



LONGITUDINAL EXTENSOMETER "Clip-On" Model MFA 2



The MFA 2 Extensometer is suitable for precision measurements of Elastic Limits according to standards in metallic specimens in Tensile tests, as well as the Elastic Modulus "E" of metals with a standard **(Lo) of 25mm**.

The measurement accuracy corresponds to accuracy class 0.5 according to EN ISO 9513.

APPLICABLE STANDARDS

EN ISO 9513.

AREA OF APPLICATION

The MFA 2 linear strain gauge is suitable for virtually all tests above an initial instrument measuring **length (Lo) of 25 mm**. Its measuring accuracy exceeds all requirements set down by standard EN ISO 9513. Its design, which has been tried and tested over many years of use, guarantees a high level of reliability and a long service life, even under difficult operating conditions. The MFA is particularly suitable for determining the module of elasticity, proof stress and ultimate strain. The MFA is fast, straightforward, and easy to use, and therefore enables large numbers of tests to be carried out.

DESIGN AND FUNCTION

A lever mounted in ball bearings, which have been tensioned to prevent play, and housed in a casing of a high-strength aluminum alloy is used to take up the clamping forces. The path of the test elongation is transferred to the measuring spring through this lever. If the measuring distance (path) is exceeded or the test piece breaks prematurely when the MFA is in use, the measuring spring is fully protected by stops.

The measuring spring is applied with a temperature-compensated strain gauge full bridge, which is calibrated to 2 mV/V for the nominal measuring path. The Lo of the measuring instrument can be equipped for all required lengths from 25 to 300 mm.

The extension arms can be changed quickly and without tools. The basic equipment comprises the extension arms for Lo 30 (25*) mm and Lo 50 mm. The clamping device facilitates quick and easy clamping. The top moving measuring arm is held in its zero position by a stop, which means that it does not need to be adjusted or released. The pressing force and the opening width of the MFA are infinitely variable. Rectangular knife edges, specially designed for thin circular test pieces and the averaging double - side MFA version, can be supplied.

OPERATION

To use the MFA, the clamping device is opened with the thumb and forefinger. Care must be taken when positioning the device on the test piece, that the bottom edge contacts with the test piece first. The clamping device should be positioned on the MFA casing so that the backing rolls are symmetrically opposite the knife edges. Where Lo is above 60 mm, the clamping device is screwed directly onto the extension arm. The extension arms themselves can be inserted without danger of twisting once the coupling ring has been released. On the double-side MFA, the lever should be set to "Zero" before clamping and then to "Measure" to facilitate clamping without initial tension.



Delivery scope

Single - side linear strain gauge

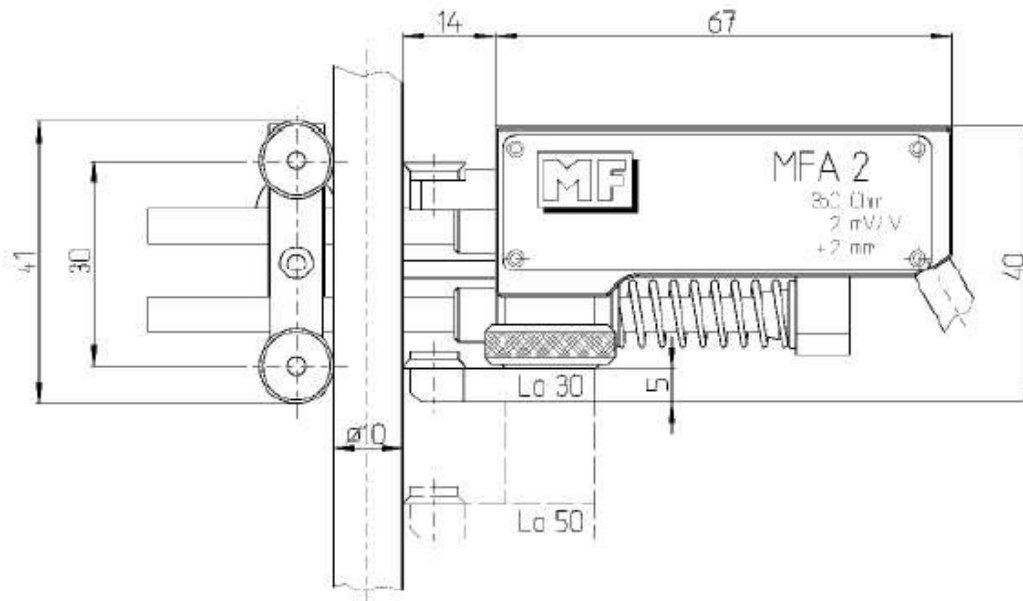
- * 1 MFA 2 with 5 m cable
- * 1 Extension arm, Lo 30 (25*) mm
- * 1 Extension arm, Lo 50 mm
- * 1 Clamping device with cylindrical backing rollers
- * 2 Spare fixing screws, M3 T10
- * 1 TORX screwdriver, T10
- * 1 Test Specification Sheet
- * 1 Storage case

Spare parts and accessories

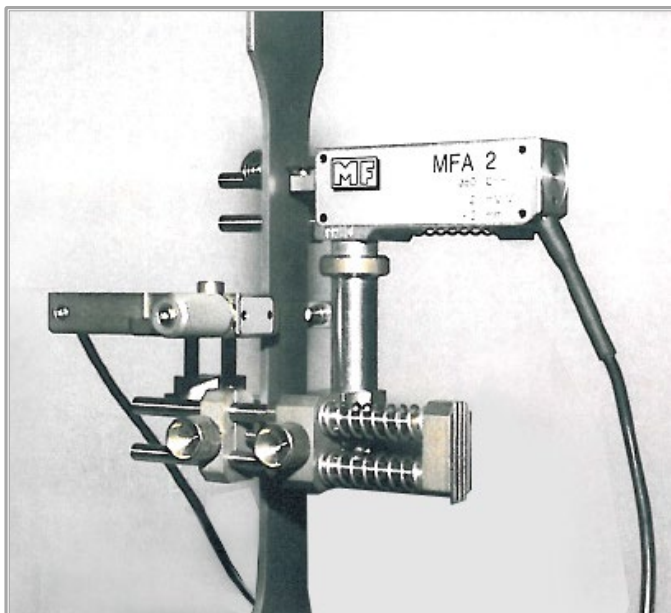
Single - side linear strain gauge

- ✓ Extension arms Lo 25 mm to 300 mm (cannot be adjusted)
- ✓ Adapter for test pieces of up to 60 mm x 60 mm and 60 mm diameter
- ✓ Knife edge fixing screw, M3 T10
- ✓ Circular knife edge, 9,5 mm
- ✓ Rectangular knife edge, 9,5 x 10 mm
- ✓ Clamping device

* By turning the knives on the extension arm 30 mm and on the MFA housing a gauge length of 25 mm can be set.



Picture 1: MFA 2 - Dimensions



Example for Calculations of values "n" and "r", in this image the 2 Extensometers:

- **MFA - 2 Longitudinal**
- **MFQ - H Transversal**



Contents of standard supply

Double - side linear strain gauge

- 1 Double side MFA 2 with 5 m cable
- 2 Extension arm, Lo 30 (25*) mm
- 2 Extension arm, Lo 50 mm
- 1 Double Clamping device
- 3 Spare fixing screws, M3 T10
- 1 TORX screwdriver, T10
- 1 Test Specification Sheet
- 1 Storage case

Spare parts and accessories

Double - side linear strain gauge

- Pair of extension arms Lo 25 mm to 300 mm (cannot be adjusted)
- Pair of adapter for test pieces of up to 60 mm x 60 mm and 60 mm diameter
- Holder with cylindrical backing rolls for clamping one MFA only
- Knife edge fixing screw, M3 T10
- Circular knife edge, 9.5 mm
- Rectangular knife edge, 9.5 x 10 mm
- Clamping device

CALIBRATION

1. Set the levers at "m" on the MFA 2 double side.
2. Bring the unlocked MFA 2 to the measurement position and set the amplifier to "Zero".
3. Gently push the edge of the movable knife towards its upper stop.
4. Calibrate the measurement amplifier in this position to the value that is documented on the test specification sheet.
5. To ensure that the calibration was successful, repeat steps 2 through 5 and readjust if necessary.

With this the calibration of the MFA 2 is carried out

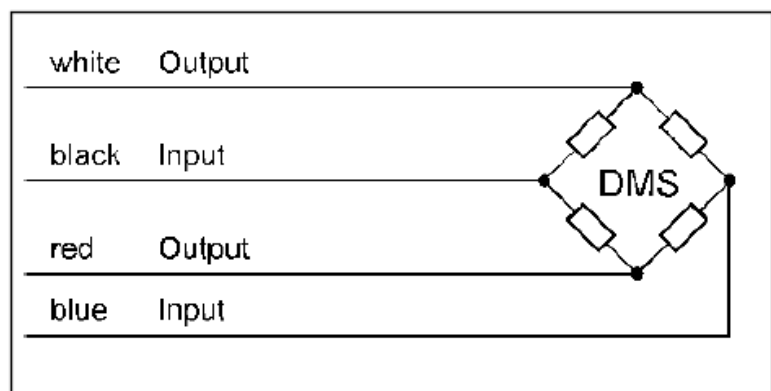
RECOMMENDATION

The following calibration instruments can be used for high calibration requirements:

- KMF3 for sensitivity calibration
- KMF1 and KMF01 for sensitivity calibration and to verify linearity.



Picture 3: MFA 2 with Lo 50



Picture 4: Cabling

TECHNICAL DATA OF THE MFA 2 EXTENSOMETER

Accuracy class EN ISO 9513	0.2
Measuring principle	Strain gauge full bridge
Measuring path for tensile test MFA 2	2 mm (3 mm)
Measuring path for pressure test	To be agreed
Indication error *	0.2 %
Indication error *	0.6 m
Error in initial measuring instrument length	< 50 μ m
Sensitivity	2 mV/V
Rated resistance of bridge	350 Ohm
Max. voltage input	10 V
Actuation force	10 - 60 cN
Standard initial instrument measuring length	30 (25)** and 50 mm
Attachments for initial instrument measuring length	30 to 300 mm
Standard temperature range	+1 °C to + 60 °C
Type for temperature chamber	+1 °C to + 200 °C
Weight of single-side MFA	190 g
Weight of double-side MFA	260 g

* The greater value is permissible

** By turning the blades through 180 degrees

Adjustable for the cross sections of the following specimens ***

Circular	0 to 30 mm in diameter
Flat	0 to 30 x 30 mm
Circular with adapter	0 to 60 mm
Flat with adapter	0 to 60 mm thick and 60 mm wide
Cable length	5 m

*** Others on request