PRÜFTECHNIK

Rotating System RS130

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.

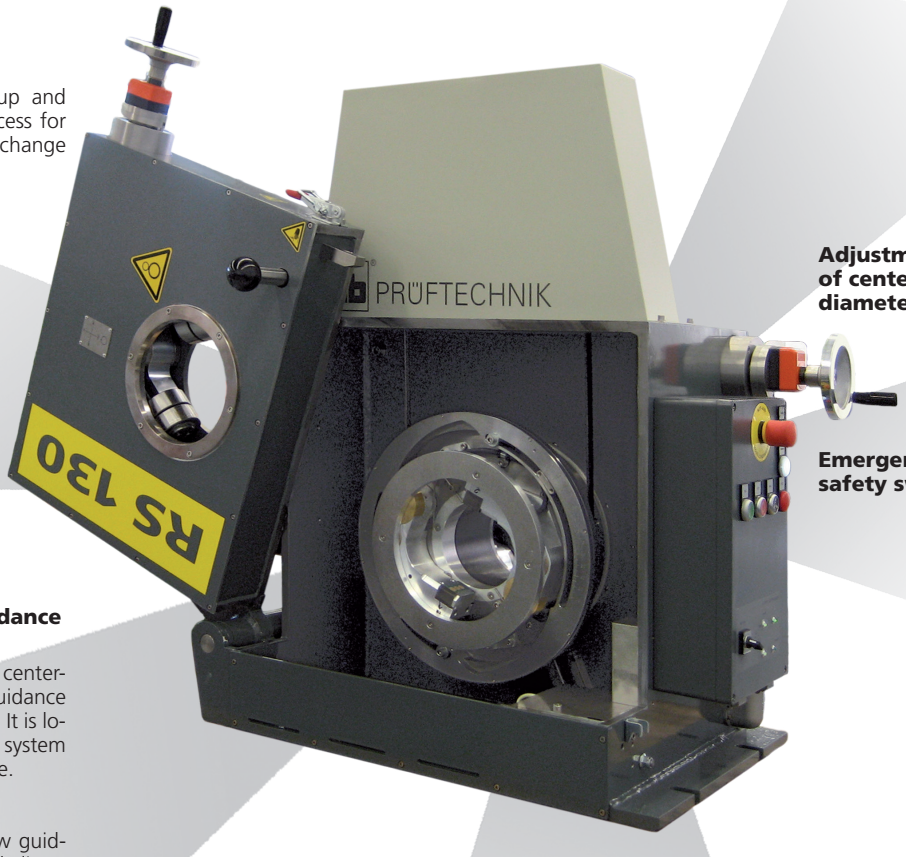
- Inspection before and after production
- High sensitivity
- Range of probe types available
- Lift-off compensation between probe and oval test piece
- Robust design for rigorous industrial environment
- Userfriendly operation
- Easy service

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.

Convenient service

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



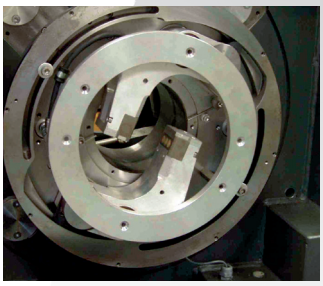
Adjustment of centering diameter

Emergency-stop safety switch

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

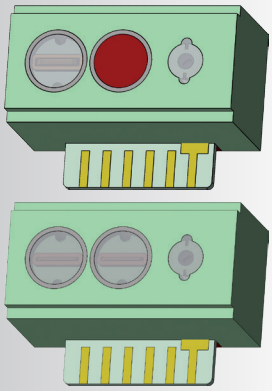
The testing head features a plate with probes on spring mounted probe arms.
The diameter can be changed quickly and the probes can be replaced easily if needed.

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.

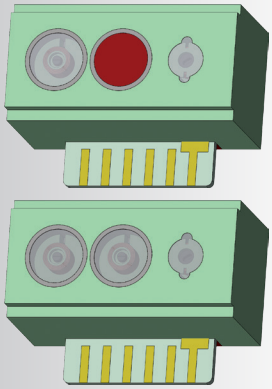
Depending on the material to be tested a range of probe types can be used with the RS130:

T probes



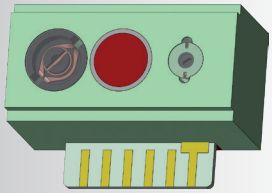
2- or 4–channel;
track width 4 mm

Dual core probes



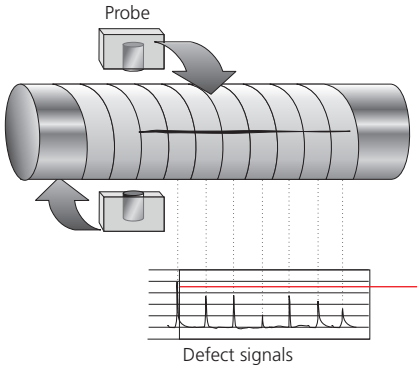
2- or 4–channel;
track width 2 mm

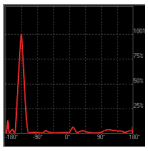
Pot probes

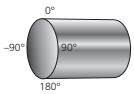


2–channel; track width 4 mm;
highly sensitive configuration for finding longitudinal defects

How the rotating system works





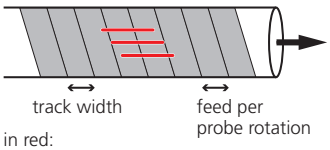


The rotating system scans the test piece in a helical pattern. Every time a probe crosses a crack, it generates a defect signal. In doing so, the rotating system produces a great number of consecutive signals that identify the flaw as a crack. The defect signals appear on the screen as they occur. An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

Minimum defect length

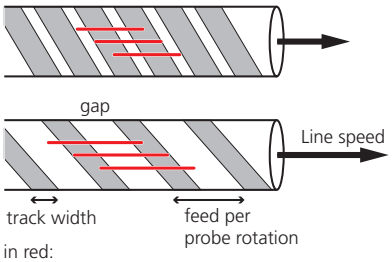
and production speed

1) complete surface testing



in red:
minimum defect length (MDL) = 2x track width

2) non-complete surface testing



in red:
MDL = 2x track width + gap

In complete testing, the feed per revolution corresponds exactly to the probe width. In order to be able to definitely(!) detect a defect, it must at least cover one probe track completely (see red defect markings). The minimum defect length MDL in complete surface testing can therefore not be smaller, than twice the probe width.

In order to be able to definitely detect a defect during a non-complete surface testing, it also must at least cover one probe track completely (see red defect markings). Accordingly, MDL is enlarged to 2x track width plus 1x gap width.

The maximum possible production speed vmax for a specific MDL is calculated as follows:

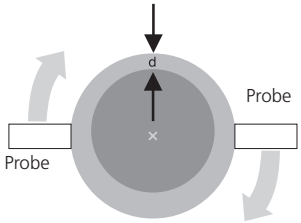
vmax [m/s] = rpm x number of probes x (track width + gap) / 60000

(gap = MDL minus 2x track width)

vmax [m/s] = rpm x number of probes x (MDL minus track width) / 60000

Lift-off compensation

The option for high precision testing



	Gap control range
	Test piece
x	Center of probe path
d	Gap (distance between probe and test piece)

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.

Reliable semi-finished product testing

Production speed and minimum defect length

			Complete ...	... partial surface testing									
2 T–Probes with track width 4 mm	Order No. LAB 6215ND LAB 6217ND LAB 6219ND		**minimum defect length in mm**										
			8	10	12	14	16	18	20	25	30	35	40
		RPM	**max. production speed in m/s**										
		1500	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.05	1.3	1.55	1.8
		3000	0.4	0.6	0.8	1.0	1.2	1.4	1.6	2.1	2.6	3.1	3.6
4 T–Probes with total track width 12 mm	Order No. LAB 6216ND LAB 6246ND		**minimum defect length in mm**										
			24	26	28	30	32	34	36	38	40	45	50
		RPM	**max. production speed in m/s**										
		1500	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.65	1.9
		3000	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.3	3.8

Production speed (m/s) = RPM x Number of probes x (Minimum defect length (mm) – Track width (mm)) / 60000

Technical data RS130

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)

Eddy current instrument
- EDDYCHEK® 5; EDDYCHEK® 610

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 see table – depends on production speed and probe
- Min. defect depth: 0.05 mm (0.0012") – depends 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

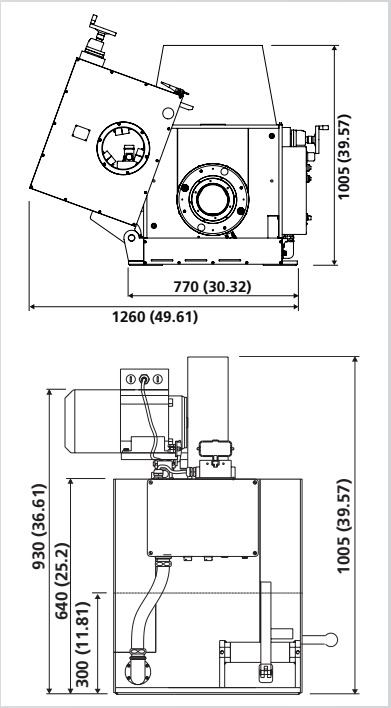
Rotations per minute
- 1500 or 3000 RPM

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

Dimensions in mm (in)



System configuration

Control box | RS130 Rotating system | Eddy current tester

PRÜFTECHNIK
PROVEN QUALITY
- Made in Germany
- Global Presence
- Qualified Support
- Quality Service

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DOK5280EN.11.17