NEXA
ULTRASONIC SOLUTIONS

Product Brochure

Transducers & Accessories

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Welcome to Nexa Ultrasonic Solutions

Nexa has over 18 years' experience and expertise in transducer design and manufacture. Our bespoke and standard transducers are used by some of the world's leading companies, to ensure safety standards and improve quality and reliability.

Nexa design and manufacture transducers form a standard product or using our capabilities, to develop transducers solutions to the most challenging environments. At Nexa you receive high quality transducers that is supplied with a data sheet and warranty and is characterized by a technical specification EN12668-2 to confirm the performance, this is to ensure the quality and reliability and long-term stability.

This brochure will introduce you to our full range of precision ultrasonic transducers, designed and manufactured to the highest standard. The transducers and accessories offered provide you with the widest choice for your none destructive testing needs. As this brochure may not answer all your requirements, we invite you to enquire and our outstanding technical staff who will provide an immediate response

Contents

Section 1

ShearWave Transducers

Standard PZT Angle Transducers

Angle beam transducers are a versatile testing tool used for detection and evaluation of flaws, where flaws have an angular orientation to the surface. The standard PZT series is designed to provide exceptional sensitivity and signal to noise ratio for flaw detection.

General Characteristics

- Shear wave
- Angles available: 45°- 90°
- PZT element
- Centre Frequency (-6dB) from 1MHz to 7.5MHz
- Relative Bandwidth (-6dB) 30 to 50%

Product No.	MHz	Element (mm)	Angle °	Case Size (mm)	Connector
SP2 - 45	2	10	45	L29 x W14 x H21.5	Subvis
SP2 - 60	2	10	60		Subvis
SP2 - 70	2	10	70		Subvis
SP4 - 45	4	10	45		Subvis
SP4 – 60	4	10	60		Subvis
SP4 - 70	4	10	70		Subvis

Standard Shear Wave Transducers

The standard shear wave transducers have a piezo-composite element and is designed to provide exceptional sensitivity and signal to noise ratio for general flaw detection.

General Characteristics

- Shear wave
- Angles available: 45°- 90°
- Piezo-composite
- Centre Frequency (-6dB) from 1MHz to 7.5MHz
- Relative Bandwidth (-6dB) 50 to 90%

Product No.	MHz	Element (mm)	Angle °	Connector	Case Size (mm)
SW-2 - 45	2	8 x 9	45	Lemo 00	L29 x W16.5 x H23.5
SW-2 - 60	2	8 x 9	60	Lemo 00	
SW-2 - 70	2	8 x 9	70	Lemo 00	
SW-4 - 45	4	8 x 9	45	Lemo 00	
SW-4 – 60	4	8 x 9	60	Lemo 00	
SW-4 - 70	4	8 x 9	70	Lemo 00	
MS-2 - 45	2	14 x 14	45	Lemo 00	L37 x W22 x H26.5
MS-2 – 60	2	14 x 14	60	Lemo 00	
MS-2 - 70	2	14 x 14	70	Lemo 00	
MS-4 - 45	4	14 x 14	45	Lemo 00	
MS-4 – 60	4	14 x 14	60	Lemo 00	
MS-4 - 70	4	14 x 14	70	Lemo 00	
LS-1 - 45	1	20 x 20	45	Lemo 00	L51.5 x W26.5 x H30.5
LS-1 – 60	1	20 x 20	60	Lemo 00	
LS-1 - 70	1	20 x 20	70	Lemo 00	
LS-2 - 45	2	20 x 20	45	Lemo 00	
LS-2 – 60	2	20 x 20	60	Lemo 00	
LS-2 - 70	2	20 x 20	70	Lemo 00	

Sub-Miniature Angled Shear Wave Transducer

The Sub-Miniature range of probes has been designed for inspection where access is reduced. Connectors are as requested top-entry / side-entry connector (microdot connectors are available upon request)

General Characteristics

- Shear wave
- Angles available: 45°- 70°
- Piezocomposite element
- Centre Frequency (-6dB) from 1MHz to 7.5MHz
- Relative Bandwidth (-6dB) 50 to 90%

Product No.	MHz	Element (mm)	Angle °	Connector	Case (mm)
SM 5 - 45	5	5 x 5	45	Subvis	L14 x W10 x H10
SM 5 – 60	5	5 x 5	60	Subvis	
SM 5 - 70	5	5 x 5	70	Subvis	
SM 7.5 – 45	7.5	5 x 5	45	Subvis	
SM 7.5 – 60	7.5	5 x 5	60	Subvis	
SM 7.5 - 70	7.5	5 x 5	70	Subvis	

Angle Shear Wave Transducers

Twin angle Shear provide good resolution and sensitivity ideal for thin walled material and near surface inspections.

Characteristics

- Twin Shear wave
- Angles available: 45°- 90°
- Piezo composite
- Centre Frequency (-6dB) from 1MHz to 7.5MHz
- Relative Bandwidth (-6dB) 30 to 55%

Product No.	MHz	Element (mm)	Angle °	Connector	Case Size(mm)
TS2 - 45	2	4 x 8mm (x2)	45	Lemo 00	L29 x W16.6 x H23.5
TS2 – 60	2	4 x 8mm (x2)	60	Lemo 00	
TS2 - 70	2	4 x 8mm (x2)	60	Lemo 00	
TS4 - 45	4	4 x 8mm (x2)	45	Lemo 00	
TS4 – 60	4	4 x 8mm (x2)	60	Lemo 00	
TS4 - 70	4	4 x 8mm (x2)	70	Lemo 00	

Section 2

CompressionWave Transducers

Single Compression Wave Contact Transducers

The Single compression wave transducers have a longitudinal wave and zero-degree angle. The transducers are excellent for straight beam flaw detection and sizing on a vast range of materials.

General Characteristics

- Longitudinal wave
- Angle: 0°
- Piezo-composite/PZT
- Centre Frequency (-6dB) from 0.5MHz to 10MHz
- Active area 3mm to 25mm diameter
- Relative Bandwidth (-6dB) 50 to 90%

Product No.	MHz	Element size (mm)	Connector	Case Size (mm)
SC 0.5-25	0.5	25	Lemo 00	H45 x Ø32
SC 1-25	1	25	Lemo 00	
SC 2-10	2	10	Lemo 00	H40 x Ø17
SC 4-10	4	10	Lemo 00	
SC 2-20	2	20	Lemo 00	H40 x Ø28
SC 4-20	4	20	Lemo 00	
SC 5-6	5	6	Lemo 00	H25 x Ø11
SC 10-6	10	6	Lemo 00	

Twin Crystal Compression Wave Transducers

Twin crystal transducers consist of 2 elements separated by an acoustic barrier. One element transmits the longitudinal wave while the other receives the returning signal.
These transducers reduce the noise in coarse material and have improved near surface resolution. Applications include bond inspection, crack detection and corrosion mapping.

General Characteristics

- Longitudinal wave
- Dual
- Angle: 0°
- Piezo-composite/PZT
- Centre Frequency (-6dB) from 1MHz to 10MHz
- Active area 3mm to 25mm
- Relative Bandwidth (-6dB) 45 to 80%

Product No.	MHz	Element (mm)	Connector	Case Size
TL1-25	1	25	Lemo 00	H45 x Ø32
TL2-10	2	10	Lemo 00	H40 x Ø17
TL4-10	4	10	Lemo 00	
TL2-20	2	20	Lemo 00	H40 x Ø28
TL4-20	4	20	Lemo 00	
TL5-6-M	5	6	Microdot	H25 x Ø11
TL5-6	5	6	Subvis	
TL10-6-M	10	6	Microdot	
TL10-6	10	6	Subvis	

Single Element Delay Line Transducer.

Delay line transducers main application is thickness measuring or high-resolution flaw detection. The range has been designed for superior near surface resolution and comprises of a piezo composite element and exchangeable delay line. This transducer is ideal for the inspection of thin material to detect small flaws.

General Characteristics

- Longitudinal wave
- Delay line
- Angle: 0°
- Piezo-composite
- Centre Frequency (-6dB) from 5MHz to 15MHz
- Relative Bandwidth (-6dB) 45 to 80%

Product No.	MHz	Element size (mm)	Connector	Case Size (mm)
DL5-6	5	6	Microdot	H22.5 x Ø12.75
DL5-3	5	3	Microdot	
DL7.5-6	7.5	6	Microdot	
DL7.5-3	7.5	3	Microdot	
DL10-6	10	6	Microdot	
DL10-3	10	3	Microdot	
DL15-3	15	3	Microdot	

Section 3

TOFD Transducers & Wedges

TOFD Transducers

Nexa Time-of-Flight Diffraction (TOFD) transducers are high performance composite probes. With high sensitivity, a short pulse and high resolution which provide excellent sizing capabilities. Available in frequencies ranging from 2MHz -15MHz.

General Characteristics

- Longitudinal wave
- Piezo-composite
- Centre Frequency (-6dB) from 2MHz to 15MHz
- Active area 3mm to 12mm
- Relative Bandwidth (-6dB) 50 to 90%

Product No.	MHz	Element (mm)	Connector	Probe Dimensions (mm)		
				Thread	A	B
T0F2-6 UNEF	2	6	Lemo 00	3/8UNEF	23	10
T0F5-3 UNEF	5	3	Lemo 00	3/8UNEF	23	10
TOF5-6 UNEF	5	6	Lemo 00	3/8UNEF	23	10
TOF7.5-3 UNEF	7.5	3	Lemo 00	3/8UNEF	23	10
TOF7.5-6 UNEF	7.5	6	Lemo 00	3/8UNEF	23	10
TOF10-3 UNEF	10	3	Lemo 00	3/8UNEF	23	10
TOF10-6 UNEF	10	6	Lemo 00	3/8UNEF	23	10
TOF15-3 UNEF	15	3	Lemo 00	3/8UNEF	23	10
TOF2-6	2	6	Lemo 00	M12	23	9.5
TOF2-12	2	12	Lemo 00	M20	23	17
TOF5-3	5	3	Lemo 00	M12	23	9.5
TOF5-6	5	6	Lemo 00	M12	23	9.5
TOF5-12	5	12	Lemo 00	M20	23	17
TOF7.5-3	7.5	3	Lemo 00	M12	23	9.5
TOF7.5-6	7.5	6	Lemo 00	M12	23	9.5
TOF10-3	10	3	Lemo 00	M12	23	9.5
TOF10-6	10	6	Lemo 00	M12	23	9.5
TOF15-3	15	3	Lemo 00	M12	23	9.5

TOFD Wedges

Nexa manufacture Time of Flight Diffraction wedges in durable plastic and rexolite as standard with UNEF or M12 thread. Stainless steel and brass wedges can be manufactured on request. The wedges fit universal threaded probes (M12, M20 and UNEF) and are suitable for use with the TOFD probes.

General Characteristics

- 3/8 UNEF Wedges include Ø5x5mm recess for fitting.
- Material rexolite or delirin with rexolite bung
- M12/M20 wedge includes M4 x 3.85mm gimbal pins
- couplant irrigation.

Product No.	Width (mm)	Longitudinal Angle°	Thread Size	Material
TW45-UNEF	32	45	UNEF 3/8	Rexolite
TW55-UNEF	32	55	UNEF 3/8	Rexolite
TW60-UNEF	32	60	UNEF 3/8	Rexolite
TW70-UNEF	32	70	UNEF 3/8	Rexolite
TW45-M12	30	45	M12	Rexolite
TW55-M12	30	55	M12	Rexolite
TW60-M12	30	60	M12	Rexolite
TW70-M12	30	70	M12	Rexolite
TW45-M20	30	45	M20	Rexolite
TW55-M20	30	55	M20	Rexolite
TW60-M20	30	60	M20	Rexolite
TW70-M20	30	70	M20	Rexolite

Section 4

High Temperature Transducers

High Temperature Transducers

Standard High temperature transducers are ideal for inspections which must be performed at elevated temperature. The transducers are rated to 200°C for continuous use and 250°C for intermittent use and maintain excellent signal/noise at high temperature. If we do not supply a transducer in this section to meet your needs, then we have the facilities on site to manufacture one to specification.

General Characteristics

- Shear wave/ Longitudinal Wave
- Angles available 0, 45°-70°
- Crystal Lead Metaniobate
- Wedge material Vespel/Torlon
- Centre Frequency (-6dB) from 2MHz to 5MHz
- Relative Bandwidth (-6dB) 30 to 60%
- Maximum recommended operating temperature 200°C

Part Number	Frequency MHz	Crystal Size	Angle A°
HTC 2/10	2	Ø10	0
HTC 4/10	4	Ø10	0
HTC 5/10	5	Ø10	0
HTC 5/6	5	Ø 6	0
HSW 2/ A°	2	Ø 10	45, 60, 70
HSW 4/ A°	4	Ø 10	45, 60, 70

Section 5

Immersion Transducers

Immersion Transducers

The Nexa range of immersion transducers are made with piezo composite which benefit from a low acoustic impedance and higher sensitivity for improved immersion testing

General Characteristics

- Longitudinal wave
- Connector microdot, UHF
- Piezo-composite / lead metaniobate element
- Centre Frequency (-6dB) 1MHz – 10MHz
- Relative Bandwidth (-6dB) 50 to 100%

Part No:	Freq (MHz)	Element (mm)	Connector	Housing Size
IMS 02/5	2.25	5.0	Microdot	9.5 Ø
IMS 02/02	2.25	6.0	Microdot	9.5Ø
IMS 03/5	3.5	5.0	Microdot	9.5 Ø
IMS 03/02	3.5	6.0	Microdot	9.5 Ø
IMS 05/5	5	5.0	Microdot	9.5Ø
IMS 05/02	5	6.0	Microdot	9.5 Ø
IMS 10/5	10	5.0	Microdot	9.5 Ø
IMS 10/02	10	6.0	Microdot	9.5 Ø
IML 02/03	2	10	UHF	16
IML 02/04	2	12	UHF	16
IML 03/03	3.5	10	UHF	16
IML 03/04	3.5	12	UHF	16
IML 05/03	5	10	UHF	16
IML 05/04	5	12	UHF	16
IML 01/06	1	20	UHF	25
IML 02/06	2	20	UHF	25

Section 6

Angle Beam Longitudinal Transducers

Single Angle Longitudinal Wave Transducers

Angle beam longitudinal transducers are used for the inspection of coarse grain attenuative materials such as Stainless Steel, Duplex etc.

General Characteristics

- Longitudinal wave
- Single configuration
- Angles available: 45°to 70°
- PZT element
- Centre Frequency (-6dB) from 1MHz to 4MHz
- Relative Bandwidth (-6dB) 50 to 80%

Product No.	MHz	Element (mm)	Angle °	Connector	Probe (mm)
SLC2 - 45	2	8 x 9	45	Lemo 00	L29 x W16.5 x H23.5
SLC2 – 60	2	8 x 9	60	Lemo 00	
SLC2 - 70	2	8 x 9	70	Lemo 00	
SLC4 - 45	4	8 x 9	45	Lemo 00	
SLC4 - 60	4	8 x 9	60	Lemo 00	
SLC4 - 70	4	8 x 9	70	Lemo 00	
LLC1 - 45	1	20 x 20	45	Lemo 00	L51.5 x W26.5 x H30.5
LLC1 – 60	1	20 x 20	60	Lemo 00	
LLC1 - 70	1	20 x 20	70	Lemo 00	
LLC2 – 45	2	20 x 20	45	Lemo 00	
LLC2 – 60	2	20 x 20	60	Lemo 00	
LLC2 – 70	2	20 x 20	70	Lemo 00	
LLC4 – 45	4	20 x 20	45	Lemo 00	
LLC4 - 60	4	20 x 20	60	Lemo 00	
LLC4 - 70	4	20 x 20	70	Lemo 00	

Transmit Receive Longitudinal (TRL) Angle Transducers

TRL longitudinal wave transducers are used for the inspection of coarse grained attenuative material stainless steel, Duplex etc which are often difficult to inspect with standard probes. Different element sizes and roof angles can be manufactured to create a focal spot at the desired depth.
When ordering Specify the focal spot (FS), it must be within the focal spot range within the table below.

General Characteristics

- Twin Longitudinal wave
- Angles available: 45°to 70°
- Piezo-composite element
- Centre Frequency (-6dB) 2MHz - 4MHz
- Relative Bandwidth (-6dB) 50 to 80%

Product No.	MHz	Element (mm)	Angle °	Focal Spot (mm)	Connector	Probe (mm)
TRL F-45/FS/25	2, 4	2(8x15)	45	12 – 55	Lemo 00	25x25
TRL F-60/FS/25	2, 4	2(8x15)	60	12 – 55	Lemo 00	
TRL F-70/FS/25	2, 4	2(8x15)	70	12 – 55	Lemo 00	
TRL F-45/FS/30	2, 4	2(10x20)	45	15 – 80	Lemo 00	30x30
TRL F-60/FS/30	2, 4	2(10x20)	60	15 – 80	Lemo 00	
TRL F-70/FS/40	2, 4	2(10x20)	70	15 – 80	Lemo 00	
TRL F-45/FS/40	2, 4	2(15x25)	45	20 – 90	Lemo 00	40x40
TRL F-60/FS/40	2, 4	2(15x25)	60	20 – 90	Lemo 00	
TRL F-70/FS/40	2, 4	2(15x25)	70	20 – 90	Lemo 00	

Creeping Wave Transducer

Creep waves are twin crystal longitudinal wave transducers, which use the edge of a high angle beam to generate a creep wave which propagate sub-superficially to the surface of the piece under examination. Creep wave probes are suitable for detection of defects close to the surface. The working range is short approximately 20mm from the front of the probe due to the rapid decay of ultrasonic energy

General Characteristics

- CreepWave
- Working range approx. 20mm
- PZT / piezocomposite element
- Centre Frequency (-6dB) from 2MHz to 4MHz
- Relative Bandwidth (-6dB) 30 to 80%

Product No.	MHz	Element (mm)	Top Entry Connector	Case Size
CrW2-25	2	2 (8 x 15)	Lemo 00	25 x 25
CrW2-30	2	2 (10 x 20)	Lemo 00	30 x 30
CrW4-25	4	2 (8 x 15)	Lemo 00	25 x 25
CrW4-30	4	2 (10 x 20)	Lemo 00	30 x 30

Section 7

Custom Transducers

Custom Transducers

Nexa has extensive experience in the engineering, design and development of customised transducers. As a solution for your inspection when a standard probe is not suitable we can produce optimized solutions for your application. A custom transducer may benefit the inspection procedure and reduce overall costs and inspection time. If you need help specifying the transducer, we can assist, just contact us as soon as possible with your inspection requirements.

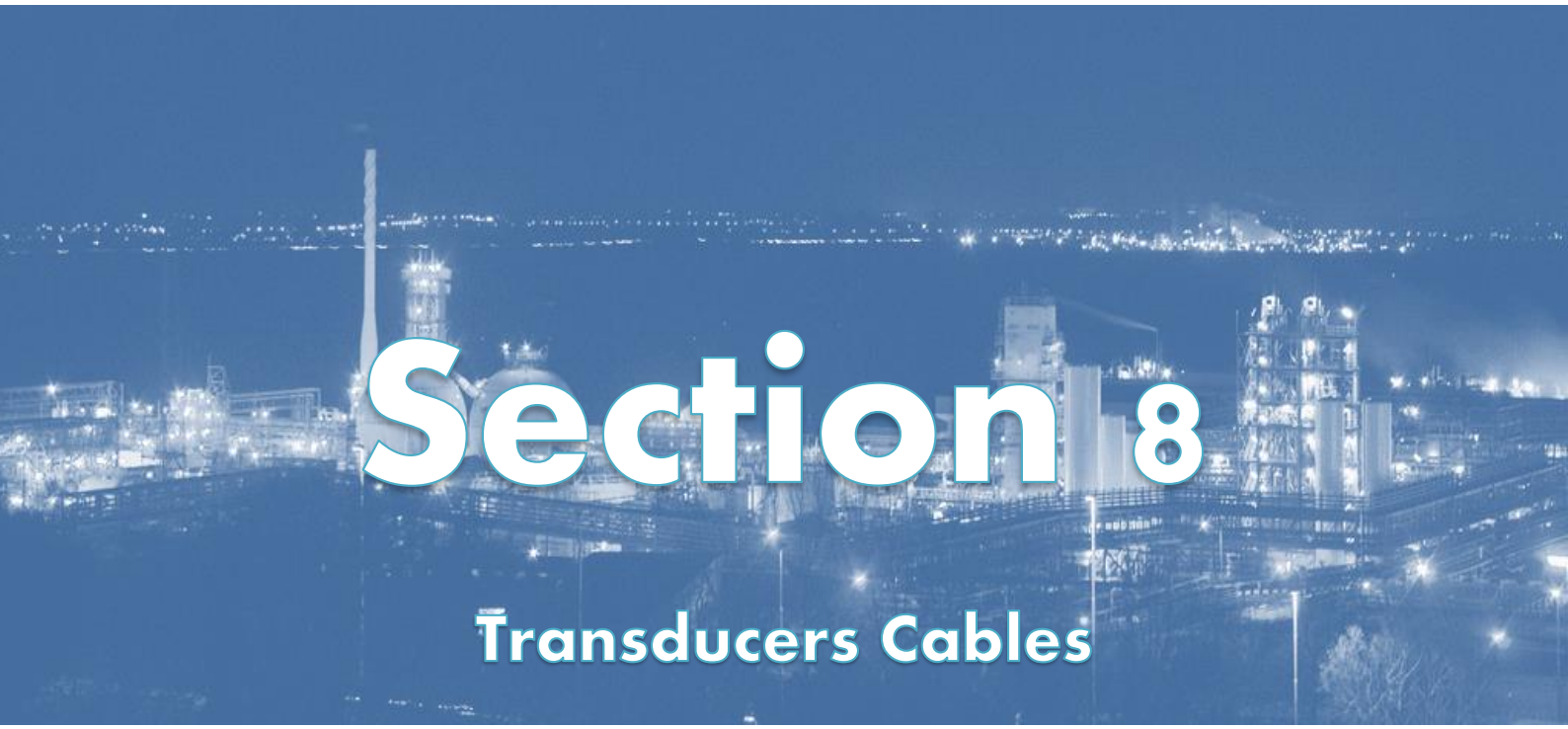
A custom solution may be required for the following applications

- Material characterisation
- Testing of bonded material
- Inspecting Ceramic / wood
- Transducers for tandem technique
- Inspecting areas of limited space

Nexa can manufacture a transducer to operate in the environmental conditions of your inspection. We work closely with the client to ensure the measuring tasks and needs of the end user are met. Additional testing and build requirements are used to ensure optimum performance.

A custom solution may be required for the following environments

- High temperature
- Subsea
- Nuclear
- Harsh conditions vibration, pressure, weather



Section 8

Transducers Cables

Single Cables

Nexa manufacture a wide range of standard cables to suit most requirements.
Select from a range of cables to meet your application requirements.

General Characteristics

- Standard cable length: 6ft (1.8m)
- 50-Ohm impedance (unless specified)
- All cables undergo strict testing and are robust for longevity
- Nexa can also supply custom cables to your specification (phased Array cables / Eddy Current cables)

Product Code	Instrument	Transducer
CL1-S	LEMO 1	SUBVIS
CL1-L1	LEMO 1	LEMO 1
CL1-L00	LEMO 1	LEMO 00
CL1-M	LEMO 1	MICRODOT
CL1-BNC	LEMO 1	BNC
CL00-L00	LEMO 00	LEMO 00
CL00-S	LEMO 00	SUBVIS
CL00-M	LEMO 00	MICRODOT
CBNC-S	BNC	SUBVIS
CBNC-L00	BNC	LEMO 00
CBNC-M	BNC	MICRODOT
CBNC-BNC	BNC	BNC
CL00-MCX	LEMO 00	MCX

Twin Cables

Product Code	Instrument	Transducer
CTL1-S	LEMO 1	SUBVIS
CTL1-L1	LEMO 1	LEMO 1
CTL1-L00	LEMO 1	LEMO 00
CTL1-M	LEMO 1	MICRODOT
CTL1-BNC	LEMO 1	BNC
CTL00-L00	LEMO 00	LEMO 00
CTL00-S	LEMO 00	SUBVIS
CTL00-M	LEMO 00	MICRODOT
CTBNC-S	BNC	SUBVIS
CTBNC-L00	BNC	LEMO 00
CTBNC-M	BNC	MICRODOT
CTBNC-BNC	BNC	BNC
CTL00-MCX	LEMO 00	MCX

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