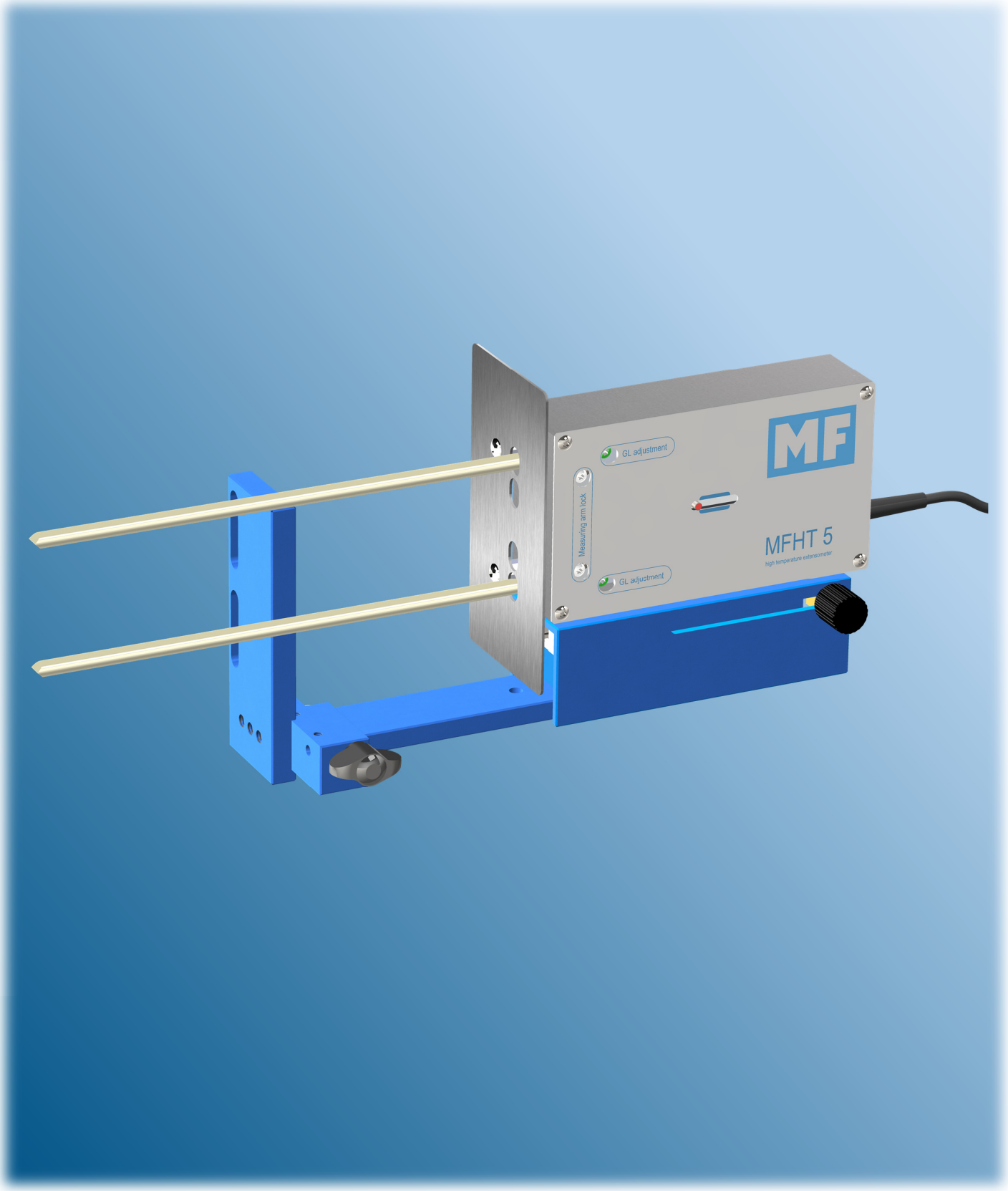
Mess- & Feinwerktechnik GmbH



MFHT 5

Extensometer for high temperature tensile tests

Area of application

The MFHT 5 has been conceived as a highly accurate, sturdy measuring device for hot tensile tests in a folding furnace.

The measuring precision meets the requirements of the ISO 9513 class 0.5.

2 initial gauge lengths are offered as standard. GL 25 mm and GL 50 mm can be adjusted quickly and fast by turning over the feeler arms. Due to its extremely low activating force, the unit enables the testing of highly sensitive samples which permits only the lowest surface pressures

Design and function

In a housing of anodized, high strength aluminum alloy 2 levers with play free tensioned ball bearings hold the feeler arms on rotating points. By means of these levers a strain gauge measuring spring will be activated. Due to this arrangement only forces from the tensile level of the sample are transmitted to the measuring spring. Tension springs press the feeler arms gently against the sample. When clamping the feeler arms both GL limit stops will be automatically released prior to measuring in order to prevent the application of preload force to the feeler arms.

An optional slide-in unit will perform a quick clamping to the furnace as well as a smooth and gently driving of the feeler arms towards the sample.

Varying sample diameters, the reduction of the cross section and possibly existing faulty alignment are compensated for by a high precision parallel guide which is free from float.

Operating Instructions

The MFHT offers 2 initial gauge lengths (25 and 50 mm). Depending on the desired initial gauge length, the feeler arms either have to be in-serted into the MFHT 5 housing through the inner bores (GL 25 mm) or the outer bores (GL 50 mm) of the heat protecting shield.

Therefore the clamping screws **"A"** have to be unlocked approximately one turn, by using the Torx T10 screw-driver (standard accessory).The feeler arms have to be inserted into the MFHT housing to their mechanical stop, at the same time, care has to be taken, that the shapes of the feeler arms are in a horizontal position. Finally, the clamping screws **"A"** have to be pulled tight moderately.

Note:

All settings on the MHFT 5 have to be done in measuring position, but unclamped to a sample.

Gauge length-Setting

After the correct mounting of the feeler arms the initial gauge length can be adjusted accurately. Therefore the MFHT 5 has to be in the measuring position and the screw Torx T10 **"B"** has to be unlocked. The upper feeler arm can be adjusted now.

Now put the adjusting tool with the 90° groove on the feeler arms and tighten the screw **"B"**. The setting has to be checked again. With the correct setting, the GL should now be 25 mm respectively 50 mm (+/- 0.1 mm).

Installation on the furnace

In order to install the device on the furnace, the furnace fixing plate **„H"** as well as connecting part **„I"** have to be fixed to the corresponding plate on the furnace.

Afterwards the guidance **„F"** incl. the guiding pins has to be pushed forwards manually.

Now, the MFHT 5 device incl. the guidance **„F"** has to be fixed to the connecting part **„I"** by means of the two guiding pins and finally has to be fastened with lever **„E"**.

Touching the sample

After attachment of the MFHT 5 incl. its slide-in unit (blue parts) on the furnace, the feeler arms can be attached to the sample. Therefore the MFHT 5 has to be moved gently to the sample by means of the guidance, so that the red indicator „C" becomes placed approximately central with respect to the marks (depending on sample crosssection). In this position the stop „D" has to be fixed left leveled. This setting is usable for further attachments with similar sample diameters without a new alignment.

Attention:

Do not operate the MFHT 5 without heat shield protector!

Delivery scope

1	MFHT 5
1	Screwdriver TORX T10
1	Gauge length adjusting tool
1	Test report

Spare parts and accessories

Ceramic feeler arms 220 mm
Other cermic feeler arms lengths on request*
Slide-in unit for the furnace

Optional device version

Steppless GL-adjustment 10-60 mm

***By a change of ceramic feeler arms with other lenght, the sensitivity has to be corrected as well.**

Additional instruction for the stepless version of the MFHT 5

The attachment of the feeler arms has to take place in a similar way as with standard MFHT 5.

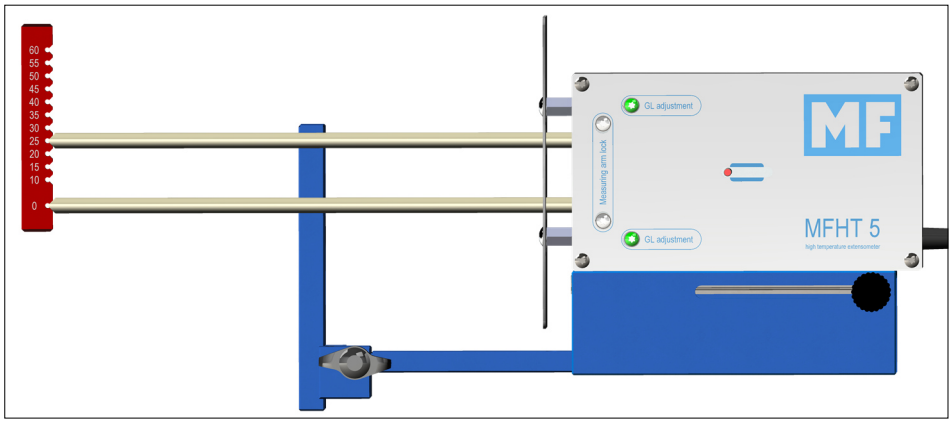
For gauge lengths of 10 to 35 mm the feeler arms have to be inserted into the inner holes whereas for gauge lengths from 40 to 60 mm, into the outer holes of the MFHT 5 housing. The feeler arms must be attached and aligned in the same way as with standard MFHT 5.

The setting of the gauge length has to be done by means of the V-shaped adjusting tool. Therefore both "GL adjustment"-screws have to be unlocked slightly, so that both feeler arms can turn freely. Now the V- shaped feeler arms have to be fixed into the V-shaped grooves of the adjusting tool by pushing the it slightly against the feeler arms by hand. (See picture 2).

Important: Care has to be taken not to push the feeler arms back against their spring tension, otherwise the exact setting of the gauge length is not possible.

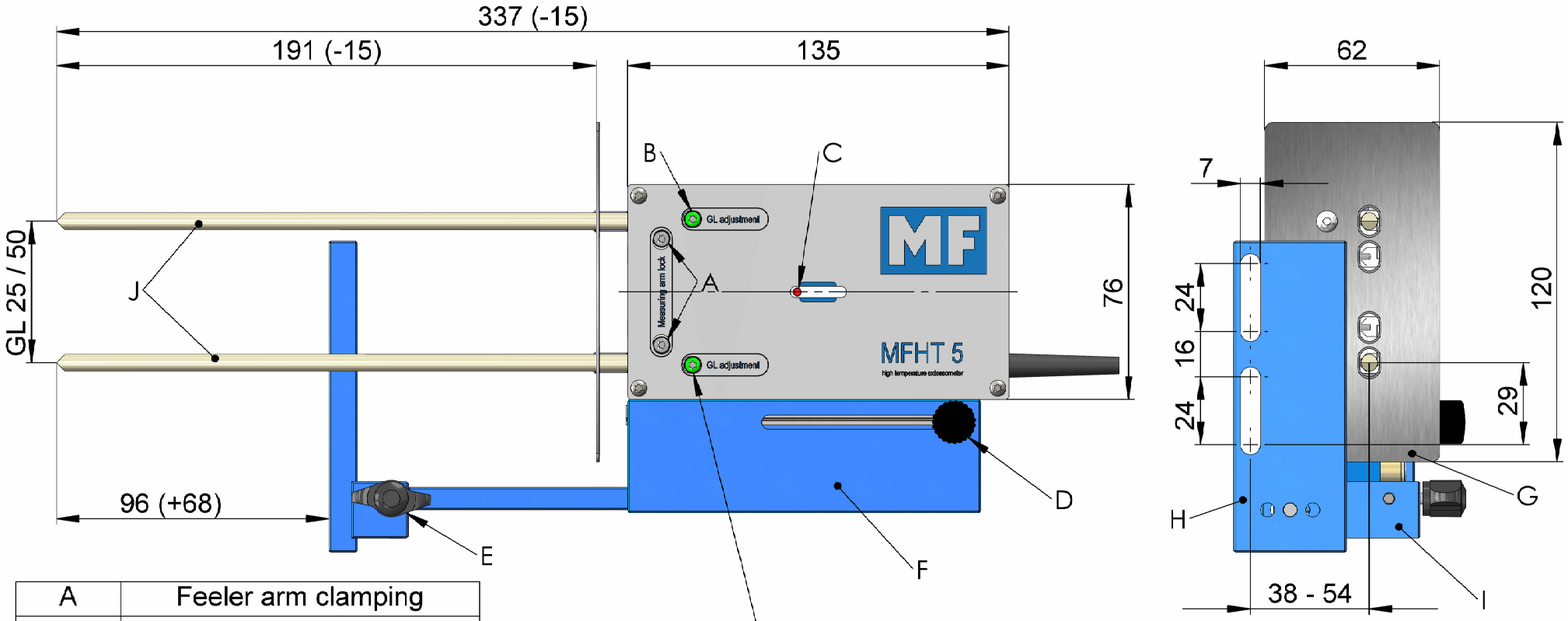
In this position ,the adjusting tool, with the fixed feeler arms can be moved up- and downwards parallel towards the inner stops of the feeler arms. The position of the feeler arms should be approximately symmetric to their stops.

In this position the "GL adjustment"-screws have to be fixed slightly.



Picture 2: MFHT 5 with stepless gauge length adjusting tool

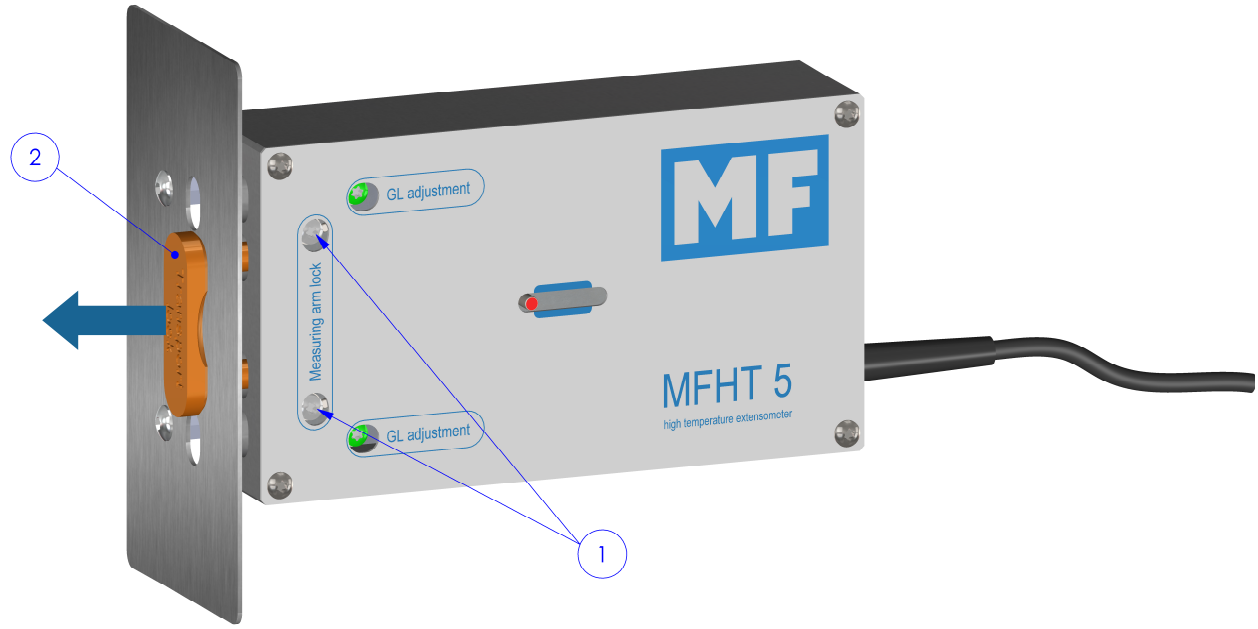
Drawing 1: MFHT 5 dimensions



A	Feeler arm clamping
B	Gauge length - adjustment
C	Indicator pin
D	Stop screw
E	Clamping screw for slide attachment
F	Guidence
G	Heat protection shield
H	Furnace fixing plate
I	Connecting part for furnace fixture (adjustable sideways)
J	Feeler arm (220 mm)

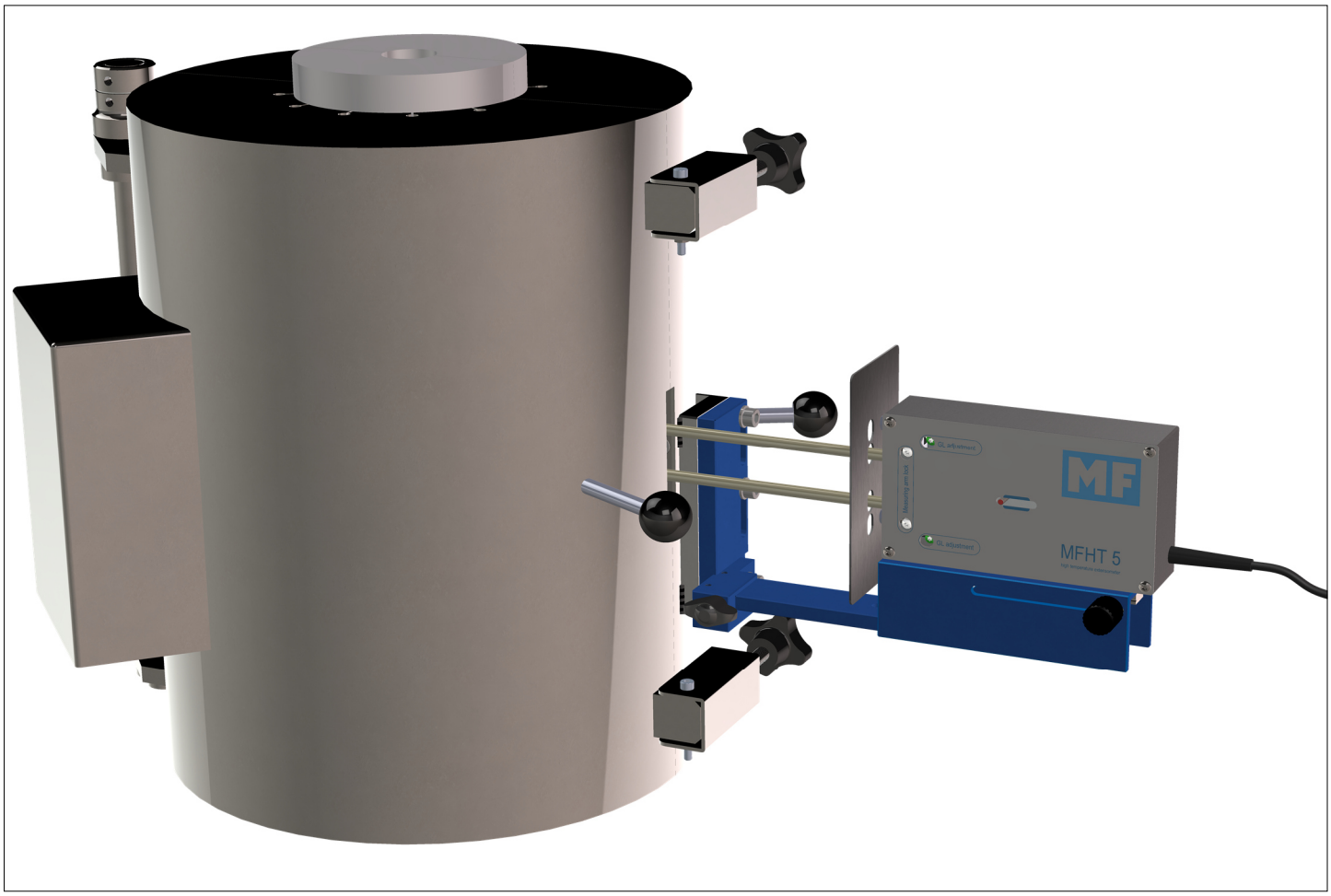
MFHT 5 in set-off condition (scale 1:2)

Removing the transport lock



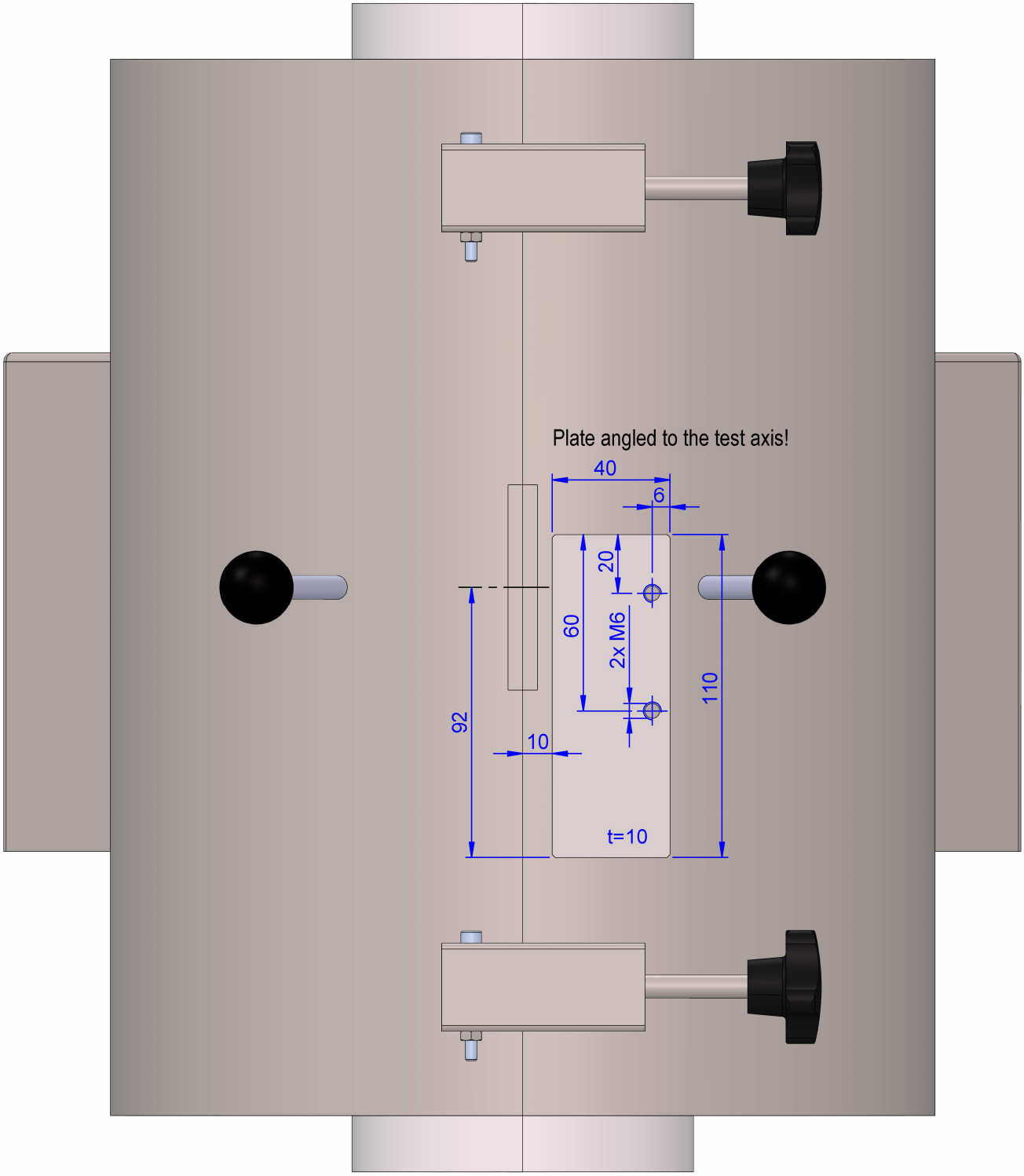
1. Unloose with the T10 Screwdriver counterclockwise the both screws marked with ①
2. Remove the plastic transport part ②
3. Enclose the plastic transport part ② to the other accessories for using it again in case of a necessary transport

Picture 4: Description of transport lock



Picture 5: Example of MFHT 5 on a round furnace

Mounting example on a round furnace (front view).
Position of the adapter plate in relation to the furnace cut-out for the feeler arms



Drawing 2: Mounting example

Technical data	MFHT 5
Accuracy class according EN ISO 9513	0.5
Measurment principal	Strain-gauge full bridge
Travel	± 5 mm
Activating force	≈ 10 cN
Contact pressure on the sample	≈ 200 cN
Initial gauge lengths	25 mm and 50 mm
Nominal sensitivity	2 mV/V
Recommended voltage supply	Max 10 V (kHz)
Standard feeler arms	Ceramic (Al23) up to 1700 °C
Weight	0.7 kg
Weight with clamping device	1.2 kg