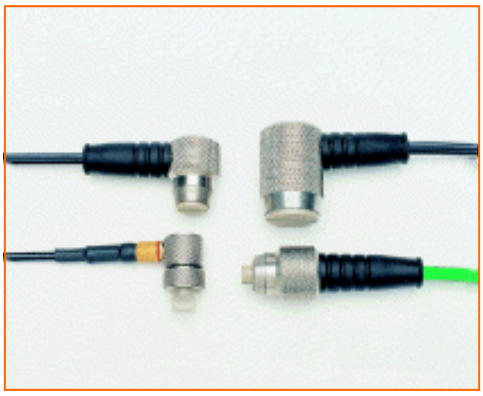
Ultrasonic Transducer Options



Ultrasonic Transducer Options

At a glance

- *Wide range of probes to suit your particular substrate under inspection.*
- *Maximum measuring depth 254mm (10”) - in steel.*
- *High temperature, extra resolution and Exxon specification transducers available.*

Ultrasonic Transducer Options
Elcometer have a complete range of transducers to meet your requirements, including:

- A Range of Frequencies and Sizes
- Straight and Right Angle Transducers available as Potted or Microdot Transducers
  - *Potted Transducers*: Transducer cable is fixed to the transducer head
  - *Microdot Transducers*: Allows the user to insert the cables themselves, allowing transducer heads to be replaced quickly and easily.
- High Temperature Transducers: Temperature up to 340°C (650°F)

When selecting a transducer, it is important to choose one which will best meet your application, taking into consideration:

- The measurement range
- The type of material to be tested
- The design of the transducer probe

Material Thickness
The thickness of materials cannot always be determined by direct measurement as access to both sides is not always possible.

The effects of corrosion and erosion at the back of a metal panel may reduce its thickness significantly yet not affect the front surface. Pipelines, for example, may appear corrosion free on the outside but can be eroded by the flow of material on the inside.

Machined or cast items may have thin walls that cannot be determined by callipers or other not-destructive tests.

ULTRASONIC TRANSDUCER SELECTION TABLE FOR ELCOMETER 205, 206, 206DL, 208, 208DL

Measurement Range (in steel) mm / inches	Material								Probe Type							Part Number	Frequency MHz (Colour Code)	Crystal Diameter mm / inches	Wearface Diameter mm / inches
	Cast Iron	Plastic	Glass Fibre	Thin Glass Fibre	Steels	Glass	Thin Plastic	Aluminium	Potted	Straight Probe	Right Angle Probe	Microdot	High Temp (340°C/650°F)	Extra Resolution	Exxon Specification				
3.8 – 50.8	●	●	●						●	●						T92015620	1.0	12.7	15.88
	●	●	●						●		●					T92015621			
0.15 – 2.0	●	●	●							●		●				T92015622	(brown)	½	⅝
	●	●	●								●	●				T92015623			
1.5 – 101.6	●	●		●					●	●						T92015626	2.25	6.35	9.53
	●	●		●					●		●					T92015627			
0.06 – 4.0	●	●		●						●		●				T92015628	(red)	¼	⅜
	●	●		●							●	●				T92015629			
	●	●		●					●	●			●			T92015631			
	●	●		●						●		●	●			T92015632			
1.5 – 127.0	●	●		●					●	●						T92015633	2.25	12.7	15.88
	●	●		●					●		●					T92015634			
0.06 – 5.0	●	●		●						●		●				T92015635	(red)	½	⅝
	●	●		●							●	●				T92015636			
	●	●		●					●	●			●			T92015637			
	●	●		●						●		●	●			T92015638			
1.5 – 50.8					●	●	●		●	●						T92015641	5.0	4.76	6.35
					●	●	●		●		●					T92015642			
0.06 – 2.0					●	●	●				●	●				T92015644	(green)	$^{3}/_{16}$	¼
1.02 – 152.4					●	●	●		●	●						T92015645	5.0	6.35	9.53
					●	●	●		●		●					T92015646			
0.04 – 6.0					●	●	●			●		●				T92015647	(green)	¼	⅜
					●	●	●				●	●				T92015648			
					●	●	●		●	●			●			T92015655			
					●	●	●			●		●	●			T92015656			
1.27 – 507.7					●	●	●		●	●						T92015657	5.0	12.7	15.88
					●	●	●		●		●					T92015658			
0.05 – 19.99					●	●	●			●		●				T92015659	(green)	½	⅝
					●	●	●				●	●				T92015660			
					●	●	●		●	●			●			T92015661			
					●	●	●			●		●	●			T92015662			
1.02 –152.4					●	●	●	●	●	●					●	T92015663	7.5	6.35	9.53
					●	●	●	●	●		●				●	T92015664			
0.04 – 6.0					●	●	●	●		●		●			●	T92015665	(grey)	¼	⅜
					●	●	●	●			●	●			●	T92015666			
0.635 – 152.4					●	●	●	●	●	●				●		T92015667	7.5	6.35	9.53
					●	●	●	●	●		●			●		T92015668			
0.025 6.0					●	●	●	●		●		●		●		T92015669	(blue)	¼	⅜
					●	●	●	●			●	●		●		T92015670			
1.02 – 152.4					●			●	●	●						T92015671	10.0	6.35	9.35
					●			●	●		●					T92015672			
0.04 – 6.0					●			●		●		●				T92015673	(white)	¼	⅜
					●			●			●	●				T92015674			
1.52 – 254.0					●			●	●	●						T92015676	10.0	12.7	15.88
					●			●	●		●					T92015677			
0.06- 10.0					●			●		●		●				T92015678	(white)	½	⅝
					●			●			●	●				T92015679			

Speed of Sound Reference Table

SPEED OF SOUND THROUGH MATERIALS
Elcometer Ultrasonic Thickness Gauges can be programmed by the user to the appropriate material in two ways:

- Known standard of the same material – set the calibration to the thickness
- The frequency calibration – set the frequency to the appropriate material using the Velocity Chart below.

Material	km/sec	in/msec
Air	0.33	0.013
Aluminium 2024-T4	6.38	0.251
Beryllium	12.88	0.507
Boron Carbide	10.92	0.430
Brass	4.39	0.173
Cadmium	2.77	0.109
Copper	4.65	0.183
Glass (plate)	5.77	0.227
Glycerine	1.93	0.076
Gold	3.25	0.128
Inconel	5.82	0.229
Iron	5.89	0.232
Iron, Cast	4.55	0.179
Lead	2.16	0.085
Magnesium	5.84	0.230
Mercury	1.45	0.057
Molybdenum	6.25	0.246
Monel	5.36	0.211
Motor Oil (SAE 30	1.75	0.069

Material	km/sec	in/msec
Neoprene	1.60	0.063
Nickel	5.64	0.222
Nylon	2.69	0.106
Platinum	3.96	0.156
Plexiglass	2.69	0.106
Polystyrene	2.34	0.092
Polyurethane	1.78	0.070
PVC	2.39	0.094
Quartz	5.74	0.226
Silver	3.61	0.142
Steel (4340)	5.84	0.230
Steel (303 Stainless)	5.66	0.223
Teflon	1.52	0.060
Tin	3.33	0.131
Titanium	6.10	0.240
Tungsten	5.18	0.204
Uranium	3.38	0.133
Water	1.47	0.058
Zinc	4.32	0.170

Related products

Elcometer 205/206

These robust, hand held instruments are used for measuring the thickness of materials where access to only one side of the test piece is available. Many different materials can be measured including steel, cast iron, plastic, epoxy resin and glass fibre, etc.

Elcometer 208

The Elcometer 208 and 208DL are simple to use hand held Ultrasonic Thickness Gauges with the capability to measure material thickness whilst eliminating the thickness of the coating (on metal substrates only) making these the ideal gauges for measuring the thickness of the metal substrate without worrying about taking into account the thickness of the coating in your measurement.

Elcometer 207

Elcometer's series of precision ultrasonic thickness gauges are designed to provide accurate measurements on thin materials. Using the latest transducer designs the Elcometer 207 gauges will measure thin materials in one mode and then automatically switch to another mode when measuring thicker materials and plastics.

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