

Probes

Probes –

The “eyes” of our test systems

The most important prerequisite for successful eddy current inspections is the use of optimum probes. That is why we put a special emphasis on the development and manufacture of probes and probe systems.

For many applications there are national and international standards as well as standards by manufacturers and users that specify the minimum requirements for a test system.

Almost always the solution to difficult applications boils down to the development of special probes. Due to our experience, we are able to quickly and flexibly react to such challenges. Having developed hundreds of probes over many years we have the know-how and are able to fall back existing or similar solutions for the benefit of our customers.



Customized probes




Accessories for rotor inspection



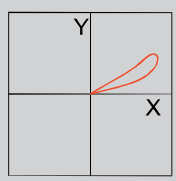
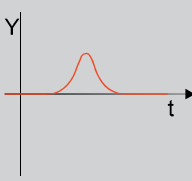
A small selection of our hand-held probes

Typical Probe Types –

Absolute probe

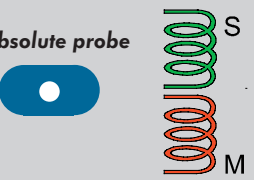


parametric (absolute)

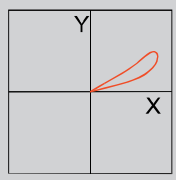
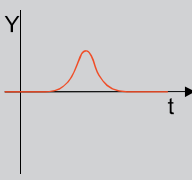



resonance principle;
highly sensitive to small defects

Absolute probe

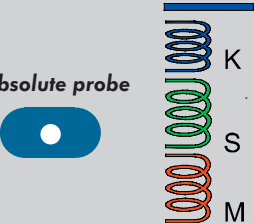


transformer absolute

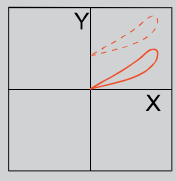
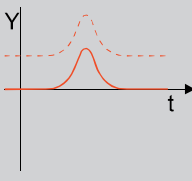



material sorting;
any defect orientation

Absolute probe

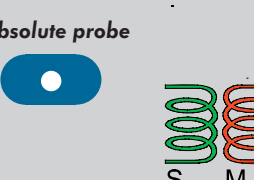


transformer absolute

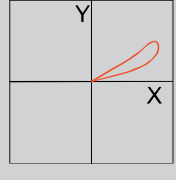
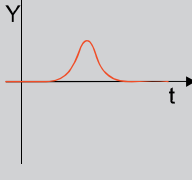



material sorting;
any defect orientation;
highly dynamic

Absolute probe

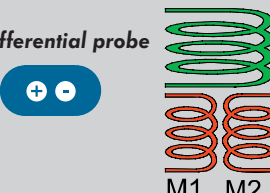


transformer (reflexive) absolute

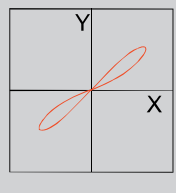
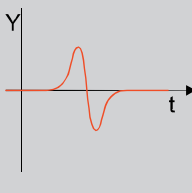



low-lying defects
(up to several mm below the surface)

Differential probe

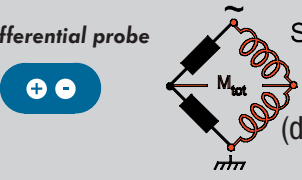


transformer differential

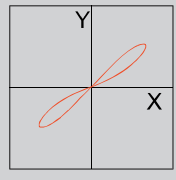
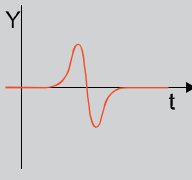



high sensitivity;
for dynamic inspections with filter;
horizontal defects

Differential probe



bridge (differential)

inner tube inspection;
detection of cracks in ferritic
weld seams

S = transmitting coil, M = measuring coil, K = compensation coil

The probes in our data sheets are marked with these pictographs:



Absolute probe



Differential probe



Absolute probe, shielded



Differential probe, shielded



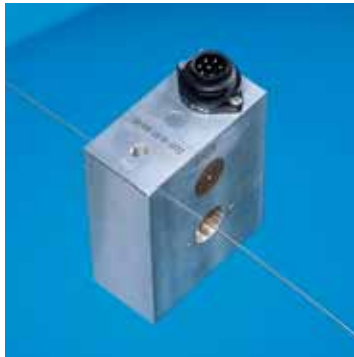
Multi-differential probe

Applications

Examples of applications



Defects along the base and flank of ribbed tubes



Longitudinal and circumferential defects of fine wires



Overheating when grinding and cracks on camshafts



Pores, cracks and faulty welding on multi fuel valves



Minute cracks on roll barrels



Dynamic bore hole inspection starting at $\varnothing 0.8\text{mm}$



Manipulator-capable miniature probes



Inspection of layer thickness and for pores on aluminium tubes



Crack detection along the base of a tooth, contactless



Inspection for overheating when grinding and cracks on rotating parts



Crack detection on complex structures



Hidden cracks on safety-relevant parts

Reference Standards

Reference Standards –

Calibration, alignment, function checks – this is where reference standards come in. Since the eddy current-based inspection is an indirect measuring procedure, the reference standards establish the reference to the physical and the testing parameters that are the basis of the inspection.

Conductivity, layer thickness, hardness, depth of hardness, tensile strength etc. could be physical-technical parameters.

To check materials for defects such as cracks one usually uses reference standards that have been processed in a manner that the modifications come as close to the defects that are to be detected as possible. Artificial flaws are for example imitated with notches, corrosion with removal by milling and hidden defects with bore holes that originate from the back of the part.

ROHMANN offers a wide variety of reference standards ranging from a simple one with a notch to complex structures. Upon request the standards come with a certificate of calibration.



Reference standards

Hand-Held Rotors and Rotating Probes –

The inspection of flat and round materials using rotating probes offers special advantages: It permits dynamic inspections for small defects with high local resolution and sensitivity regardless of the feed that may be very low – in extreme cases even “at a standstill”. Here the filter technology of the dynamic inspection takes effect and most interferences can be suppressed.

Disc probes are used to inspect large areas. Hand-held rotors are used for small bore holes whilst internal rotors are used for bigger bore holes and the inside of tubes. The outside of tubes is inspected with external rotors. The internal and external rotors are available for diameters ranging from 0.8mm to 200mm.

Absolute differential or multi-differential probes are used depending on the specific application.



Hand-held rotors