

## **MFN-A-L** **COLUMN EXTENSOMETER with 2 travel** **(4mm and 800mm)**

### **Area of application**

The extensometer MFN is in a modular design. Therefore can be chosen for each application.

The MFN-A offers both a small and a large measuring range. With the smaller range (4 mm) highest measurement accuracy is achieved. All requirements of the European Standard EN ISO 9513 are exceeded. The MFN-A is highly suitable for determining the Young's Modulus and for recording fracture elongation of  $L_0 + \Delta L = 800$  mm.

### **Design and function**

The measuring heads with the attached measuring arms are guided in parallel and move play-free between two chrome plated columns. No errors arise due to change in the angle of the arms and due to tilting of the knife edges on the sample as is the case in a simple setup with rotating measuring arms. An easily movable parallel swing plate compensates alignment errors and slanting pull between the machine and the MFN. It is mounted to the base of the MFN and no force is transferred on to the sample.

### **Short measuring travel (until 4 mm)**

A measuring spring bonded with a full bridge strain gauge is housed in the upper right measuring arm. Its deflection results from the measuring pin of the lower arm along the line passing through the "knife edge and sample centre". A close positioning of the measuring system to the sample makes measurement accuracy possible which is otherwise only achievable through hand-clamped extensometers directly attached to the sample. Measuring pins required for different  $L_0$  may be changed easily and quickly (standard accessory is a 50 mm pin).

### **Long measuring travel (until $L_0 + \Delta L = 800$ mm)**

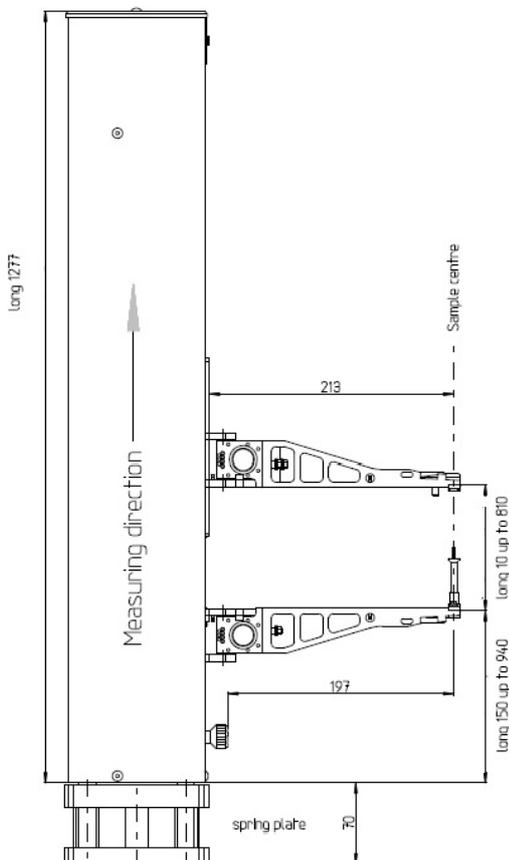
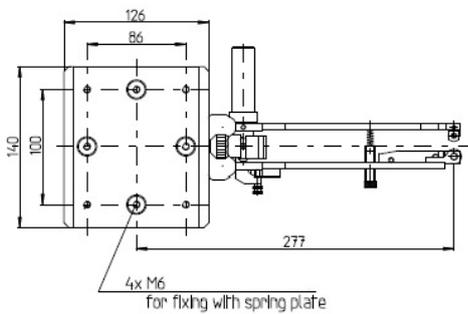
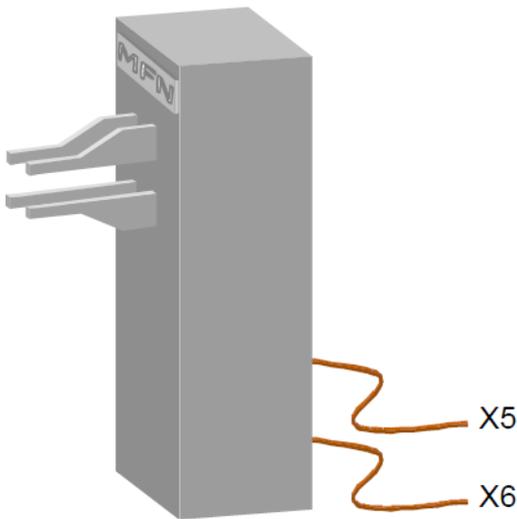
The large measuring range is instrumented by a 5 kOhm potentiometer made of a conducting polymer specially tailored for use in metrology. By means of teflon slides an especially low friction movement of only 20 cN is obtained. With an inbuilt measurement amplifier the difference in the slide voltage is converted to an output in the selectable ranges +10 V...-10 V or 0 V...+10 V.

### **Manual operation**

In the manual version of the MFN the measuring arms must be opened, closed and pushed to the  $L_0$  stop by hand. The  $L_0$  stop snaps in the  $L_0$  range 10 to 30 mm in 5 mm steps and from  $L_0$  30 to 100 mm in 10 mm steps.

### **Supplied with :**

- 1 Measuring pin  $L_0$  50 mm
- 1 Spanner 5.5 / 7 mm
- 1 Screw driver TORX T10
- 2 Gauge discs 2 mm
- 1 Gauge rod for large travel
- 1 Connector for cable X6
- 1 Connector for cable X5 (not for MFN- A-D)
- 1 Hook
- 1 Hexagon key 2.5 mm



### Technical data

Short measuring travel  
 Accuracy class EN ISO 9513 : 0.2  
 Measurement principle full bridge strain gauge Travel 4 mm  
 Activating force 80 cN  
 Indication error (v. A.)\* 0.20 %  
 Error in linearity 0.06 %  
 Indication error\*  $\leq 0.6 \mu\text{m}$   
 Standard gauge length 50 mm

### Special Accessories for gauge lengths

$L_0 = 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100,$   
 on request 250 mm  
 Error in gauge length 50  $\mu\text{m}$

Rated resistance of the bridge 350 Ohm  
 Sensitivity 2 mV/V  
 Recommended voltage supply 1-6 V / 5 kHz  
 Maximum sample thickness 30 mm  
 Maximum sample width 70 mm  
 Maximum sample diameter 30 mm  
 Other dimensions on inquiry

### Long measuring travel / analog MFN-A and MFN-B

Accuracy class for a path  $> 4 \text{ mm}$  1  
 Measurement principle potentiometric  
 Long travel 800 mm  
 Activating force 20 cN  
 Indication error (v. A.) for a path  $> 4 \text{ mm}^* 1 \%$   
 Error in linearity 0.025 %  
 Indication error\* 40  $\mu\text{m}$   
 Standard gauge lengths 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 mm

### Optional Gauge length up to 250 mm on request

Error in gauge length 50  $\mu\text{m}$   
 Output voltage range 0...+10 V or +10...-10 V  
 Required voltage supply +/- 15 V stabilized  
 Maximum sample thickness 30 mm  
 Maximum sample width 70 mm  
 Maximum sample diameter 30 mm  
 Other dimensions see Accessories  
 Weight approx. 19 kg

\*The larger value is admissible

ACCESSORIES:

**MFN-A-L-10**

Pin base measure L0 = 10 mm

**MFN-A-L-15**

Pin basic measure L0 = 15 mm

**MFN-A-L-20**

Pin basic measure L0 = 20 mm

**MFN-A-L-25**

Pin basic measure L0 = 25 mm

**MFN-A-L-30**

Pin basic measure L0 = 30 mm

**MFN-A-L-40**

Pin basic measure L0 = 40 mm

**MFN-A-L-50**

Pin base measure L0 = 50 mm

**MFN-A-L-60**

Pin basic measure L0 = 60 mm

**MFN-A-L-70**

Pin base measure L0 = 70 mm

**MFN-A-L-80**

Pin basic measure L0 = 80 mm

**MFN-A-L-90**

Pin basic measure L0 = 90 mm

**MFN-A-L-100**

Pin basic measure L0 = 100 mm

**MFN-A-L-EXT-ARMS**

Extension arm length +75 mm

**MFN-A-L-EXT-OPEN**

Maximum sample thickness : 40 mm

Maximum width of sample : 70 mm

Maximum diameter of the sample : 40 mm

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