

CRACK DEPTH MEASUREMENT

DEPTH MASTER

Portable crack depth meter based on the alternating current electropotential method



A high-precision portable crack depth meter for measuring the depth of surface-breaking cracks in ferromagnetic and non-ferromagnetic metals and alloys — including stainless steel, duralumin and titanium — previously detected by any other NDT method.

Measurement range 0.5 – 30 mm

Resolution 0.1 mm

Curvature radius from 4 mm

20 h autonomy, 0.25 kg

DEPTH MASTER

Rev. 01 / 2026 · 1/8

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PRODUCT OVERVIEW

DEPTH MASTER



Crack Depth Measurement

DEPTH MASTER is a portable crack depth meter housed in an impact-resistant ABS case with a protective silicone bumper. It works on the electropotential method: a current is injected into the cracked area through the current electrodes of the probe, and the electronic unit measures the voltage generated by the current flowing around the crack walls through the receiving electrodes, displaying the crack depth directly on the graphic display. Compared with traditional ultrasonic or eddy current sizing, the method determines crack depth faster and more accurately, on flat and curved surfaces down to a 4 mm radius, with a measurement range of 0.5 – 30 mm and an estimation range up to 100 mm.

Designed for

- Sizing cracks detected by MT, PT, UT or eddy current
- Welds, flanges, pipe bodies and pressure equipment
- Stainless steel, duralumin and titanium components
- Workshop, laboratory and in-service field inspection

01

Electropotential method

Current electrodes inject the test current, receiving electrodes measure the voltage across the crack: depth is read directly in millimetres.

02

Calibrated per material

Dedicated calibration cells for ferromagnetic, non-ferromagnetic and custom materials (Mat1 – Mat3), with automatic zeroing on a defect-free area.

03

Archive and SD memory

Named measurements saved to the archive on memory card, with calibration backup, restore and memory status functions.

KEY BENEFITS

DEPTH MASTER

01

High accuracy sizing

Measurement error $\pm (0.1h + 0.2 \text{ mm})$ with 0.1 mm digital indicator resolution over the whole 0.5 – 30 mm range.

02

Deep crack estimation

Beyond the measurement range, depths from 30 to 100 mm are estimated for indicative fitness-for-service assessment.

03

Curved geometries

Convex and concave surfaces with a curvature radius from just 4 mm, using the 1×4 four-electrode probe.

04

Fast and repeatable

Automatic calibration on a defect-free area of the part makes the reading independent from the actual injected current.

05

Field-proof housing

Impact-resistant ABS body with silicone bumper, backlit graphic display and automatic shutdown, 122 × 76 × 37 mm, 0.25 kg.

06

Verifiable at any time

The DMRF control sample with simulated cracks (0.8 / 1.7 / 4.8 / 9.8 mm) verifies device operability before every inspection.



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RECOMMENDED USE / METHOD SELECTION

Crack Depth Measurement

Crack depth sizing can be approached with different NDT techniques. The table compares the electropotential method used by DEPTH MASTER with the alternatives commonly applied to surface-breaking defects.

METHOD	WORKING PRINCIPLE	DEPTH RANGE	SPEED	TYPICAL USE
ACPD (DEPTH MASTER)	Alternating current electropotential, 4-electrode probe	0.5 – 30 mm measured	Fast	Direct depth reading in mm
ACPD estimation	Extended electropotential evaluation	30 – 100 mm estimated	Fast	Deep cracks, indicative value
Eddy current (EDDY SENSE)	Induced current perturbation, 1 – 3.5 MHz	from 0.3 mm crack depth	up to 50 mm/s	Detection and location of cracks
Ultrasonic sizing	Tip diffraction / angle beam	Variable	Slow	Requires couplant and skilled operator

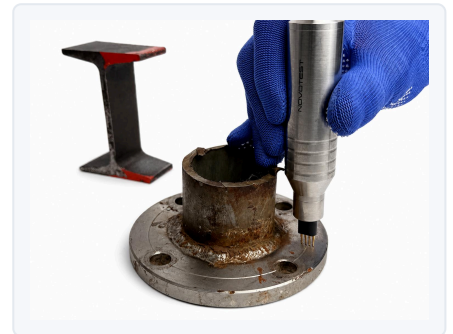
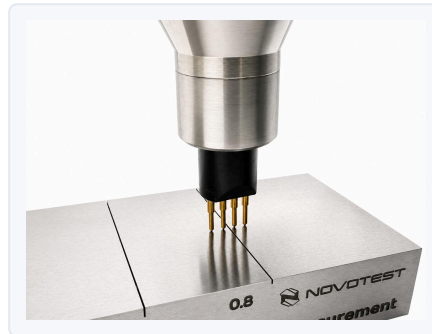


Recommended workflow: detect and locate the crack with MT, PT or eddy current (EDDY SENSE), clean the area, zero the probe on a defect-free zone of the same material, then measure the depth with DEPTH MASTER positioning the probe across the crack.

APPLICATIONS

DEPTH MASTER

DEPTH MASTER is used wherever a detected crack must be quantified to decide whether a component can stay in service, be repaired or be rejected.



01

Welded joints

Depth sizing of surface cracks on welds of flanges, nozzles and structural assemblies, including heat-affected zones.

02

Pressure equipment

Vessels, pipelines and pipe bodies where crack depth drives fitness-for-service and repair decisions.

03

Structural steelwork

Beams, joints and load-bearing profiles inspected during periodic surveys and after overload events.

04

Machined components

Shafts, hubs and stainless-steel or duralumin parts checked before assembly or return to service.

TECHNICAL SPECIFICATIONS

DEPTH MASTER

MEASUREMENT PERFORMANCE

Crack depth measurement range	0.5 – 30 mm
Estimated crack depth range	30 – 100 mm
Measurement error	$\pm (0.1h + 0.2 \text{ mm})$, h = crack depth
Digital indicator resolution	0.1 mm
Maximum crack opening	up to 3.5 mm (depending on probe)
Minimum crack length	5 crack depths, at least 3 mm
Minimum curvature radius	4 mm (convex and concave)

PROBE & METHOD

Working principle	Electropotential method (ACPD)
Standard probe	"1×4" probe, 4 electrodes in a row, with cable
Connection	Lemo-Lemo cable, top-panel connector
Materials	Ferromagnetic and non-ferromagnetic metals, stainless steel, duralumin, titanium

DISPLAY & FUNCTIONS

Display	Graphic display with backlight
Sections	Measurement, Calibration, Archive, Settings, Memory card, Information
Calibration cells	Fer., N.Fer., Mat1, Mat2, Mat3
Auto power-off	OFF / 1 / 5 / 10 / 30 min
Languages	English or Ukrainian/Russian (others on request)

POWER & ENVIRONMENT

Power supply	2 × AA NiMH rechargeable 1.2 V (or 1.5 V alkaline)
Battery life	up to 20 h
Operating temperature	-20 °C to +40 °C

Specifications are taken from the NOVATEST DEPTH MASTER operating manual v1.0 and may be updated without notice as part of continuous product improvement. The manufacturer reserves the right to make minor changes that do not degrade technical characteristics.

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STANDARD DELIVERY & OPTIONAL ACCESSORIES

DEPTH MASTER

STANDARD DELIVERY

Electronic unit

DEPTH MASTER crack depth meter,
1 pc.

"1×4" probe

Probe with 4 electrodes in a row,
complete with cable, 1 pc.

Control sample DMRF

Reference sample with simulated
cracks for operability verification, 1
pc.

Batteries & charger

2 pcs AA rechargeable batteries and
charger, 1 pc.

Protective bumper

Silicone shockproof bumper for the
electronic unit, 1 pc.

Case & documentation

Carrying case and operating manual,
1 pc. each.

OPTIONAL ACCESSORIES

Additional probes

Probes of various designs for
restricted access and small
curvature radii.

Spare electrodes

Replaceable electrode tips,
consumable parts subject to wear.

Additional control samples

Reference samples with different
simulated crack depths and
materials.

EDDY SENSE

Eddy current flaw detector for
detecting cracks to be sized with
DEPTH MASTER.

Spare battery sets

Additional AA rechargeable battery
sets and charger.

Custom configuration

The delivery set can be expanded
with equipment on customer
request.



MORE THAN AN INSTRUMENT

Novatest services

NOVATEST supplies more than instruments: every device is delivered with documentation, warranty programme and engineering support required to make the inspection method work on your components.

01

Technical assistance

Application support for method definition, probe selection and troubleshooting.

02

Warranty programme

Basic and extended warranty, with scheduled maintenance recorded in the device certificate.

03

Training

Operator training on zeroing, material calibration and correct probe positioning across the crack.

04

Service & calibration

Adjustment and repair performed at the manufacturer's facility with certified reference samples.



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