PRÜFTECHNIK

RS130 Rotating System

Detecting longitudinal defects at large diameters

- Wire
- Bar
- Tube

First rate products through reliable eddy current testing

Today's rod, bar and wire industry requires testing procedures that recognize longitudinal surface defects of small depth.
The eddy current inspection method suits these needs particularly well, since it shows a high sensitivity to surface defects.
A special eddy current sensor, the rotating system spirally scans the surface of the test material for even the tiniest longitudinal cracks and tears – depending on the surface conditions. Due to its high resolution and transverse movement across the crack (rather than along it), the rotating system finds defects sometimes missed by conventional encircling coils.

- Inspection before and after production
- High sensitivity
- Range of probe types available
- Lift-off compensation between probe and oval test piece
- Robust design for rigorous industrial environment
- Userfriendly operation
- Easy service

Robust, userfriendly, and easy to maintain

The inspection unit consists of a sleeve shaft construction with a robust, industrial spindle bearing, a non-contact signal transmitter and a heavy-duty probe head.

Adjustment of centering diameter

Emergency-stop safety switch

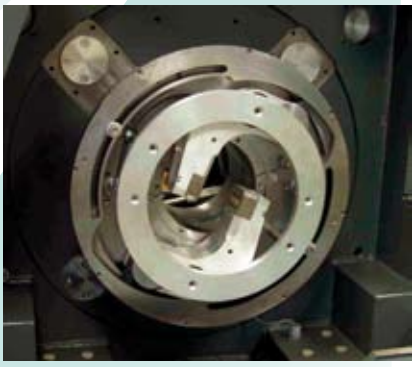
Convenient service

The centering unit lifts up and away, allowing frontal access for diameter adjustment, exchange of probes and service.

Precise test piece guidance

Built-in centering
The solidly-built, 3-roller centering guarantees precise guidance to an accuracy of 0.1 mm. It is located on both sides of the system and is externally adjustable.

Auxiliary guide sleeves
More accurate and narrow guidance is required for small diameter material to prevent test material from hitting the sensors. Special guide sleeves attach internally at the infeed and/or outfeed for this purpose.



Testing head

The testing head features a plate with probes on spring mounted probe arms.
The diameter can be changed quickly and the probes can be replaced easily if needed.

Eddy current probes

The exchangeable probes are well protected and easily replaced.The probe case holds 1 or 2 differential probes and a lift-off probe.

Depending on the material to be tested a range of probe types can be used with the RS65:

T probes

2- or 4-channel;
default configuration

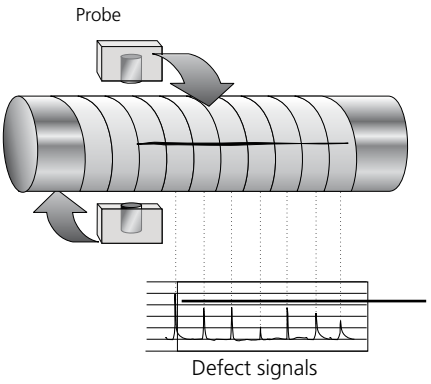
Dual core probes

2- or 4-channel;
highly sensitive configuration

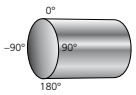
Pot probes

2-channel;
highly sensitive configuration for finding longitudinal defects

How the rotating system works

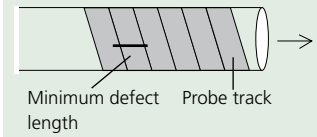


The rotating system scans the test piece in a helical pattern. Every time a probe crosses a crack, it generates a defect signal. In doing so, the rotating system produces a great number of consecutive signals that identify the flaw as a crack. The defect signals appear on the screen as they occur. An angular display shows the position of the defect on the circumference of the test piece.



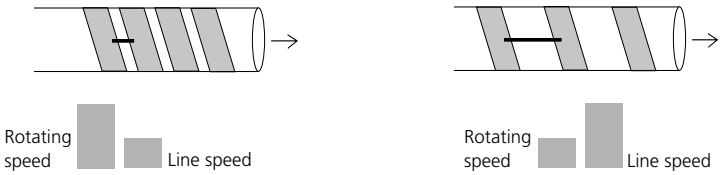
Minimum defect length

The shortest defects can be detected if there is no gap between the probe tracks



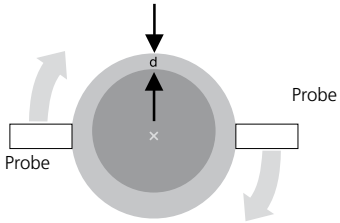
The length of the shortest detectable defect depends on how the test piece is scanned. Testing is ideal if the probes cover every part of the test piece as they pass over it without leaving any untested zones. This depends on the rotational speed of the rotating system and the production speed. The shortest defects are detectable at a high rotational speed and low production speed.

Effect of rotational speed and line speed on detectable defect length



Lift-off compensation

The option for high precision testing



The optional lift-off compensation corrects distorted signals that arise from a varying gap between the probe and test piece. The smaller the gap, the larger the defect signal. If the test pieces are off-center, defects of the same size produce different signal amplitudes, resulting in inaccuracies in the defect evaluation. The lift-off compensation system corrects this effect and ensures reliable test results.

	Gap control range
	Test piece, not round
x	Center of probe path
d	Gap (distance between probe and test piece)

Technical data

Testing material
- Tubing, pipe, bar, wire
- Ferrous, nonferrous and austenitic metals
- Size range: Ø 20-130 mm (3/4–5 1/8")
- Temperature of inspected material: -20° – 70 °C

Weights
- RS130 650 kg (1430 lb); control cabinet 18 kg (40 lb)h;

Eddy current instrument
- EDDYCHEK® 5

Production line
- Continuous production with cut-off
- Continuous production without cut-off (e.g. drawing line)
- Testing of cut lengths (offline)

Defect resolution
- Min. defect length: depends on production speed and probe (see table)
- Min. def. depth: 0.05 mm (0.0012") dep. on surface conditions

Probes
- 2 or 4 differential probes on two test heads
- Optional lift-off compensation; max. lift-off: 2 mm
- Probe type dependent on throughput and surface

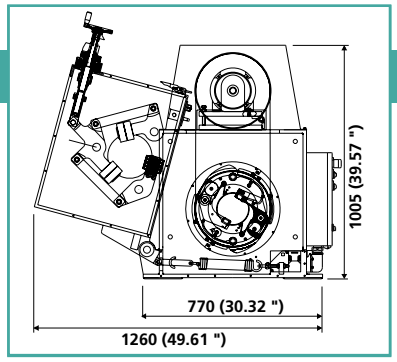
Guidance system/Centering
- Built-in roller guide system
- Bushings for diameters < 30 mm optional

Rotations per minute 1500 or 3000 RPM

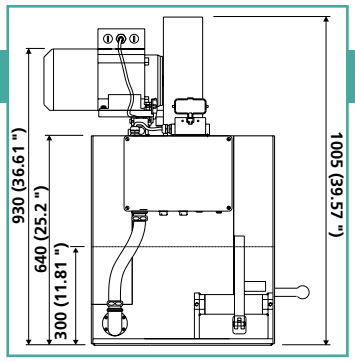
Motor and power supply
- Asynchron. 4-pole switchable motor with mechanical brake
- 400V, 50/60 Hz, 2.5kVA. Different voltages possible with isolating transformer
- 115/230 V, 0.5 kW, 50/60 Hz

Demagnetization
- Recommended for material with >10 A/cm

PLC
- Signal output for system control automatization available



mm (in)



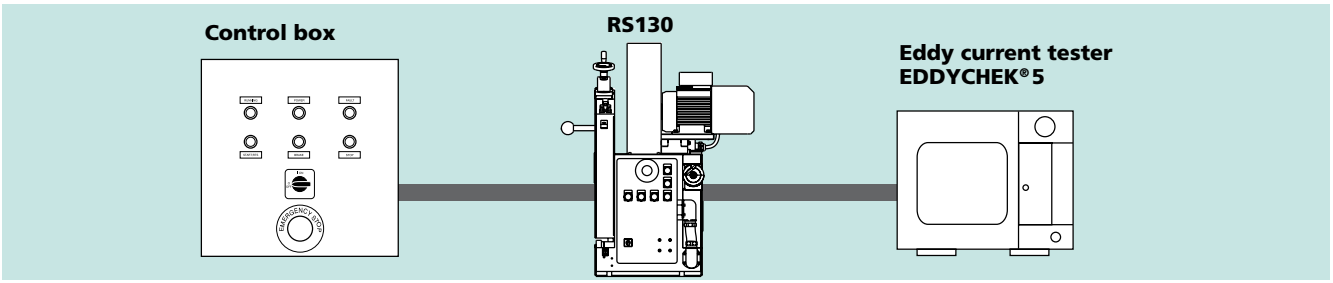
mm (in)

Throughput of material passing through rotating system (in m/s)*

Number of probes**	RPM	Complete surface testing	Partial surface testing											
			Minimum defect length											
		4 mm	6 mm	8 mm	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm	25 mm	30 mm	35 mm	40 mm
		Throughput (m/s)												
2	1500	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.3	1.5	1.8	2
	3000	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.5	3	3.5	4
4	1500	0.27	0.45	0.5	0.55	1.2	1.3	1.4	1.5	1.6	1.85	2.1	2.35	2.6
	3000	0.53	0.9	1	1.1	2.4	2.6	2.8	3	3.2	3.7	4.2	4.7	5.2

* Throughput for two probes (1 per arm) = Number of probes x minimum defect length (mm) x rpm / 60 000
**Track width= 4 mm

System configuration



Distributor:

Printed in Germany DOK 5280EN.11.09

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