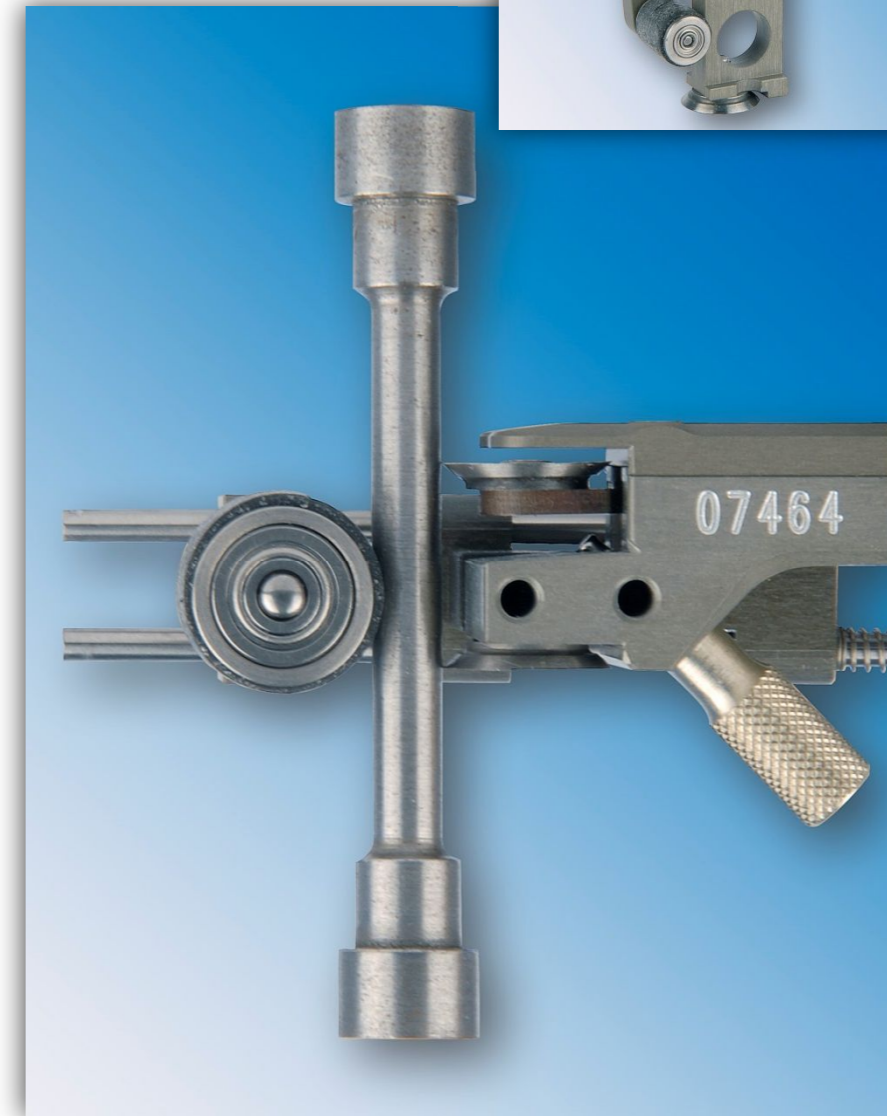
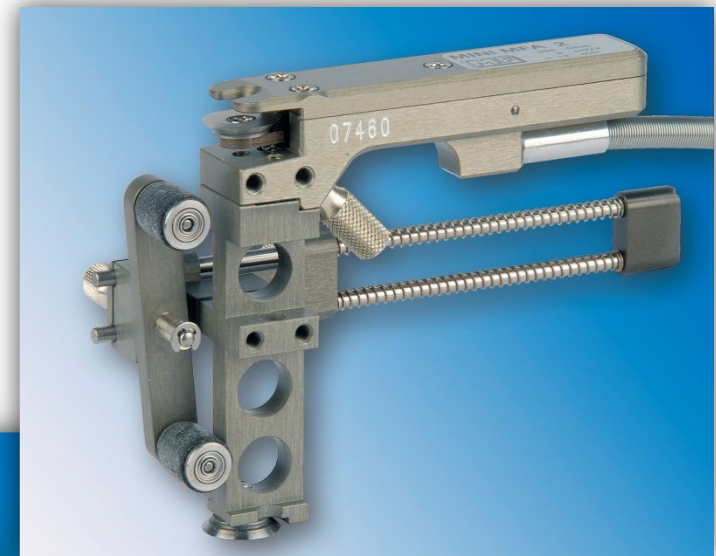


Technical data	MINI MFA 2
Accuracy class EN ISO 9513	0.2
Measurement principle	full bridge strain gauge
Range in tensile direction	2 mm (3mm)
Range in compressive direction	1 mm (not with 3 mm)
Linearity error including hysteresis	0.05%
Display error (full display range)*	0.2%
Indication error*	0.6 μ m
Error in gauge length	50 μ m
Sensitivity	2 mV/V
Rated resistance of the bridge	350 Ohm
Max. voltage input	10 V
Activating force	10 - 60 cN
Standard gauge length	10 and 50 mm
Accessories for gauge length	10 to 100 mm
Standard temperature range	+1 °C to +60 °C
Type for temperature chamber	-55 °C to +200 °C
Type for temperature chamber	-70 °C to +280 °C
Weight of the one sided MINI MFA 2	45 g
Weight of the double-side MINI MFA 2	70 g

* The larger values is admissible.

Diameter range for round samples	0 to 25 mm
Thickness range for flat samples	0 to 25 x 25 mm
Cable length	5 m



MINI MFA 2

Hand clamped extensometer



M e s s - & F e i n w e r k t e c h n i k G m b H



P r e c i s i o n t e s t i n g o f l i n e a r s t r a i n

Area of application

The extensometer MINI MFA 2 is suitable for almost all types of samples up to \varnothing 25 mm (or 25 mm x 25 mm) and a gauge length (L_e) of 100 mm. Very high resolution and accuracy allows the determination of the Young's modulus (modulus of elasticity), in addition to the yield point $R_{p0.2}$. The instrument's accuracy exceeds all requirements of the European Norm EN ISO 9513.

The extensometer permits quick and easy examination of a large number of test samples. Its low weight and minimal activating force makes it especially suitable for small and notch sensitive samples. The measurement range amounts to 2 mm in the positive (tensile) direction and 1 mm in the negative (compressive) direction. The large adjustment range of the clamping force allows for the optimal adaptation to the tested material and the sample dimensions. The knife edges are wear resistant and can be utilized several times over by rotating them and thus increasing their life.

Construction and function

The measurement spring is housed in a casing made of high strength aluminium. It is bonded with a temperature-compensated full bridge strain gauge, having a 2 mV/V sensitivity. Mechanical stoppers protect against unintended overloads, even in the case of premature breaking of the sample with the extensometer attached. The MINI MFA 2 has a gauge length L_e of

10 mm. With the basic model an extension arm for L_e 50 mm is provided. Further extension arms for L_e 10 to 100 mm can be supplied giving intermediate lengths. The clamping device of the MINI MFA 2 permits fast and problem free clamping and unclamping. The distance between the standard counter rollers is 30 mm. Special fixtures with roller distances adapted to the chosen L_e can be supplied for very sensitive and small samples. Two MINI MFA can be used with the double clamping device in order to average the strain of a sample. For the double-sided MINI MFA 2 as well as for thin round samples rectangular edges are recommended.

Operation

1. Tighten stopper screw lightly.
2. Open clamping device with thumb and forefinger and place the lower knife edge on the sample first, then the top edge.
3. Carefully release the stopper screw (1/8 turning is enough) without moving the MINI MFA 2 on the sample.
4. The measurement can now be started. After clamping, for measurement in the negative (compressive) direction the stopper screw must be retracted (screwed back) more than the expected extension. The edges, the cover and the clamping device can be disassembled with the supplied star screw driver.

Temperature Chamber

A special model of the MINI MFA 2 can be supplied for tests in the temperature range of + 1 °C to + 200 (-70 to 280) °C.

Delivery Scope

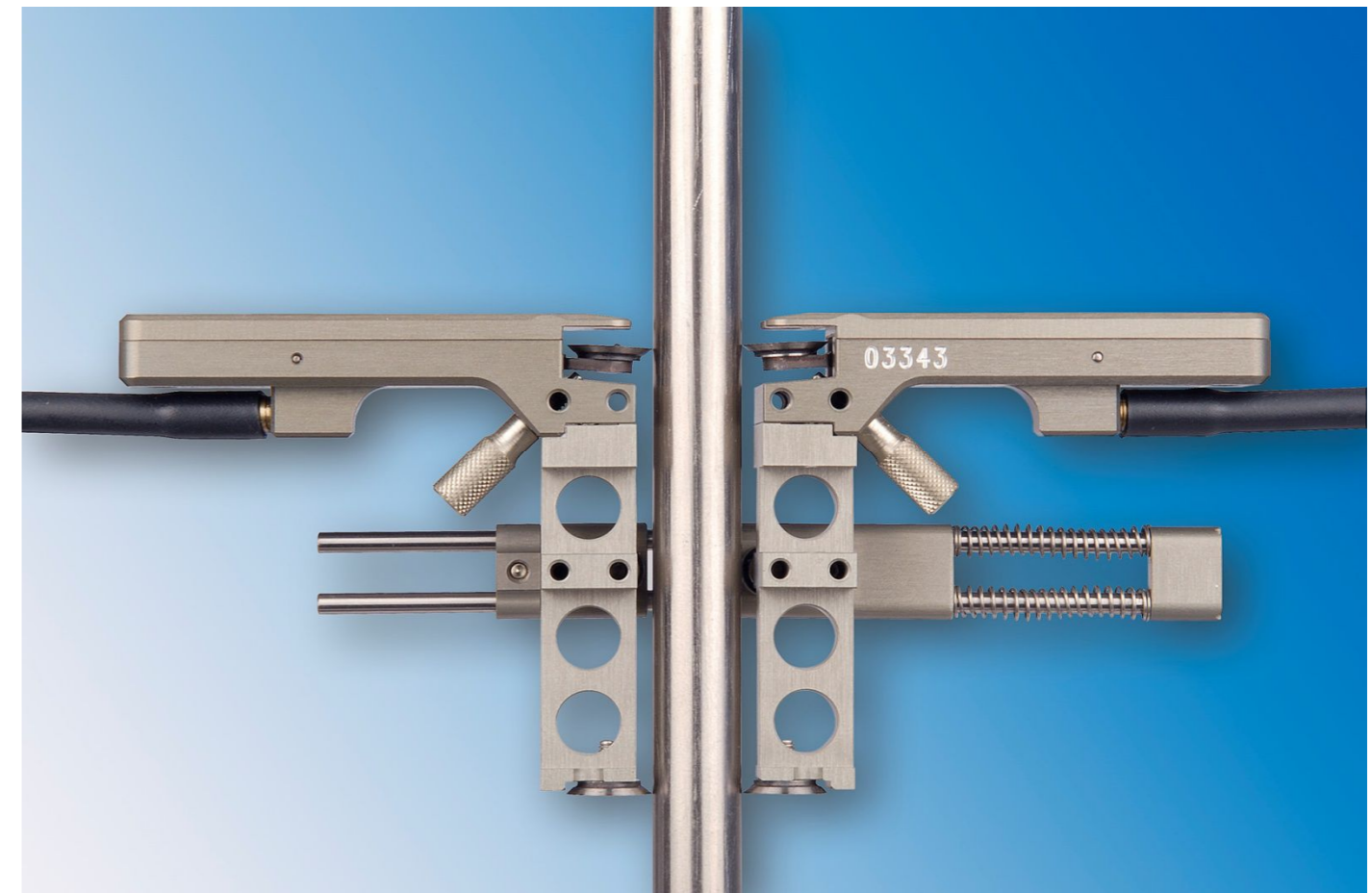
Single-sided extensometer

- 1 MINI MFA 2 with 5 m cable and open end without connector
- 1 Extension arm, L_e 50 mm
- 1 Clamping device with counter rollers 30 mm distance
- 1 Gauge block 1.6 mm
- 2 Spare fastening screws
- 1 star screw driver T8
- 1 Test Specification Sheet
- 1 Storing case

Spare parts and accessories

Single-sided extensometer

- Extension arm, L_e 10 mm to 100 mm (not adjustable)
- Carrier with cylindrical counter rollers 10-100 mm (not adjustable)
- 1 Clamping device
- Round knife edge 9.5 mm
- Rectangular knife edge 6 x 9.5 mm
- Fastening screw M2.5 x 3 T8 for upper edge
- Screw M2.5 x 6 T8 for lower measuring edge



Picture 2: Mini MFA 2 double-sided extensometer

Delivery Scope

Double-sided extensometer

- 2 MINI MFA 2 with 5 m cable and open end without connector
- 2 Extension arm, L_e 50 mm
- 1 Double clamping device
- 2 Gauge blocks 1.6 mm
- 3 Spare fastening screws M2.5 T8
- 1 star screw driver T8
- 1 Test Specification Chart
- 1 Storing case

Spare parts and accessories

Double-sided extensometer

- Extension arm pair for double-sided MINI MFA 2
- Carrier with cylindrical counter rollers (30 mm distance from centre to centre) for clamping of only one MINI MFA 2
- Round measuring edge 9.5 mm
- Rectangular measuring edge 6 x 9.5 mm
- Fastening screw M 2.5 x 3 T8 for upper edge
- Screw M 2.5 x 6 T8 for lower edge
- Clamping device

Equalisation with standard accessories

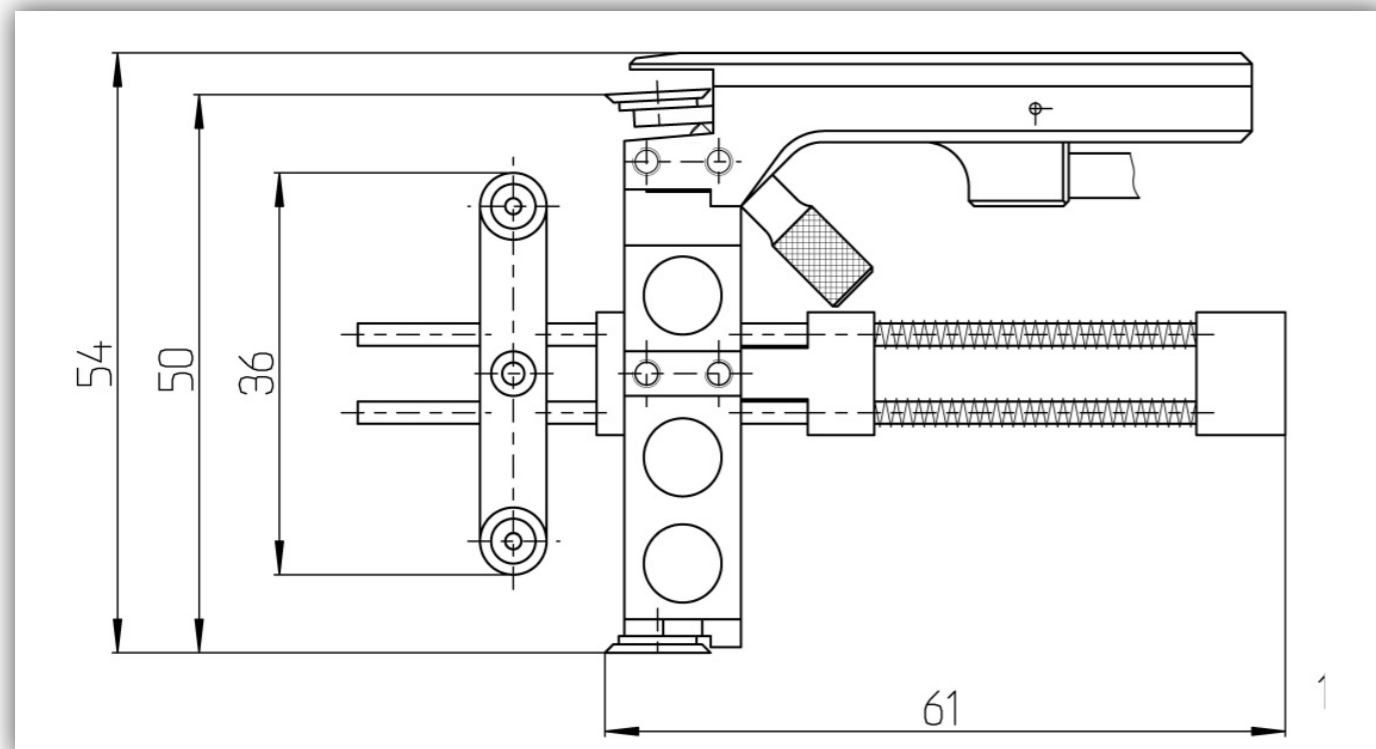
1. The measurement spring of the MINI MFA 2 must rest on the lightly tightened stopper screw.
2. The measurement amplifier is set to zero in this position of the measurement spring.
3. The 1.6 mm gauge block is now inserted between the measurement spring and the stopper screw. Care has to be taken, so that the gauge block lies horizontally on the measurement spring and does not touch the casing of the MINI MFA 2.
4. The strain gauge amplifier is set to its full range value in this position of the measurement spring. The exact value is given in the test specification chart provided

with each instrument. (Example: The deflection resulting from the 1.6 mm gauge block between the measurement spring and the stopper screw is 2.0549 mm = 10.27 V. Thus the deflection of 2.000 mm corresponds to 10.00 V)

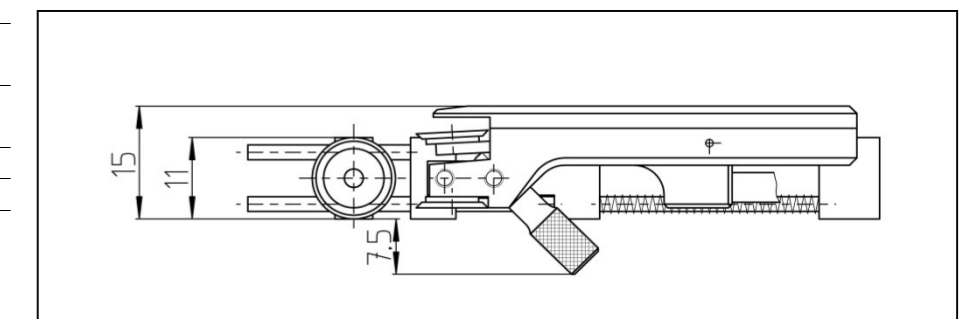
5. Repeat points 1 to 4 and readjust the amplifier if necessary.

Recommendation

For more demanding requirements on calibration, the following instruments are recommended. KMF 3 for sensitivity calibration. KMF 100 for sensitivity calibration and linearity check.



Picture 1: Mini MFA with L_e 50



Picture 3: Mini MFA 2 with L_e 10 and special clamping device with one counter roller \varnothing 10 mm