0°	-25° to 25°
LM-55LW	LW	Type L - Medium / 55LW	55°	40° to 70°
LM-55SW	SW	Type L - Medium / 55SW	55°	40° to 70°

Wedges Dimensions

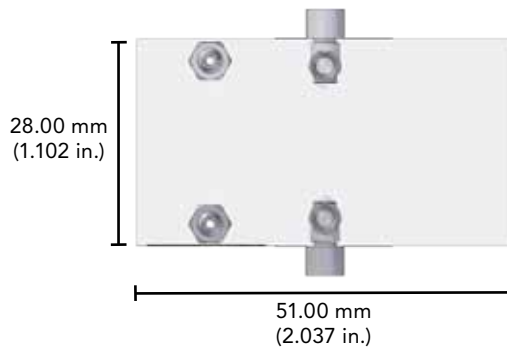
Type L - Medium / 55LW



Type L - Medium / 55SW

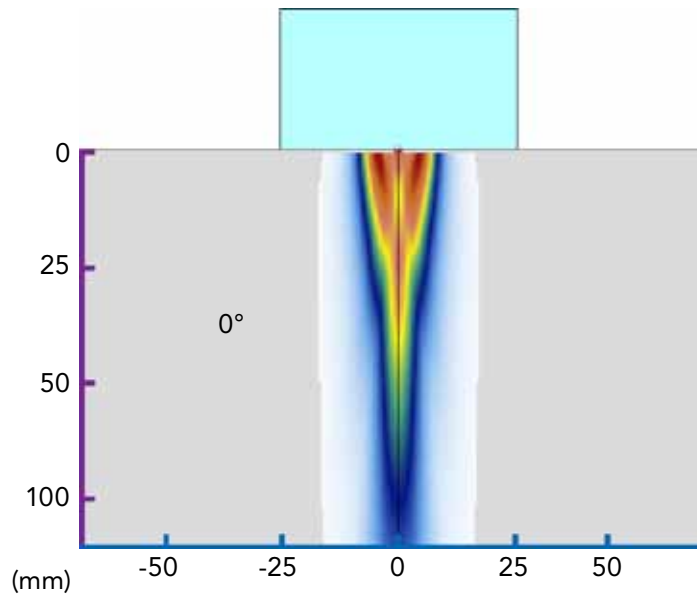


Type L - Medium / 0LW

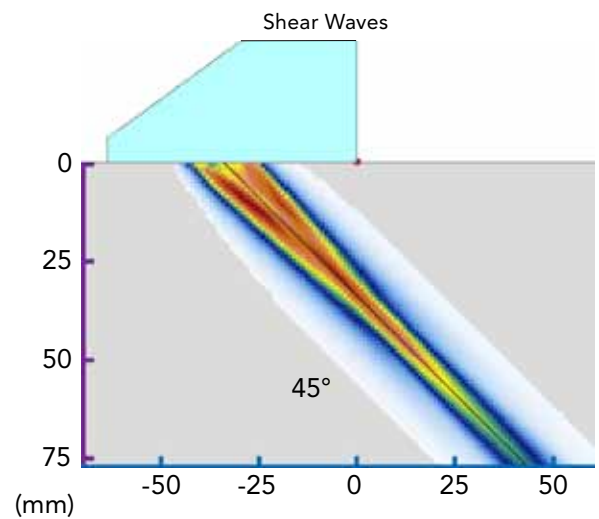
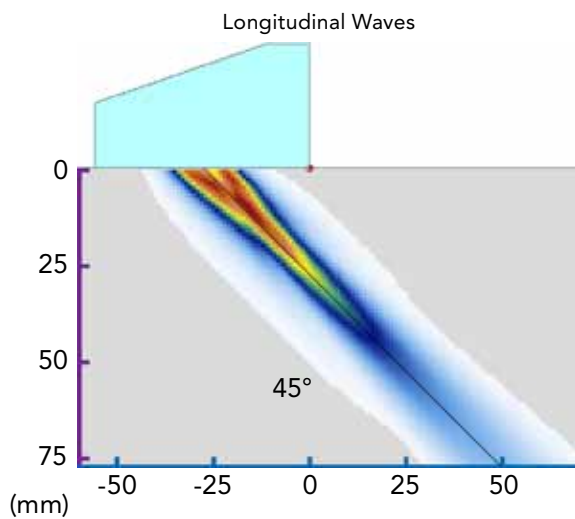


Type L - Medium - 2.25 MHz (continued)

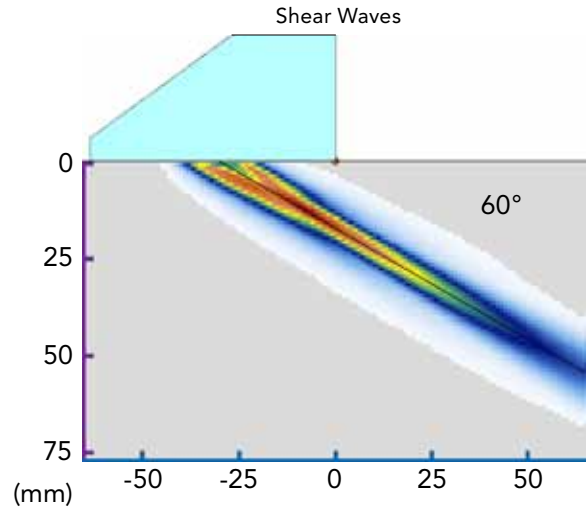
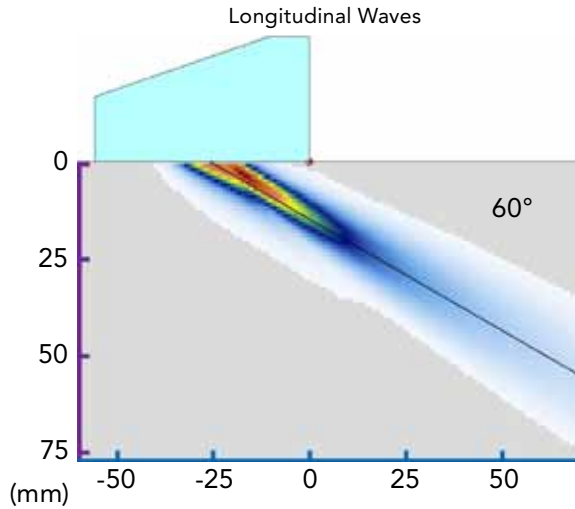
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



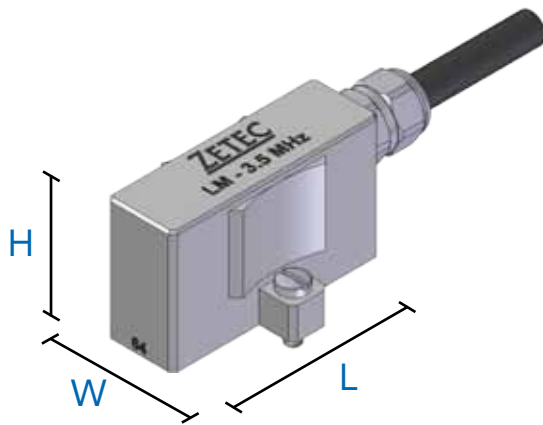
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (17 to 48)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	1.00 mm (0.039 in.)	10.00 mm (0.394 in.)	11.00 mm (0.433 in.)	4.00 mm (0.157 in.)	13.00 mm (0.512 in.)
Focal Zone Length	46.50 mm (1.831 in.)	46.02 mm (1.812 in.)	93.37 mm (3.676 in.)	29.38 mm (1.157 in.)	69.23 mm (2.726 in.)
Dimension in the Incident Plane	14.00 mm (0.551 in.)	9.16 mm (0.361 in.)	10.62 mm (0.418 in.)	5.64 mm (0.222 in.)	7.53 mm (0.296 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	4.00 mm (0.157 in.)	6.00 mm (0.236 in.)

Type L - Medium - 3.5 MHz



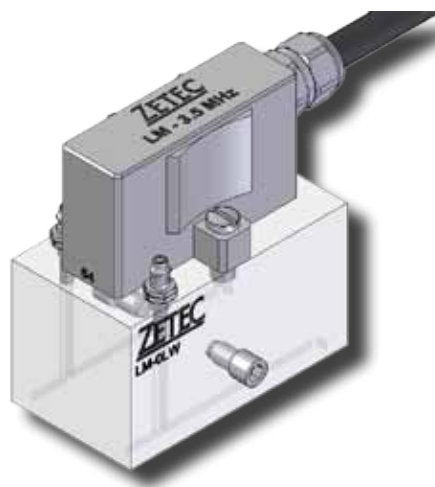
Features & Benefits

- Large aperture for linear scan
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LM-3.5MHz-*	3.5	64	0.60 mm (0.024 in.)	38.40 mm (1.512 in.)	10.00 mm (0.394 in.)	43.0 mm (1.693 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

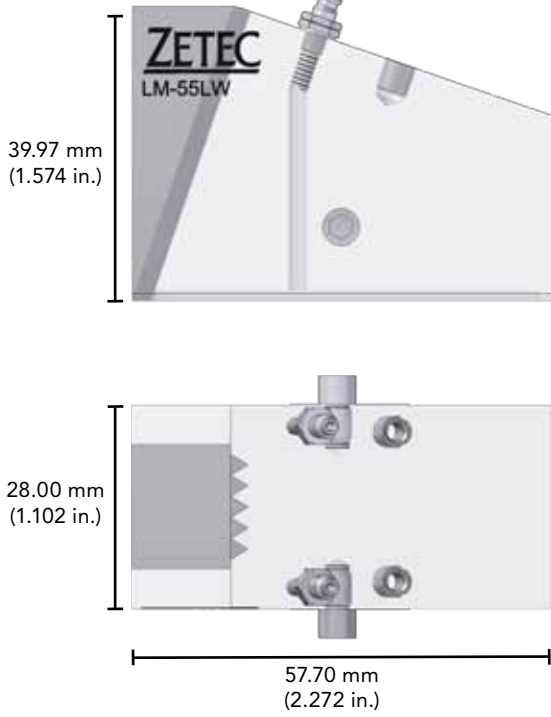


Recommended Wedges

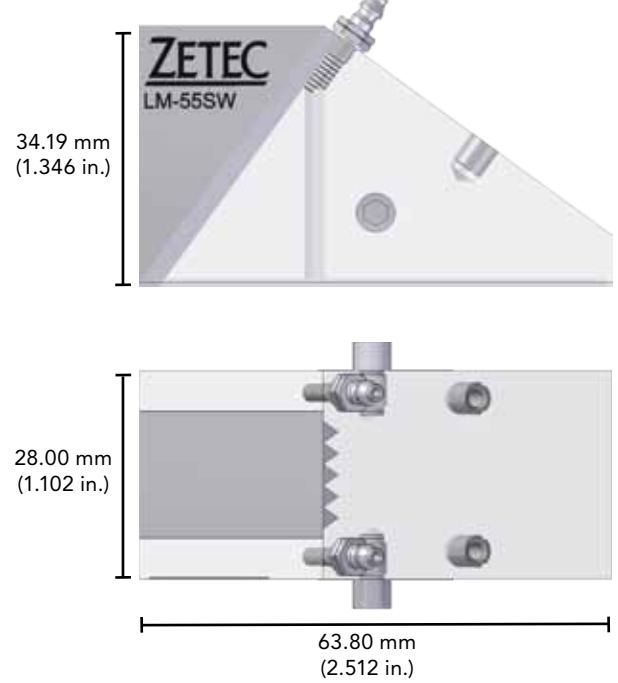
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LM-0LW	LW	Type L - Medium / 0LW	0°	-25° to 25°
LM-55LW	LW	Type L - Medium / 55LW	55°	40° to 70°
LM-55SW	SW	Type L - Medium / 55SW	55°	40° to 70°

Wedges Dimensions

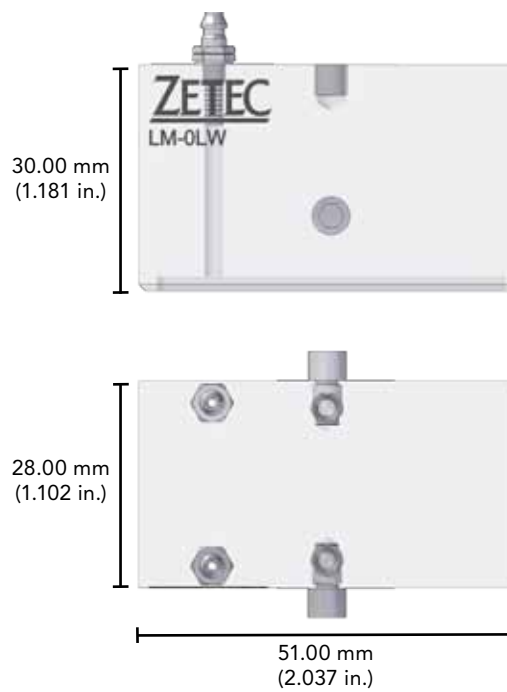
Type L - Medium / 55LW



Type L - Medium / 55SW

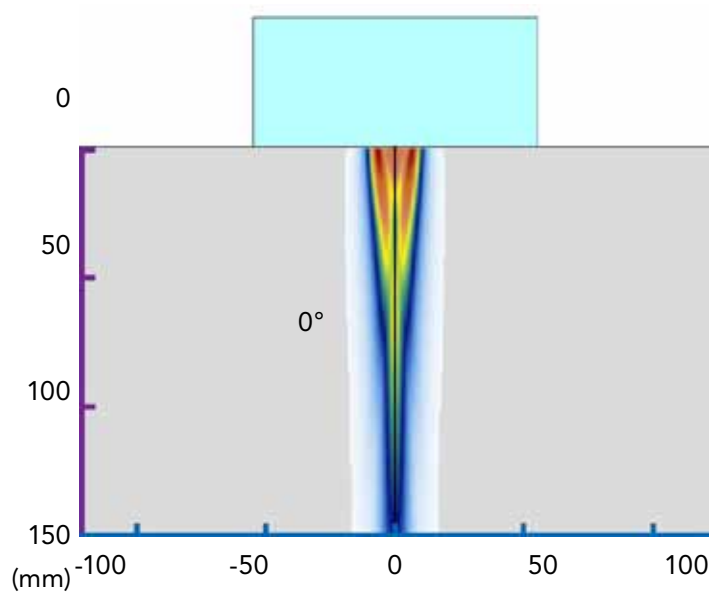


Type L - Medium / 0LW

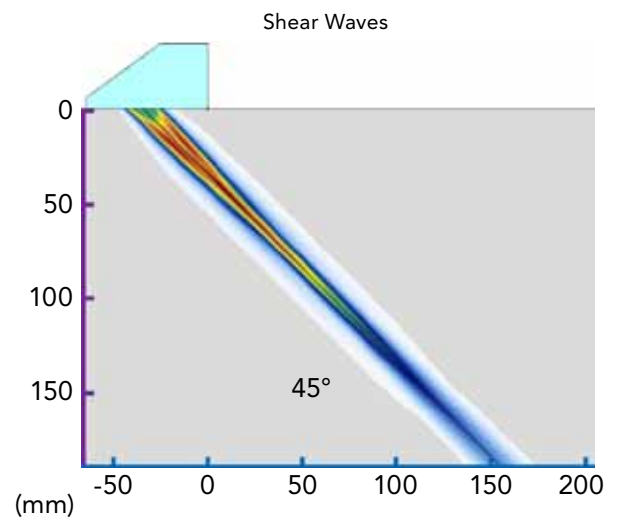
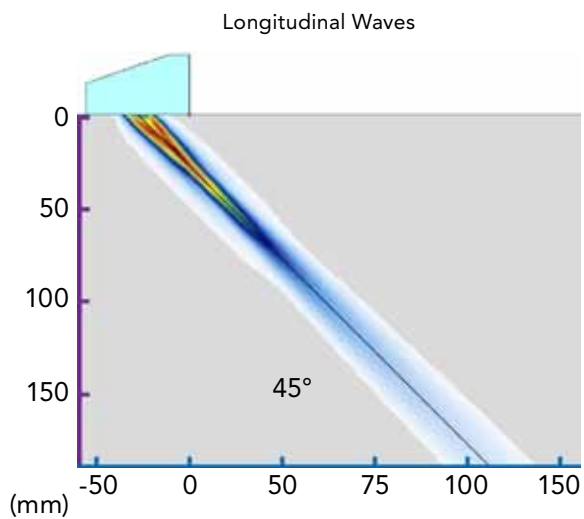


Type L - Medium - 3.5 MHz (continued)

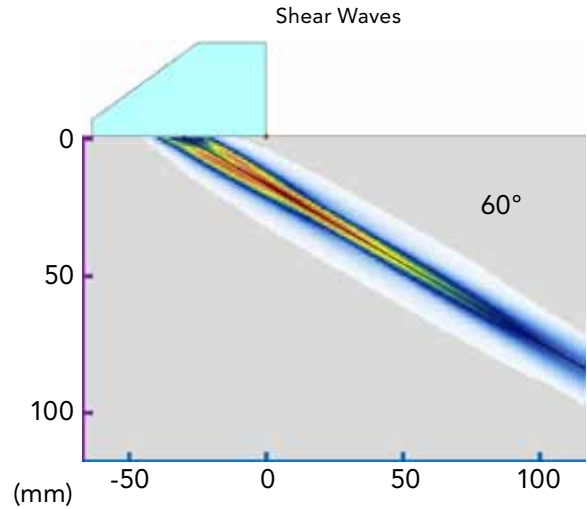
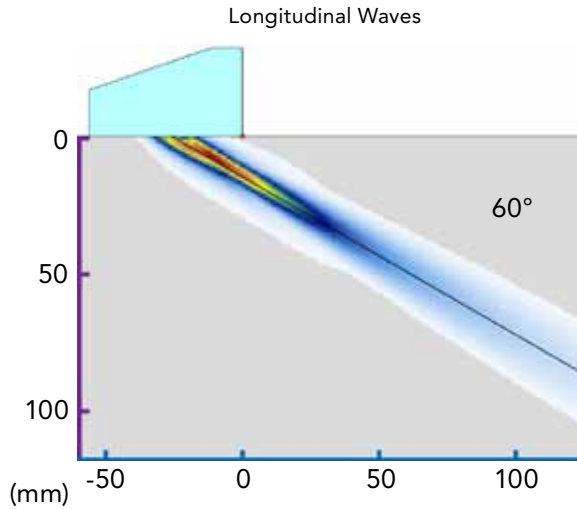
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



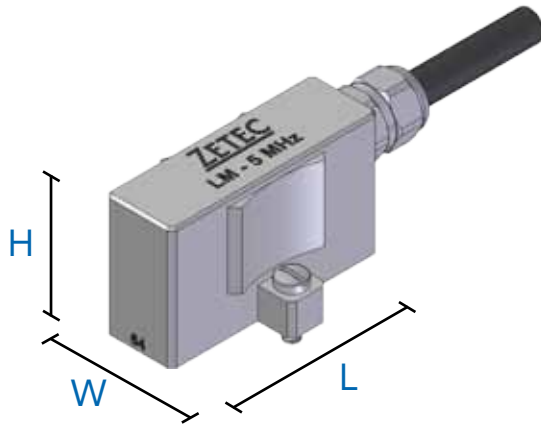
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (17 to 48)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	10.00 mm (0.394 in.)	18.00 mm (0.709 in.)	43.00 mm (1.693 in.)	8.00 mm (0.315 in.)	20.00 mm (0.787 in.)
Focal Zone Length	82.00 mm (3.228 in.)	68.63 mm (2.702 in.)	142.85 mm (5.624 in.)	43.79 mm (1.724 in.)	97.49 mm (3.838 in.)
Dimension in the Incident Plane	14.00 mm (0.551 in.)	9.22 mm (0.363 in.)	10.59 mm (0.417 in.)	5.31 mm (0.209 in.)	7.08 mm (0.279 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	4.00 mm (0.157 in.)	6.00 mm (0.236 in.)

Type L - Medium - 5 MHz



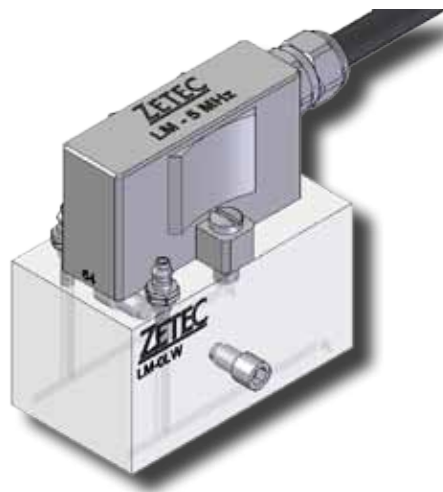
Features & Benefits

- Large aperture for linear scan
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LM-5MHz-*	5.0	64	0.60 mm (0.024 in.)	38.40 mm (1.512 in.)	10.00 mm (0.394 in.)	43.0 mm (1.693 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

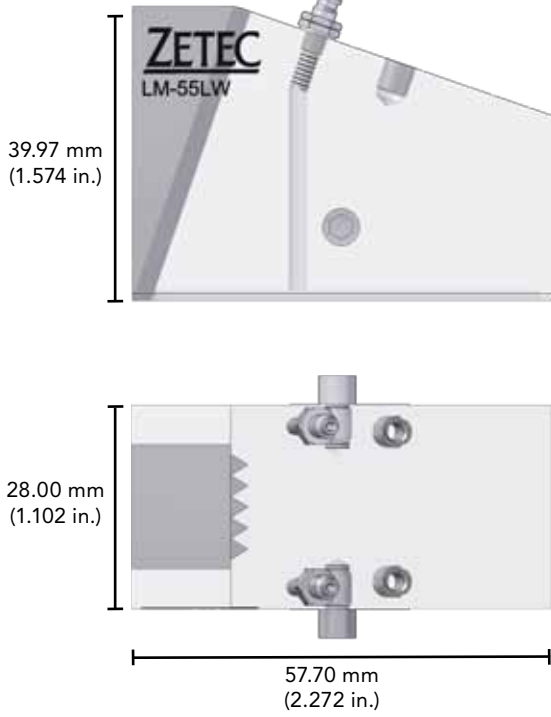


Recommended Wedges

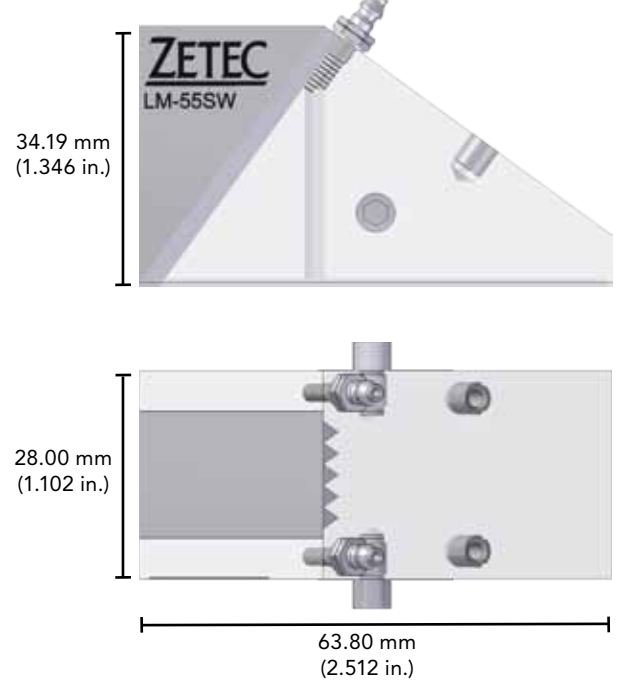
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LM-0LW	LW	Type L - Medium / 0LW	0°	-25° to 25°
LM-55LW	LW	Type L - Medium / 55LW	55°	40° to 70°
LM-55SW	SW	Type L - Medium / 55SW	55°	40° to 70°

Wedges Dimensions

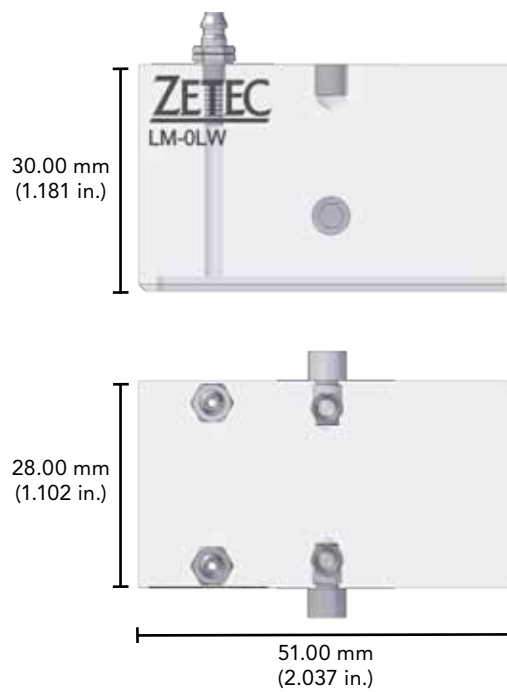
Type L - Medium / 55LW



Type L - Medium / 55SW

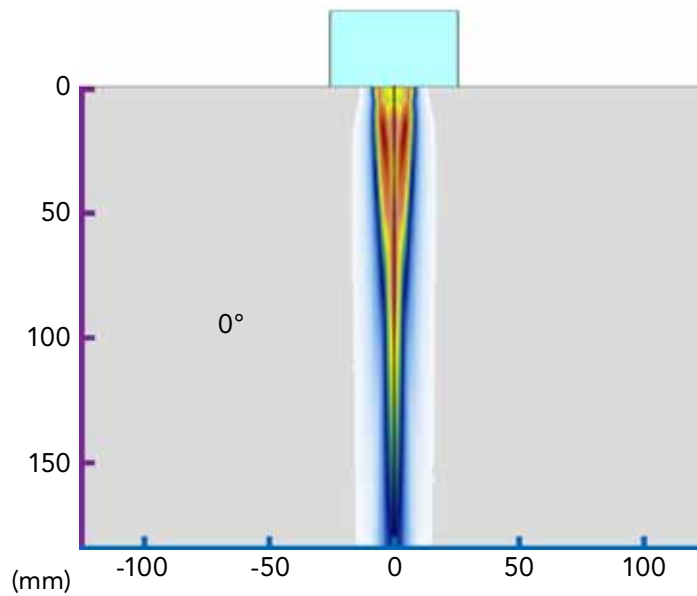


Type L - Medium / 0LW

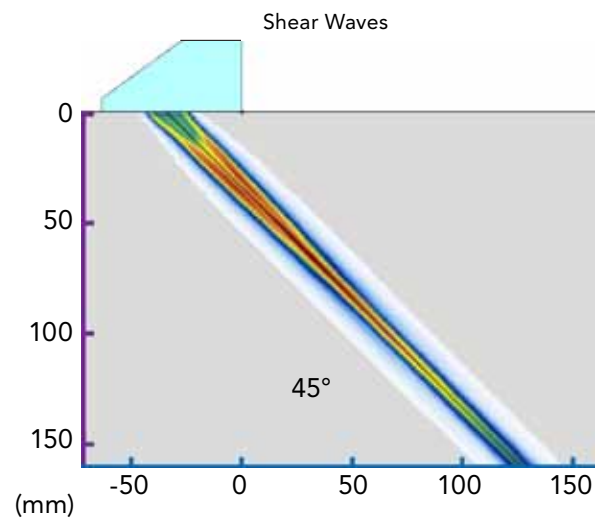
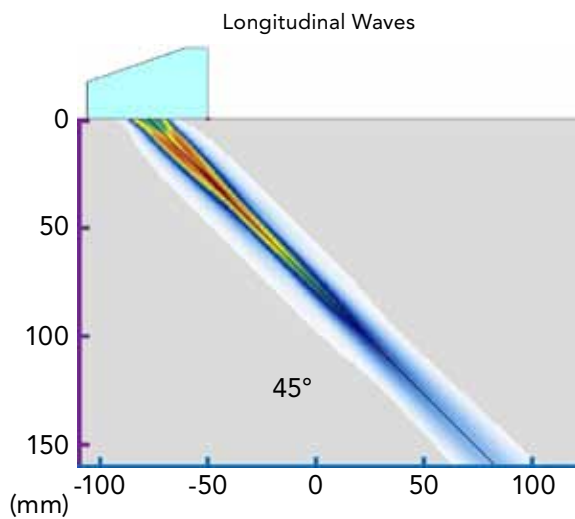


Type L - Medium - 5 MHz (continued)

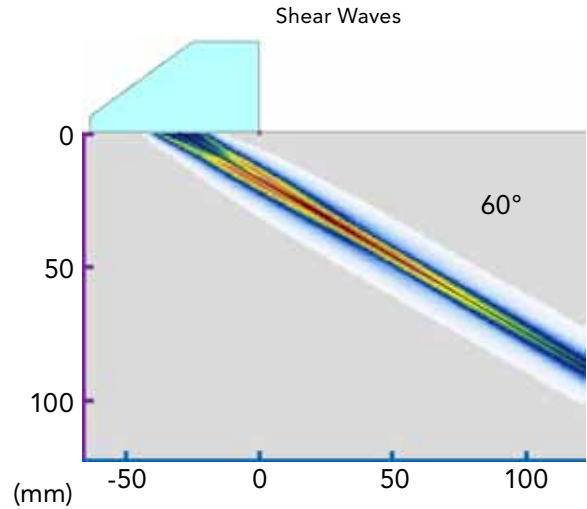
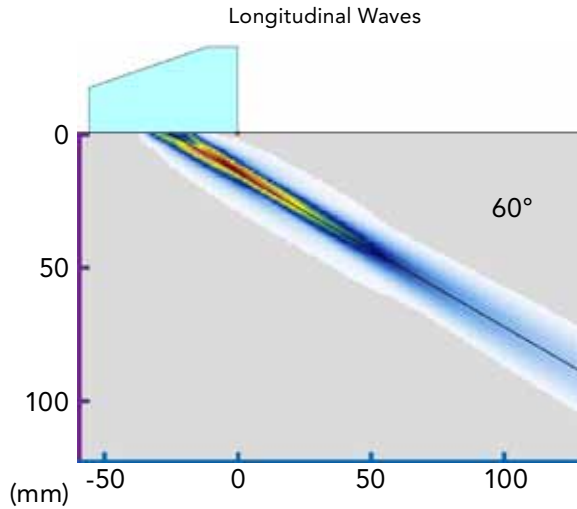
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



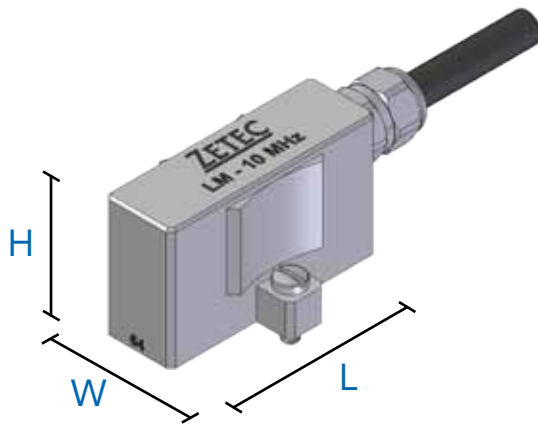
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (17 to 48)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	18.50 mm (0.728 in.)	28.00 mm (1.102 in.)	65.00 mm (2.559 in.)	12.00 mm (0.472 in.)	31.00 mm (1.220 in.)
Focal Zone Length	126.50 mm (4.980 in.)	95.48 mm (3.759 in.)	199.41 mm (7.851 in.)	56.81 mm (2.237 in.)	130.23 mm (5.127 in.)
Dimension in the Incident Plane	14.00 mm (0.551 in.)	9.22 mm (0.363 in.)	10.60 mm (0.417 in.)	4.97 mm (0.196 in.)	6.61 mm (0.260 in.)
Dimension in the Perpendicular Plane	7.00 mm (0.276 in.)	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	4.00 mm (0.157 in.)	4.00 mm (0.157 in.)

Type L - Medium - 10 MHz



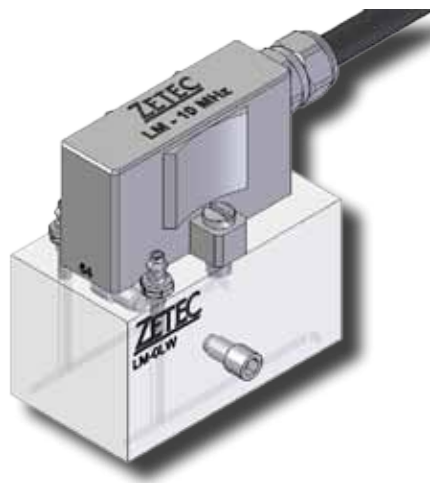
Features & Benefits

- Large aperture for linear scan
- Wide range of applications
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LM-10MHz-*	10.0	64	0.60 mm (0.024 in.)	38.40 mm (1.512 in.)	10.00 mm (0.394 in.)	43.0 mm (1.693 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

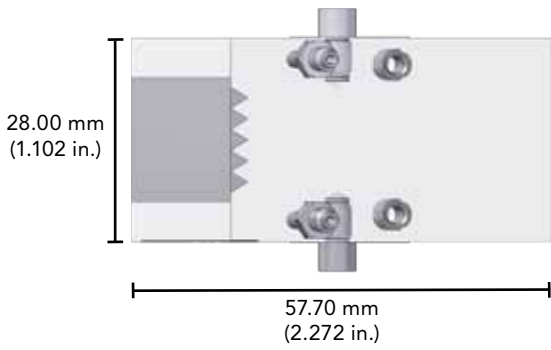


Recommended Wedges

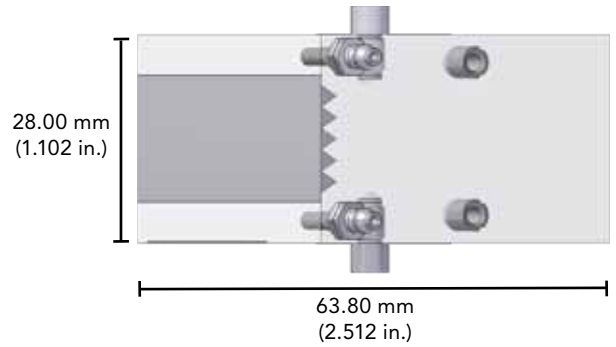
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LM-0LW	LW	Type L - Medium / 0LW	0°	-25° to 25°
LM-55LW	LW	Type L - Medium / 55LW	55°	40° to 70°
LM-55SW	SW	Type L - Medium / 55SW	55°	40° to 70°

Wedges Dimensions

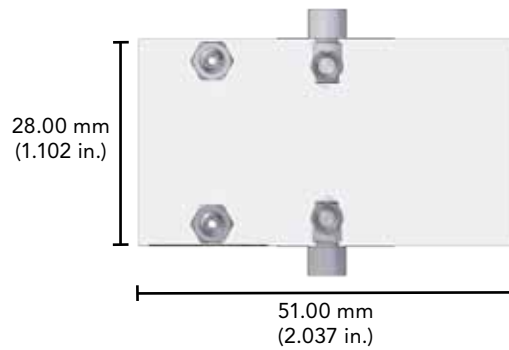
Type L - Medium / 55LW



Type L - Medium / 55SW

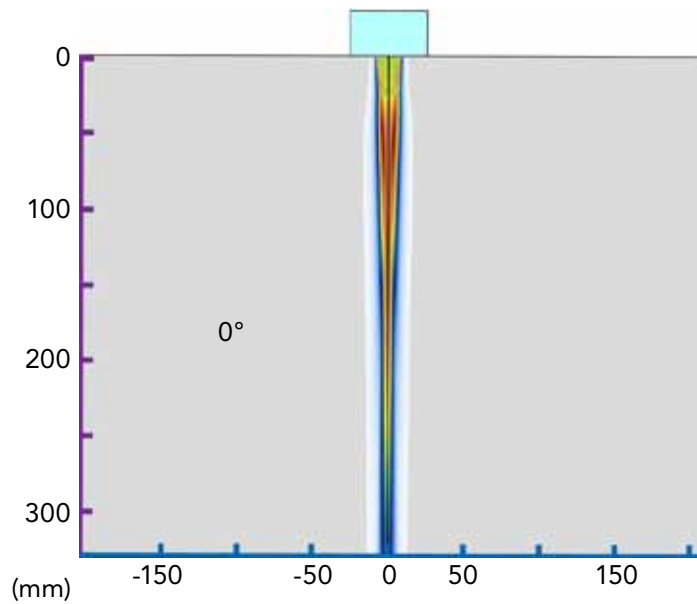


Type L - Medium / 0LW

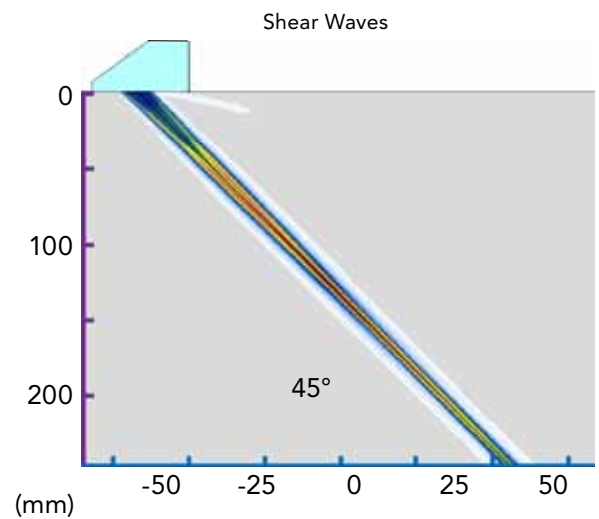
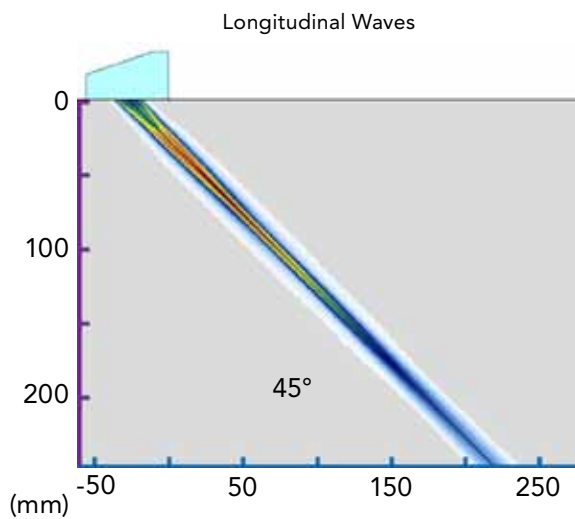


Type L - Medium - 10 MHz (continued)

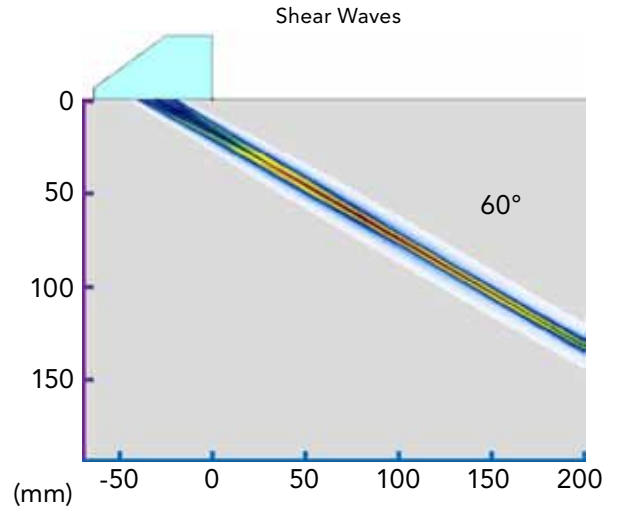
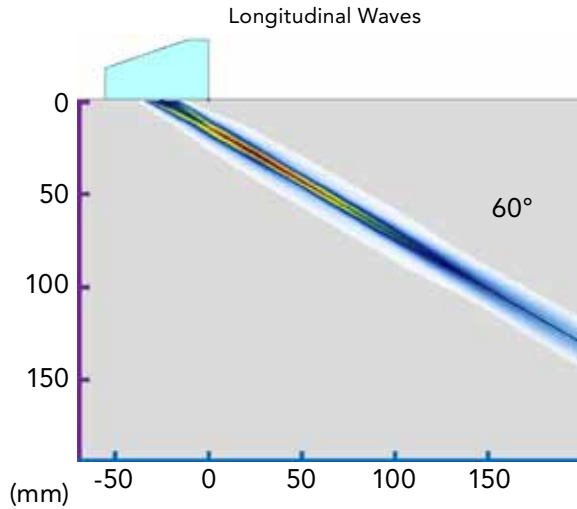
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



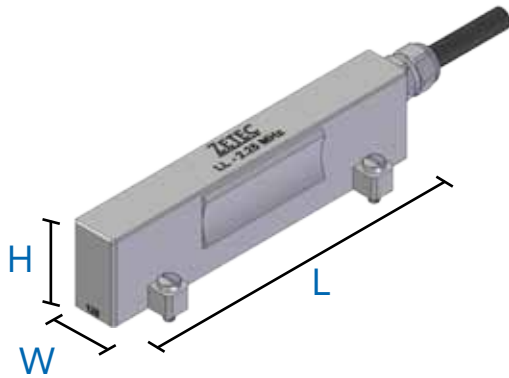
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (17 to 48)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	50.50 mm (1.988 in.)	60.00 mm (2.362 in.)	123.00 mm (4.843 in.)	26.00 mm (1.024 in.)	63.00 mm (2.480 in.)
Focal Zone Length	267.00 mm (10.512 in.)	181.74 mm (7.155 in.)	296.28 mm (11.665 in.)	111.88 mm (4.405 in.)	209.12 mm (8.233 in.)
Dimension in the Incident Plane	15.00 mm (0.591 in.)	9.19 mm (0.362 in.)	7.80 mm (0.307 in.)	4.68 mm (0.184 in.)	5.17 mm (0.204 in.)
Dimension in the Perpendicular Plane	8.00 mm (0.315 in.)	4.00 mm (0.157 in.)	6.00 mm (0.236 in.)	4.00 mm (0.157 in.)	4.00 mm (0.157 in.)

Type L - Large - 2.25 MHz



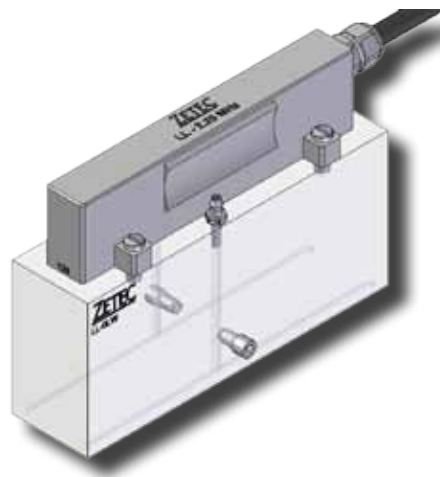
Features & Benefits

- Large aperture for linear scan
- Optimized for thickness measurement and corrosion mapping
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LL-2.25MHz-*	2.25	128	0.75 mm (0.030 in.)	96.00 mm (3.780 in.)	10.00 mm (0.394 in.)	100.0 mm (3.937 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

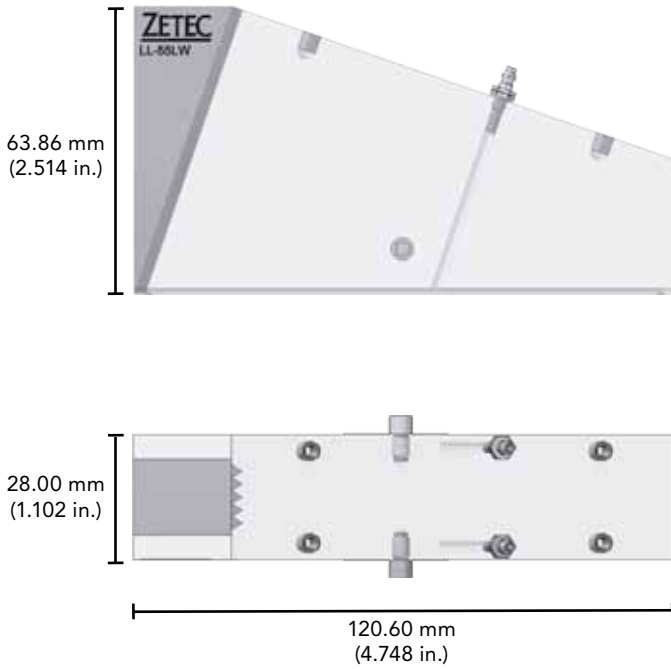


Recommended Wedges

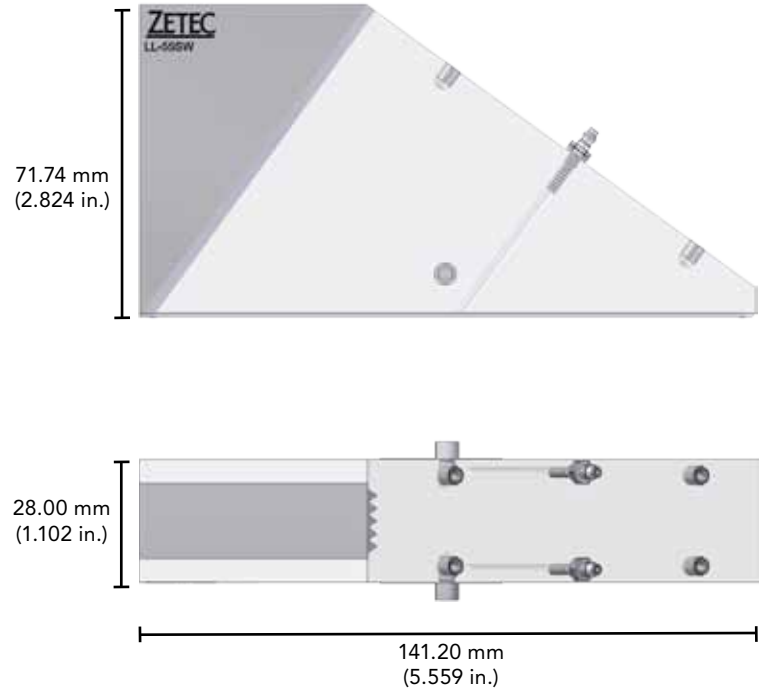
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LL-0LW	LW	Type L - Large / 0LW	0°	-25° to 25°
LL-55LW	LW	Type L - Large / 55LW	55°	40° to 70°
LL-55SW	SW	Type L - Large / 55SW	55°	40° to 70°

Wedges Dimensions

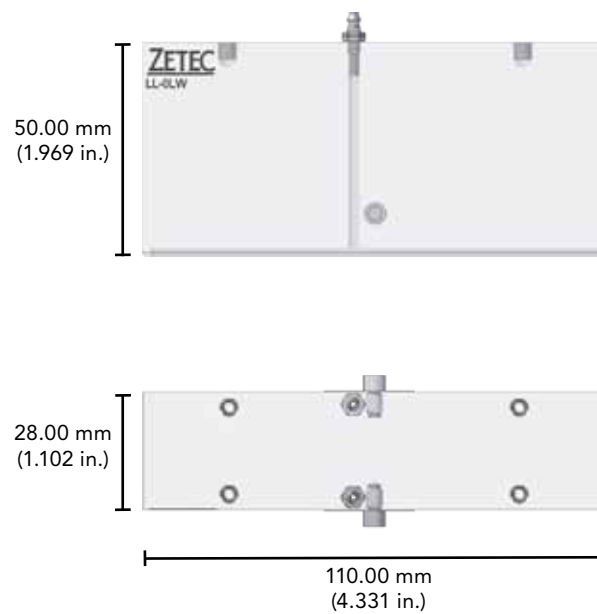
Type L - Large / 55LW



Type L - Large / 55SW

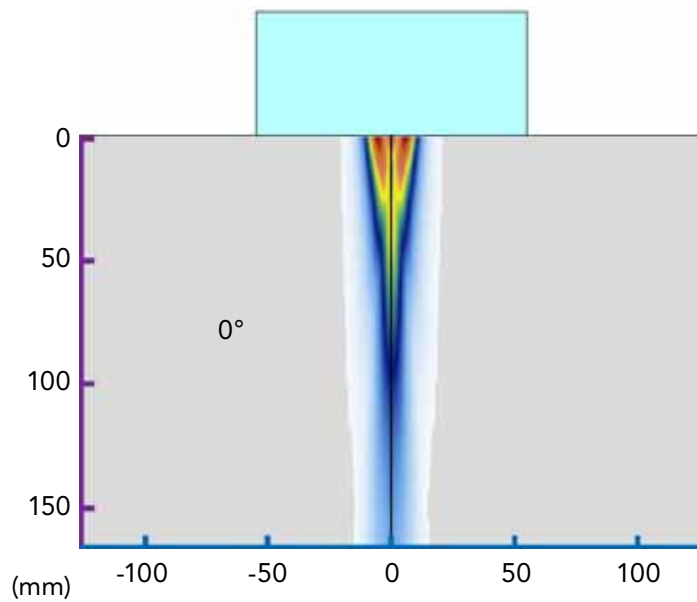


Type L - Large / 0LW

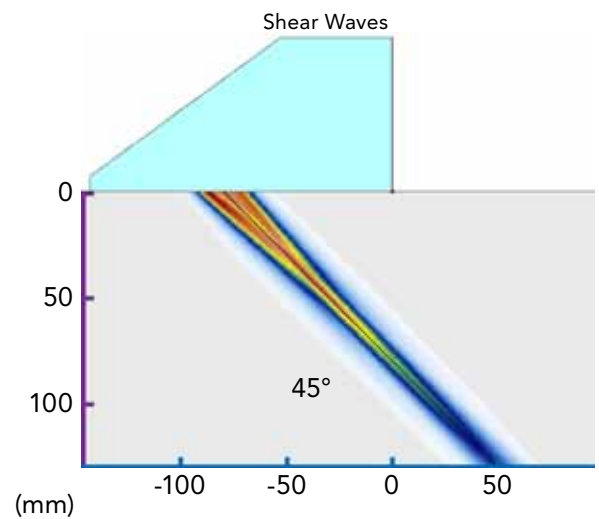
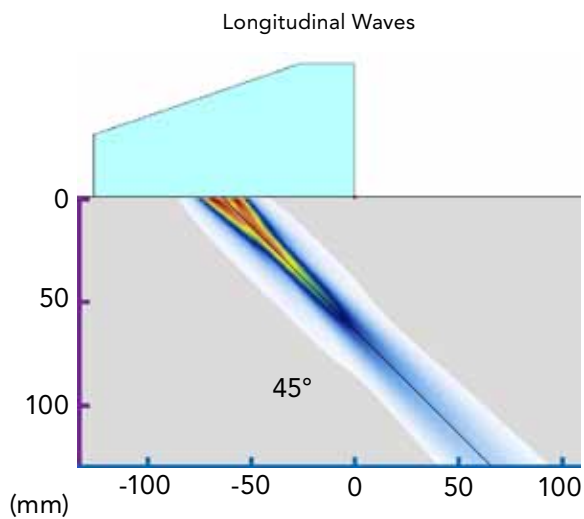


Type L - Large - 2.25 MHz (continued)

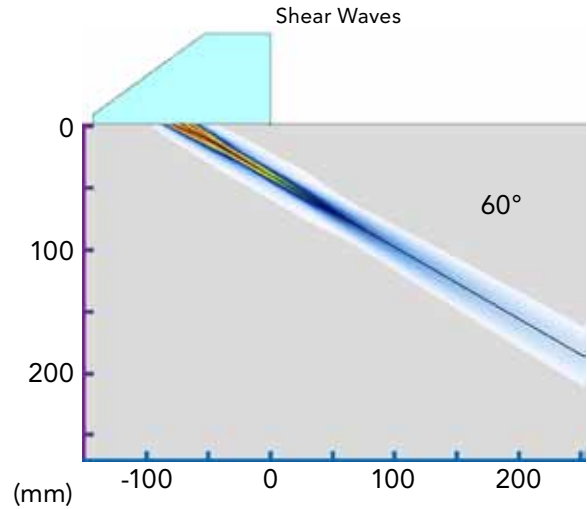
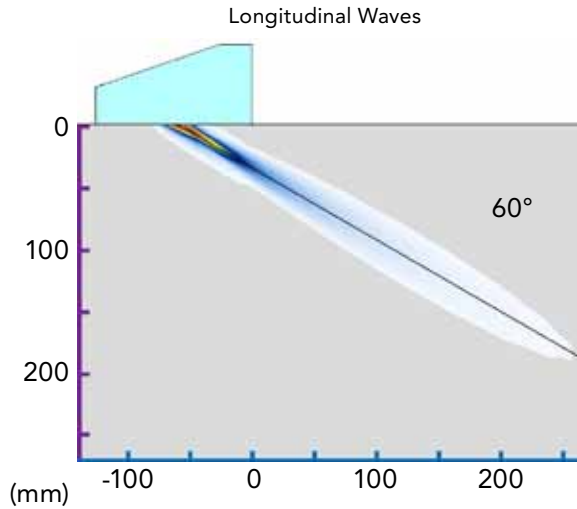
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



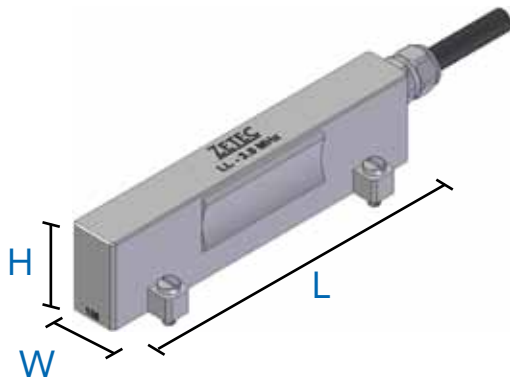
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (49 to 80)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	1.00 mm (0.039 in.)	1.00 mm (0.039 in.)	3.00 mm (0.118 in.)	5.50 mm (0.217 in.)	15.00 mm (0.591 in.)
Focal Zone Length	52.50 mm (2.067 in.)	60.55 mm (2.384 in.)	114.59 mm (4.511 in.)	45.68 mm (1.798 in.)	100.05 mm (3.939 in.)
Dimension in the Incident Plane	18.00 mm (0.709 in.)	12.57 mm (0.495 in.)	14.12 mm (0.556 in.)	8.32 mm (0.323 in.)	10.84 mm (0.428 in.)
Dimension in the Perpendicular Plane	5.00 mm (0.197 in.)	9.00 mm (0.354 in.)	8.00 mm (0.315 in.)	7.00 (mm) (0.276 in.)	9.00 mm (0.354 in.)

Type L - Large - 3.5 MHz



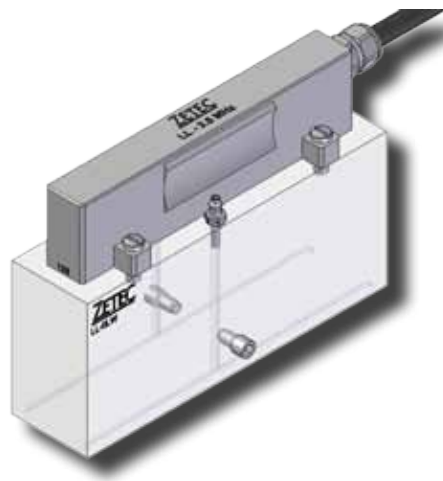
Features & Benefits

- Large aperture for linear scan
- Optimized for thickness measurement and corrosion mapping
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LL-3.5MHz-*	3.5	128	0.75 mm (0.030 in.)	96.00 mm (3.780 in.)	10.00 mm (0.394 in.)	100.0 mm (3.937 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

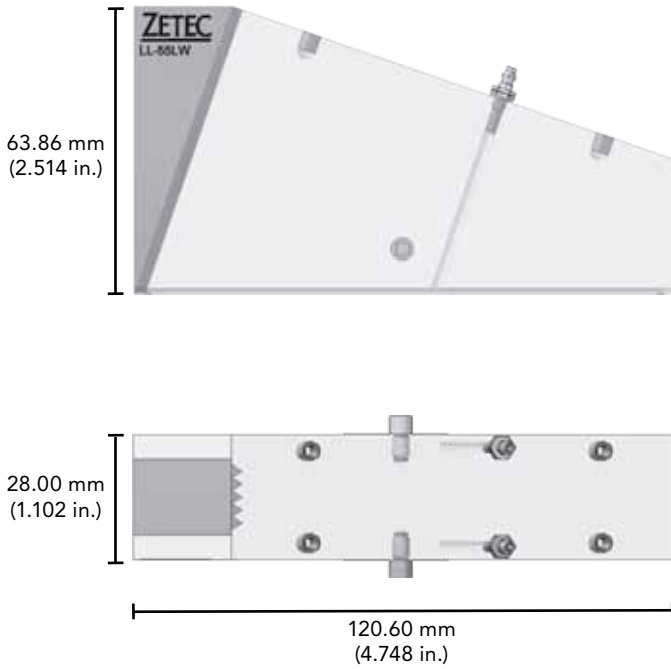


Recommended Wedges

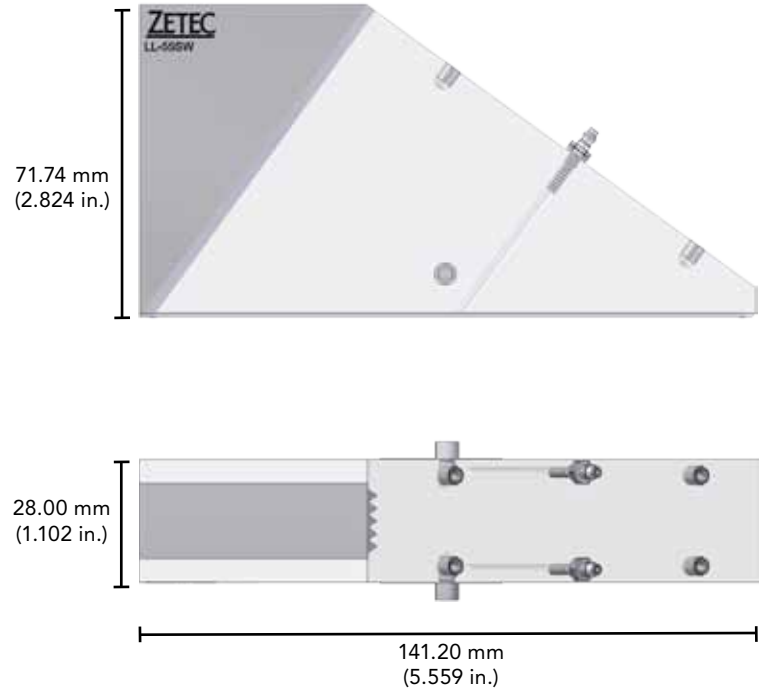
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LL-0LW	LW	Type L - Large / 0LW	0°	-25° to 25°
LL-55LW	LW	Type L - Large / 55LW	55°	40° to 70°
LL-55SW	SW	Type L - Large / 55SW	55°	40° to 70°

Wedges Dimensions

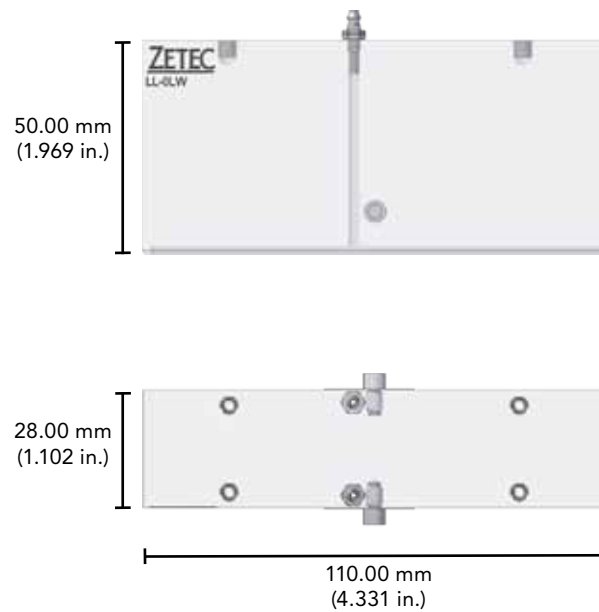
Type L - Large / 55LW



Type L - Large / 55SW

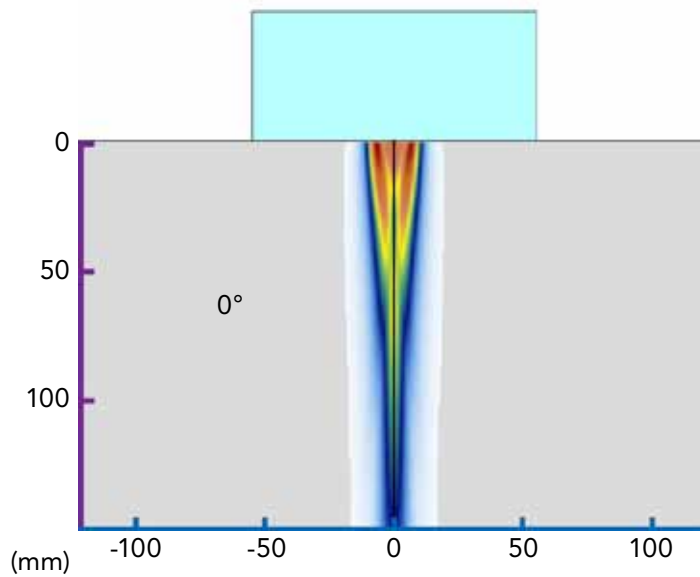


Type L - Large / 0LW

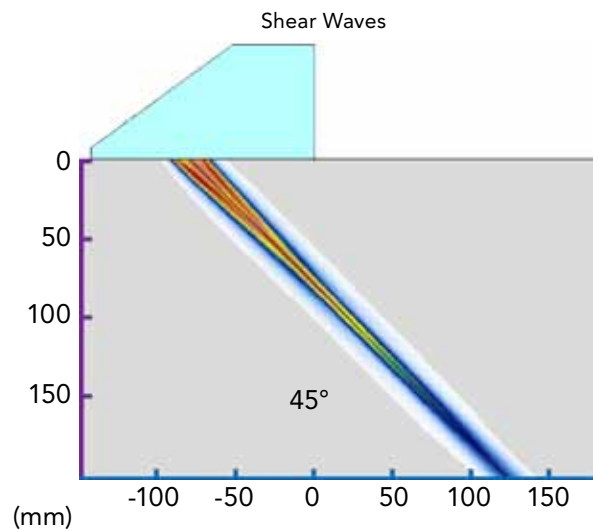
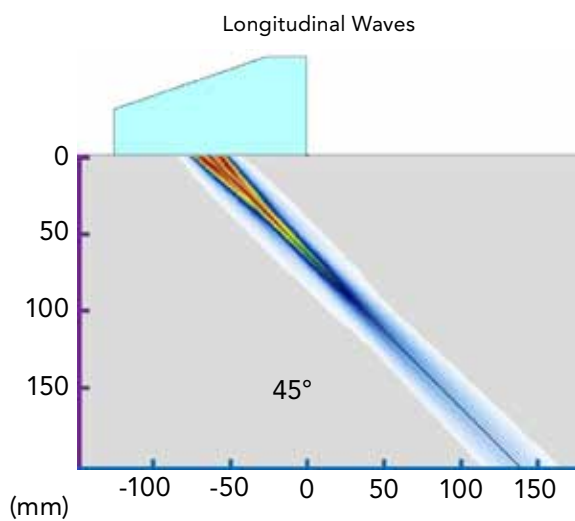


Type L - Large - 3.5 MHz (continued)

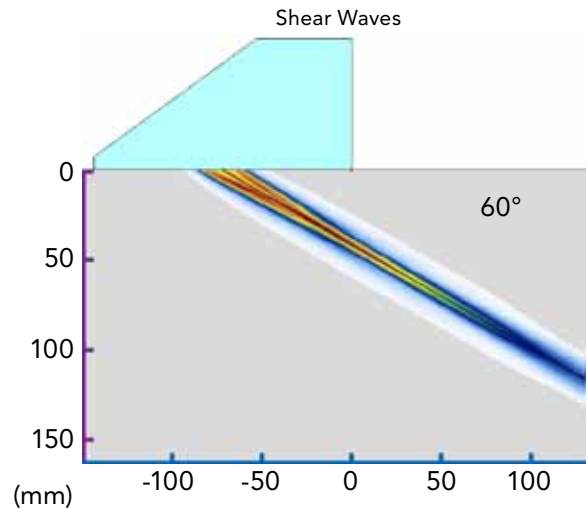
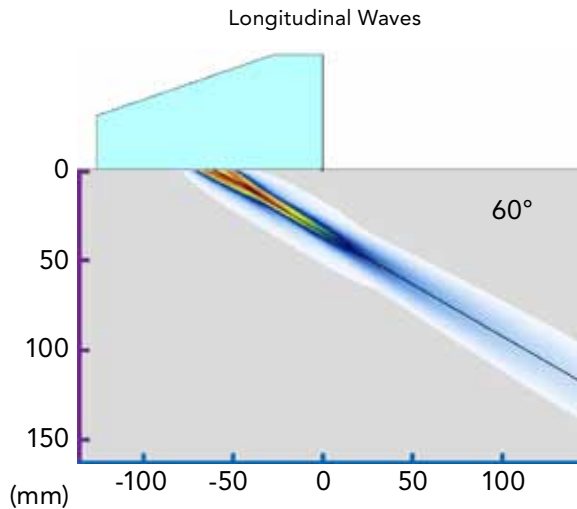
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



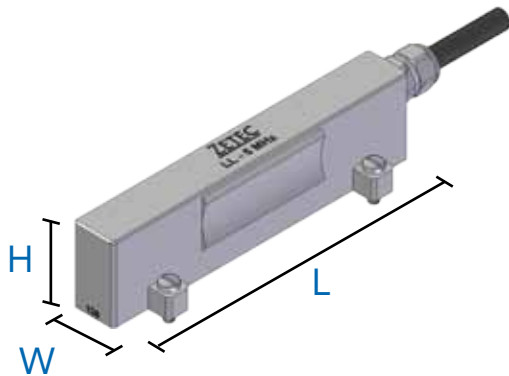
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (49 to 80)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	1.50 mm (0.059 in.)	6.00 mm (0.236 in.)	8.00 mm (0.315 in.)	10.50 mm (0.413 in.)	28.00 mm (1.102 in.)
Focal Zone Length	84.00 mm (3.307 in.)	89.14 mm (3.509 in.)	179.62 mm (7.072 in.)	67.62 mm (2.662 in.)	147.97 mm (5.826 in.)
Dimension in the Incident Plane	18.00 mm (0.709 in.)	13.34 mm (0.525 in.)	14.15 mm (0.557 in.)	8.90 mm (0.350 in.)	11.05 mm (0.435 in.)
Dimension in the Perpendicular Plane	4.00 mm (0.157 in.)	8.00 mm (0.315 in.)	8.00 mm (0.315 in.)	6.00 mm (0.236 in.)	8.00 mm (0.315 in.)

Type L - Large - 5 MHz



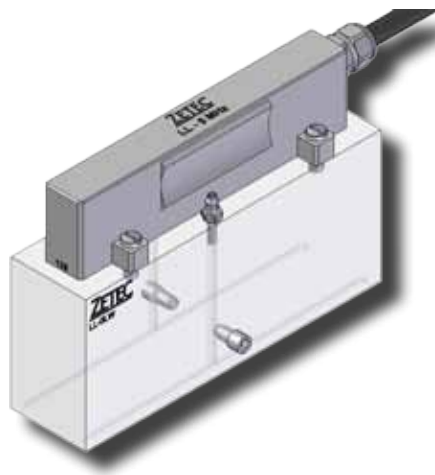
Features & Benefits

- Large aperture for linear scan
- Optimized for thickness measurement and corrosion mapping
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LL-5MHz-*	5.0	128	0.75 mm (0.030 in.)	96.00 mm (3.780 in.)	10.00 mm (0.394 in.)	100.0 mm (3.937 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

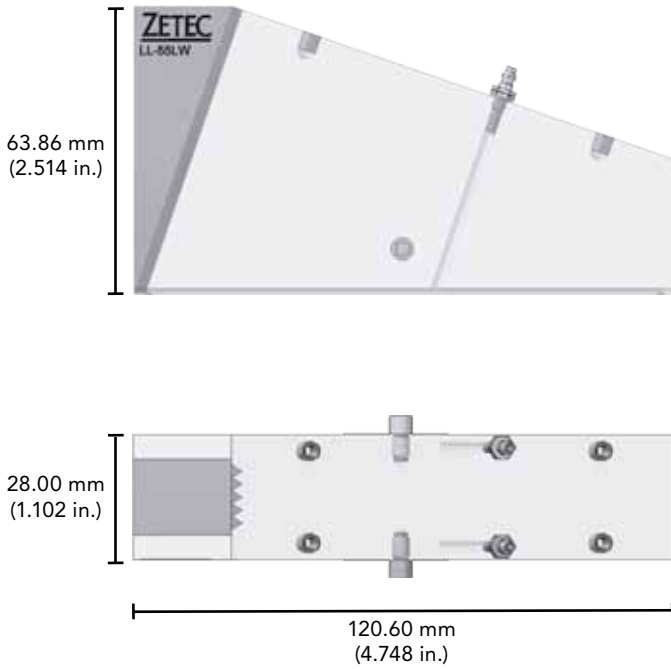


Recommended Wedges

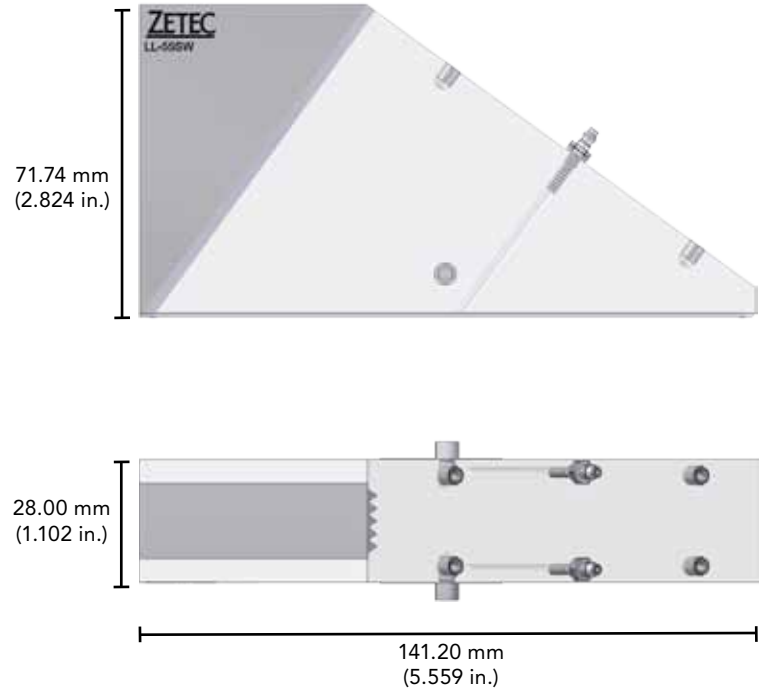
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LL-0LW	LW	Type L - Large / 0LW	0°	-25° to 25°
LL-55LW	LW	Type L - Large / 55LW	55°	40° to 70°
LL-55SW	SW	Type L - Large / 55SW	55°	40° to 70°

Wedges Dimensions

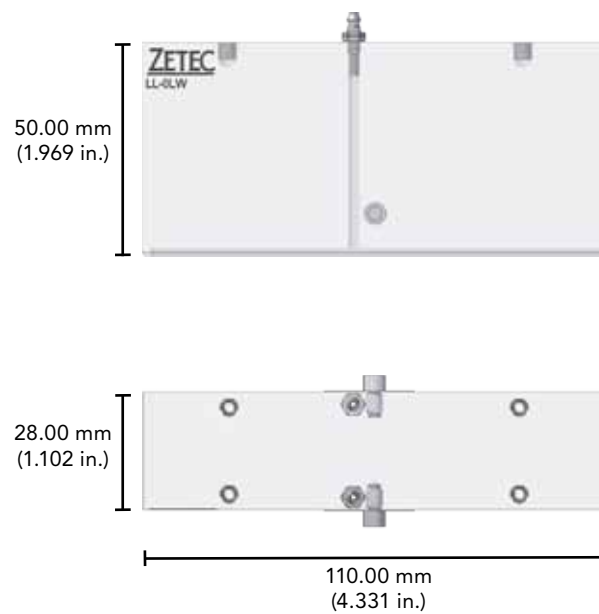
Type L - Large / 55LW



Type L - Large / 55SW

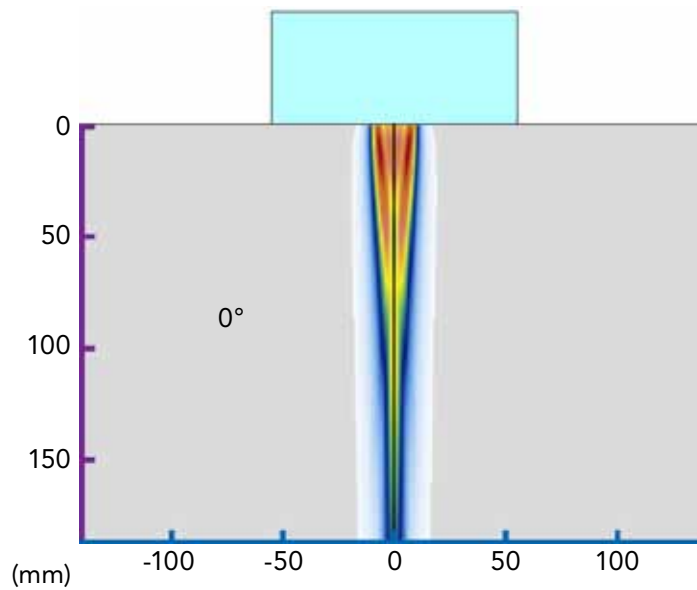


Type L - Large / 0LW

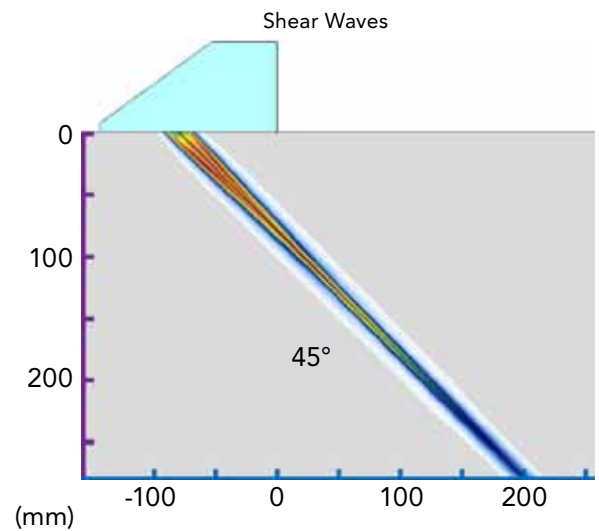
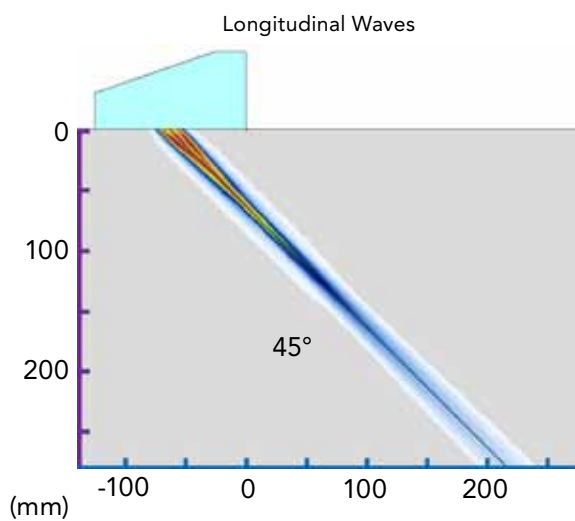


Type L - Large - 5 MHz (continued)

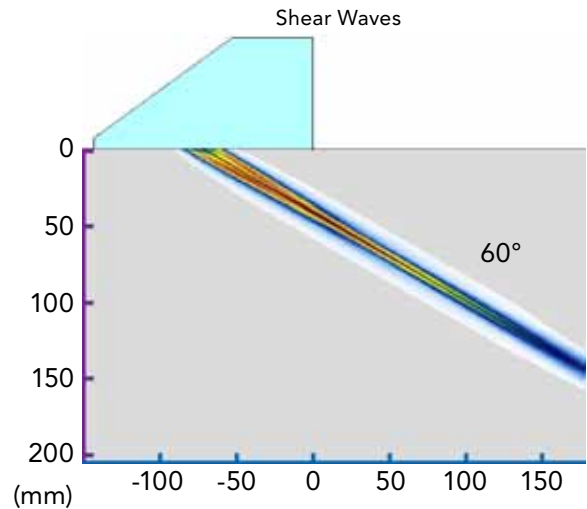
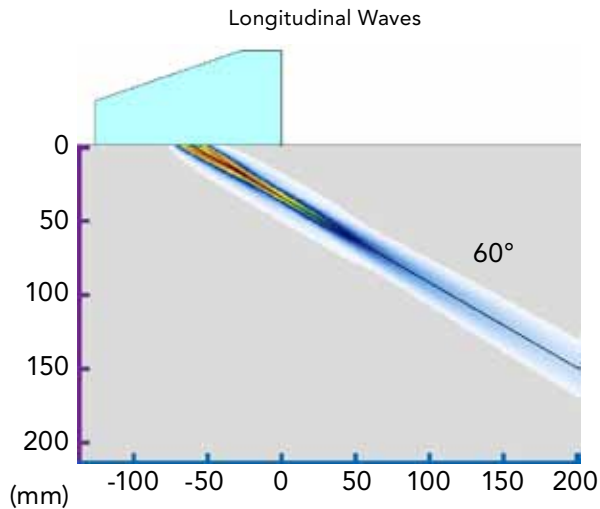
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



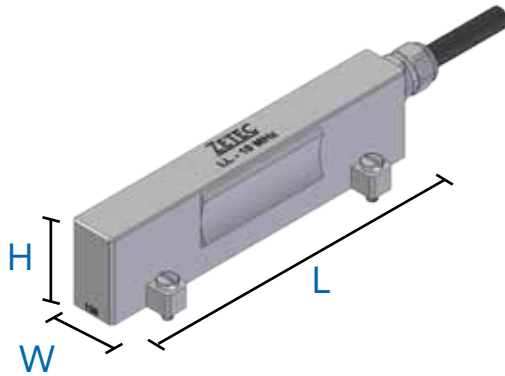
60° - Acoustic Beam Simulation



Acoustic Beam Characteristics (from Simulation Data)

Considered Active Aperture	32 elements (49 to 80)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	10.50 mm (0.413 in.)	11.00 mm (0.433 in.)	22.00 mm (0.866 in.)	17.00 mm (0.669 in.)	41.00 mm (1.614 in.)
Focal Zone Length	143.50 mm (5.650 in.)	126.60 mm (4.984 in.)	260.22 mm (10.245 in.)	91.18 mm (3.590 in.)	200.43 mm (7.891 in.)
Dimension in the Incident Plane	18.00 mm (0.709 in.)	12.75 mm (0.502 in.)	14.16 mm (0.557 in.)	8.51 mm (0.335 in.)	10.57 mm (0.416 in.)
Dimension in the Perpendicular Plane	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	8.00 mm (0.315 in.)	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)

Type L - Large - 10 MHz



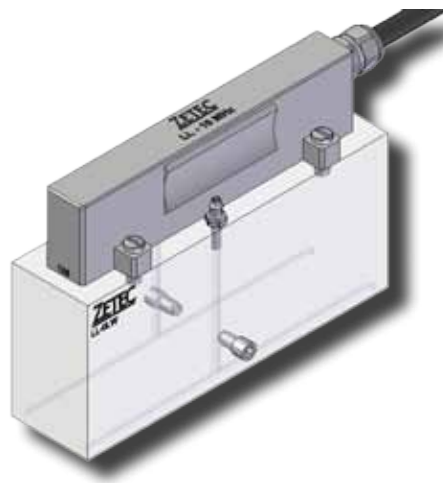
Features & Benefits

- Large aperture for linear scan
- Optimized for thickness measurement and corrosion mapping
- Wave layers with acoustic adaptation to Rexolite®
- Probe cable length: 5 m (16 ft.)
- Two connector types available: ZIRCON and DYNARAY compatible

Probe Specifications and Dimensions

Part ID	Frequency (MHz)	Number of elements (Primary axis)	Primary axis Pitch	Primary axis aperture	Secondary axis aperture	External dimensions		
						L	W	H
LL-10MHz-*	10.0	128	0.75 mm (0.030 in.)	96.00 mm (3.780 in.)	10.00 mm (0.394 in.)	100.0 mm (3.937 in.)	28.0 mm (1.102 in.)	25.0 mm (0.984 in.)

(*) : -ZIRCON or -DYNARAY

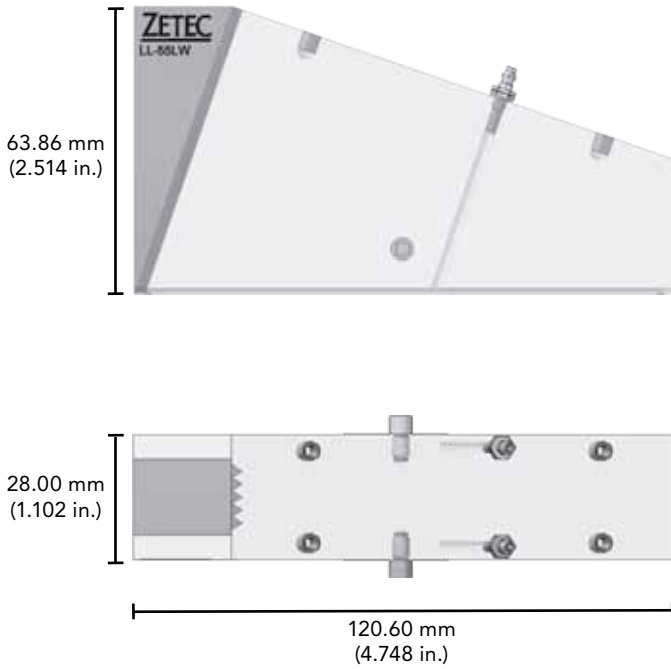


Recommended Wedges

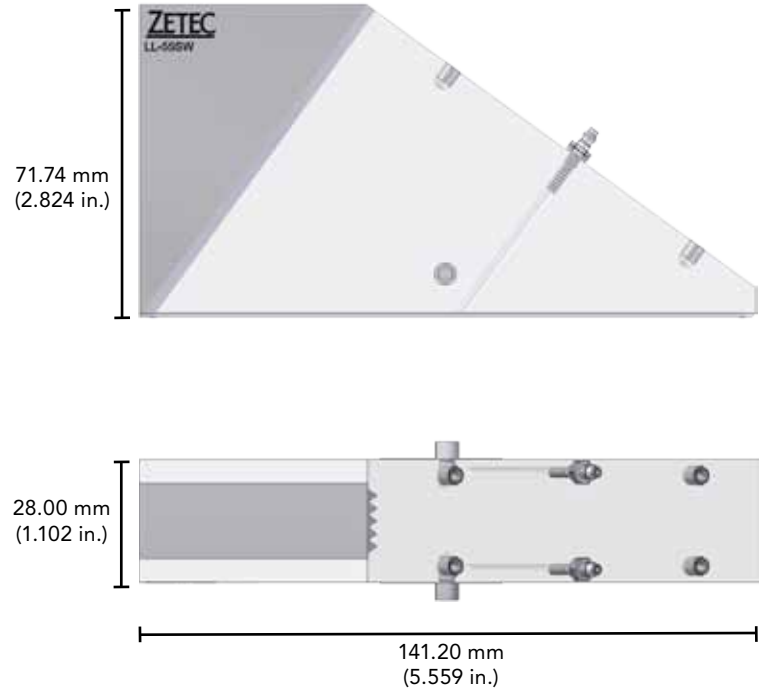
Part ID	Wave type	Name	Nominal angle in steel	Optimized refracted beam angle range (in steel)
LL-0LW	LW	Type L - Large / 0LW	0°	-25° to 25°
LL-55LW	LW	Type L - Large / 55LW	55°	40° to 70°
LL-55SW	SW	Type L - Large / 55SW	55°	40° to 70°

Wedges Dimensions

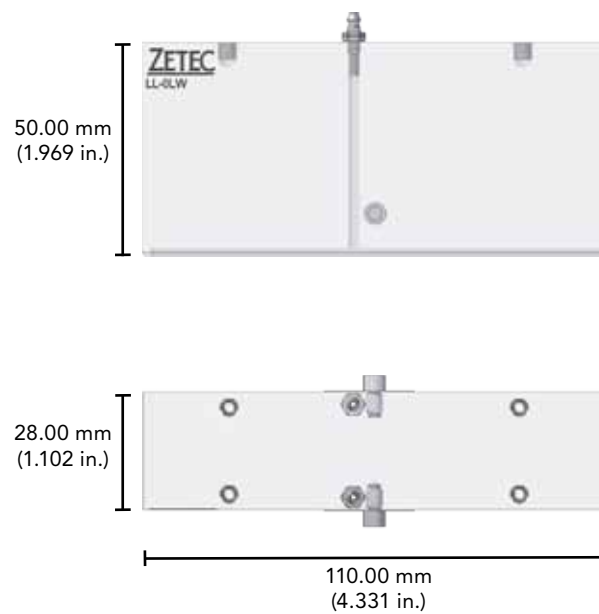
Type L - Large / 55LW



Type L - Large / 55SW

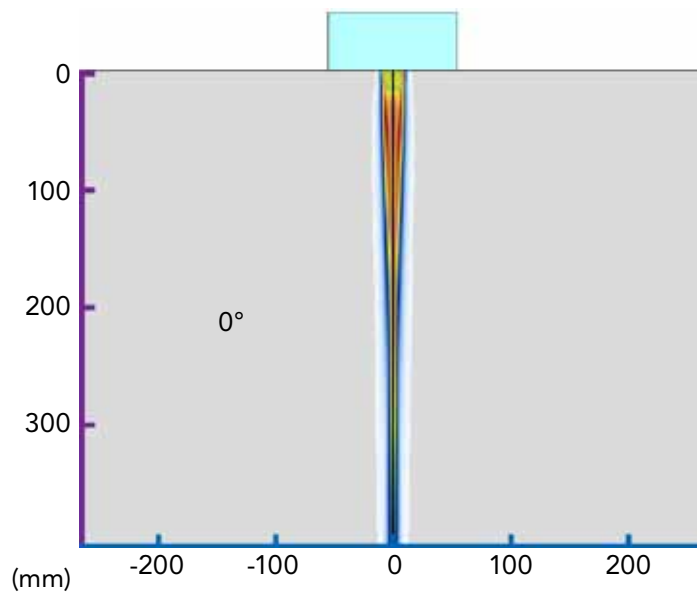


Type L - Large / 0LW

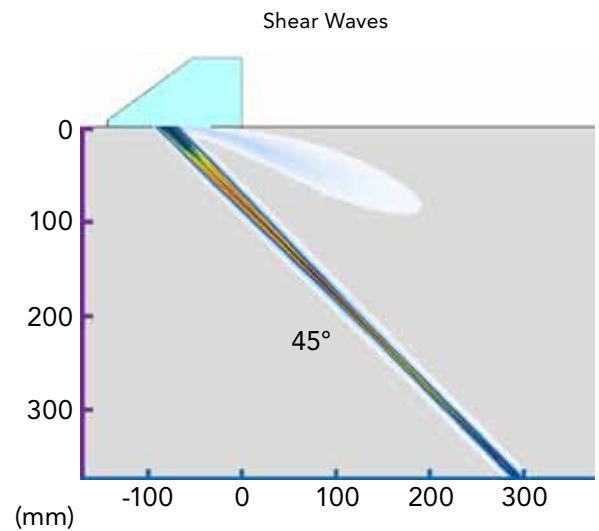
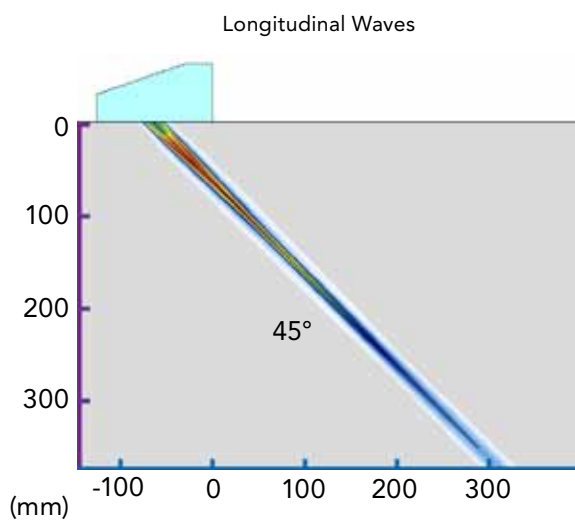


Type L - Large - 10 MHz (continued)

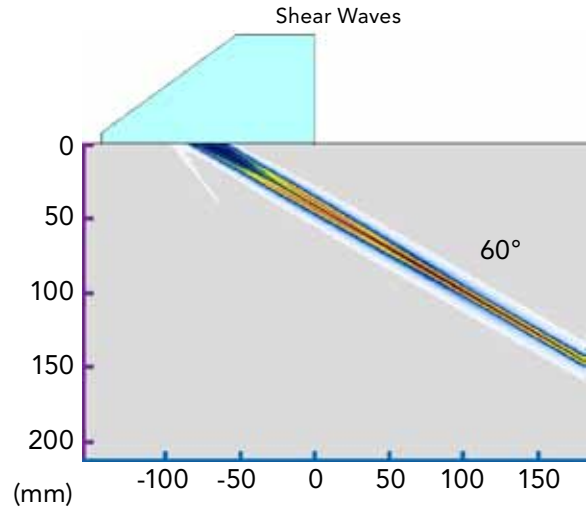
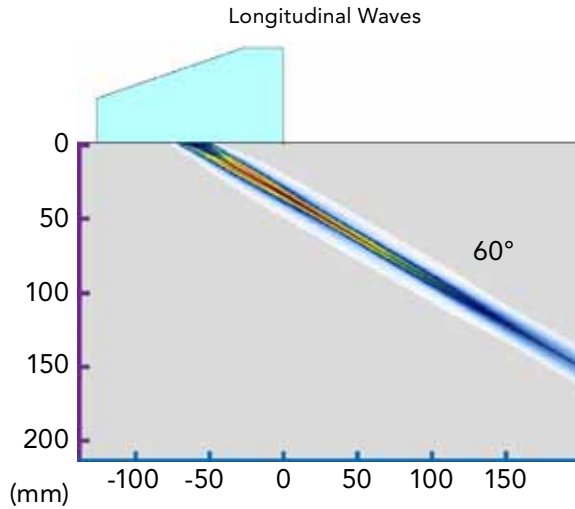
0° - Acoustic Beam Simulation



45° - Acoustic Beam Simulation



60° - Acoustic Beam Simulation

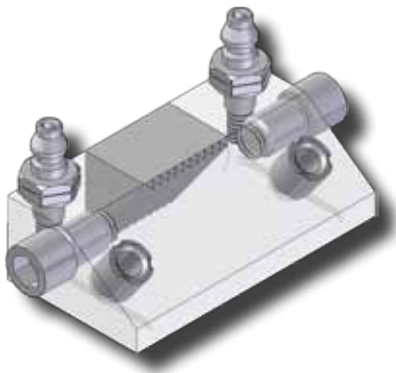


Acoustic Beam Characteristics (from Simulation Data)

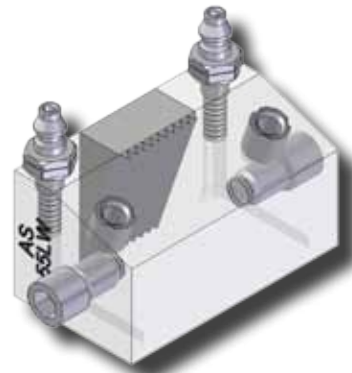
Considered Active Aperture	32 elements (49 to 80)				
	0°	45°		60°	
Angle					
Wave Type	LW	LW	SW	LW	SW
Maximum Sound Field Depth	40.00 mm (1.575 in.)	79.00 mm (3.110 in.)	148.00 mm (5.827 in.)	34.00 mm (1.339 in.)	81.00 mm (3.189 in.)
Focal Zone Length	336.00 mm (13.228 in.)	258.10 mm (10.161 in.)	412.96 mm (16.258 in.)	147.22 mm (5.796 in.)	306.23 mm (12.056 in.)
Dimension in the Incident Plane	19.00 mm (0.748 in.)	12.73 mm (0.501 in.)	11.36 mm (0.447 in.)	7.22 mm (0.284 in.)	8.46 mm (0.333 in.)
Dimension in the Perpendicular Plane	9.00 mm (0.354 in.)	6.00 mm (0.236 in.)	6.00 mm (0.236 in.)	4.00 mm (0.157 in.)	6.00 mm (0.236 in.)

Wedges for Azimuthal Scanning

For Type A - Small



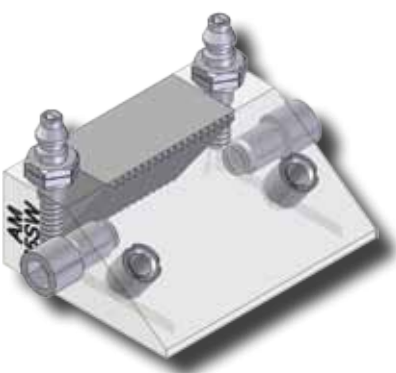
Small / 55SW



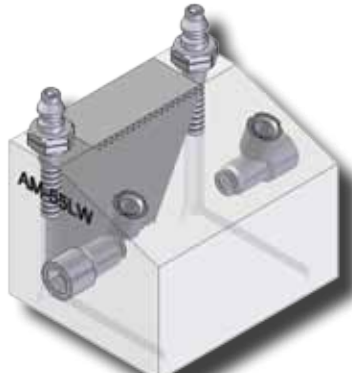
Small / 55LW

Part ID	Type	Wedge Angle	Length	Width	Height	H1	X1	Length - X1	Y1
AS-55SW	Type A - Small / 55SW	36.0°	16.30 mm (0.642 in.)	30.00 mm (1.181 in.)	10.17 mm (0.400 in.)	5.00 mm (0.197 in.)	1.78 mm (0.070 in.)	14.52 mm (0.572 in.)	15.00 mm (0.591 in.)
AS-55LW	Type A - Small / 55LW	19.0°	17.20 mm (0.677 in.)	30.00 mm (1.181 in.)	16.86 mm (0.642 in.)	14.00 mm (0.551 in.)	3.03 mm (0.119 in.)	14.17 mm (0.558 in.)	15.00 mm (0.591 in.)

For Type A - Medium



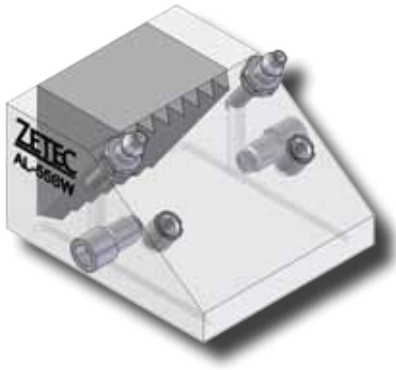
Medium / 55SW



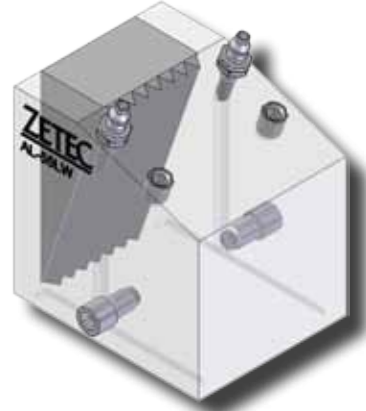
Medium / 55LW

Part ID	Type	Wedge Angle	Length	Width	Height	H1	X1	Length - X1	Y1
AM-55SW	Type A - Medium / 55SW	36.0°	23.50 mm (0.925 in.)	30.00 mm (1.181 in.)	12.48 mm (0.491 in.)	4.00 mm (0.157 in.)	2.73 mm (0.107 in.)	20.77 mm (0.818 in.)	15.00 mm (0.591 in.)
AM-55LW	Type A - Medium / 55LW	19.0°	25.00 mm (0.984 in.)	30.00 mm (1.181 in.)	23.26 mm (0.916 in.)	18.50 mm (0.728 in.)	3.19 mm (0.126 in.)	21.81 mm (0.859 in.)	15.00 mm (0.591 in.)

For Type A - Large



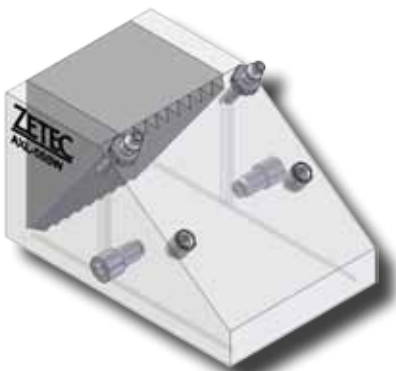
Large / 55SW



Large / 55LW

Part ID	Type	Wedge Angle	Length	Width	Height	H1	X1	Length - X1	Y1
AL-55SW	Type A - Large / 55SW	36.0°	38.20 mm (1.504 in.)	33.00 mm (1.299 in.)	21.98 mm (0.865 in.)	8.00 mm (0.315 in.)	2.99 mm (0.118 in.)	35.21 mm (1.386 in.)	16.50 mm (0.650 in.)
AL-55LW	Type A - Large / 55LW	19.0°	41.40 mm (1.630 in.)	33.00 mm (1.299 in.)	41.17 mm (1.621 in.)	33.00 mm (1.299 in.)	3.50 mm (0.138 in.)	37.90 mm (1.492 in.)	16.50 mm (0.650 in.)

For Type A - X-Large



X-Large / 55SW

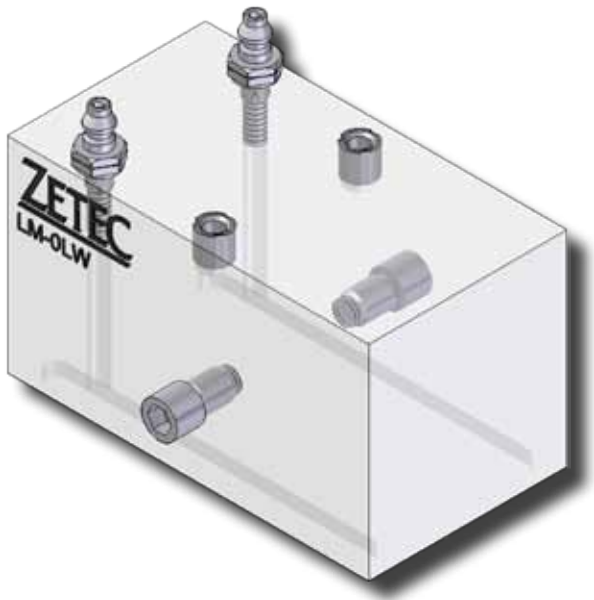


X-Large / 55LW

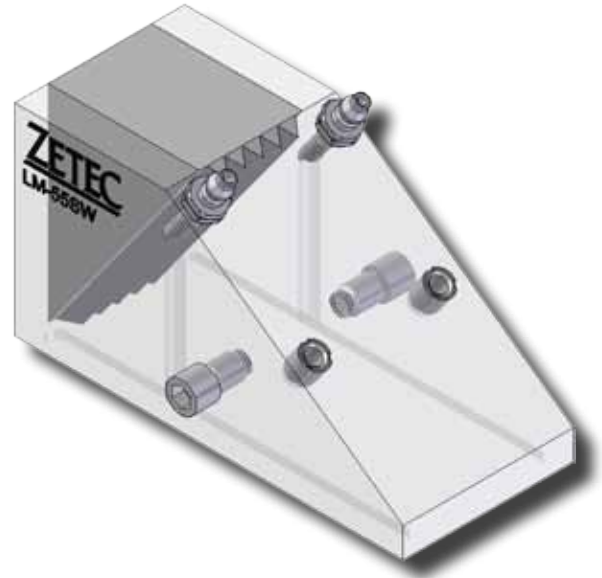
Part ID	Type	Wedge Angle	Length	Width	Height	H1	X1	Length - X1	Y1
AXL-55SW	Type A - Xlarge / 55SW	36.0°	58.70 mm (2.311 in.)	38.00 mm (1.496 in.)	33.77 mm (1.330 in.)	11.00 mm (0.433 in.)	2.83 mm (0.111 in.)	55.87 mm (2.120 in.)	19.00 mm (0.748 in.)
AXL-55LW	Type A - Xlarge / 55LW	19.0°	62.40 mm (2.457 in.)	38.00 mm (1.496 in.)	65.57 mm (2.581 in.)	53.00 mm (2.087 in.)	3.31 mm (0.130 in.)	59.09 mm (2.326 in.)	19.00 mm (0.748 in.)

Wedges for Linear Scanning

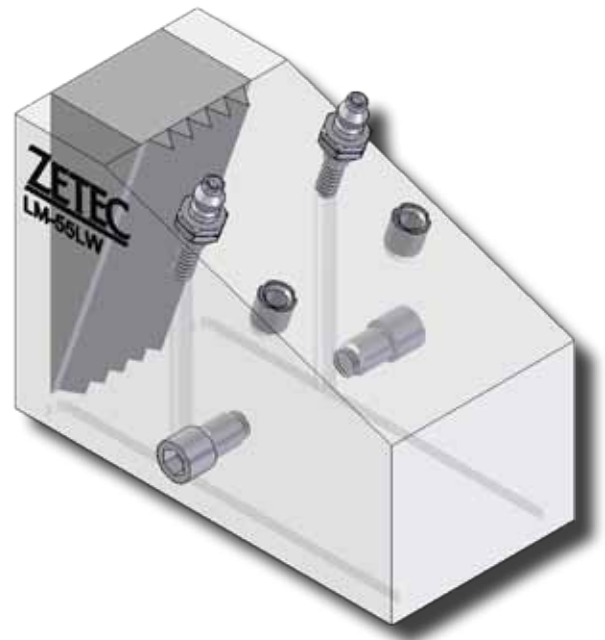
For Type L - Medium



Medium / 0LW



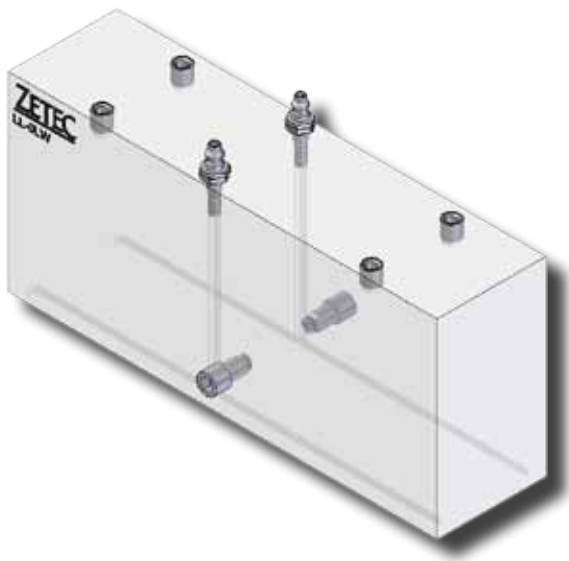
Medium / 55SW



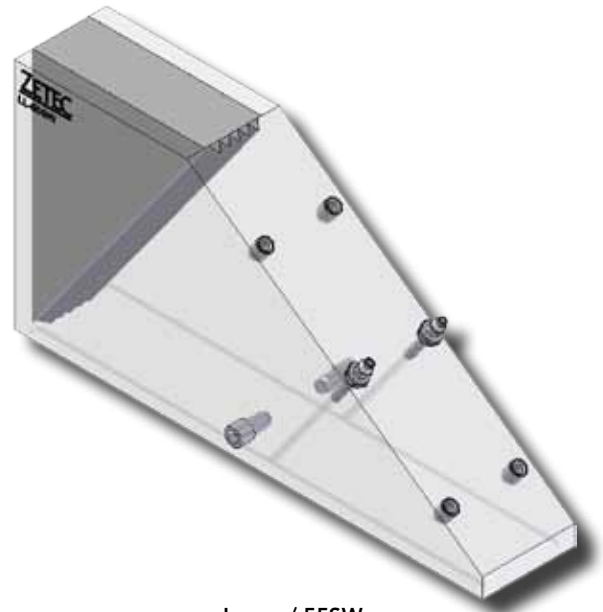
Medium / 55LW

Part ID	Type	Wedge Angle	Length	Width	Height	H1	X1	Length - X1	Y1
LM-0LW	Type L - Medium / 0LW	0°	51.00 mm (2.037 in.)	28.00 mm (1.102 in.)	30.00 mm (1.181 in.)	30.00 mm (1.181 in.)	6.60 mm (0.260 in.)	44.40 mm (1.748 in.)	14.00 mm (0.551 in.)
LM-55SW	Type L - Medium / 55SW	36.0°	63.80 mm (2.512 in.)	28.00 mm (1.102 in.)	34.19 mm (1.346 in.)	8.00 mm (0.315 in.)	2.91 mm (0.115 in.)	60.89 mm (2.397 in.)	14.00 mm (0.551 in.)
LM-55LW	Type L - Medium / 55LW	19.0°	57.70 mm (2.272 in.)	28.00 mm (1.102 in.)	39.97 mm (1.574 in.)	26.00 mm (1.024 in.)	3.40 mm (0.134 in.)	54.30 mm (2.138 in.)	14.00 mm (0.551 in.)

For Type L - Large



Large / 0LW



Large / 55SW



Large / 55LW

Part ID	Type	Wedge Angle	Length	Width	Height	H1	X1	Length - X1	Y1
LL-0LW	Type L - Large / 0LW	0°	110.0 mm (4.331 in.)	28.00 mm (1.102 in.)	50.00 mm (1.969 in.)	50.00 mm (1.969 in.)	7.38 mm (0.291 in.)	102.62 mm (4.040 in.)	14.00 mm (0.551 in.)
LL-55SW	Type L - Large / 55SW	36.0°	141.2 mm (5.559 in.)	28.00 mm (1.102 in.)	71.74 mm (2.824 in.)	9.00 mm (0.354 in.)	2.73 mm (0.107 in.)	138.47 mm (5.452 in.)	14.00 mm (0.551 in.)
LL-55LW	Type L - Large / 55LW	19.0°	120.6 mm (4.748 in.)	28.00 mm (1.102 in.)	63.86 mm (2.514 in.)	31.00 mm (1.220 in.)	3.19 mm (0.126 in.)	117.41 mm (4.622 in.)	14.00 mm (0.551 in.)

Adapters, Splitters and Other Accessories

ZETEC offers a series of connection adapters which allows operation of its standard PA probes on different hardware platforms or of other PA probes on ZETEC's equipment. In order to allow simultaneous operation of multiple PA probes, we also offer a series of splitter cables.

Should you need special connection solutions, don't hesitate to contact us for any custom design.

Adapter boxes



ADPBOX-ZIRCON-DYNARAY



ADPBOX-ZIRCON-OMNI



ADPBOX-DYNARAY-ZIRCON



ADPBOX-DYNARAY-OMNI

Part ID	Description
ADPBOX-ZIRCON-DYNARAY	Adapter Box - Connect one DYNARAY compatible PA probe connector (Hypertronics) to the ZIRCON (ZIRCON male connector to DYNARAY female connector, 128 connections)
ADPBOX-ZIRCON-OMNI	Adapter Box - Connect one Omni-type PA probe connector to the ZIRCON (ZIRCON male connector to Omni-type female connector, 128 connections)
ADPBOX-DYNARAY-ZIRCON	Adapter Box - Connect one ZIRCON compatible PA probe connector to the DYNARAY (Hypertronics) (DYNARAY male connector to ZIRCON female connector, 128 connections)
ADPBOX-DYNARAY-OMNI	Adapter Box - Connect one OMNI-type PA probe connector to the DYNARAY (Hypertronics) (DYNARAY male connector to OMNI-type female connector, 128 connections)

Splitters



SPLTBOX-ZIRCON-2ZIRCON64



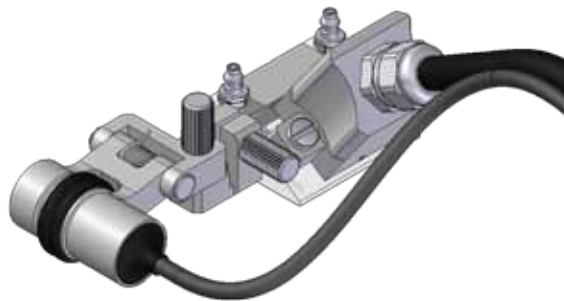
SPLTCBL-ZIRCON-2DYNARAY64

Part ID	Description
SPLTBOX-ZIRCON-2ZIRCON64	Splitter Box - Connect simultaneously 2 ZIRCON compatible PA probes to the ZIRCON (ZIRCON male connector to 2 ZIRCON female connectors, 1-64 and 65-128)
SPLTCBL-ZIRCON-2DYNARAY64	Splitter Cable - Connect simultaneously 2 DYNARAY compatible PA probes (Hypertronics) to the ZIRCON (ZIRCON male connector to 2 DYNARAY female connectors, 1-64 and 65-128)

ZETEC also offers accessories to use with your phased array probes and wedges. This includes handheld encoders and scanners for position feedback when acquiring your UT signals.

For generic or custom scanner designs, ZETEC can provide you with scanning mechanisms that will improve your examinations. Don't hesitate to contact us for any scanning needs.

Handheld Encoder



ACC-ZIRCON-ENC-5M-DE15

Part ID	Description
ACC-ZIRCON-ENC-5M-DE15	Mini encoder - 5 m cable - waterproof - DE15 connector compatible with ZIRCON systems - includes bracket kit to attach on Zetec wedges



ZETEC holds *ISO 9001:2008*
and *ISO/IEC 17025:2005*
certifications

ZETEC[®]

To order, contact us:

info@zetec.com

Toll free: 800.643.1771

P: 418.266.3020

F: 418.263.3742

875 boul. Charest Ouest, Suite 100
Québec, Qc, CANADA G1N 2C9