2025

Eddy Current Array Surface Inspection Probe Catalogue

Through innovation,
we surpass standard expectations

SG NDT
AN EKOSCAN COMPANY

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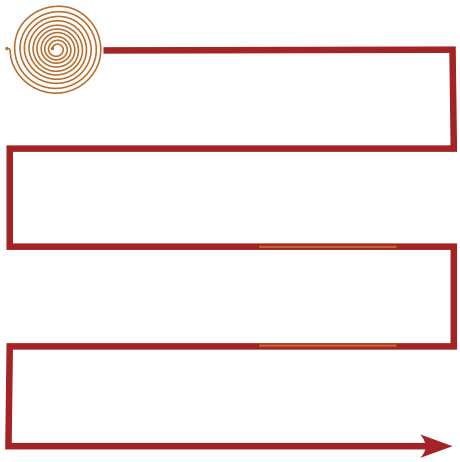
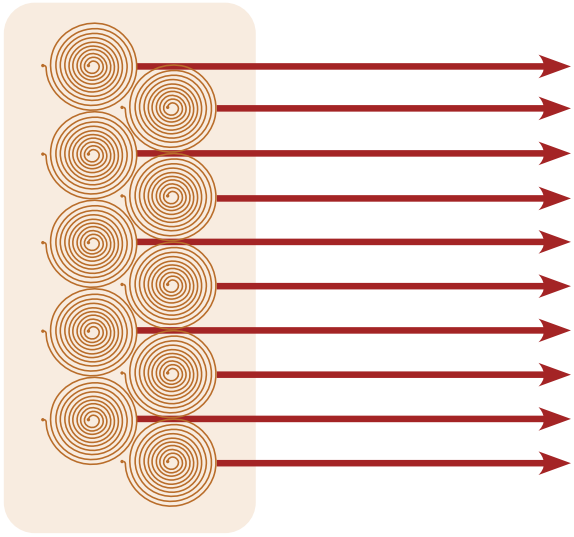
Introduction to Eddy Current Array (ECA) Technology

What is ECA?

Eddy Current Array is a non-destructive inspection method in which multiple eddy current coils are placed in a single housing. Some of these coils induce eddy currents into a material, while others are used to receive and analyze the eddy currents. This technique represents an improvement over conventional eddy current inspection because it allows for the coverage of a large area in a single pass. Additionally, it makes the examination recordable, repeatable, less operator-dependent, and less time-consuming. Furthermore, it provides clear 2D/3D images of the part being tested.



Single coil: raster scanning



Array probe: one-line scanning

Benefits of ECA

- Rapid, repeatable inspections
- Recordable, traceable data
- Intuitive C-Scan imaging

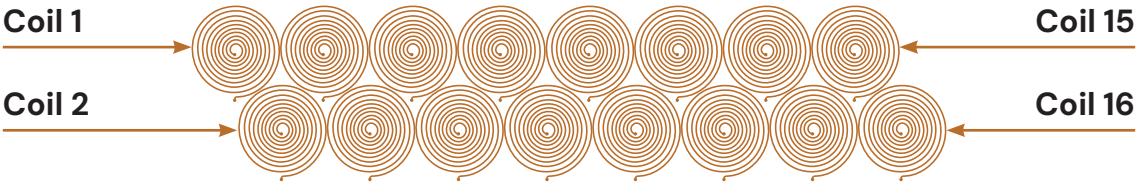
Some of the basics...

Coils vs Channels Explained

Often the terms coil and channel are mis-understood or confused with each other, so what is the difference?

Coils

A coil is a physical element (wound wire or printed) used to produce eddy currents in the test surface. In an eddy current array probe, an array of many coils are placed in 1, 2 or sometimes more rows such as this :

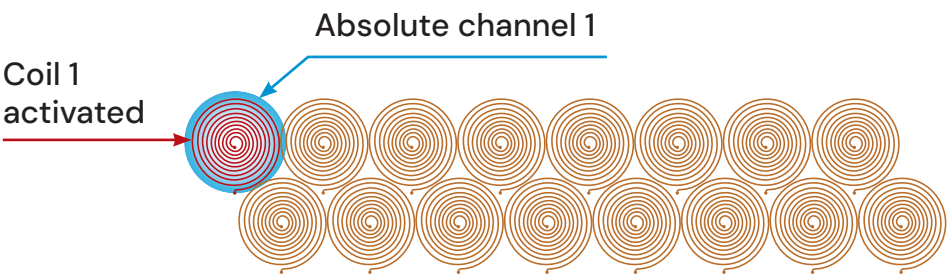


Channels

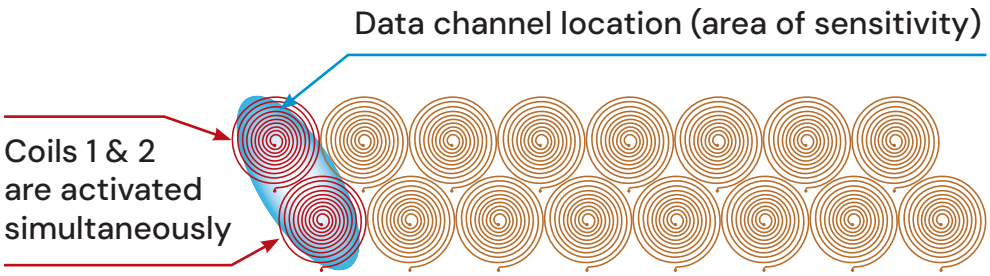
A channel (sometimes referred to as data channel) corresponds to the eddy current data measured at a particular position in the array probe, it is often confused with a coil for two reasons :

- a data channel is typically created by measuring a particular coil of the array
- in absolute array probes, the data channel is the same as the coil because only one coil is activated at a time.

Example :



However, there are many other array topologies in which more than one coil is activated simultaneously to create one data channel.
Example :

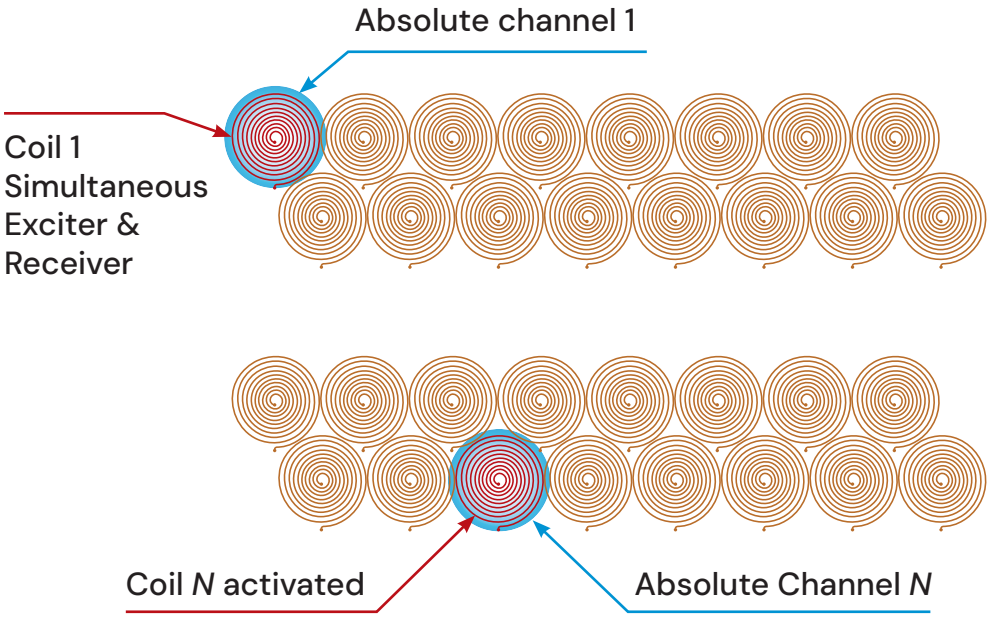


Topologies Explained

Impedance Absolute

Characteristics :

- All channels equally sensitive
- Channels sensitives to defects in all orientations
- Very sensitive to liftoff variations
- Sensitive to thermal drifting
- Absolute response
- ½ channel overlap



Activation step *N* (Timeslot *N*)

Short Single Driver

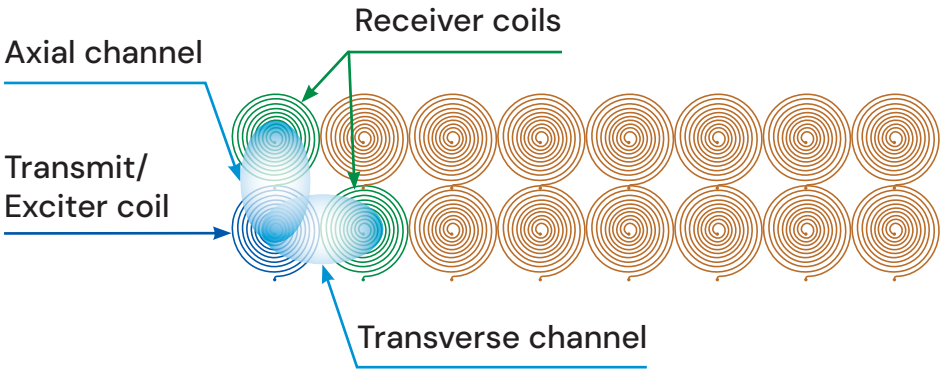
This configuration is commonly found in two different forms : “Straight” and “Angled”

“Straight” Short Single Driver

Characteristics :

- 2 sets of data are created with different sensitivities (axial & transverse)
- Sensitive to liftoff variations
- Sensitive to near surface defects
- Insensitive to thermal drifting
- Absolute response

No channel overlap -> for this reason it is commonly found with one or two added offset rows.



Printed Vs. Rea

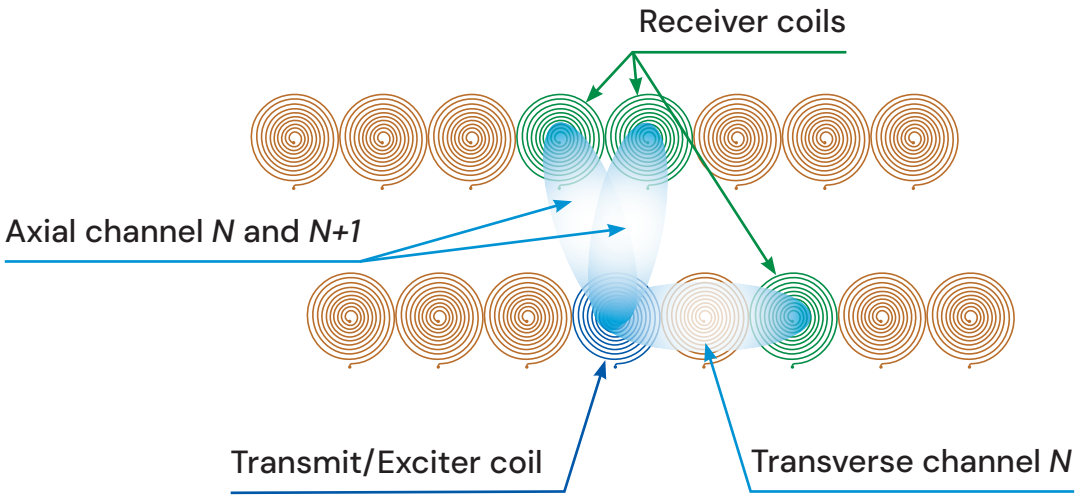
Printed Coils	
For	**Against**
✓ No manual assembly	✗ Handles less power
✓ Less expensive to manufacture	✗ Can be limited with less depth of penetration
✓ Greater durability	

Long Single Driver

This configuration is typically used when higher tolerance to liftoff is required. The spacing between both rows is normally equal to the coil OD.

Characteristics :

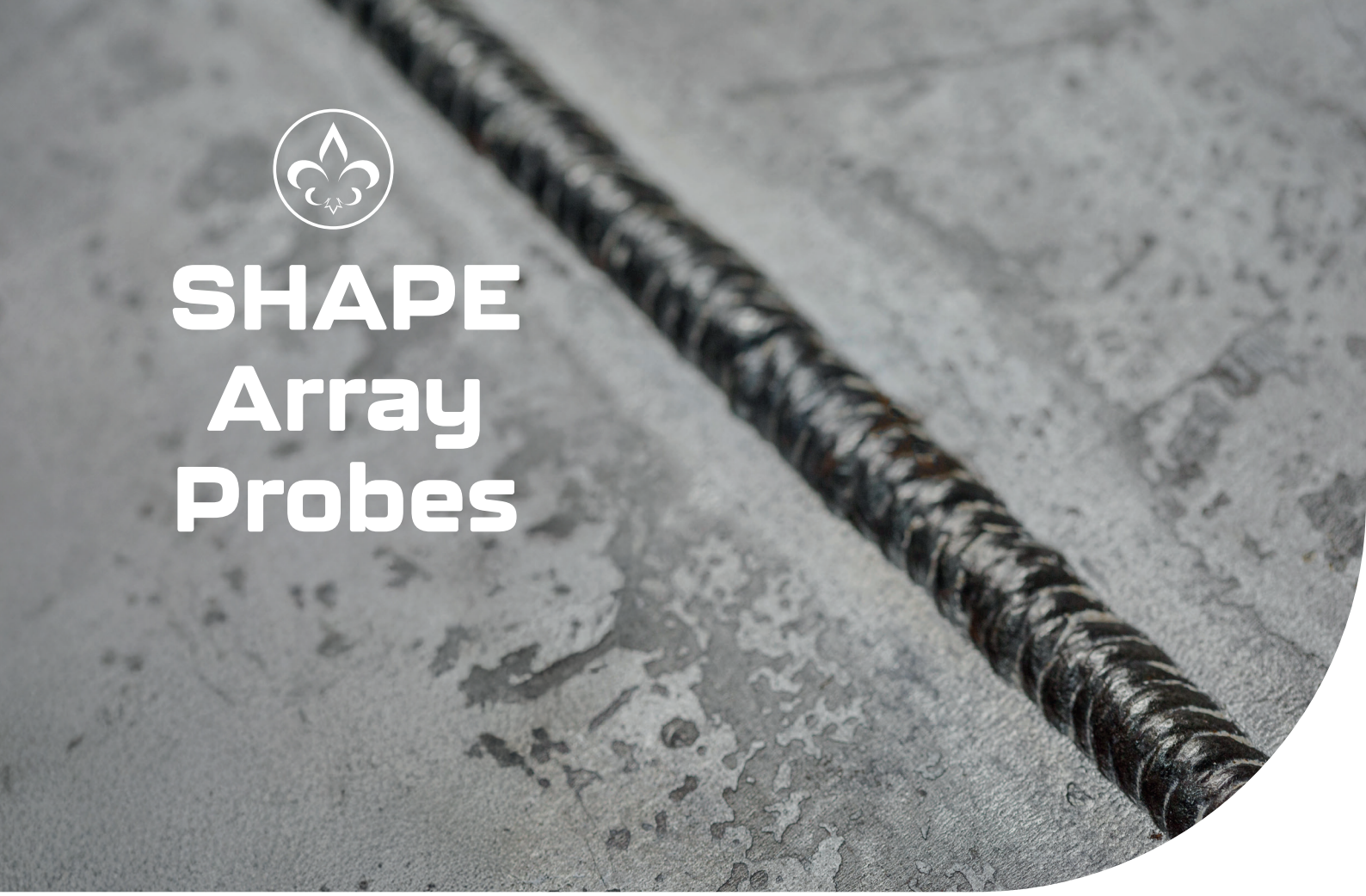
- 2 sets of data are created with different sensitivities (axial & transverse)
- 30° orientation difference between even and odd axial channels creates slight sensitivity differences.
- Less sensitive to liftoff variations than Short Driver topologies
- Sensitive to near-surface defects & slightly subsurface defects
- Insensitive to thermal drift
- Absolute response
- ½ channel overlap in the axial direction, increasing resolution



Coils

l Coils

Real Coils	
For	**Against**
✓ Can handle more power	✗ Difficult to manufacture
✓ Greater depth of penetration	✗ More expensive
	✗ Can be fragile



SHAPE Array Probes

SHAPE Array Probe

- Small, compact and lightweight.
- Flexible printed circuit board (PCB).
- Two modes available: transmit-receive or impedance (absolute) modes on request.
- Frequency range from 100 kHz to 5MHz.
- Offers all the flexibility required to inspect welds and surfaces.
- Topology and shape are customizable upon request.
- Interchangeable inspection surface to adapt to specific needs or when worn out.
- Embedded multiplexer facilitates integration to non-proprietary inspection equipment.

New SHAPE Array Probes (Printed Coils)

- Part Numbering

SHAPE - [ ] - [ ] - [ ] - [ ]

Coil Type	Width (coverage) of array	Resolution Range	Increased Flexibility
P = Printed ECA Coils	053 = 53mm	LR = (20-100 kHz)	-f = no rubber backing
		MR = (75-500 kHz)	
		HR = (200-800 kHz)	
		XR = 500kHz – 5mHz	

SHAPE-P-053-MR

SG NDT SHAPE Probe, flexible and conformable printed PCB inspection probe. (Printed coils)

- Mid resolution, 50kHz - 500kHz frequency range, Long Single Driver.
- 32 X 3.5mm coils, 53mm coverage.
- Rubber backing for increased durability.
- Detachable 3m (10ft) cable with 41pin ECT Extended Connector.
- One spare flexible PCB included.
- Supplied in a protective transport box.

Click here
for full spec on our website

SFLX-P-053-MR

Replacement printed PCB for SHAPE-P-053-MR

- Mid resolution, 50kHz - 500kHz frequency range, Long Single Driver.
- 32 X 3.5mm coils, 53mm coverage
- Rubber backing for increased durability.
- PCB ONLY does not include cable assembly.

Scan for full spec

SHAPE-P-053-MR-f

SG NDT SHAPE Probe, flexible and conformable printed PCB inspection probe. (Printed coils)

- Mid resolution, 50kHz - 500kHz frequency range, Long Single Driver.
- 32 X 3.5mm coils, 53mm coverage.
- no rubber backing giving increased flexibility.
- Detachable 3m (10ft) cable with 41pin ECT Extended Connector.
- One spare flexible PCB included.
- Supplied in a protective transport box.

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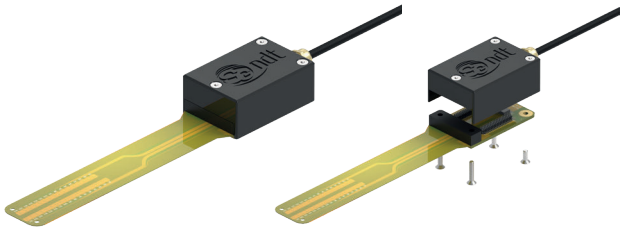

SFLX-P-053-MR-f

Replacement printed PCB for SHAPE-P-053-MR-f

- Mid resolution, 50kHz - 500kHz frequency range, Long Single Driver.
- 32 X 3.5mm coils, 53mm coverage
- No rubber backing giving increased flexibility,
- PCB ONLY does not include cable assembly.

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SHAPE-P-054-HR

SG NDT SHAPE Probe, flexible and conformable printed PCB inspection probe. (Printed coils)

- High resolution, 100kHz - 800kHz frequency range, Short Single Driver.
- 64 X 3.5mm coils, 54mm coverage.
- Rubber backing for increased durability.
- 3m (10ft) cable with 41pin ECT Extended Connector.
- One spare flexible PCB included.
- Supplied in a protective transport box.

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SFLEX-P-054-HR

Replacement printed PCB for SHAPE-P-054-HR

- High resolution, 100kHz - 1000kHz frequency range, Short Single Driver.
- 64 X 3.5mm coils, 54mm coverage.
- Rubber backing for increased durability.
- PCB ONLY does not include cable assembly.

Scan for full spec

SHAPE-P-054-HR-f

SG NDT SHAPE Probe, flexible and conformable printed PCB inspection probe. (Printed coils)

- High resolution, 100kHz - 800kHz frequency range, Short Single Driver.
- 64 X 3.5mm coils, 54mm coverage.
- No rubber backing giving increased flexibility.
- 3m (10ft) cable with 41pin ECT Extended Connector.
- One spare flexible PCB included.
- Supplied in a protective transport box.

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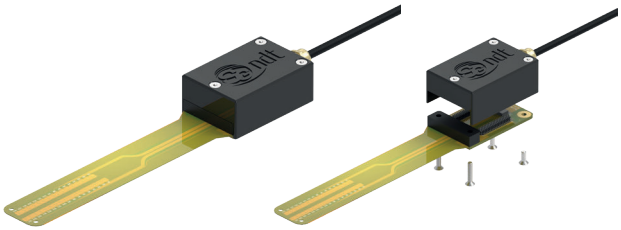

SFLEX-P-054-HR-f

Replacement printed PCB for SHAPE-P-054-HR-f

- High resolution, 100kHz - 1000kHz frequency range, Short Single Driver.
- 64 X 3.5mm coils, 54mm coverage.
- No rubber backing giving increased flexibility.
- PCB ONLY does not include cable assembly.

Scan for full spec

SHAPE-P-036-XR

SG NDT SHAPE Probe, flexible and conformable printed PCB inspection probe. (Printed coils)

- Extra-High resolution, 500kHz - 5000kHz frequency range, Short Single Driver.
- 64 X 2.35mm coils, 36mm coverage.
- Rubber backing for increased durability.
- 3m (10ft) cable with 41pin ECT Extended Connector.
- One spare flexible PCB included.
- Supplied in a protective transport box.

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SFLEX-P-036-XR

Replacement printed PCB for SHAPE-P-036-XR

- Extra-High resolution, 500kHz - 5000kHz frequency range, Short Single Driver.
- 64 X 2.35mm coils, 36mm coverage.
- Rubber backing for increased durability.
- PCB ONLY does not include cable assembly.

Scan for full spec

SHAPE-P-036-XR-f

SG NDT SHAPE Probe, flexible and conformable printed PCB inspection probe. (Printed coils)

- Extra-High resolution, 500kHz - 5000kHz frequency range, Short Single Driver.
- 64 X 2.35mm coils, 36mm coverage.
- No rubber backing giving increased flexibility.
- 3m (10ft) cable with 41pin ECT Extended Connector.
- One spare flexible PCB included.
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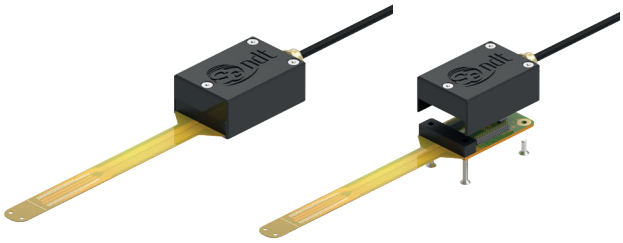


SFLEX-P-036-XR-f

Replacement printed PCB

- Extra-High resolution, 500kHz - 5000kHz frequency range, Short Single Driver.
- 64 X 2.35mm coils, 36mm coverage.
- No rubber backing giving increased flexibility.
- PCB ONLY does not include cable assembly.

Scan for full spec

SHAPE-P-324-MR

Ideal as a do-it-all probe for inspectors or in early phase trials before moving to a fixed geometry rigid probe.

- High resolution, 100kHz – 500kHz frequency range, Long Single Driver.
- 2 rows of 32 (64 total) coils, 324mm coverage.
- No rubber backing giving increased flexibility.
- 3**m (10ft.)** or **5m (16ft.)** or **10m (32ft.)** cable.
- One spare flexible PCB included.
- Supplied in a protective transport box.

SFLX-P-324-LR

Replacement printed PCB

- High resolution, 100kHz – 500kHz frequency range, Long Single Driver.
- 2 rows of 32 (64 total) coils, 324mm coverage.
- No rubber backing giving increased flexibility.
- PCB ONLY does not include cable assembly.

CBLS-ECA-256

This cable supports up to 256 channel probes.

- Standard cable length 10m.
- Max number of coils 128.
- Max number of coils-
  Long Single Driver:
  Max 2 rows of 64 coils.
  Short Single Driver:
  Max 2 rows of 64 coils.
  Impedance Absolute:
  Max 1 row of 64 coils.
- Compatibility with uS2G2-ARRAY-256.

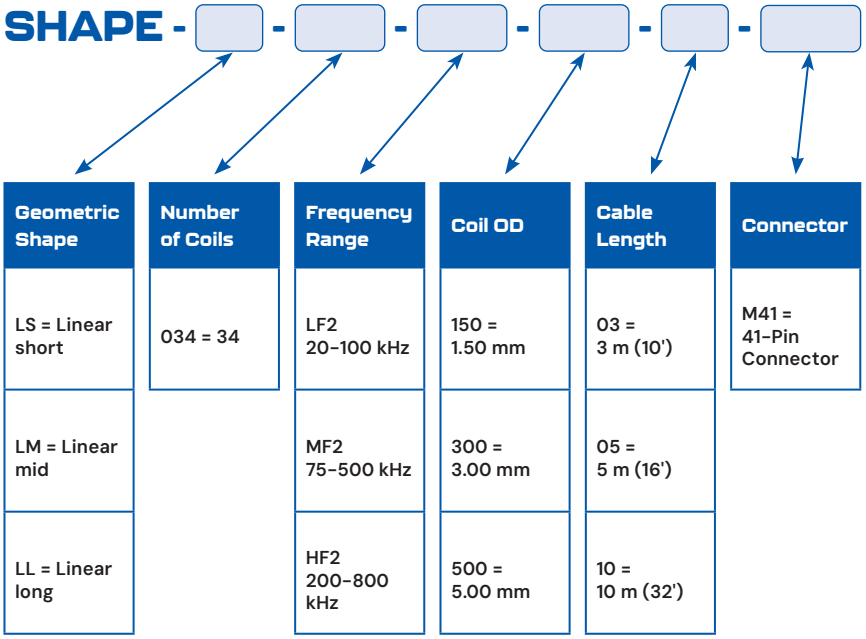
Legacy SHAPE Probes

Legacy Probes

SG NDT legacy probes use traditional **wound coils,** where copper wire is physically wound and soldered to a flexible printed circuit. Wound coils allow for a high degree of control over the coil's properties, such as the number of turns, wire gauge, and overall design, which can be optimized for specific applications.

This method offers high durability and design flexibility for specialized applications. In contrast, **printed coils** are created by directly printing the coil onto a flexible PCB, offering a more compact, cost-effective solution, but with less customization and performance in specialized uses.

Legacy SHAPE Array Probes (Wound Coils)
- Part Numbering



SHAPE-L-034-HF2-150 (-03) -M41

SG NDT Shape probe – flexible and conformable inspection probe with copper wire wound coils.

- High frequency (200-800kHz - 500 kHz centre frequency).
- 34 X 1.5mm coils, 25mm array coverage.
- **3m (10ft.)** cable.
- Rubber backing for increased durability.
- 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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SHAPE-L-034-HF-150 (-05) (-10) -M41

SG NDT Shape probe – flexible and conformable inspection probe with copper wire wound coils.

- High frequency (200-800kHz - 500 kHz centre frequency).
- 34 X 1.5mm coils, 25mm array coverage.
- **5m (16ft.)** or **10m (32ft.)** cable.
- Rubber backing for increased durability.
- 41pin ECT Extended Connector.
- Supplied in a protective transport box.

Scan for full spec

SHAPE-L-034-MF2-300 (-03) -M41

SG NDT Shape probe – flexible and conformable inspection probe with copper wire wound coils.

- Medium frequency (75-500kHz - 250kHz centre frequency).
- 34 X 3.0mm coils, 25mm array coverage.
- **3m (10ft.)** cable.
- Rubber backing for increased durability.
- 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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SHAPE-L-034-MF-300 (-05) (-10) -M41

SG NDT Shape probe – flexible and conformable inspection probe with copper wire wound coils.

- Medium frequency (75-500kHz - 250kHz centre frequency),
- 34 X 3.0mm coils 50mm array coverage.
- **5m (16ft.)** or **10m (32ft.)** cable.
- Rubber backing for increased durability.
- 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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SHAPE-L-034-LF2-500 (-03) -M41

SG NDT Shape probe – flexible and conformable inspection probe with copper wire wound coils.

- Low frequency (20-100kHz - 70kHz centre frequency),
- 34 x 5.0mm coils, 80mm array coverage.
- **3m (10ft.)** cable.
- Rubber backing for increased durability.
- 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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SHAPE-L-034-LF-500 (-05) (-10) -M41

SG NDT Shape probe – flexible and conformable inspection probe with copper wire wound coils.

- Low frequency (20-100kHz - 70kHz centre frequency),
- 34 x 5.0mm coils, 80mm array coverage.
- **5m (16ft.)** or **10m (32ft.)** cable.
- Rubber backing for increased durability.
- 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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Cushion Probes

Cushion Probe

The SG NDT Cushion probes are the perfect blend of comfort and performance for inspectors. Designed for smooth surfaces, clean welds, pipes, and semi-flat to flat structures, these probes are versatile, whether used with or without an encoder. Ideal for inspecting surfaces with low-radius curves to flat areas, they offer durability, ease of use, and a design focused on the inspector's needs.

New Cushion Probes

- Part Numbering

PAD - [ ] - [ ] - [ ]

Coil Type	Width (coverage) of array	Resolution Range
P = Printed ECA Coils	053 = 53mm	LR = (20-100 kHz)
		MR = (75-500 kHz)
		HR = (200-800 kHz)
		XR = 500kHz – 5mHz

PAD-P-053-MR

SG NDT Cushion Probe, soft faced probe for the inspection of imperfect or low-radius curved surfaces. (Printed coils)

- Mid resolution, 50kHz - 500kHz frequency range, Long Single Driver.
- 32 X 3.5mm coils, 53mm coverage.
- Detachable 3m (10ft) cable with 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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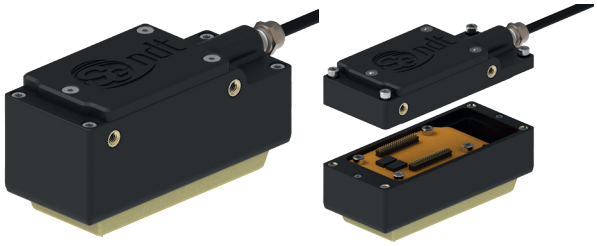

SPAD-P-053-MR

Replacement cushion array module for PAD-P-053-MR

- Mid resolution, 50kHz - 500kHz frequency range, Long Single Driver.
- 32 X 3.5mm coils, 53mm coverage.
- Array ONLY does not include cable assembly.

Scan for full spec

PAD-P-054-HR

SG NDT Cushion Probe, soft faced probe for the inspection of imperfect or low radius curved surfaces.

- (Printed coils) High resolution, 100kHz - 1000kHz frequency range, Short Single Driver.
- 64 X 3.5mm coils, 54mm coverage. 3m (10ft) cable with 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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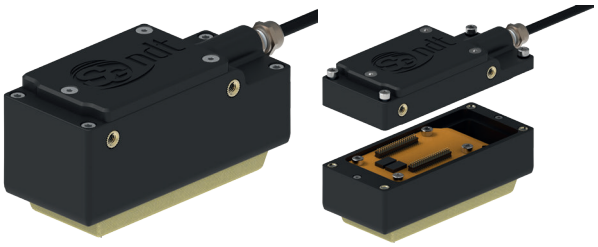

SPAD-P-054-HR

Replacement Cushion array module for PAD-P-054-HR

- High resolution, 100kHz - 1000kHz frequency range, Short Single Driver.
- 64 X 3.5mm coils, 54mm coverage.
- Array ONLY does not include cable assembly.

Scan for full spec

PAD-P-036-XR-03M

SG NDT Cushion Probe, soft faced probe for the inspection of imperfect or low-radius curved surfaces.

- (Printed coils) Extra-High resolution, 500kHz - 5000kHz frequency range, Short Single Driver.
- 64 X 2.35mm coils, 36mm coverage, no rubber backing giving increased flexibility.
- 3m (10ft) cable with 41pin ECT Extended Connector.
- Supplied in a protective transport box.

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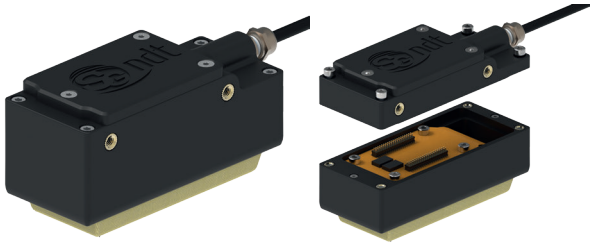

SPAD-P-036-XR

Replacement Cushion array module for PAD-P-036-XR-03M

- Extra-High resolution, 500kHz - 5000kHz frequency range, Short Single Driver.
- 64 X 2.35mm coils, 36mm coverage.
- Array ONLY does not include cable assembly.

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ENCS-00-03M

The ENCS-00-03M is our go-to encoder for seamless integration with standard padded probes, including the PAD-P-053-MR, PAD-P-054-HR, and PAD-P-036-XR.
Designed with precision in mind, it features a durable aluminium, spring-loaded four-bar mechanism that ensures consistent surface contact and highly accurate encoding.
The encoder comes with a standard 3-meter cable, but we're happy to customize the length to suit your specific needs.
For those looking to build their own solution, custom mounts are straightforward to design and implement.

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CBLS-ECA (-03M) (-05M) (-10M)

- Cable and MUX assembly for removable SG NDT cushion probes, **3m (10ft), 5m (16ft)** or **10m (32ft)** cable length, with 41pin ECT Extended Connector.

WAVE Probes

WAVE Probe

SG NDT WAVE probes are engineered for handheld inspections of carbon steel and stainless-steel welds, even those with rough surface finishes. Featuring dynamic lift-off technology, they are perfect for inspecting painted welds without the need to remove and reinstate the protective coating. The probe's built-in memory stores calibration data for quick and easy plug and play experience, ensuring a seamless inspection process.

Wave Probes
- Part Numbering

WAVE - [ ] - [ ] - [ ]

Angle	Cable length	Encoder Connector
090 = 90 degrees	03 = 3 m (10')	18= 18-Pin Connector
180 = 180 degrees	05 = 5 m (16')	
	10 = 10 m (32')	

WAVE-090 (-03) (-05) (-10) -M18

SG NDT Wave Probe for use inspecting carbon steel fillet welds in a single pass. With integrated encoder, Dynamic lift-off compensation, can measure crack depth and length.

- **Integral 3m (10ft.), 5m (16ft.) or 10m (32ft.) cable,** 18 pin I/O connector (for use with SG NDT µS2G2 & S2G2-WS).

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WAVE-180 (-03) (-05) (-10) -M18

SG NDT Wave Probe for use inspecting carbon steel fillet welds in a single pass. With integrated encoder, Dynamic lift-off compensation, can measure crack depth and length.

- **Integral 3m (10ft.), 5m (16ft.) or 10m (32ft.) cable,** 18 pin I/O connector (for use with SG NDT µS2G2 & S2G2-WS).

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Weld Probes

Weld Probes

SG NDT offers a comprehensive range of manual weld inspection probes for both conventional eddy current and AC Field Measurement inspections. Widely used across various industries, manual weld inspection is a trusted method for assessing ferrous and non-ferrous materials. These probes are essential for ensuring the quality of critical structures in numerous markets, where eddy current and AC field measurement inspections are key to maintaining the highest safety standards.

Weld Probes
- Part Numbering

SPEN - [ ] - [ ] - [ ] - [ ]

Type	Angle	Temperature	Cable length
WELD – Tangential ECT weld probe	-S – Straight	-HT – High Temp Ceramic tip	03 = 3 m (10')
AC – AC Field Measurement	-RA – Right Angle		05 = 5 m (16')
			10 = 10 m (32')

SPEN-WELD-S-HT (-03M) (-05M) (-10M)

The SPEN-WELD-S-HT model is equipped with a durable, abrasion-resistant, straight ceramic tip, making it ideal for applications at elevated temperatures.

- Integral **3m (10ft.), 5m (16ft.)** or **10m (32ft.)** cable

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SPEN-WELD-RA-HT (-03M) (-05M) (-10M)

SG NDT SPEN Weld Probe for use inspecting carbon steel welds where access is restricted. Can be used to measure crack length and depth.

- Integral **3m (10ft.), 5m (16ft.)** or **10m (32ft.)** cable

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SPEN-AC-S-HT (-03M) (-05M) (-10M)

The SPEN-AC-S-HT model is equipped with a durable, abrasion-resistant, straight ceramic tip, making it ideal for high-temperature applications.

- Integral **3m (10ft.), 5m (16ft.)** or **10m (32ft.)** cable

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SPEN-AC-RA-HT (-03M) (-05M) (-10M)

The SPEN-AC-RA-HT model is equipped with a durable, abrasion-resistant, right-angled ceramic tip, making it ideal for high-temperature applications.

- Integral **3m (10ft.), 5m (16ft.)** or **10m (32ft.)** cable

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Accessories & Adaptors

Accessories & Adaptors

SG NDT develops and designs a range of accessories and adaptors to support the entire range of products offered. These include encoders, cables, cable adaptors etc.

CBLA-RG-IO-18-39P

Adaptor to convert 18pin encoder (I/O) connector (uS2G2 & S2G2-WS) to 39 pin encoder (I/O) connector (S2G2-800).

- 18PIN - 39PIN ADAPTOR

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CBLA-RG-ECT-04-41P

Rigid adapter for ECT bobbin probe.

- Amphenol connector 4-pin female to 41-pin male.

Click here for full spec on our website

Scan for full spec

CBLA-RG-RFT-19-41P

Rigid adapter for RFT bobbin probe.

- Amphenol connector 19-pin female to 41-pin male. (For use with S2G2-800)

Click here for full spec on our website

Scan for full spec

ENCS-00-03M

SG NDT Cushioned Probe Encoder, clip-on style encoder for use with SG NDT Cushion range of ECA probes.

- 3m (10ft.) cable, 18 pin connector (for use with SG NDT µS2G2 & S2G2-WS)

Click here for full spec on our website

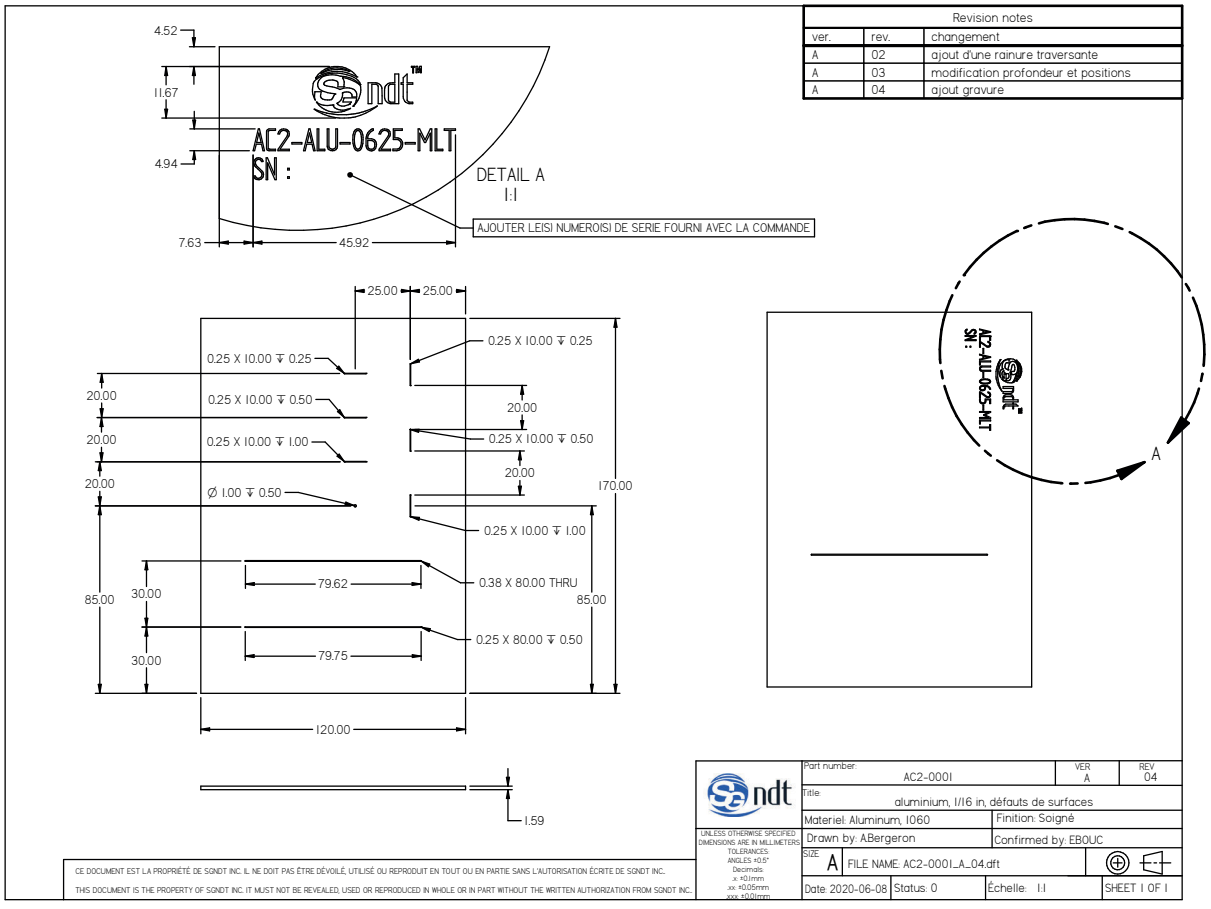
Scan for full spec

Accessories & Adaptors Continued

Performance Verification Sample

Part Number – AC2-ALU-0625-MLT

Description – Aluminum eddy current array (ECA) performance verification sample containing a range of EDM notches used for calibration and verification of defect detection and sensitivity levels.



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for full spec on our website

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Custom Probes and Rigid Probes

Custom and Rigid Probes

Eddy current array (ECA) inspections offer several advantages over traditional NDT methods, including recordable, traceable data, repeatable inspections, higher probability of detection, and improved speed and efficiency. While SG NDT's standard ECA probes can handle a wide range of applications, many situations still benefit from a custom solution. Custom probes can be designed for specific geometries, to detect particular defects, or to enhance durability in challenging environments. SG NDT specializes in creating tailored eddy current array probes—if you have a unique requirement, we're ready to discuss your needs.

Click here for full spec on our website

Scan for full spec

Gear Tooth Probe

for inspecting industrial gears.

Thread Probe

for inspecting the root of a cut thread.

Clam-shell style encircling array probe

for inspection the OD of tubes of pipes.

Get in touch today!

Our team are ready to answer your questions.

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Through innovation,
we surpass standard expectations

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