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Ordering eddy current probes

Choosing a probe

1. Identify which instrument you wish to use the probe with.
2. Identify which frequency you wish to inspect at.
3. Decide whether you require an absolute or differential probe.
4. Define the probe geometry – access to the appropriate area to be inspected will often determine the shape and size necessary.
5. Decide if the probe needs to be shielded.

Frequency

Eddy current probes operate over a band of frequencies. This depends on the probe and the instrument with which they are being used. Frequencies marked on the probe indicate the setting for best performance.

Best performance on impedance plane instruments used in bridge mode is generally achieved at a frequency (f) at which the probe's impedance (Zp) has a similar value to the instrument bridge impedance (ZI). The Mentor EM is 50 Ohms.

Probe inductances (L) are given in the tables to enable Zp to be calculated for any frequency (f). $Zp=2\pi fL$ ohms. In most cases the winding resistance has little effect and can be ignored.

High frequency probes are appropriate for surface crack detection.

Low frequencies are appropriate for penetration of non-ferrous materials, e.g. for the detection of the sub-surface cracks or corrosion. Lower frequency allows greater penetration. Low frequency probes tend to be larger than high frequency probes. Low frequency probes are not as sensitive to short shallow cracks as they create a larger eddy current field.

Sensor formats

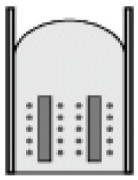
Absolute

Probes consisting of a single coil (or winding) interrogating the test piece which respond to all changes in material, heat treatment, shape, etc. Changes of a gradual nature are detected, as well as sharp discontinuities.



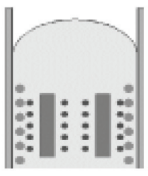
Differential

Probes with two or more balanced windings generally in the same are of the test piece. Designed to respond selectively to sharp changes in the test piece, e.g. cracks, they are insensitive to slow changes of material or geometry and long continuous defects. In the case of the encircling coils used for material sorting or comparison purposes the coils are separated with one loaded with an .unknown. part while the other has the 'unknown' part placed in it.



Reflection

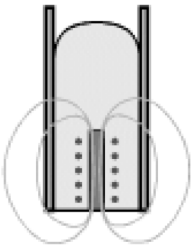
Probes in which a sense coil/s (pick-up/s) near the test piece detects the eddy current field reflected from it. The eddy currents are created by a driver coil situated around or near the pick-up coil(s). These probes are usually differential, but can be absolute, with a balance coil situated remote from the test piece also surrounded by, or adjacent to, a similar driver coil to ensure an accurate balance. Their principle advantage is a wide frequency band and a good signal to noise ratio.



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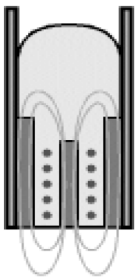
Ordering eddy current probes

Unshielded



These probes are lower in cost and produce a broader eddy current field than shielded probes. They are more tolerant of lift-off and probe angle changes and require less passes to scan an area due to their broad field. This is a benefit when only larger cracks are of interest and where the inspection area is uniform.

Shielded



The sideways spread of the eddy current field is restricted by placing shielding around the sensor. This focuses the field into a narrow beam at the end of the sensor. It is thus more sensitive to short cracks, unaffected by edges, geometry changes, adjacent ferrous materials and can operate close to edges. This narrow field means that closer scans are required to cover a given area.

Shielded probes should always be considered for work on or near edges, angles, etc. or for inspecting non-ferrous materials adjacent to ferrous materials, e.g. wing skins around and near ferrous fasteners..

Dimensions

The dimensions may be rounded for convenience or brevity. In those cases where a particular dimension is important an accurate figure or drawing can be supplied on request. The drawings in these documents are not necessarily to scale.

Waygate Technologies pursues a policy of continuous product development and improvement, specifications are therefore, liable to change without notice.

If you have any questions about the range of Waygate Technologies eddy current probes and accessories, or you would like to place an order, please contact your local Waygate Technologies representative. If you would like to discuss your special probe requirements in more detail, please contact us directly.

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Shielded surface probes 1

Application

Absolute probes for general purpose inspection.

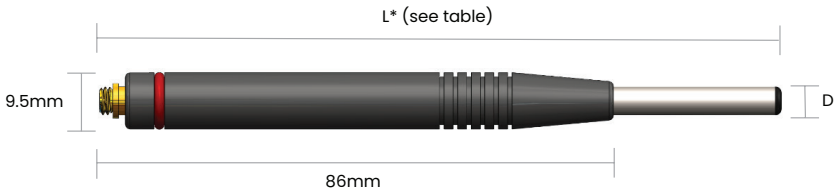
Features

Double shielded probes with a stainless steel shaft, a choice of normal, cranked or 90° tip. Supplied with a microdot connector.

Shielded straight pencil probe with Delrin handle				
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz
	Fe and NFe	Fe and NFe	NFe	NFe
4.45	610-034-XXX	610-035-XXX	610-037-XXX	610-039-XXX
3.2	610-044-XXX	610-045-XXX	610-047-XXX	
2.3	613-034-XXX	613-035-XXX		
Inductance (µH)	120	47	8.2	1.3

Available lengths	
L *	-XXX
114	-002
152	-003
203	-004
254	-005
305	-006

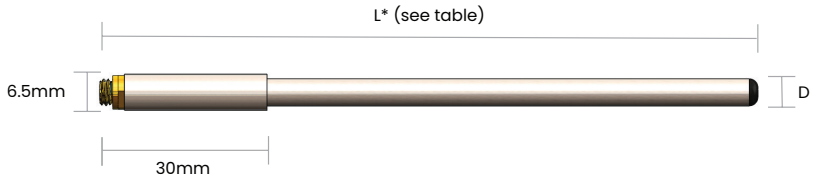
Note: lookup table for required length and drop height inputs to replace "-XXX" value



Shielded straight pencil probe with metal handle				
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz
	Fe and NFe	Fe and NFe	NFe	NFe
4.45	611-034-XXX	611-035-XXX	611-037-XXX	611-039-XXX
3.2	611-044-XXX	611-045-XXX	611-047-XXX	
2.3	611-034-XXX	611-035-XXX		
Inductance (µH)	120	47	8.2	1.3

Available lengths	
L *	-XXX
38	-000
76	-001
114	-002
152	-003
203	-004
254	-005

Note: lookup table for required length and drop height inputs to replace "-XXX" value



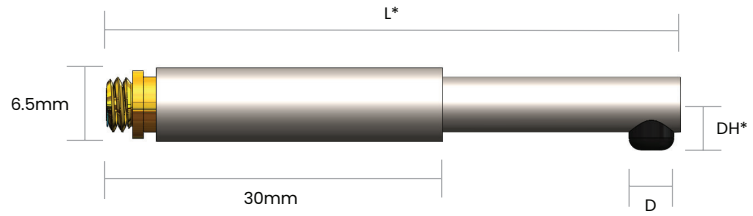
inches	1/32	.004	1/16	0.08	1/8	1/5	1/4	3/8	0.4	1/2	5/8	3/4	1	1 1/2	2	3	4	5	6	7	8	9	10	11	12
mm	0.8	1	1.6	2	3.2	5	6.4	9.5	10	12.7	15.9	19	25.4	38	51	76	102	127	152	178	203	229	254	279	305

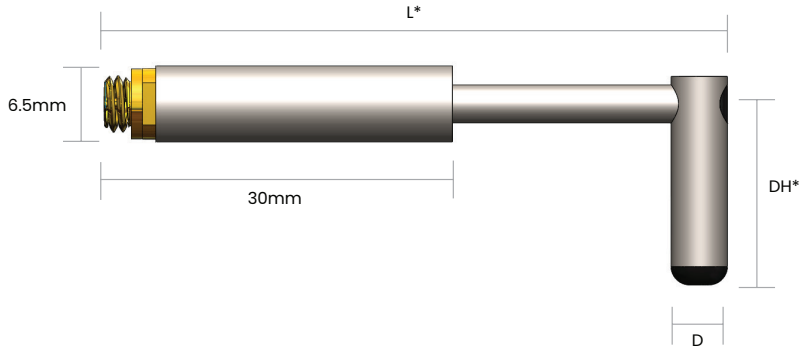
Shielded surface probes 1

90° tip pencil probe with metal handle				
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz
	Fe and Nfe	Fe and Nfe	Nfe	Nfe
4.45	611-074-XXX	611-075-XXX	611-077-XXX	611-079-XXX
3.2	611-084-XXX	611-085-XXX	611-087-XXX	
2.3	614-074-XXX	614-075-XXX		
Inductance (µH)	120	47	8.2	1.3

	Length (L)	
Drop height (DH)	51	76
Min	-000	-001
6	-006	-007
13	-012	-013
19	-018	-019
25	-024	-025

Note: lookup table for required length and drop height inputs to replace "-XXX" value





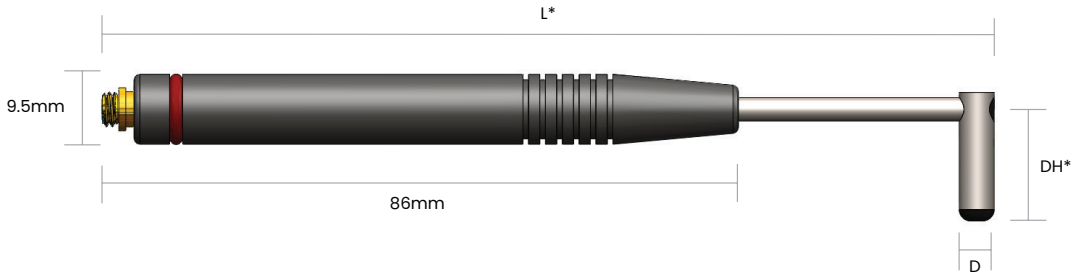
inches	1/32	.004	1/16	0.08	1/8	1/5	1/4	3/8	0.4	1/2	5/8	3/4	1	1 1/2	2	3	4	5	6	7	8	9	10	11	12
mm	0.8	1	1.6	2	3.2	5	6.4	9.5	10	12.7	15.9	19	25.4	38	51	76	102	127	152	178	203	229	254	279	305

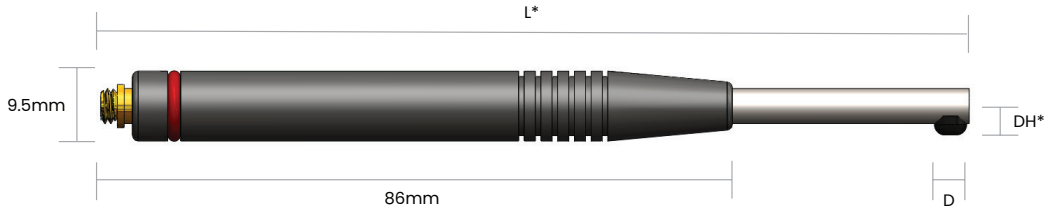
Shielded surface probes 1

90° tip pencil probe with Delrin handle				
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz
	Fe and Nfe	Fe and Nfe	Nfe	Nfe
4.45	610-074-XXX	610-075-XXX	610-077-XXX	610-079-XXX
3.2	610-084-XXX	610-085-XXX	610-087-XXX	
2.3	613-074-XXX	613-075-XXX		
Inductance (μH)	120	47	8.2	1.3

	Length (L)			
Drop height (DH)	114	152	203	254
Min	-002	-003	-004	-005
6	-008	-009	-010	-011
13	-014	-015	-016	-017
19	-020	-021	-022	-023
25	-026	-027	-028	-029

Note: lookup table for required length and drop height inputs to replace "-XXX" value





inches	1/32	.004	1/16	0.08	1/8	1/5	1/4	3/8	0.4"	1/2	5/8	3/4	1	1 1/2	2	3	4	5	6	7	8	9	10	11	12
mm	0.8	1	1.6	2	3.2	5	6.4	9.5	10	12.7	15.9	19	25.4	38	51	76	102	127	152	178	203	229	254	279	305

Shielded surface probes 2

Application

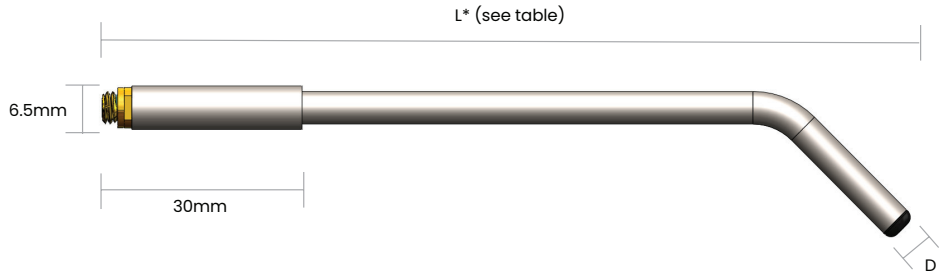
Absolute probes for general purpose inspection.

Features

Double shielded probes with a stainless steel shaft. Available with a 45° crank or a 15° crank with a 90° tip. Microdot connector.

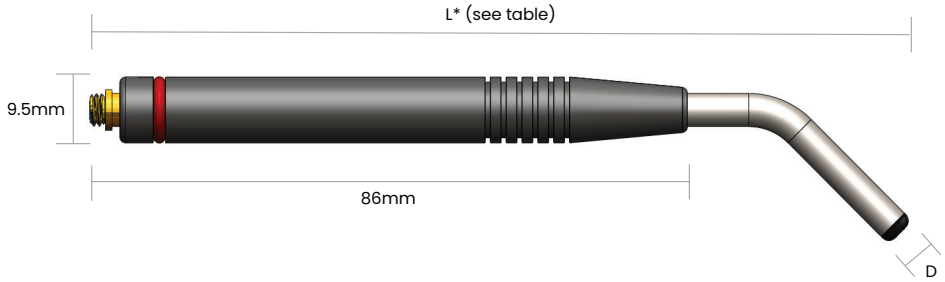
45° cranked pencil probe with metal handle					Available length (L)	
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz	L *	XXX
	Fe and Nfe	Fe and Nfe	Nfe	Nfe	76	-075
4.45	611-074-XXX	611-075-XXX	611-077-XXX	611-079-XXX	114	-076
3.2	611-084-XXX	611-085-XXX	611-087-XXX		152	-077
2.3	614-074-XXX	614-075-XXX			203	-078
Inductance (µH)	120	47	8.2	1.3	254	-079

Note: lookup table for required length input to replace "-XXX" value



45° cranked pencil probe with Delrin handle					Available length (L)	
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz	L *	XXX
	Fe and Nfe	Fe and Nfe	Nfe	Nfe	114	-076
4.45	610-054-XXX	610-055-XXX	610-057-XXX	610-059-XXX	152	-077
3.2	610-064-XXX	610-065-XXX	610-067-XXX		203	-078
2.3	613-054-XXX	613-055-XXX			254	-079
Inductance (µH)	120	47	8.2	1.3	305	-080

Note: lookup table for required length input to replace "-XXX" value



Shielded surface probes 2

15° cranked pencil probes with 90° tip and Delrin handle

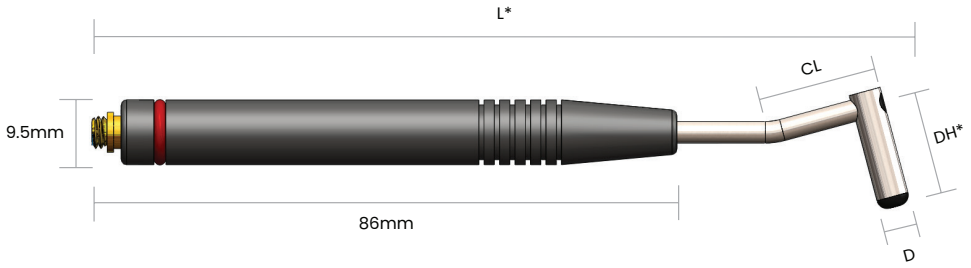
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz
	Fe and Nfe	Fe and Nfe	Nfe	Nfe
4.45	610-094-XXX	610-095-XXX	610-097-XXX	610-099-XXX
3.2	610-104-XXX	610-105-XXX	610-107-XXX	
2.3	613-094XXX	613-095-XXX		
Inductance (µH)	120	47	8.2	1.3

	Length (L)		
Drop height (DH)	114	152	203
Min	-031	-042	-043
6.4	-111	-122	-123
12.7	-171	-182	-183
19	-231	-242	-243
25.4	-291	-302	-303

Notes:

1) Lookup table for required length and drop height inputs to replace "-XXX" value

2) If length (L) is greater than 114mm then crank length (CL) = 25mm otherwise CL is 15mm



15° cranked pencil probes with 90° tip and metal handle

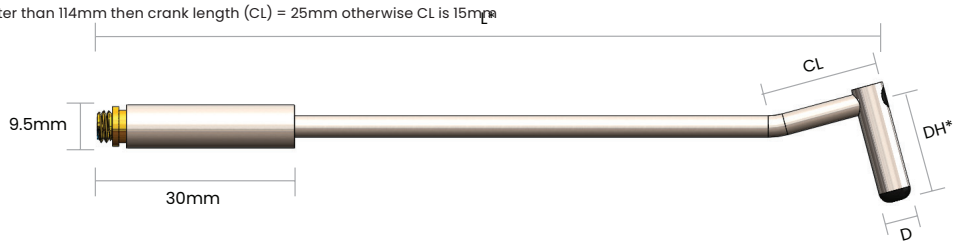
D	20kHz-200kHz	50kHz-500kHz	350kHz-3MHz	2MHz-10MHz
	Fe and Nfe	Fe and Nfe	Nfe	Nfe
4.45	611-094-XXX	611-095-XXX	611-097-XXX	611-099-XXX
3.2	611-104-XXX	611-105-XXX	611-107-XXX	
2.3	614-094XXX	614-095-XXX		
Inductance (µH)	120	47	8.2	1.3

	Length (L)				
Drop height (DH)	51	76	114	152	203
Min	-000	-001	-002	-003	-004
6.4	-006	-007	-008	-009	-010
12.7	-012	-013	-014	-015	-016
19	-018	-019	-020	-021	-022
25.4	-024	-025	-026	-027	-028

Notes:

1) Lookup table for required length and drop height inputs to replace "-XXX" value

2) If length (L) is greater than 114mm then crank length (CL) = 25mm otherwise CL is 15mm



Shielded surface probes 2

Adjustable copper absolute shielded pencil probes

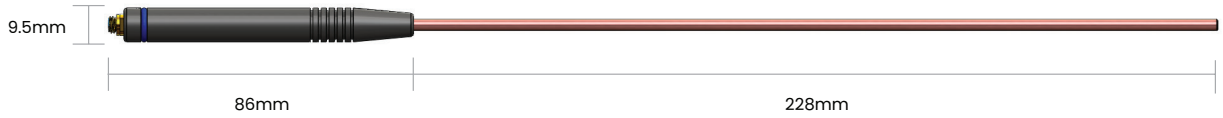
Application

Absolute probes for general purpose inspection in locations with complex geometry.

Features

Double shielded probes, with a microdot connection and a copper shaft that can be manipulated into the required shape for inspection. Can also be provided with a 90 degree tip on request.

Adjustable copper absolute shielded pencil probes						
L	20kHz-200kHz		50kHz-500kHz		350kHz-3MHz	
100	615-037-002	(104P8C)	615-037-003	(105P8C)	615-037-004	(106P8C)
Inductance (µH)	120		47		8.2	



Approvals Quick Reference Guide
Country Specific Ordering Options

108M1756 Rev. AV

Transmitters																					
P/N	00	01	05	AE	AE0	AU	BR	CN	CN0	IN	K0	KR	KZ	MA	MA0	NZ	R0	RU	TW	U0	ZA
177230	×	×	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	×	×	✓	✓	✓	✓	✓	✓
990	✓	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
991	✓	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓	✓	×	×	×	✓	✓	✓	✓	✓

Sensor Accessories																															
P/N	00	01	02	04	05	AE	AE0	AU	AZ	AZ0	BR	BY	BY0	CN	IN	JP	K0	KR	KZ	MA	MA0	NZ	R0	RU	TW	U0	UA	UK	UZ	UZ0	ZA
102044	✓	×	×	×	✓	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓
102045	✓	×	×	×	✓	×	×	×	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	×	×	×	✓	✓	✓	×	×	×	✓	✓	✓	✓
128164	✓	×	×	×	✓	✓	✓	×	×	×	×	×	×	✓	×	×	✓	×	✓	×	×	×	✓	✓	×	✓	✓	✓	×	×	×
129715	✓	×	×	×	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
129716	✓	×	×	×	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
129957	✓	×	×	×	✓	×	×	×	✓	✓	✓	×	×	✓	✓	✓	✓	✓	✓	×	×	×	✓	✓	✓	×	×	×	×	×	✓
130938	✓	×	×	×	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	×	×	✓	✓	✓	✓
131908	✓	✓	×	×	✓	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
132306	×	✓	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
134340	✓	×	×	×	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
137383	✓	×	×	×	✓	✓	×	×	×	×	✓	✓	×	✓	✓	✓	×	✓	✓	✓	×	×	×	✓	✓	×	✓	✓	✓	×	✓
142238	✓	×	×	×	✓	×	×	×	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓
142810	✓	✓	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
143493	✓	×	×	×	✓	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	✓	✓	×	×	×	✓	×	×	×
144181	✓	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓
162380	✓	×	×	×	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
162381	✓	×	×	×	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
168209	✓	×	×	×	✓	✓	✓	×	×	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓
170133	✓	×	×	×	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
170172	✓	×	×	×	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
175636	✓	×	×	×	✓	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

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SCAN TO CHAT ON WHATSAPP

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PRODUCT: 129716-XXX-032-90-05 MOD:166797-0111 / Bently Nevada Configured Eddy-Current Probe Assembly

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