UniWest - Standard EC Probes

UniWest

Since 1985, employee-owned UniWest has engineered and manufactured eddy current (EC) testing solutions and instruments with unparalleled flaw detection capabilities for safety-critical and high-performance components in industries around the globe.

Theory

When a coil of conductive wire is excited with an alternating electrical current an alternating magnetic field is produced. The magnetic field oscillates at the same frequency as the excitation source. When placed near a conductive material, currents opposed to the ones in the coil are induced in the material. These are referred to as eddy currents.

In the case of variations in the electrical conductivity and/or magnetic permeability causes a change in eddy current. Additionally, the presence of defects will precipitate a change in phase and amplitude that can be detected as a measurable change in the impedance. Eddy Current testing is generally used on conductive materials to detect surface defects.

Surface Probes

Surface probes are manufactured with a flat face on the underside to allow for more stable use on the element being tested. Probes can be purchased in absolute mode and in bridge (SS) or reflection (SSR) configurations. There is a range of frequencies available with all probes being shielded.

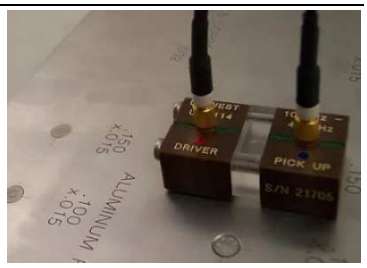
A- Coil Type	B- Size (mm)	C- Frequency				
	OD	1kHz	10kHz	20kHz	50kHz	100kHz
SS	9.5	✓	✓	✓	✓	✓
SS	12.7	✓	✓	✓	✓	✓
SS	19	✓	✓	✓	✓	✓
SSR	9.5	✓	✓	✓	✓	✓
SSR	12.7	✓	✓	✓	✓	✓
SSR	19	✓	✓	✓	✓	✓

*Bridge Config- Triax Connector/ Reflection-4-socket Fischer
**Part Number A-B(inch)-C i.e. SS-0.75-50 is a 19mm 50kHz Bridge Probe (Absolute Shielded)

US-3716 Surface Scan Probe

The US-3716 is a general-purpose probe that can be utilized in many different surface inspections. Well balanced differential coils exhibit minimal lift-off signal and can be operated in a broad frequency range. The coils are directionally sensitive allowing for detection independent of orientation. It's a cost-effective method to inspect in-service welds efficiently for near surface cracks and can be used to inspect through thin coatings such as paint.

Sliding Probes



Sliding probes are used on airframe structures for finding flaws on the surface or subsurface, particularly in areas close to fasteners. A variety of frequencies are available depending on the inspection application.

Part No	Frequency				Connector
	100Hz (100Hz-40kHz)	500Hz (500Hz-30kHz)	500Hz (500Hz-100kHz)	1kHz (1kHz-100kHz)	
US-158			✓		Dual M/D
US-584				✓	Triax
US-2419	✓				Dual M/D
US-2682		✓			Triax
US-2907	✓				Dual M/D
US-2942				✓	Triax

*US-2419 has a removable sight glass
** 8-pin Burndy/Triax, reflection (PN 94051)
8-pin Burndy/Dual Microdot, reflection (PN 94012)

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Ring Probes

Ring probes are primarily used in the location of cracks around fasteners or for corrosion on aerospace structures. Typically manufactured with low frequency capabilities they are capable of deep penetration when being used for inspections. Absolute and Reflection configurations are available.

Probe Style	A- Size (mm)	B- Frequency				
	ID/OD	100Hz	500Hz	1kHz	10kHz	50kHz
RPR	6.4/15.2			✓	✓	✓
RPR	7.6/16.5		✓	✓	✓	✓
RPR	8.9/17.8	✓	✓	✓	✓	✓
RPR	10.2/19.1	✓	✓	✓	✓	✓
RPR	11.4/20.3	✓	✓	✓	✓	✓
RPR	12.7/21.6	✓	✓	✓	✓	✓
RPR	14/22.9	✓	✓	✓	✓	✓
RPR	15.2/24.1	✓	✓	✓	✓	
RPR	16.5/24.5	✓	✓	✓		

*Ring Probes are fitted with 4-socket Fischer connectors
**Part Number- RPR-A(inches)-B ie RPR 0.25/0.6-50 is a ring probe with 6.4mm ID and 15.2mm OD, 50kHz

Surface Following Probes

Surface Following Probes are constructed with UniWest's patented swivel head which allows the coil to follow curved surfaces without requiring the need to hold a handle perpendicular to the inspection zone.

A-Probe Style	B- Head Dia (mm)		C- Frequency			Connect -or
	15.9	25.4	20k Hz	200k Hz	2MHz	
SFA (Ref-Abs)	✓	✓	✓	✓	✓	4 socket Fischer
SFD (Ref-Diff)	✓	✓		✓	✓	4 socket Fischer
SFX (Cross Wound)	✓	✓			✓	Triax

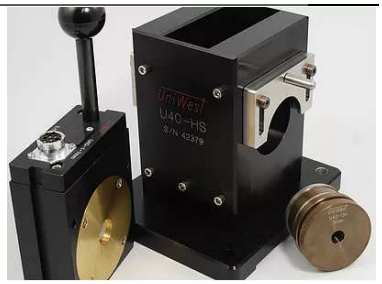
Bolt Hole Scanner Probes

Bolt Hole Scanner probes are primarily used for the inspections of bores or holes. Compatible with high speed scanners these Bolt Hole probes can efficiently inspect elements for flaws. This technique is generally used for structural inspection after the removal of fasteners, bushings or in other open hole style inspection applications. These URS rotating bolt hole probes are manufactured with a differential reflection coil configuration. The standard working length is 44.45mm.

Probe Style	A- Probe Dia (mm)	B- Frequency	
	OD	2MHz (1.3 MHz)	LF (100-500 kHz)
URB	3.18	✓	✓
URB	3.96	✓	✓
URB	4.76	✓	✓
URB	6.35	✓	✓
URB	7.93	✓	✓
URB	9.53	✓	✓
URB	11.13	✓	✓
URB	12.7	✓	✓
URB	14.28	✓	✓
URB	15.88	✓	✓
URB	17.46	✓	✓
URB	19.05	✓	✓

These probes are made to operate with UniWest JF-15, ECS-1 Scanners and others.

Encircling Probes (U40)



Encircling Probes are used for the inspection of tubes, bars and wires for such flaws as inclusions, cracks, laps, pores or other unwanted defects

Coils can be supplied in differential or absolute with coil sizes 1.2, 2.2, 3.2, 4.2, 5.7, 7, 9, 11, 12, 15, 17, 20, 23, 26, 29, 32, 35, 38, 44mm. Actual coil diameter us 0.5mm larger.

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Pencil Probes

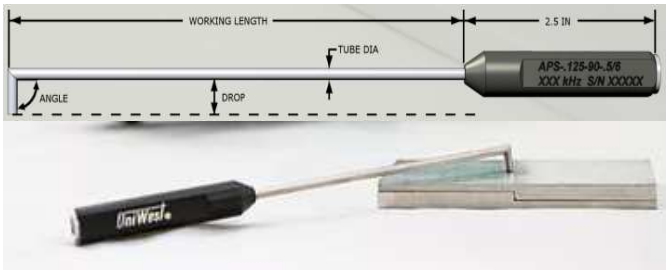
Pencil probes are generally used in a range of NDT inspections. Configurations available are both bridge and reflection with either absolute or differential modes. A range of frequencies are available with coils either shielded or unshielded. An optional collar for working on flat surfaces is available.

A-Coil Type	B- Shaft Dia	C- Frequency		
Bridge	4.7mm	100kHz	500kHz	2MHz
P (Abs Unshielded)	✓	✓	✓	✓
PS (Abs Shielded)	✓	✓	✓	✓
PD (Diff Unshielded)	✓	✓	✓	✓
PDS (Diff Shielded)	✓	✓	✓	✓

A-Coil Type	B- Shaft Dia	C- Frequency	
Reflection	4.7mm	500kHz	2MHz
PSR (Abs Shielded)	✓	✓	✓
PDSR (Diff Shielded)	✓	✓	✓

*Bridge Config- Triax Connector/ Reflection-4-socket Fischer
**Part Number A-B(inch)-C i.e. PS-.187-500 is a 500kHz Bridge Probe (Absolute Shielded) 4.7mm dia shaft

Angled Pencil Probes



Angled Pencil Probes provide the ability to surface test where access is limited. A variety of working length, tip angles and drops are available. Configurations produced by UniWest include bridge/reflection, absolute/differential, shielded/unshielded and in a range of frequencies.

Pencil Probe Specs

A-Coil Type	B- Tube (mm)	C- Angle		D-Drop (mm)			E- Working Length (mm)				F- Frequency		
Bridge	3.2	45	90	2.5	6.4	12.7	76	102	127	152	100kHz	500kHz	2MHz
AP (Abs Unshielded)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
APS (Abs Shielded)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
APD (Diff Unshielded)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
APDS (Diff Shielded)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

A-Coil Type	B- Tube (mm)	C- Angle		D-Drop (mm)			E- Working Length (mm)				F- Frequency		
Reflection	3.2	45	90	2.5	6.4	12.7	76	102	127	152	100kHz	500kHz	2MHz
APSR (Abs Shielded)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
APDSR (Diff Shielded)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Bridge Config- Triax Connector/ Reflection-4-socket Fischer
** Part Number- A-B-C-D-E-F (all in inches)- ie APDSR-.125-45-.25-3-2 is a Differential Shield Reflection Probe with 3.2mm dia tube, 45 deg angle, 6.4mm drop, 76mm working length and 2MHz