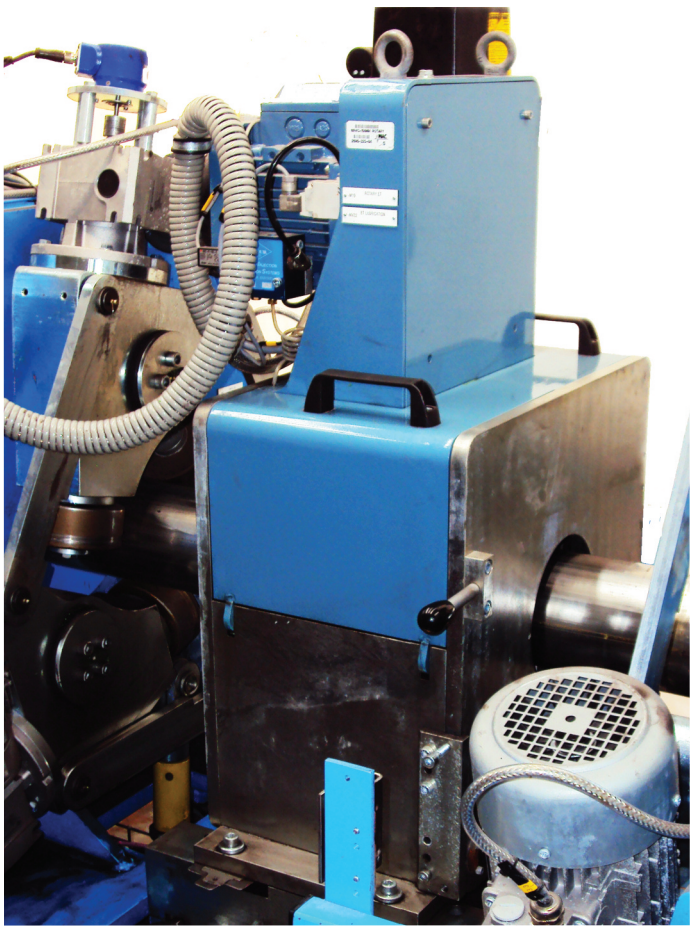
MAC®
Magnetic Analysis Corp.

Rotomac® Rotaries

Eddy Current Rotary Mechanism to Detect Seam Type Defects in Tube and Bar

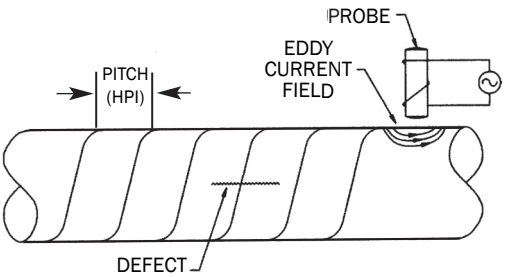


Rotary Test Technology

Method of Choice for Seam Type Defects

MAC Rotaries use the unique qualities of eddy current rotary probe technology to detect long continuous surface flaws which may not be detected by encircling test coils.

MultiMac® eddy current electronics provide the controls, processing and analysis for the Rotary. MultiMac can also assign channels to an encircling coil test to detect short, intermittent defects, in combination with the rotary test, where needed.



To be consistently detected, the defect length must be greater than the helical pitch (HPI) of inspection. The HPI is a function of the probe's rotational speed and the throughput speed of the test material.

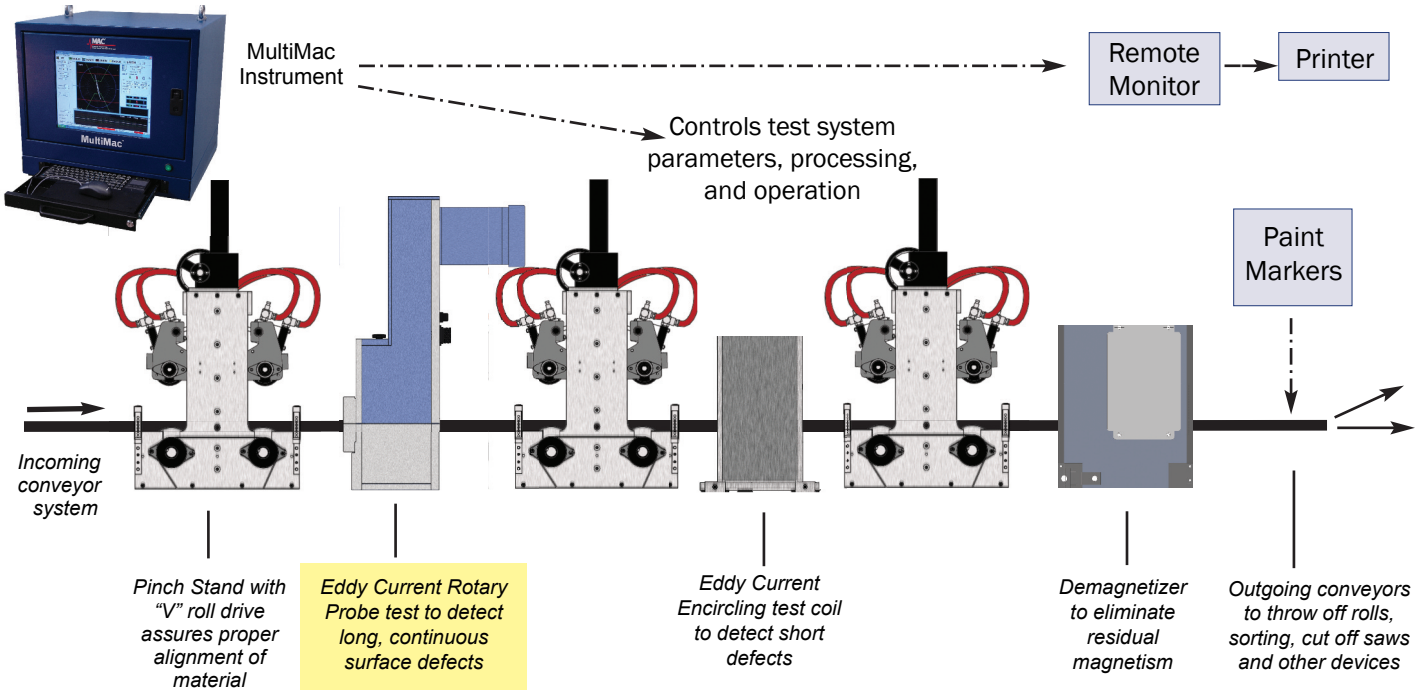
Principles of Operation

Rotary probe technology requires relative motion between the probe and the test material. Two or more probes rotate around the test material, inducing eddy currents.

When the induced eddy currents are disrupted by a surface defect, the change is sensed by the probe, and a flaw signal is sent to the instrumentation for processing and display. The amplitude of the signal for any surface seam is highly proportional to its depth.

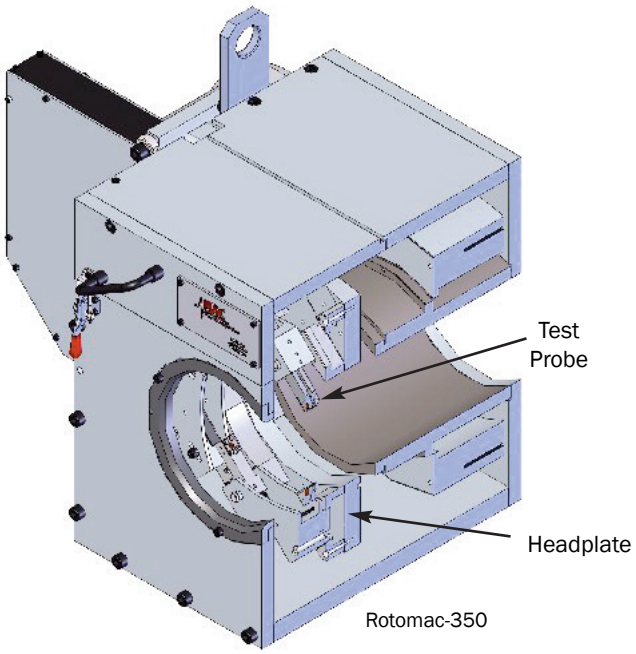
In general, either a higher rotational speed, or a greater number of test probes, at a given throughput speed, enables shorter defects to be detected.

TYPICAL SYSTEM COMPONENTS INCLUDING ROTARY PROBE & ENCIRCLING COIL TESTS



Rotomac® Rotary Features

- ❒ Operate with MultiMac® eddy current electronics.
- ❒ Systems with two, four, or six probes, each with its own detector channel.
- ❒ Accurate Distance Compensation ensures a uniform defect signal, even with off center or out of round material.
- ❒ Choose test headplates for surface or air ride configurations, depending on surface conditions, sizes, and test specifications.
- ❒ Dynamic breaking for quick stop of test probe headplate rotation.
- ❒ Rotary probes, unlike encircling test coils, are not affected by throughput speed changes such as occur in parts forming, because the probes spin continually around the test material at a fixed speed.
- ❒ Operates automatically as defects in the bar or wire create flaw signals, activate alarms, paint markers and other devices.



Rotomac-350

New Rotomac® HS- for High Speed testing of small diameter product 2mm - 20mm diameter..

Rotomac Applications

High Speed Testing of Wire, Rod & Bar

- ❒ Test cold drawn wire & cut length bar stock.
- ❒ Test magnetic & nonmagnetic material from 1/8" (3mm) to 7.1" (180mm) diameter.
- ❒ Test material 2mm - 20mm diameter with the new Rotomac HS.
- ❒ Test in line with continuous wire operations such as drawing, parts forming,or straight and cut.
- ❒ Operate in-line with straighteners or off-line in a separate test station.
- ❒ In parts forming, such as in springmaking, Rotomac can identify a flaw prior to forming, and reject the piece after cutting and forming operations.

ROTOMAC® EDDY CURRENT ROTARIES

ROTARY MODEL	MATERIAL DIAMETER	ROTARY SPEED	NUMBER OF PROBES	NOTES *Surface or Air Ride Probes, LH or RH feed, Different Headplates& Small Diameter Package, are some of the available selections.*
ROTOMAC ENGLISH SERIES				
1RM	1/8" - 1" (3 mm - 25.4mm)	Up to 1800 RPM Continuously variable	Two	Two Probes connected in parallel to one channel of electronics.
Rotomac-100	1/8" - 1" (3 mm - 25.4mm)	Up to 6000 RPM Continuously variable	Two	Heavy Duty Hub to prevent vibration of wire when installed in conjunction with a draw block.
Rotomac-150	1/8" - 1-1/2" (3 mm - 38.1mm)	Up to 6000 RPM Continuously variable	Two or Four	
Rotomac-350	1/2" - 3-1/2" (12.7mm - 88.9 mm)	Up to 3000 RPM Continuously variable	Two, Four, or Six	
ROTOMAC METRIC SERIES				
Rotomac-150mm	12.7mm - 150mm (1/2" - 5 1/2")	Up to 1800 RPM	Two or Four	
Rotomac-180mm (4C)	50mm - 180mm (2.0" to 7.0")	Up to 1200 RPM	Two or Four	
Rotomac-180mm (6C)	100mm - 180mm (4.0" to 7.0")	Up to 1200 RPM	Two, Four, or Six	6 Probes available only on Air Ride
ROTOMAC E SERIES				
Rotomac-150E	3 mm - 38.1mm (1/8" -1-1/2")	Up to 6000 RPM Continuously variable	Two or Four	Includes Triple Roll Inlet & Outlet Guides.
Rotomac-350E	12.7mm - 88.9 mm (1/2" - 3-1/2")	Up to 3000 RPM Continuously variable	Two or Four	Includes Triple Roll Inlet & Outlet Guides.
Rotomac-550E	12.7mm - 139.7mm (1/2" - 5-1/2")	Up to 1800 RPM Continuously variable	Two or Four	Includes Triple Roll Inlet & Outlet Guides.
ROTOMAC HS				
Rotomac HS - 20mm	2mm - 20mm (0.0787" - 0.787")	Up to 18,000 RPM	Two	Quick twist-on bushing holders