

Automatic Averaging Transverse Strain Extensometer Series MFQ-A

Designed for productive measure of plastic strain ratio (r-value) for steel according to ISO 10113, ASTM E517, JIS z 2254 and other international standards. The automatic MFQ-A transverse extensometer is well suited for companies which need increased specimen throughput to maximize efficiency as this unit reduce time-consuming steps of traditional clip-on transverse extensometers.

The MFQ-A can be fully integrated into the automatic extensometers model MFL and MFX.



Key Features

- Automatic operation by pneumatic cylinders allow to retract, remove the unit out of the test space, move it into test space and automatic contact with the specimen utilising a pneumatic sled.
- Suitable for testing of thin sheet metals starting with 0.2 mm thickness
- Standard configurations meet ISO 9513 class 0,5 and ASTM E83 class B-1 requirements for accuracy.
- May be left on through specimen failure
- Average measuring system
- Weight compensated measuring locations
- Maintaining of the position of the measuring points during the tension test through a smooth-running guide rail system.

Technical Data:

Transverse Extensometer Series	MFQ-A
Accuracy class EN ISO 9513	0.2 supplied with certificate class 0.5
Measuring principle	Two DMS-full bridge, wired parallel (optional with 3 measuring systems)
Nominal measuring travel	4 mm (6 or 10 mm optional available)
Indication error (v.A.)*	0.2 %
Indication error*	0.6 µm
Full range error	0.05 %
Sensitivity	2 mV/V
Pressure of the measuring pins	2N
Pressurised air consumption	ca. 1 l / min
Pneumatic working pressure	ca. 4 bar
Specimen widths	12.5 mm, ½», 20, 25, ½», 30 mm (other dimensions upon request)
Specimen thickness	0.2 – 10 mm (optional 0.1 – 20 mm)
Specimen dimensional tolerance B ₀	+/- 0.2 mm
Weight	2.0 kg

*The larger value is permitted.



Design and Function

The MFQ-A is equipped with two measuring clamps, forming the average value of two separate measuring locations. They are weight-compensated and mounted in smooth-running guides. The distance of the measuring clamps is 30 mm at the start of the measurement. Optionally, this distance can be reduced to a minimum of 12,5 mm.

The two measuring arms apply the lateral change to the measuring springs with their integrated full bridge strain gauges. Pneumatic cylinders allow to retract and swing them out of the way. The position of the measuring arms remains constant during the equally applied extension of the specimen. The position of the measuring arms remains stationary relative to the specimen during the uniform elongation. The measuring arms are always dragged together with the specimen, so that neither parallel errors, nor surface roughness will spoil the measurement. The pressing force of the measuring arms is very faint, and a hinge mechanism with all degrees of freedom lines itself up very gently, therefore very thin sheet metal, down to 0.2 mm can be measured.

The MFQ-A is automatically brought into contact with the specimen utilising a pneumatic sled. When uniform stretching is completed, this movement is reversed, to swing the unit out of the way. An electronic controller board drives the MFQ-A, either directly, from the PC or by the control electronics of the MFL, using a relay. Alternatively, controlling may also be done utilising pushbuttons.

It is quite easy to take MFQ-A off the instrument in a few moments, for example if it is not being used during tests that generate large amounts of contamination. The signals of the two measuring clamps can be taken out separately as well in order to detect parallel discrepancies.

Operation:

Using their universal mounting profiles, the two measuring clamps of the MFQ-A can be aligned to the centre of the specimen and to the B0-position easily and fast. The end-stops for the differences in initial width of the specimen B0 are comfortably exchangeable without any tools.

Important Note

This extensometer can be used with automatic extensometers MFL, MFX and axial clip-on extensometer MFA series.

Delivery Scope:

- 1 MFQ-A- guide rail system with 2 measuring clamps
- 1 attaching profile system
- 1 MFQ-A-control unit
- 1 MFQ-A- wall-plug power source
- 1 input plugs X4 for manual or PC controlling
- 1 Signal output plug X1 / X2 for strain gauge measuring bridge
- 6 Meters of pneumatic pipe Festo 4,3
- 1 Pneumatic clutch
- 2 Gauge blocks for calibration (according to the measuring distance)
- 1 Angular screwdriver Torx T8
- 1 Measurement protocol

Calibration of MFQ-A

Gauge blocks for calibration of the sensibility are included in the delivery scope of the MFQ-A. This allows to align the zero point using the 16,5 mm gauge block, and the nominal sensitivity of the amplifier using the 20,5 mm gauge block.

MFQ-A with Extensometer MFL:

