



**Mechanical force gauge**

**FA**



PROFESSIONAL MEASURING

**Original version**

**Operating instructions for mechanical force gauge**

Version 1.0  
2025-07  
en  
FA-BA-en-2510

**de**

Weitere Sprachversionen  
finden Sie online unter

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**fr**

Vous trouverez d'autres  
versions de langue online  
sous

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**bg**

Други езикови версии ще  
намерите в сайта

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**el**

Άλλες γλωσσικές αποδόσεις  
θα βρείτε στην ιστοσελίδα

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**hr**

Druge jezične verzije su  
dostupne na stranici :

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**lv**

Citas valodu versijas  
atradīsiet vietnē

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**pt**

Encontram-se online mais  
versões de línguas em

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**sl**

Druge jezikovne različice na  
voljo na spletni strani

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**en**

Further language versions  
you will find online under

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**it**

Trovate altre versioni di  
lingue online in

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**cs**

Jiné jazykové verze najdete  
na stránkách

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**et**

Muud keeleversioonid leiata  
Te leheküljel

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**hu**

A további nyelvi változatok a  
következő oldalon  
találhatók:

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**nl**

Bijkomende taalversies vindt  
u online op

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**ro**

Alte versiuni lingvistice veți  
găsi pe site-ul

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**sv**

Övriga språkversioner finns  
här

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**es**

Más versiones de idiomas  
se encuentran online bajo

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**pl**

Inne wersje językowe znajdują  
Państwo na stronie

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**da**

Flere sprogudgaver findes  
på websiden

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**fi**

Muut kieliversiot löytyvät  
osoitteesta

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**lt**

Kitas kalbines versijas rasite  
svetainėje

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**no**

Andre språkversjoner finnes  
det på

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)

**sk**

Iné jazykové verzie nájdete  
na stránke

[www.kern-  
sohn.com/manuals](http://www.kern-sohn.com/manuals)



**SAUTER GmbH**

Ziegelei 1  
72336 Balingen-Frommern  
Germany



+0049-[0]7433-9933-0



info.sauter@kern-sohn.com



[www.sauter.eu](http://www.sauter.eu)



**SAUTER**

## SAUTER FA

### Operating instructions for mechanical force gauge

Version 1.0 2025-07 english

#### Table of contents:

|           |  |           |
|-----------|--|-----------|
| <b>1</b>  | <b>Technical .....</b>                                     | <b>2</b>  |
| 1.1       | Technical data FA with internal load cell up to 500N ..... | 2         |
| <b>2</b>  | <b>Declaration of Conformity .....</b>                     | <b>3</b>  |
| <b>3</b>  | <b>Overview of the device.....</b>                         | <b>4</b>  |
| 3.1       | Scope of delivery .....                                    | 4         |
| 3.2       | Components .....   | 4         |
| 3.3       | Dimensions .....   | 5         |
| <b>4</b>  | <b>Basic information (general) .....</b>                   | <b>6</b>  |
| 4.1       | Intended use .....   | 6         |
| 4.2       | Improper use .....   | 7         |
| 4.3       | Warranty .....   | 7         |
| <b>5</b>  | <b>Basic warnings and safety instructions.....</b>         | <b>8</b>  |
| 5.1       | Observe the instructions in the operating manual .....     | 8         |
| 5.2       | Staff training .....                                       | 8         |
| 5.3       | Safety.....  | 8         |
| <b>6</b>  | <b>Transport and storage .....</b>                         | <b>10</b> |
| 6.1       | Note .....   | 10        |
| 6.2       | Transport .....  | 10        |
| 6.3       | Storage .....  | 10        |
| 6.4       | Packaging/return transport .....                           | 10        |
| <b>7</b>  | <b>Unpacking and commissioning .....</b>                   | <b>11</b> |
| 7.1       | Unpacking.....   | 11        |
| <b>8</b>  | <b>Operation.....</b>                                      | <b>12</b> |
| 8.1       | Changing the measurement mode .....                        | 13        |
| 8.2       | Zeroing .....  | 14        |
| 8.3       | Measurement by hand or in the assembled state .....        | 15        |
| <b>9</b>  | <b>Scope of delivery .....</b>                             | <b>16</b> |
| <b>10</b> | <b>Maintenance, servicing, and disposal.....</b>           | <b>17</b> |
| 10.1      | Cleaning .....   | 17        |
| 10.2      | Maintenance and repair.....                                | 17        |
| 10.3      | Disposal.....  | 17        |

# 1 Technical

## 1.1 Technical data FA with internal load cell up to 500N

| Model                           | FA 5                              | FA 10    | FA 20    | FA 50    | FA 100    | FA 200    | FA 500    |
|---------------------------------|-----------------------------------|----------|----------|----------|-----------|-----------|-----------|
| Type                            | TFA 5-B                           | TFA 10-B | TFA 20-B | TFA 50-B | TFA 100-B | TFA 200-B | TFA 500-B |
| Capacity                        | 5N                                | 10N      | 20N      | 50N      | 100N      | 200N      | 500N      |
| Resolution                      | 0.05N                             | 0.1N     | 0.15N    | 0.25N    | 0.5N      | 1N        | 2.5N      |
| Measurement uncertainty         | ±1% of max (measuring range)      |          |          |          |           |           |           |
| Operating temperature           | 10°C to 40°C                      |          |          |          |           |           |           |
| Max. travel                     | 10 mm                             |          |          |          |           |           |           |
| Weight                          | Approx. 600 g                     |          |          |          |           |           |           |
| Dimensions Display unit (LxWxH) | 234x66x53mm                       |          |          |          |           |           |           |
| Thread                          | M6                                |          |          |          |           |           |           |
| Accessories                     | Standard attachments, 5-piece set |          |          |          |           |           |           |

## **2 Declaration of Conformity**

The current EC/EU Declaration of Conformity can be found online at:

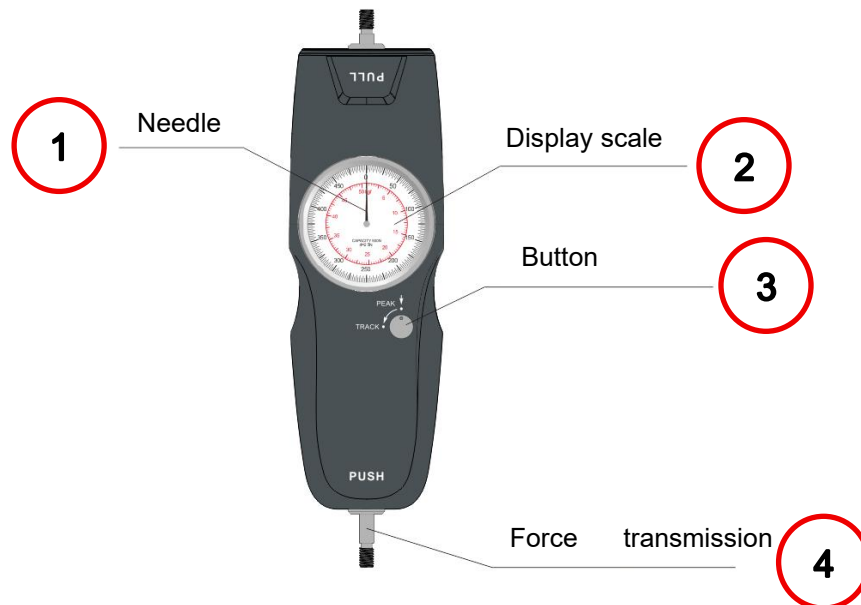
<https://www.kern-sohn.com/shop/de/DOWNLOADS/>

### 3 Overview of the device

#### 3.1 Scope of delivery

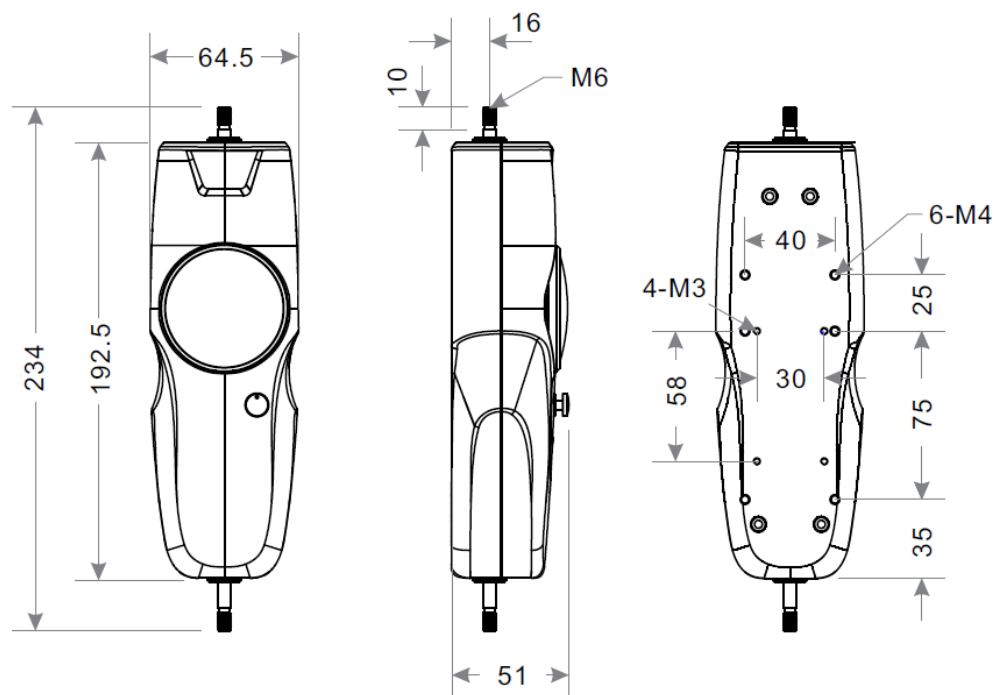
- FA
- Operating instructions
- 4x M3x12 screws for attachment to Sauter test benches
- Standard attachment, 5-piece

#### 3.2 Components



|   | Description            | Function                             |
|---|------------------------|--------------------------------------|
| 1 | Dial gauge needle      | Displays the force value             |
| 2 | Display scale          | Scale in N & kg                      |
| 3 | Button                 | Change measurement mode Track & Peak |
| 4 | Force application bolt | For adapting attachments             |

### 3.3 Dimensions




## 4 Basic information (general)

This operating manual uses warning notices to alert you to possible personal injury or property damage in certain situations.

| Signal word    | Description  |
|----------------|--|
| <b>DANGER</b>  | Failure to observe this warning will result in serious injury, permanent impairment (e.g., loss of a limb), or death of the user or third parties. |
| <b>WARN</b>    | Failure to observe this warning may result in serious injury, permanent disability (e.g., loss of a limb), or death of the user or third parties.  |
| <b>CAUTION</b> | Failure to observe this warning may result in minor injury or temporary impairment to the user or third parties (e.g., minor cuts).                |
| <b>NOTE</b>    | Failure to observe this warning may result in property damage.   |

### Symbols in warning notices :

| Symbol  | Meaning  |
|---|--|
| <b>Warning signs</b>  | Warning signs warn you of hazards that could potentially cause personal injury. The symbol indicates the type of hazard. |
|  | Indicates general hazards or a hazardous location  |

### 4.1 Intended use

Use the device exclusively for measuring tensile and compressive forces within the measuring ranges specified in the technical data.

To use the device as intended, only use accessories or spare parts that have been tested by SAUTER. SAUTER offers optional software and accessories to make the measuring device more versatile. Please contact SAUTER or your SAUTER supplier, or visit our website [at www.sauter.eu](http://www.sauter.eu).



## **4.2 Improper use**

Do not use the measuring device for medical weighing.

Do not use the device in potentially explosive areas or for measurements in liquids and on live parts.

Unauthorized structural modifications, additions, or conversions to the device are prohibited.

## **4.3 Warranty**

The warranty shall be void in the event of

- failure to observe our specifications in the operating instructions
- Use outside the described applications
- Modification or opening of the device
- Mechanical damage and damage caused by media, liquids, natural wear and tear
- Improper installation
- Overloading the measuring mechanism

## 5 Basic warnings and safety instructions

### 5.1 Observe the instructions in the operating manual



Read the operating instructions carefully before commissioning/using the device, even if you already have experience with SAUTER devices. Always keep the instructions in the immediate vicinity of the device.

### 5.2 Staff training

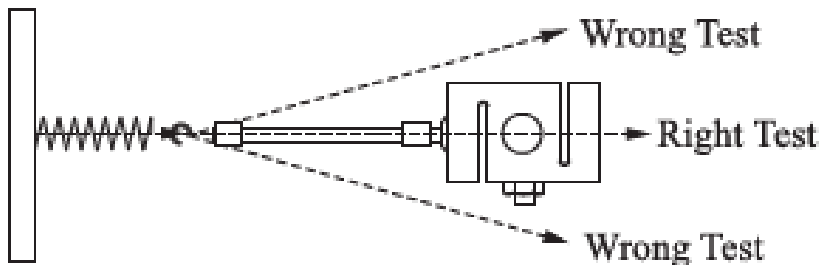
The device may only be used by persons who have read and understood the operating instructions, in particular the chapter on safety.

### 5.3 Safety

Incorrectly performed force measurements can lead to serious injury to persons and damage to objects and may therefore only be carried out by trained and experienced personnel.

In particular, forces exceeding the maximum load (Max) of the purchased measuring device or forces not acting axially on the device via the external force measuring cell must be avoided, as must high impulse forces acting on the measuring device.

Avoid twisting the force measuring cell, as this could damage it and, in any case, reduce the measuring accuracy.



Please prevent the measuring device from being overloaded beyond the specified maximum load (Max), minus any tare load that may already be present. This can damage the measuring device (risk of breakage!).

### **⚠ WARNING**



#### **Read all safety instructions and directions.**

Failure to comply with the safety instructions and directions may result in electric shock, fire, and/or serious injury.

#### **Keep all safety instructions and instructions for future reference.**

- Ensure that there are never any people or objects under the load, as they could be injured or damaged!
- The measuring device must not be modified in any way. This can lead to incorrect measurement results, safety defects, and destruction of the measuring device.
- Do not operate the device in potentially explosive rooms or areas, and do not set it up there.
- Do not operate the device in aggressive atmospheres.
- Do not immerse the device in water. Do not allow liquids to penetrate the interior of the device.
- The device may only be used in a dry environment and under no circumstances in rain or at a relative humidity above the operating conditions.
- Protect the device from constant direct sunlight.
- Do not expose the device to strong vibrations.
- Do not remove any safety signs, stickers, or labels from the device. Keep all safety signs, stickers, and labels in a legible condition.
- Do not open the device.

### **⚠ WARNING**



#### **Risk of suffocation!**

Do not leave the packaging material lying around carelessly. It could become a dangerous toy for children.

- The device is not a toy and should be kept out of the reach of children.
- This device can be dangerous if used improperly or for purposes other than those intended by untrained persons! Observe the personnel qualifications!

### **CAUTION**

Keep a sufficient distance from heat sources.

### **! NOTE**

- To avoid damage to the device, do not expose it to extreme temperatures, extreme humidity, or moisture.
- Do not use harsh cleaners, abrasives, or solvents to clean the device.

## **6 Transport and storage**

### **6.1 Note**

Improper storage or transport of the device may result in damage. Please observe the information on transporting and storing the device.

### **6.2 Transport**

Use the foam insert included in the scope of delivery to transport the device in order to protect it from external influences.

### **6.3 Storage**

When not in use, store the device under the following conditions:

- dry and at room temperature ( ) protected from frost and heat
- storage temperature corresponds to the technical data

### **6.4 Packaging/return transport**

Returns are only possible within the limits of the general terms and conditions. Keep all parts of the original packaging for any necessary return transport.

- Only use the original packaging for return transport.
- Disconnect all connected cables and loose/movable parts before shipping.
- Secure all parts against slipping and damage.

## **7      Unpacking and commissioning**

### **7.1    Unpacking**



In the event of a return, please observe the instructions in the chapter "Packaging/Return Transport."

---

Upon receipt of the device, you should check in advance that no transport damage has occurred and that the outer packaging, the housing, other parts, or even the device itself have not been damaged. If any damage is apparent, please notify SAUTER GmbH immediately.

## 8 Operation

A wide variety of measuring head adapters are included in the scope of delivery to perform a wide range of measurements. The measuring heads are mounted by hand, without tools. Do not use a deformed or damaged measuring head.

**Pull test:** Select the hook and mount it on the connection marked **PULL**.

**Push test:** Select the pressure attachment and mount it on the connection marked **PUSH**.

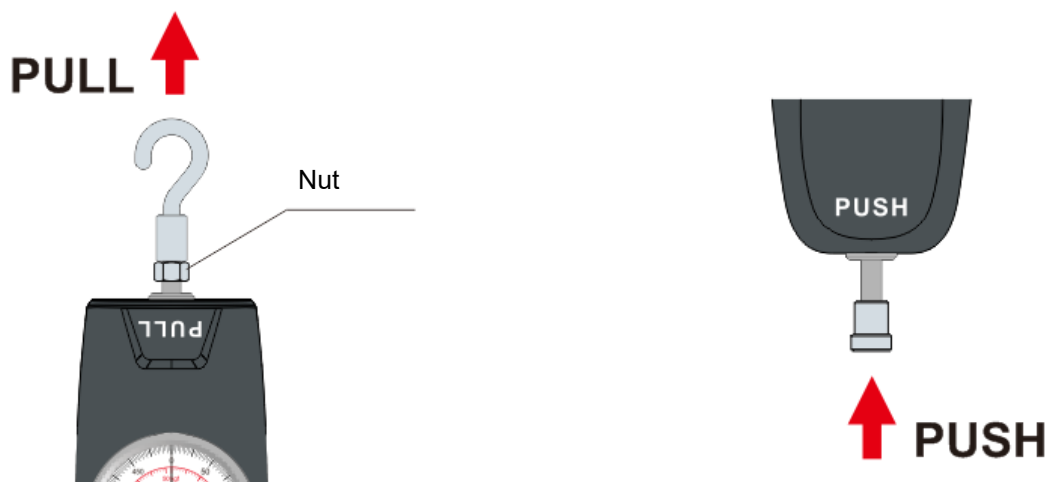
- **Extension shaft:** Can be used for extension at both ends.

- **Nut:** For locking the respective attachments.

### NOTE:

Do not use tools to tighten the measuring head, as this will damage the force gauge.

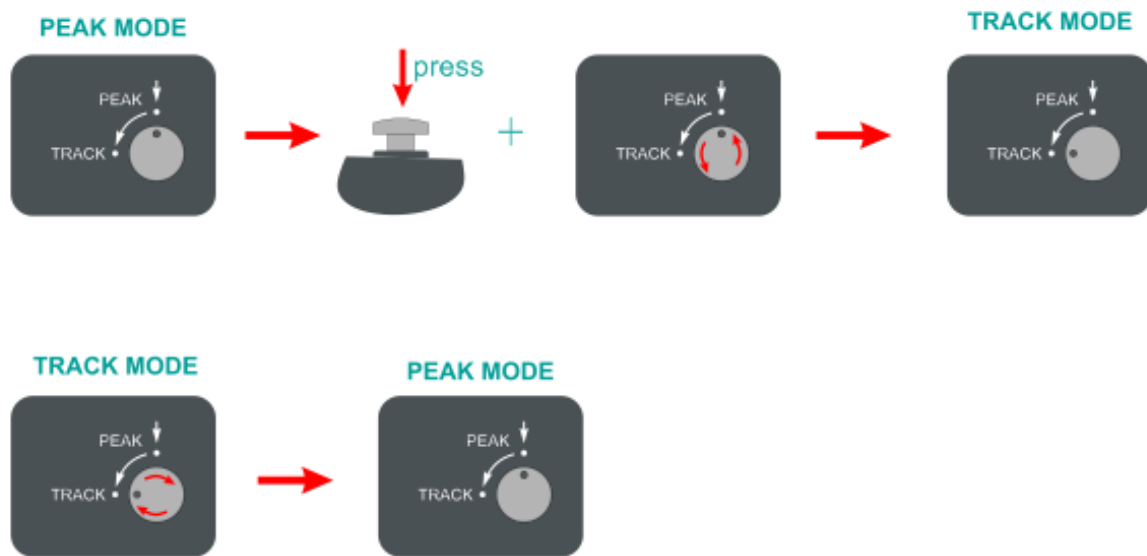
Do not install the pull attachment on the connection marked "PUSH" and do not install the push attachment on the connection marked "Pull."



## 8.1 Changing the measurement mode

The position of the button can be used to switch between PEAK and TRACK. Press the button in slightly and turn it to align the dot on the button • with the text TRACK or PEAK on the measuring device.

- Track: Real-time measurement mode
- Peak: The peak value does not change until a higher value is measured

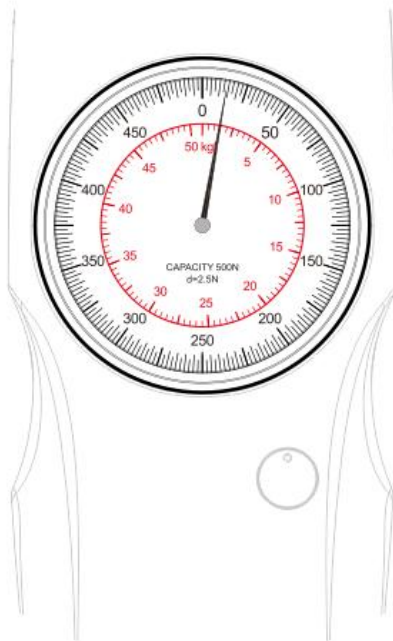


## 8.2 Zeroing

Position of the scale disc:

Make sure that the needle is pointing to the zero point [0] on the scale.

If this is not the case, turn the adjustable outer circle of the scale until the needle matches the zero point on the scale surface. If the button is in PEAK mode, first press the button inwards slightly.





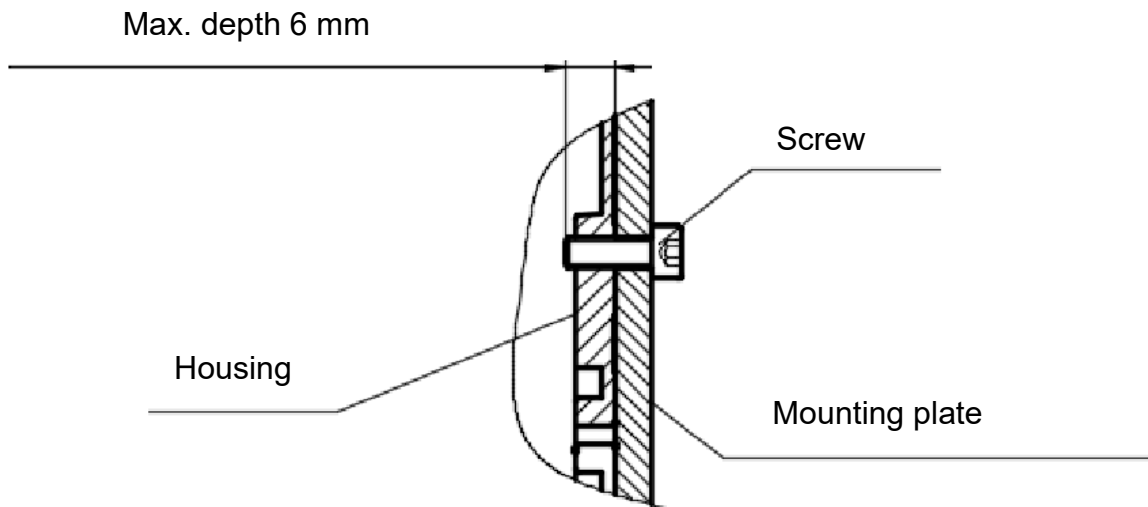
### 8.3 Measurement by hand or in the assembled state

The force gauge is a portable instrument; you can perform the test either by hand or on a test bench.

There are 6x M4 and 4x M3 threaded holes on the rear panel, which are to be used for mounting on a test stand..

**NOTE:**

The depth of the mounting hole is 5.5 mm; please select a suitable screw.

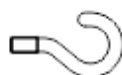


## 9 Scope of delivery

**Mechanical Force Gauge**



**Hook**



**Manual**



**Flat tip**



**Conical tip**



**Notched tip**



**Chisel tip**



**Extension shaft**



**Threaded adapter**



## 10 Maintenance, servicing, and disposal

### 10.1 Cleaning

Clean the device with a damp, soft, lint-free cloth. Make sure that no moisture penetrates the housing. Do not use sprays, solvents, alcohol-based cleaners, or abrasive cleaners; only use clear water to moisten the cloth.

### 10.2 Maintenance and repair

Do not make any changes to the device or install any replacement parts. Contact the manufacturer for repairs or device inspections.

### 10.3 Disposal



Old devices and accessories do not belong in household waste.

The disposal of packaging and the device must be carried out by the operator in accordance with the applicable national or regional laws of the user location.

Improper disposal of the device can have harmful effects on humans and the environment.

Proper and environmentally friendly disposal can prevent harmful effects and allow raw materials to be recovered.