

Probe model **FD13H**
 Part no.¹ **604-508**



Probe model **FDW13H**
 Part no.¹ **604-800**



Applications Probes for measurements on virtually all metals. The probes work with two test methods and are therefore able to measure coating thicknesses on non-ferrous metals as well as on ferrous metals. Because of the large pole tip the probes are also well suited for measurements on rough (blasted) surfaces.

Examples

<p>Steel or iron base materials (Fe)</p> <ul style="list-style-type: none"> • Paint, varnish, rubber or plastic coatings on steel, iron or cast iron (Iso/Fe) • Chrome or copper coatings on steel or iron (NF/Fe) • Both electro-galvanized and hot galvanized coatings on steel, iron or cast iron (NF/Fe) 	<p>Non-ferrous metal base materials (NF)</p> <ul style="list-style-type: none"> • Paint, varnish or plastic coatings on aluminium, copper or brass (NC/NF) <p><i>The probes feature a patented conductivity compensation. So that the different electrical conductivities of e.g. various aluminium alloys have no effect of the coating thickness measurement.</i></p>
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Probe designs

- FD13H probe: Axial single tip probe with spring-loaded measuring system
- FDW13H probe: Single tip angle probe with spring-loaded measuring system
- Robust probe design with wear-resistant probe tip

Applications	Steel or iron base materials (Fe) NC/Fe or NF/Fe	Non-ferrous metal base materials (NF) NC/NF
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* *The values for measurement range, trueness, repeatability precision and measurement deviations are valid for electrically non-conductive coating materials on steel or iron (NC/Fe). The values may differ for measurements on non-ferrous coating materials (NF).*

Measurement ranges*	Steel or iron base materials (Fe) 0 ... 2000 µm / 0 ... 78.74 mils	Non-ferrous metal base materials (NF) 0 ... 2000 µm / 0 ... 78.74 mils
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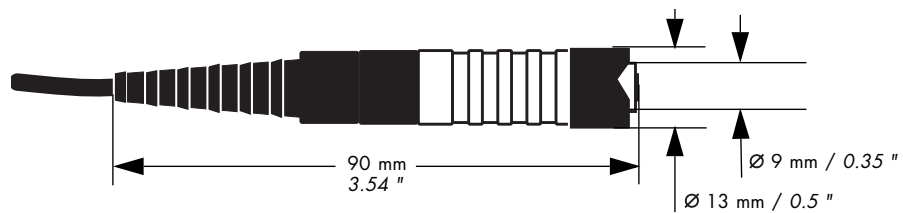
Trueness* based on Fischer factory calibration standards	Steel or iron base materials (Fe) 0 ... 75 µm: ≤ 1.5 µm 75 ... 1000 µm: ≤ 2 % of nominal value 1000 ... 2000 µm: ≤ 3 % of nominal value 0 ... 2.95 mils: ≤ 0.06 mils 2.95 ... 39.37 mils: ≤ 2 % of nominal value 39.37 ... 78.74 mils: ≤ 3 % of nominal value	Non-ferrous metal base materials (NF) 0 ... 50 µm: ≤ 1 µm 50 ... 1000 µm: ≤ 2 % of nominal value 1000 ... 2000 µm: ≤ 3 % of nominal value 0 ... 1.97 mils: ≤ 0.039 mils 1.97 ... 39.37 mils: ≤ 2 % of nominal value 39.37 ... 78.74 mils: ≤ 3 % of nominal value
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Repeatability precision* based on Fischer factory calibration standards, 5 single readings per standard	Steel or iron base materials (Fe) 0 ... 50 µm: ≤ 0.25 µm 50 ... 2000 µm: ≤ 0.5 % of reading 0 ... 1.97 mils: ≤ 0.0098 mils 1.97 ... 78.74 mils: ≤ 0.5 % of reading	Non-ferrous metal base materials (NF) 0 ... 100 µm: ≤ 0.5 µm 100 ... 2000 µm: ≤ 0.5 % of reading 0 ... 3.94 mils: ≤ 0.02 mils 3.94 ... 78.74 mils: ≤ 0.5 % of reading
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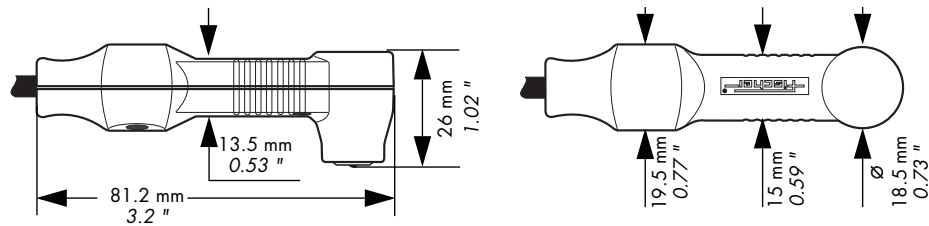
Influences*	Steel or iron base materials (Fe)	Non-ferrous metal base materials (NF)
<p>The following values are valid for a coating thickness with a nominal value of 75 µm / 2.95 mils. The quantity of the influences are stated with the expanded measurement uncertainty U with the expanded factor of k = 2 (defines an interval with the confidence level of 95.45 %) - according to DIN V ENV 13005 "Leitfaden zur Angabe der Unsicherheit beim Messen" (Guide to the expression of uncertainty in measurement).</p>		
<p>Curvature (R), measurement deviation from the nominal value with reference to master calibration on flat surface</p>		
<p>Measuring spot</p>	<p>No measurement deviation within the trueness as of R = 55 mm ± 9 mm / R = 2.17 " ± 0.35 " Measurement deviation of 10 % for R = 28 mm ± 1.6 mm / R = 1.10 " ± 0.063 " Probe needs a minimum of R = 25 mm (support stand necessary) / R = 0.98 "</p>	<p>No measurement deviation within the trueness as of R = 550 mm ± 56 mm / R = 21.65 " ± 2.2 " Measurement deviation of 10 % for R = 110 mm ± 5.6 mm / R = 4.33 " ± 0.22 " Probe needs a minimum of R = 25 mm (support stand necessary) / R = 0.98 "</p>
<p>Curvature (R), measurement deviation from the nominal value with reference to master calibration on flat surface</p>		
<p>Measuring spot</p>	<p>No measurement deviation within the trueness as of R = 80 mm ± 5 mm / R = 3.14 " ± 0.2 " Measurement deviation of 10 % for R = 16 mm ± 1.2 mm / R = 0.63 " ± 0.047 " FD13H probe needs a minimum of R = 1.5 mm (support stand necessary) / R = 0.06 " FDW13H probe needs a minimum of R = 2 mm (support stand necessary) / R = 0.08 "</p>	<p>No measurement deviation within the trueness as of R = 447 mm ± 28 mm / R = 17.6 " ± 1.1 " Measurement deviation of 10 % for R = 92 mm ± 3.4 mm / R = 3.62 " ± 0.13 " FD13H probe needs a minimum of R = 1.5 mm (support stand necessary) / R = 0.06 " FDW13H probe needs a minimum of R = 2 mm (support stand necessary) / R = 0.08 "</p>
<p>Edge distance (R), specification from probe tip centre, measurement deviation from the nominal value</p>		
<p>Measuring spot in the centre of the circular surface</p>	<p>No measurement deviation within the trueness as of R = 11.5 mm ± 0.3 mm / R = 0.45 " ± 0.012 " Measurement deviation of 10 % for R = 6.4 mm ± 0.3 mm / R = 0.25 " ± 0.012 " Probe needs a minimum of R = 2.5 mm (support stand necessary) / R = 0.098 "</p>	<p>No measurement deviation within the trueness as of R = 3.2 mm ± 0.2 mm / R = 0.13 " ± 0.0079 " Measurement deviation of 10 % for R = 2.4 mm ± 0.04 mm / R = 0.094 " ± 0.0016 " Probe needs a minimum of R = 1.7 mm (support stand necessary) / R = 0.067 "</p>
<p>Edge distance (X), specification from probe tip centre, measurement deviation from the nominal value</p>		
<p>Measuring spot = Probe pole centre</p>	<p>No measurement deviation within the trueness as of X = 3.6 mm ± 0.3 mm / X = 0.14 " ± 0.012 " Measurement deviation of 10 % for X = 1.0 mm ± 0.05 mm / X = 0.039 " ± 0.002 "</p>	<p>No measurement deviation within the trueness - for FD13H probe as of X = 2.2 mm ± 0.05 mm / X = 0.087 " ± 0.002 " - for FDW13H probe as of X = 2.2 mm ± 0.1 mm / X = 0.087 " ± 0.004 " Measurement deviation of 10 % for X = 1.9 mm ± 0.04 mm / X = 0.075 " ± 0.0016 "</p>
<p>Base material thickness (D), measurement deviation from the nominal value</p>		
<p>Measuring spot</p>	<p>Steel or iron base materials (Fe) No measurement deviation within the trueness as of D = 1.0 mm ± 0.1 mm / D = 39.4 mils ± 3.94 mils Measurement deviation of 10 % for D = 0.5 mm ± 0.03 mm / D = 19.7 mils ± 1.18 mils</p>	<p>Base material Aluminium No measurement deviation within the trueness as of D = 0.1 mm ± 0.01 mm / D = 3.94 mils ± 0.39 mils Measurement deviation of 10 % for D = 0.02 mm ± 0.001 mm / D = 0.79 mils ± 0.039 mils</p>
<p>Base material</p>	<p>Steel or iron base materials (Fe) Influence of the permeability of the base material (Fe) with reference to Fischer calibration standards (master calibration): No measurement error for a ferrite content from 137 FN ± 0.2 FN onwards. Measurement error of 10 % for ferrite content of 123 FN ± 0.8 FN.</p>	<p>Non-ferrous metal base materials (NF) Influence of the el. conductivity of the base material (NF) in the range from 30 to 100 % IACS: Measurement deviation ≤ 2 %, valid for the total measurement range.</p>
<p>Admissible ambient temperature at operation -10 °C ... +40 °C / +14 °F ... +104 °F</p>		

Admissible specimen temperature	max. +40 °C / +104 °F	
Probe tip material	Hard metal	
Probe tip replaceable	No	
Probe tip radius	2 mm / 0.079 "	
Measuring methods	Magnetic induction method according to ISO 2178, ASTM D7091	Amplitude sensitive eddy current method according to ISO 2360, ASTM D7091
Scope of supply	Probe, metal plates ISO/NF and NF/FE for instrument check, calibration foil sets 605-413 and 605-415, prism adapter for measurements on pipes and bars (for probe FD13H only)	
Option, FD13H probe only	Adapter for support stand: 600-173, is supplied by default with the support stand	
Instruments	All DUALSCOPE® hand-held instruments of the series FMP and FISCHERSCOPE® MMS® PC2 with F-Module PERMASCOPE®	
Dimensions	Cable length: 1.5 m / 59.06 ", other cable lengths on request ¹	

FD13H probe



FDW13H probe



¹ FD13H and FDW13H probes with special cable lengths have own part no. and probe model names. This data sheet is also valid for these probes.