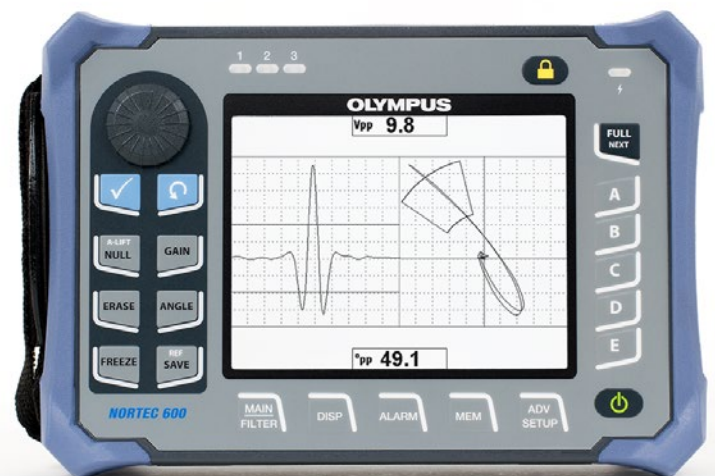


Industrial



Surface and Subsurface Probes



EVIDENT

Intro to Surface and Subsurface Probes

Low-frequency eddy current probes (LFEC) are used for subsurface detection of cracks and/or corrosion. Because they are low frequency, they can reach the required depth of penetration in thicker structures. These probes are shielded to concentrate the magnetic field under the probe and avoid interference from edges and other structures that could cause edge-effects and other false indications. Reflection type probes are also widely used due to the lower drift and often better signal-to-noise while operating at low frequencies. Spring-loaded bodies are useful to maintain constant pressure when needed, such as when spot testing for conductivity differences or corrosion in thin-skin structures.

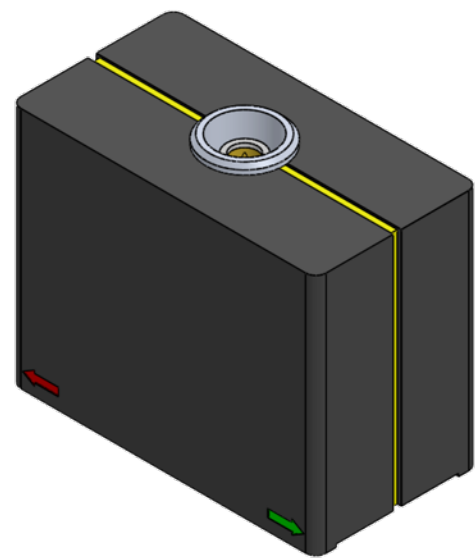
Sliding Probes

Operating in reflection mode, sliding probes enable inspection of fastener rows for surface and subsurface cracks. They are directionally sensitive and feature an engraved alignment line to assist scan orientation to the expected direction of the cracks.

Sliding probes are available in fixed or adjustable types. Fixed types are mostly used in riveted joints to detect cracks emanating from holes. Penetration is sufficient for fuselage thickness up to 0.15 in. (4 mm). Adjustable types are used for thicker structures up to 0.75 in. (19 mm). They operate well with various fasteners, including magnetic types.

Specifications

- Fixed or adjustable plastic housing with a shielded coil
- Adjustable types include space to adjust the width of the probe for varying fastener diameters or spacing between fastener rows
- Ferrite provides excellent shielding of the sensors
- Connector for fixed probes: Triax Fischer/LEMO, 2-pin Microdot, or 4-pin Fischer
- Connector for adjustable probes: two single-pin Microdot (one on each probe half)
- Various frequency ranges available
- Can operate in reflection or bridge mode when used with the appropriate cable



Cable for Sliding Probes

| | | |
|---------------------------|-----------------------|----------------------|
| NORTEC 600 or 2000 series | 2 single-pin Microdot | CN16-2M-6 (U8800273) |
|---------------------------|-----------------------|----------------------|

Sliding Probes

| Dimensions/in. (mm) | | | Frequency (kHz) | Part Number (Item Number) | Type | Connector |
|---------------------|-----------------|-----------------|-----------------|------------------------------------------|------------|----------------------------------|
| Height | Length | Width | | | | |
| 1 (25.4) | 3.35 (85.09) | 0.75 (19.05) | 100 Hz–20 kHz | LTW0419-1 (U8633025) | Adjustable | 2 single-pin Microdot |
| 1 (25.4) | 1.76 (44.7) | 1 (25.4) | 1 kHz–10 kHz | LTW2018-1 (U8633056) | Adjustable | 2 single-pin Microdot |
| 1 (25.4) | 1.75 (44.45) | 1 (25.4) | 100 Hz–40 kHz | LTW0423-1 (U8690009) | Adjustable | 2 single-pin Microdot |
| 1 (25.4) | 1 (44.45) | 1 (25.4) | 1 kHz–20 kHz | LTW5010-1 (U8690010) | Adjustable | 2 single-pin Microdot |
| 1 (25.4) | 1.5 (38.1) | 0.75 (19.05) | 1 kHz–100 kHz | LTW1022 (U8633026) | Adjustable | Adjustable/2 single-pin Microdot |
| 1.19 (30.23) | 1.5 (38.1) | 0.8 (20.32) | 1 kHz–100 kHz | NEC-4039 (U8636053) | Fixed | Triax Fischer/LEMO |
| 1 (25.4) | 1.5 (38.1) | 0.8 (20.32) | 400 Hz–50 kHz | NEC-4108 (U8633015) | Fixed | Triax Fischer/LEMO |
| 1.19 (30.23) | 1.5 (38.1) | 0.8 (20.32) | 1 kHz–100 kHz | XESL-00004 [NEC-4039-3] (U8629545) | Fixed | 2 single-pin Microdot |
| 0.75 (19.05) | 1 (25.4) | 0.7 (17.78) | 100 Hz–50 kHz | NEC-4083 (U8633021) | Adjustable | 2 single-pin Microdot |
| 1 (25.4) | 1.5 (38.1) | 0.8 (20.32) | 1 kHz–100 kHz | XESL-00003 [SPO-3806] (U8629163) | Fixed | Triax Fischer/LEMO |
| 1.19 (30.23) | 1.5 (38.1) | 0.8 (20.32) | 1 kHz–100 kHz | XESL-00005 NEC-4039-2 (U8633055) | Fixed | 4-pin Fischer |
| 0.7 (17.78) | 1.8 (45.72) | 0.7 (17.78) | 100 Hz–40 kHz | 9230982 [SPO-1958] (U8629180) | Adjustable | 2 single-pin Microdot |

Cables for Sliding Probes

| Instrument | Probe Connector | Part Number (Item Number) |
|---------------------------|--------------------|---------------------------------|
| NORTEC 600 or 2000 series | Triax Fischer/LEMO | Reflection: SPO-6687 (U8800538) |
| NORTEC 600 or 2000 series | 4-pin Fischer | 9122267 (U8800095) |
| NORTEC 600 or 2000 series | Dual Microdot | 9230374 (U8800637) |

Low-Frequency Spot and Corrosion Probes

Spot probes are used for discovering flaws both on and below surfaces. Operating in reflection mode, their large diameters usually accommodate lower frequencies or scanning large areas. Because spot probes contain large diameter coils for greater depth of penetration, the detectable flaw size will be increased. They are available in a variety of diameters and frequency ranges and are shielded to provide maximum sensitivity. Spot probes are used to detect cracks and corrosion as well as measure thickness in materials and coatings.

Corrosion probes (SPO-532x series) are specifically balanced to detect material loss in aluminum structures and are configured with reflection absolute coils.

Specifications

- Plastic outer housing with ferrite coil
- Probes come in different sizes and frequency ranges
- Ferrite provides excellent shielding of the sensors
- Triax Fischer/LEMO straight detachable connector



Straight Spot Probes in the Reflection Coil Configuration

| Probe Outer Diameter | | Frequency (kHz) | Part Number (Item Number) | Model Number |
|--------------------------------|-------|-----------------|---------------------------|--------------------|
| in. | mm | | | |
| Reflection Coil Configurations | | | | |
| 0.25 | 6.35 | 2 kHz–200 kHz | 9213550 (U8623005) | SR/2KHZ-200KHZ/.25 |
| 0.31 | 7.87 | 700 Hz–80 kHz | 9213551 (U8623006) | SR/700HZ-80KHZ/.31 |
| 0.44 | 11.18 | 400 Hz–60 kHz | 9213552 (U8623007) | SR/500HZ-60KHZ/.44 |
| 0.50 | 12.7 | 300 Hz–40 kHz | 9213553 (U8623008) | SR/300HZ-40KHZ/.50 |
| 0.62 | 15.75 | 100 Hz–20 kHz | 9213554 (U8623009) | SR/100HZ-20KHZ/.62 |
| 0.75 | 19.05 | 100 Hz–5 kHz | 9213555 (U8623010) | SR/100HZ-5KHZ/.75 |

Note: Special spring-loaded spot probes for surface and subsurface applications are also available by request.

Corrosion Probes

| | | | | |
|------|-------|---------------|--------------------|-------------------------------|
| 0.31 | 7.87 | 700 Hz–80 kHz | 9217896 (U8633004) | SPO-5327 SR/700HZ-80KHZ/.31AL |
| 0.44 | 11.18 | 500 Hz–60 kHz | 9218108 (U8633005) | SPO-5328 SR/500HZ-60KHZ .44AL |
| 0.50 | 12.7 | 300 Hz–40 kHz | 9218203 (U8629128) | SPO-5329 SR/300HZ-40KHZ .50AL |

Right-Angle Spot Probes in the Reflection Coil Configuration

| Probe Outer Diameter | | Frequency (kHz) | Part Number (Item Number) | Model Number | Ferrite |
|----------------------|-------|-----------------|------------------------------|-----------------------|---------|
| in. | mm | | | | |
| 0.67 | 17.02 | 50 Hz–3 kHz | RS016-5-TF (U8634049) | SR/50HZ-3KHZ/.60/RA | No |
| 0.312 | 7.92 | 200 Hz–10 kHz | RS053-5-TF (Q6340003) | SR/200HZ-10KHZ/.31/RA | No |
| 0.50 | 12.7 | 200 Hz–10 kHz | RS055-1-TF (U8634024) | SR/200HZ-10KHZ/.50/RA | No |
| 0.575 | 14.61 | 5 kHz–100 kHz | RS1005-2-TF (U8630024) | SR/5KHZ-100KHZ/.57/RA | Yes |
| 0.45 | 11.43 | 1 kHz–20 kHz | RS404-1-TF (U8634037) | SR/1KHZ-20KHZ/.45/RA | Yes |

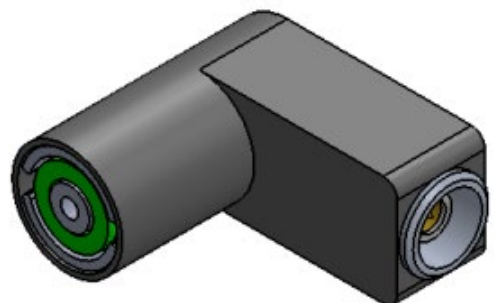


Ring Probes

Ring/encircling probes are made to fit various fastener head diameters. They provide greater sensitivity to subsurface cracks where there is a fastener/hole within multilayered structures. The probe internal diameter (ID) is the more important dimension and should be chosen to be slightly bigger than the fastener head. The outside diameter (OD) is not normally critical but should not overlap other fastener heads. The probe height is not always critical, but special low-profile types are available for cases of limited access. Ring/encircling probes are available in a variety of diameters and frequency ranges.

Specifications

- Plastic outer housing with shielded coil
- Probe diameter measured at the exposed inner diameter of the coil face
- Shielded coils provide greater depth of penetration and limits the influence of ferrite fasteners
- Steel coil form provides some shielding of the sensor
- Triax Fischer/LEMO right-angle detachable connector
- Various frequencies available



Ring Probes

| Probe Inner Diameter | | Probe Outer Diameter | | Frequency (kHz) | Part Number (Item Number) | Model Number |
|----------------------|-------|----------------------|-------|-----------------|------------------------------|--------------------------------------|
| in. | mm | in. | mm | | | |
| 0.25 | 6.35 | 0.625 | 15.88 | 100 Hz–10 kHz | RR026-1-TF (U8636032) | RR/100HZ-10KHZ/.25-.625 |
| 0.25 | 6.35 | 0.625 | 15.88 | 500 Hz–20 kHz | RR206-5-TF (U8636041) | RR/500HZ-20KHZ/.25-.625 |
| 0.3 | 7.62 | 0.75 | 19.05 | 200 Hz–10 kHz | RR058-1-TF (U8636040) | RR/200HZ-10KHZ/.300-.750 |
| 0.3 | 7.62 | 0.625 | 15.88 | 5 kHz–80 kHz | RR1006-5-TF (U8636102) | RR/5KHZ-80KHZ/.30-.625 |
| 0.312 | 7.92 | 0.75 | 19.05 | 100 Hz–10 kHz | RR028-1-TF (U8636043) | RR/100HZ-10KHZ/.3125-.75 |
| 0.335 | 8.51 | 0.625 | 15.88 | 500 Hz–20 kHz | RR207-1-TF (U8636042) | RR/500HZ-20KHZ/.335-.625 |
| 0.35 | 8.89 | 0.75 | 19.05 | 80 Hz–4 kHz | RR017-1-TF (U8636026) | RR/80HZ-4KHZ/.35-.75 |
| 0.35 | 8.89 | 0.75 | 19.05 | 500 Hz–20 kHz | RR207-5-TF (U8636116) | RR/500HZ-20KHZ/.35-.750 |
| 0.4 | 10.16 | 0.75 | 19.05 | 50 Hz–3 kHz | RR018-5-TF (U8636027) | RR/50HZ-3KHZ/.40-.75 |
| 0.43 | 10.92 | 0.75 | 19.05 | 100 Hz–5 kHz | RR027-2-TF (U8634160) | RR/100HZ-5KHZ/.43-.75 |
| 0.5 | 12.7 | 1 | 25.4 | 50 Hz–3 kHz | RR0110-5-TF (U8636011) | RR/50HZ-3KHZ/.50-1.0 |
| 0.5 | 12.7 | 1 | 25.4 | 80 Hz–4 kHz | RR019-2-TF (U8636029) | RR/80HZ-4KHZ/.50-1.0 |
| 0.5 | 12.7 | 1.25 | 31.75 | 100 Hz–10 kHz | XERI-00018 (U8629122) | RR/100HZ-10KHZ/.50-1.25-9215661 |
| 0.54 | 13.72 | 1.15 | 29.21 | 100 Hz–10 kHz | 9215663 (U8629123) | RR/100HZ-10KHZ/.54-1.0 |
| 0.6 | 15.24 | 1 | 25.4 | 50 Hz–3 kHz | RR0112-5-TF (U8636018) | RR/50HZ-3KHZ/.60-1.0 (1.16 in NS) |
| 0.68 | 17.27 | 1 | 25.4 | 50 Hz–3 kHz | RR0110-3-TF (Q2501275) | RR/50HZ-3KHZ/.68-1.00 |
| 0.7 | 17.78 | 1.25 | 31.75 | 50 Hz–3 kHz | XERI-00011 (U8636019) | RR/50HZ-3KHZ/.70-1.30 |
| 0.8 | 20.32 | 1.5 | 38.1 | 50 Hz–3 kHz | RR0115-1-TF (U8636117) | RR/50HZ-3KHZ/.80-1.50 |

Spring-Loaded Probes Available by Request

Spring-loaded probes maintain a constant pressure when needed. Like spot probes, they are available in a variety of diameters and frequency ranges. They are shielded to provide maximum sensitivity. Spring-loaded probes are used to detect cracks and measure thickness in materials and coatings.



Cables for Spot and Ring Probes

| Instrument | Probe Connector | Part Number (Item Number) |
|---------------------------|--------------------|---------------------------------|
| NORTEC 600 or 2000 series | Triax Fischer/LEMO | Bridge: 9122244 (U8800091) |
| NORTEC 600 or 2000 series | Triax Fischer/LEMO | Reflection: SPO-6687 (U8800538) |