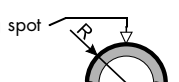




Probe model	FTA3.3H		
Part no. ¹	604-142		
Applications	Coating thickness on Non-ferrous metal base materials (NF); NC/NF		
Measurement task	Measures the thickness of electrically non-conducting coatings on non-ferrous metal base material (NC/NF).		
Examples	•Paint, varnish or plastic coatings on aluminium, copper or brass (NC/NF)		
Features	•excellently suited for measurements near edges due to the low edge influence •short probe length, resulting in lower working height above the measuring point •wear resistant probe pole extends the operational readiness of the probe •The probes have a patented conductivity compensation feature so different electrical conductivities (particularly various aluminium alloys) have no effect on the coating thickness measurement.		
Restrictions	Very damp sensitive: Not suited for measurements on damp (acidic) surface soilings.		
Measurement range	Non-ferrous metal base materials (NF) 0 ... 1200 µm / 0 ... 47.24 mils		
*	The specifications for trueness and repeatability precision apply to ambient and specimen temperatures at the time of calibration. The values for trueness and repeatability may increase compared to the values specified here if the temperature during measurement differs from the temperature during calibration.		
Trueness*	Non-ferrous metal base materials (NF) based on Fischer factory calibration standards at 20 °C (68 °F) for specimen and ambient temperature		
	0 ... 67 µm: ≤ 1 µm 67 ... 800 µm: ≤ 1.5 % of nominal value 800 ... 1200 µm: ≤ 3 % of nominal value		0 ... 2.64 mils: ≤ 0.04 mils 2.64 ... 31.50 mils: ≤ 1.5 % of nominal value 31.5 ... 47.24 mils: ≤ 3 % of nominal value
Repeatability precision*	Non-ferrous metal base materials (NF) based on Fischer factory calibration standards at 20 °C (68 °F) for specimen and ambient temperature 5 single readings per standard		
	0 ... 100 µm: ≤ 0.4 µm 100 ... 1200 µm: ≤ 0.4 % of reading		0 ... 3.94 mils: ≤ 0.016 mils 3.94 ... 47.24 mils: ≤ 0.4 % of reading
Influence*	Aluminium base material The following values are valid for a coating thickness with a nominal value of 75 µm / 2.95 mils on Aluminium base material at 20 °C (68 °F) for specimen and ambient temperature. The quantity of influences are stated with the expanded measurement uncertainty U with the expanded factor of k = 2 (defines an interval with the confidence level of 95.45 %) – according to ISO/IEC Guide 98-3:2008-09 "Guide to the expression of uncertainty in measurement".		
Curvature (R), measurement error from nominal value with reference to master calibration on flat surface			
Measuring spot	 No measurement error within the trueness as of R = 224 mm ± 37 mm / R = 8.8 " ± 1.5 " Measurement error of 10 % for R = 29 mm ± 1.3 mm / R = 1.14 " ± 0.051 " Probe requires a minimum of R = 9 mm (support stand necessary) / R = 0.354 "		
Curvature (R), measurement error from nominal value with reference to master calibration on flat surface			
Measuring spot	 No measurement error within the trueness as of 204 mm ± 33 mm / R = 8.0 " ± 1.3 " Measurement error of 10 % for R = 27 mm ± 2.3 mm / R = 1.06 " ± 0.09 " Probe requires a minimum of R = 1 mm (support stand necessary) / R = 39.37 mils		
Edge distance (R), specification from probe tip center, measurement error from nominal value			
Measuring spot in the center of the circular surface	 No measurement error within the trueness as of R = 1.93 mm ± 0.04 mm / R = 75.98 mils ± 1.57 mils Measurement error of 10 % for R = 1.43 mm ± 0.03 mm / R ≤ 56.30 mils ± 1.18 mils Probe requires a minimum of R = 1 mm (support stand necessary) / R = 39.37 mils		

Influence*

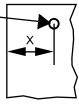
Aluminium base material

The following values are valid for a coating thickness with a nominal value of $75\text{ }\mu\text{m}$ / 2.95 mils on Aluminium base material at $20\text{ }^{\circ}\text{C}$ ($68\text{ }^{\circ}\text{F}$) for specimen and ambient temperature.

The quantity of influences are stated with the expanded measurement uncertainty U with the expanded factor of $k = 2$ (defines an interval with the confidence level of 95.45 %) – according to ISO/IEC Guide 98-3:2008-09 "Guide to the expression of uncertainty in measurement".

Edge distance (X), specification from probe tip center, measurement error from nominal value

Measuring spot =
Probe pole center



No measurement error within the trueness as of $X = 1.1\text{ mm} \pm 0.1\text{ mm}$ / $X = 43.31\text{ mils} \pm 3.94\text{ mils}$
Measurement error of 10 % for $X = 0.75\text{ mm} \pm 0.03\text{ mm}$ / $X = 29.53\text{ mils} \pm 1.18\text{ mils}$

Base material thickness (D), measurement error from nominal value

Measuring spot



No measurement error within the trueness as of $D = 84\text{ }\mu\text{m} \pm 11\text{ }\mu\text{m}$ / $D = 3.3\text{ mils} \pm 0.43\text{ mils}$
Measurement error of 10 % for $D = 21\text{ }\mu\text{m} \pm 0.6\text{ }\mu\text{m}$ / $D = 0.827\text{ mils} \pm 0.023\text{ mils}$

Base material

Influence of the el. conductivity of the base material (NF) in the range from 30 to 100 % IACS: Measurement error $\leq 2\%$, valid for the total measurement range.

Admissible ambient temperature at operation $-10\text{ }^{\circ}\text{C} \dots +40\text{ }^{\circ}\text{C}$ / $+14\text{ }^{\circ}\text{F} \dots +104\text{ }^{\circ}\text{F}$

Admissible specimen temperature $\text{max. } +40\text{ }^{\circ}\text{C}$ / $\text{max. } +104\text{ }^{\circ}\text{F}$

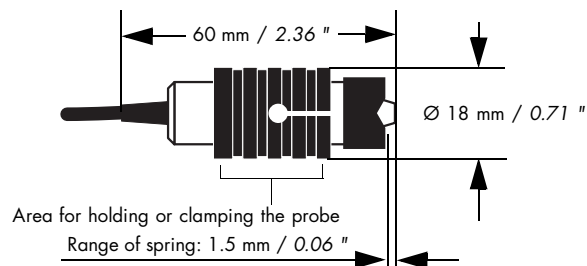
Design

Single tip axial probes with spring-loaded measuring system

Probe tip

- wear resistant
- material: hart metal
- radius: 1.2 mm / 0.05 °
- not replaceable

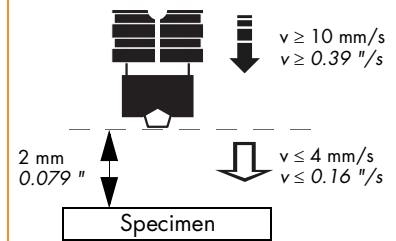
Dimensions



Probe cable

Cable length: 1.5 m / 59.06 ° , other cable lengths on request¹
Bending radius: $\geq 30\text{ mm}$ / 1.18 °

Approach and touchdown speed for automated measurement



Lift-off distance between 2 measurements $\geq 5\text{ mm}$ /

Measuring method

Amplitude sensitive eddy current method according to ISO 2360, ASTM D7091

Probe works with

- Hand-held instruments: all DUALSCOPE® and ISOSCOPE® instruments of the series FMP
- Bench top instruments: FISCHERSCOPE® MMS® PC and FISCHERSCOPE® MMS® PC2 with module PERMASCOPE® F-Probes (604-293, 12-pin connecting socket)

Scope of delivery

Probe, prism adapter for measurements on pipes and bars, support ring for placing the probe easier onto the surface (spare); calibration foil set 605-415 (metal plate ISO/NF for instrument check, 2 calibration foils with thicknesses of approx. $24\text{ }\mu\text{m}/0.94\text{ mils}$ and $250\text{ }\mu\text{m}/9.84\text{ mils}$)

Options

- Calibration foils: various foil thickness are available up to up to $1000\text{ }\mu\text{m}/39.37\text{ mils}$; to calibrate the upper measurement range one calibration foil with thickness $\geq 600\text{ }\mu\text{m}/23.62\text{ mils}$ is sufficient
- Master Calibration Set 602-204 (metal plate ISO/NF for instrument check, 4 calibration foils with thicknesses of approx. $23\text{ }\mu\text{m}/0.91\text{ }^{\circ}$, $75\text{ }\mu\text{m}/2.95\text{ mils}$, $250\text{ }\mu\text{m}/9.84\text{ mils}$ und $800\text{ }\mu\text{m}/31.5\text{ mils}$)
- Inspection certificate "3.1" according to ISO 10474 (only in connection with measuring device)
- Support stand V12 BASE, 604-420, with mechanical probe lowering device; suitable probe clamp 600-796 included in support stand delivery
- Support stand V12 MOT, 604-374, with motorized probe lowering device for highest repeatability; suitable probe clamp 600-796 included in support stand delivery

¹ FTA3.3H probes with special cable lengths have own part no. and probe model names. This data sheet also applies to these probes.