Probes V7FKB4 / D-F-2ro Data Sheet

Probe models	**V7FKB4**	**D-F-2ro**
Part no.[1]	604-180	1007030

Measurement task	**Coating thickness on steel or iron base material (FE)**; NC/FE or NF/FE
Applications	Measuring the thickness of electrically non-conductive as well as of non-ferromagnetic metallic coatings on steel or iron base material (NC/FE and NF/FE).
Examples	■ Paint, varnish or plastic coatings on steel or iron (NC/FE) ■ Copper, brass, zinc, tin and chrome coatings on steel or iron (NF/FE)
Features	■ Well suited for measurement of thin coatings ■ Preferably for measurements on rough (blasted) surfaces ■ Low edge influence ■ Probe model V7FKB4 also available as digital probe (D-F-2ro)
Restriction	■ Sensitive to material texture, during measurement the probe orientation relative to base material textur must be kept constant
*	*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).* *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.*
Measuring range*	0 ... 2000 µm (0 ... 78.74 mils)

Trueness*	**Steel, iron, cast iron base material (FE)**	
based on Fischer factory calibration standards at 20 °C (68 °F) for specimen and ambient temperature	0 ... 100 µm: ≤ 1 µm 100 ... 1500 µm: ≤ 1 % of nominal value 1500 ... 2000 µm: ≤ 3 % of nominal value	(0 ... 3.94 mils: ≤ 0.04 mils) (3.94 ... 59.06 mils: ≤ 1 % of nominal value) (59.06 ... 78.74 mils: ≤ 3 % of nominal value)
Repeatability precision*	**Steel, iron, cast iron base material (FE)**	
based on Fischer factory calibration standards at 20 °C (68 °F) for specimen and ambient temperature	0 ... 100 µm: ≤ 0.2 µm 100 ... 2000 µm: ≤ 0.2 % of reading	(0 ... 3.94 mils: ≤ 0.008 mils) (3.94 ... 78.74 mils: ≤ 0.2 % of reading)
Influence*	**Steel, iron, cast iron base material (FE)**	

The following values are valid for a coating thickness with a nominal value of 75 µm (2.95 mils).

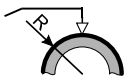
Curvature (R), measurement deviation from nominal value with reference to a calibration on flat surface

Measuring spot

Measurement deviation ≥ 10 % for R ≤ 22 mm (R ≤ 0.87 ")
Probe needs a minimum of R = 22 mm (support stand necessary) (R = 0.87 ")

Curvature (R), measurement deviation from nominal value with reference to a calibration on flat surface

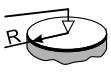
Measuring spot



Measurement deviation ≥ 10 % for R ≤ 14.5 mm (R ≤ 0.57 ")
Probe needs a minimum of R = 2 mm (support stand necessary) (R = 0.08 ")

Edge distance (R), specification from probe tip center, measurement deviation from nominal value

Measuring spot in the center of the circular surface



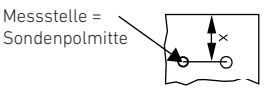
No influence within the scope of trueness from R > 14 mm (R > 0.55 "
Measurement deviation ≥ 10 % for R ≤ 6 mm / *R ≤ 0.24 "*
Probe needs a minimum of R = 10 mm (support stand necessary) (R = 0.39 ")

Probes V7FKB4 / D-F-2ro

Influence*	**Steel, iron, cast iron base material (FE)**

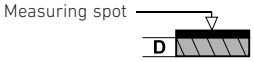
The following values are valid for a coating thickness with a nominal value of 75 µm (2.95 mils).

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



No influence within the scope of trueness from X > 5 mm (R > 0.2 ")
Measurement deviation ≥ 10 % for X ≤ 0.6 mm (X ≤ 23.62 mils)

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



Measurement deviation ≥ 10 % for D ≤ 0.7 mm (D ≤ 27.56 mils)

Admissible ambient temperature at operation	-10 °C ... +40 °C (+14 °F ... +104 °F)
Admissible specimen temperature	max. +40 °C (max. +104 °F)

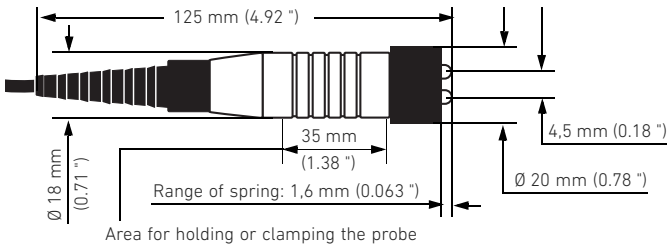
Probe design

Two pole axial probe with spring-loaded measuring system

Probe pole tips

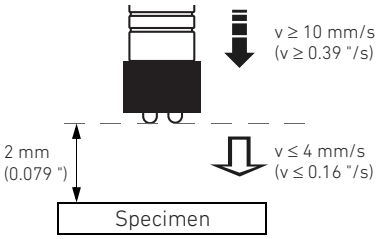
- wear-resistant
- material: PVD coated steel
- radius: 1.25 mm (49.2 mils)
- replaceable by Fischer service center

Dimensions



Probe cable length: 1.5 m (59.06 "), other cable lengths on request[1]
Bending radius: ≥ 30 mm (1.18 ")

Approach and touchdown speed for automated measurement



Lift-off distance between 2 measurements ≥ 8 mm (≥ 0.32 ")

Measuring method	Magnetic induction test method according to ISO 2178, ASTM D7091

Calibration – Calibration foils	1-Point calibration	2-Point calibration
	The 1-Point-Calibration is practicably in the lower measuring range only. This calibration method provides the best measuring accuracy in a small coating thickness range close by the stated foil thickness.	*The calibration using two calibration foils provides on the one hand the best measuring accuracy in the coating thickness range limited by the two foil thicknesses and on the other hand two calibration foils are necessary for calibrating the upper measurement range.*
Use following foil thickness (pairings) for calibration	max. 800 µm (31.5 mils)	Foil 1: ≤ 500 µm (19.7 mils); Foil 2: ≥ 900 µm (35.4 mils)

Probes work with following instruments

V7FKB4 (analog probe)	■ Hand-held instruments: all DUALSCOPE® and DELTASCOPE® instruments of the FMP series and also all DUALSCOPE® and DELTASCOPE® instruments of the DMP series by using DMP-F-Probe-Adapter (1007336) ■ Bench top instruments: FISCHERSCOPE® MMS® PC and FISCHERSCOPE® MMS® PC2 both with PERMASCOPE® F-Probe module (604-293, 12-pin connecting socket)
D-F-2ro (digital probe)	■ Hand-held instruments: all DUALSCOPE® and DELTASCOPE® instruments of the DMP series
Scope of delivery	Probe with connecting cable, calibration foil set 605-413 (metal plate NF/FE for instrument check, 2 calibration foils with thicknesses of approx. 9 µm (0.35 mils) (CuBe) and 125 µm (4.92 mils))
Options	■ Calibration foils: various foil thickness are available up to 1500 µm (59.06 mils); suitable calibration foil thicknesses are specified in section Calibration – Calibration foils ■ Manufacturer Certificate M according to DIN 55350-18 (only in connection with measuring instrument)

[1] *Probes with special cable lengths have own part no. and probe model names (e.g., V7FKB4Lx; x = cable length in meter). This data sheet also applies to these probes.*
Probe D-F-2ro: max. cable length 3 m (118 "), it not allowed to use a USB connection cable to connect probe to instrument!