



# Assembly and Operating Manual

## Clamping force tester

### SKP

Translation of Original Operating  
Manual

Hand in hand for tomorrow

## Imprint

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### **Technical changes:**

We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

Thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

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**Please read the operating manual in full and keep it close to the product.**

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# 1 General

## 1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

In addition to these instructions, the documents listed under ► 1.1.3 [ 5 ] are applicable.

**NOTE:** The illustrations in this manual are intended to provide a basic understanding and may deviate from the actual version.

### 1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.



#### **⚠ DANGER**

**Dangers for persons!**

Non-observance will inevitably cause irreversible injury or death.



#### **⚠ WARNING**

**Dangers for persons!**

Non-observance can lead to irreversible injury and even death.



#### **⚠ CAUTION**

**Dangers for persons!**

Non-observance can cause minor injuries.

#### **NOTICE**

**Material damage!**

Information about avoiding material damage.

### 1.1.2 Definition of Terms

The term "product" replaces the product name on the title page in this manual.

### 1.1.3 Applicable documents

- General terms of business \*
- Contractual agreements
- 1 Approval drawing

The documents labeled with an asterisk (\*) can be downloaded from [schunk.com](https://www.schunk.com).

## 1.2 Warranty

If the product is used as intended, the warranty is valid for 12 months from the date of delivery from the production facility and under the following conditions:

- Observe the applicable documents, ▶ [1.1.3 \[5\]](#)
- Observe the ambient conditions and operating conditions, ▶ [3.2 \[15\]](#)
- Observe the specified maintenance instructions, ▶ [7 \[23\]](#)

### 1.3 Scope of delivery

The scope of delivery includes

- 1 Product
- 1 Caliper dial gauge
- 1 Calibration certificate
- 1 Plastic case
- 1 Assembly and Operating Manual (ID. 1547777)

**NOTE:** Please keep the packaging of the product in case it needs to be returned to SCHUNK. Only then can safe transport be guaranteed.



## 1.4 Accessories

Retention knobs are available from SCHUNK in various designs but are only included in the scope of delivery for products with mounts BT30 and BT40. See [www.schunk.com](http://www.schunk.com).

## 2 Basic safety notes

### 2.1 Intended use

- The product is used for testing the clamping force.
- The product may only be used within the scope of its technical data, ▶ 3 [📄 13].
- The product is intended for industrial use.
- Appropriate use of the product includes compliance with all instructions in this manual.

### 2.2 Not intended use

The product is not being used as intended if, for example:

- The technical data of the product are being exceeded during use. ▶ 3.1 [📄 13]
- The product is used in corrosive media.
- The maintenance and storage instructions are not observed ▶ 7 [📄 23].

## 2.3 Notes on safe operation

Disregarding the instructions for safe operation can make the product unsafe and risks serious injuries and considerable material damage.

- Observe and comply with all safety instructions and warnings as well as the specifications in the assembly and operating manual.
- Use the product as intended ▶ 2.1 [ 8].
- All work may only be performed by appropriately qualified personnel ▶ 2.4 [ 10].
- Rectify malfunctions as soon as they occur ▶ 2.7 [ 12].
- Never deactivate safety installations.
- Observe safety distances.
- Before commissioning the product, take suitable protective measures to secure the danger zone.
- Secure the system against accidental operation during all work.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Never step into the danger zone during operation.
- Do not reach into the movement area of the product or into the open mechanism during operation.
- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Comply with the current safety, accident prevention, and environmental protection regulations for the application field of the product.

If you have any questions regarding safe operation, our technical after-sales service is available during our business hours:

**Service telephone: +49-7133-103-2956**

**service.toolholder@de.schunk.com**

## 2.4 Personnel qualifications

Work conducted on and with the product by inadequately qualified personnel can lead to serious injuries and considerable material damage.

- Personnel must have read and understood the complete manual before beginning any work on the product.
- All work may only be performed by appropriately qualified personnel:
  - **Specialist personnel**  
Specialist personnel have the specialized training, knowledge, and experience to perform the tasks entrusted to them, to recognize and avoid potential dangers, and know the relevant standards and regulations.
  - **Instructed person**  
An instructed person has been instructed by the operator regarding the tasks entrusted to them and the potential dangers of inappropriate handling of the product.

Work on the product	Necessary qualification
Transport	Qualified personnel/ instructed person
Assembly/disassembly	Specialist personnel
Settings/functional testing	Specialist personnel
Operation	Qualified personnel/ instructed person
Maintenance/troubleshooting	Specialist personnel/ SCHUNK service personnel
Disposal	Specialist personnel/ SCHUNK service personnel

## 2.5 Personal protective equipment

Personal protective equipment is necessary to protect staff in the event of a danger that may interfere with their health or safety at work.

- Observe the valid safety and accident prevention regulations and health & safety at work rules.
- When working on and with the product, wear the required personal protective equipment.
  - Always wear safety boots.
  - Wear close-fitting protective clothing and place a hairnet over long hair when dealing with moving components.
  - Wear protective gloves to guard against sharp edges and corners and rough surfaces.
  - Wear heat-resistant protective gloves when handling hot surfaces.
  - Wear protective gloves and safety goggles when handling hazardous substances.

## 2.6 Handling during transport

Incorrect handling during transport can make the product unsafe and risks the danger of serious injuries and considerable material damage.

- During transport and handling, secure the product to prevent it from falling.
- Do not walk under suspended loads.
- Do not leave suspended loads unattended.
- Observe the assembly and operating manual specifications for transport.
- Use suitable assembly and transport devices\*.
- Take precautions against pinching and crushing.

\* Assembly and transportation devices must be able to carry at least twice the attached weight.

## 2.7 Behavior in case of malfunctions

Incorrect handling during a malfunction can make the product unsafe and risks the danger of serious injuries and considerable material damage.

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Get appropriately qualified personnel ▶ 2.4 [10] to rectify the malfunction.
- Observe the information on troubleshooting in the assembly and operating manual.
- Faults not described in the assembly and operating manual may only be rectified after consultation with SCHUNK.
- After a malfunction, ensure that the product is able to function properly and no increased risks have arisen.
- Do not recommission the product until the malfunction has been rectified.

## 2.8 Structural changes

Modifications, changes or reworking, e.g. additional threads or holes, can damage the product or impair its functionality or safety.

- Structural changes should only be made with the written approval of SCHUNK.
- Use only original spare parts and spares authorized by SCHUNK.

## 3 Technical data

### 3.1 Product data

Cone size	ID
HSK 20	1545627
HSK 25	205960
HSK 32	205961
HSK 40	205962
HSK 50	205963
HSK 63	205964
HSK 80	205965
HSK 100	205966
SK30/CAT30	1336529
SK40/CAT40	20041741
SK50/CAT50	20043854
BT30/BT-DC30	20057197
BT40/BT-DC40	1319084
SCHUNK Capto C5	20050084
SCHUNK Capto C6	20057025

Tab.: Compatible interfaces and IDs

<b>Cone size</b>	<b>Force min. [kN]</b>
HSK 20	1.2
HSK 25	3.0
HSK 32	5.0
HSK 40	6.8
HSK 50	11.0
HSK 63	18.0
HSK 80	28.0
HSK 100	45.0
SK30/CAT30	6.0
SK40/CAT40	12.0
SK50/CAT50	25.0
BT30/BT-DC30	6.0
BT40/BT-DC40	12.0
SCHUNK Capto C5	25.0
SCHUNK Capto C6	30.0

*Tab.: Minimum pull-in forces of clamping systems*

You can obtain more precise values for your spindle from your spindle manufacturer.

Cone size	Test range according to test report [kN]		Range of measurement [kN]	
	from	to	from	to
HSK 20	1.0	1.7	0	4.5
HSK 25	2.0	5.0	0	18.0
HSK 32	3.0	7.0	0	18.0
HSK 40	5.0	15.0	0	45.0
HSK 50	8.0	20.0	0	45.0
HSK 63	15.0	30.0	0	45.0
HSK 80	20.0	40.0	0	90.0
HSK 100	30.0	60.0	0	90.0
SK30/CAT30	4.0	8.0	0	18.0
SK40/CAT40	8.0	16.0	0	18.0
SK50/CAT50	20.0	30.0	0	45.0
BT30/BT-DC30	4.0	8.0	0	18.0
BT40/BT-DC40	8.0	16.0	0	18.0
SCHUNK Capto C5	20.0	35.0	0	35.0
SCHUNK Capto C6	27.0	45.0	0	45.0

Tab.: Product range of measurement

Dial gauge	Tightening torque [Nm]
Clamping screw	0.85

### 3.2 Ambient conditions and operating conditions

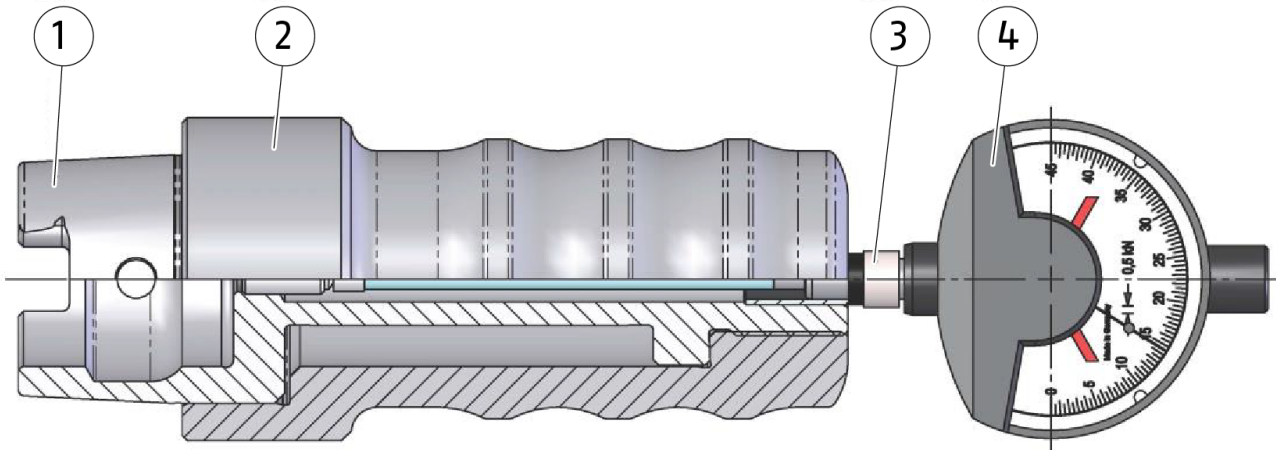
Specification	Value
Operating temperature range	+18°C to +25°C
Storage temperature range	+ 20 °C ± 10 °C
Relative air humidity	20 to 80%

**NOTE:** The temperatures refer to the product.

## 4 Design and description

### 4.1 Design

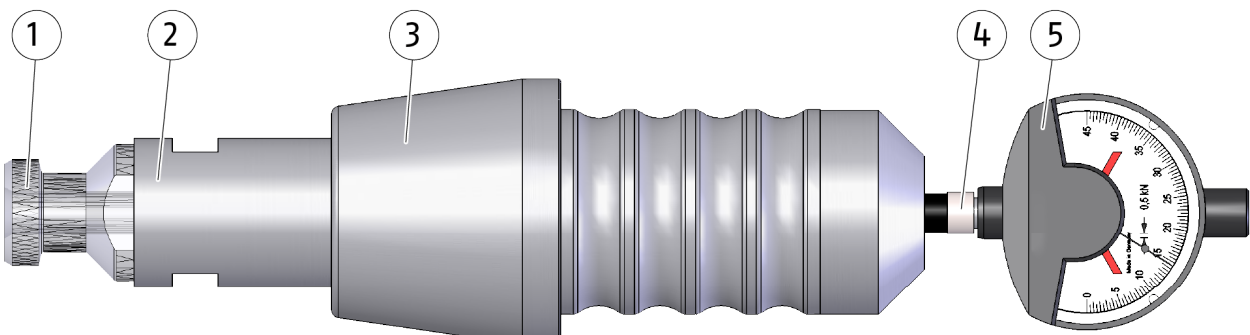
Product with HSK holder



Position	Description
1	Expansion bolt
2	Handle sleeve
3	Dial gauge holder
4	Dial gauge

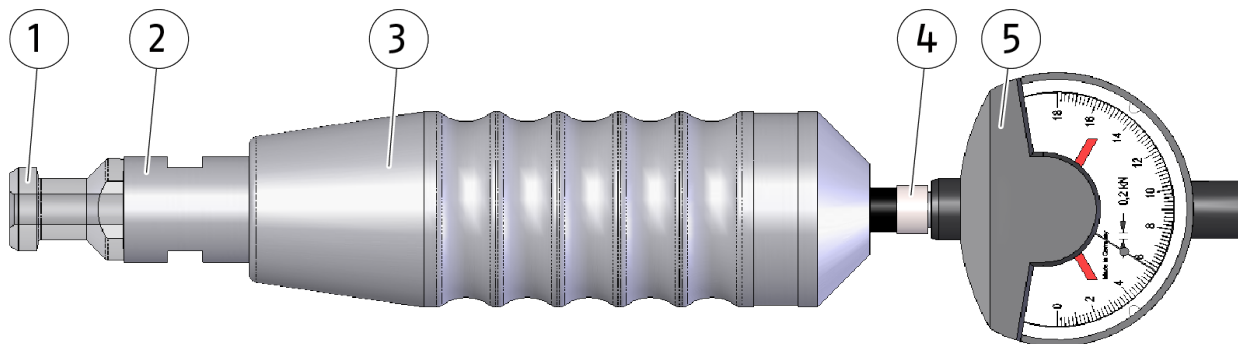


Product with SK holder



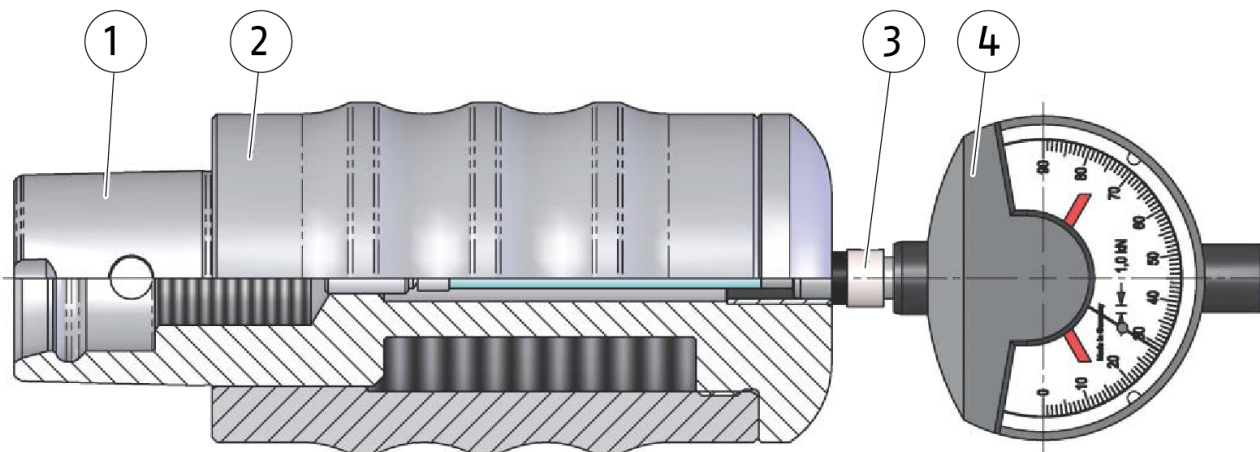
Position	Description
1	Retention knob (not included in scope of delivery)
2	Expansion bolt
3	Taper sleeve
4	Dial gauge holder
5	Dial gauge

**Product with BT holder**



Position	Description
1	Retention knob (included in scope of delivery)
2	Expansion bolt
3	Taper sleeve
4	Dial gauge holder
5	Dial gauge

**Product with SCHUNK Capto holder**



Position	Description
1	Expansion bolt
2	Handle sleeve
3	Dial gauge holder
4	Dial gauge

**NOTE:** The expansion bolt has deliberately been designed with a taper. A polygon shape is not required for measuring.

## **4.2 Functional description**

This product is used as a clamping force tester. It is calibrated. Its modular design makes the product suitable for different interfaces.

The measurement is performed by inserting the product into the spindle and actuating the respective clamping system with predefined tightening torques and clamping forces.

## 5 Assembly

### 5.1 Basic information



#### ⚠ WARNING

**Risk of injury if the product falls during transport, assembly or disassembly.**

Due to the oily surface required to preserve it, the product can slip through your hands, resulting in injury.

- Take appropriate safety measures to prevent the product from falling.
- Wear suitable protective equipment, especially protective gloves and safety boots.



#### ⚠ CAUTION

**Risk of crushing and impact when assembling and disassembling the product.**

- Do not reach between the product and machine.
- Wear suitable protective equipment.



#### ⚠ CAUTION

**Allergic reactions if oil comes into contact with the skin.**

Skin contact with oil may cause allergic reactions.

- Wear suitable protective equipment, especially protective gloves.

#### NOTICE

**Risk of damage to the product**

Improper installation may impair the functioning of the product or damage the product.

- Observe the specified tightening torques.
- Do not remove or adjust set-screws, stops, ball clamping screws or other pre-assembled parts.

## 5.2 Mounting the dial indicator

1. Insert the dial indicator with screwed-on measuring contact into the bore hole until the pointer is at the "0" position.
2. Secure the dial indicator setting by means of the clamping screw. Observe the tightening torque of the clamping screw ▶ 3.1 [13].
3. Check the accuracy and function of the dial gauge.

**NOTE:** If the clamping screw is too tight, the dial indicator will block; if it is too loose, the dial indicator will slip.

## 6 Operation

### 6.1 Basic information



#### **⚠ CAUTION**

**Risk of crushing and impact when assembling and disassembling the product.**

- Do not reach between the product and machine.
- Wear suitable protective equipment.

#### **NOTICE**

**Risk of distorted test results.**

If the toolholder is not correctly positioned on the product during the test procedure, the test results may be distorted.

- Ensure the clean and correct positioning of the toolholder.

## 6.2 Checking the clamping force

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### NOTE

The product is calibrated!

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The measurement is made by manually inserting the clamping force tester into the spindle. Actuate the clamping system and compare the specified minimum pull-in forces. ▶ 3.1 [13]. When doing so:

1. Observe the technical data ▶ 3.1 [13] and the marking on the product.
2. If necessary: Mount the retention knob of the desired interface on the product.
3. Clean all contact surfaces of the product and machine.
4. Set the dial gauge to position "0" with the fine adjustment screw.
5. Insert the clamping force tester into the spindle.
6. Actuate the clamping system.
7. Compare the value on the dial gauge with the specified minimum pull-in forces ▶ 3.1 [13].

**NOTE:** Precise values for your spindle are available from your spindle manufacturer.

## 7 Maintenance

### 7.1 Basic information



#### **⚠ CAUTION**

##### **Injury of the eyes due to dirt particles!**

When cleaning with compressed air, the eyes may be injured by flying dirt particles.

- Wear suitable protective equipment, particularly protective goggles.



#### **⚠ CAUTION**

##### **Allergic reactions if oil comes into contact with the skin.**

Skin contact with oil may cause allergic reactions.

- Wear suitable protective equipment, especially protective gloves.

For trouble-free, long-lasting use, clean, maintain and check the functionality of the product regularly.

##### **Repair work may only be carried out by SCHUNK!**

If you have any questions regarding maintenance and servicing, our technical after-sales service is available during our business hours:

**Service telephone: +49-7133-103-2956**  
**service.toolholder@de.schunk.com**

## 7.2 Intervals and tasks

Operation	Interval period
Cleaning the product	daily
Clean the contact surfaces of the product	prior to each use
Check and calibrate	annually

The specified maintenance intervals are based on empirical data gathered by SCHUNK and are a recommendation. Depending on the ambient and operating conditions, as well as the clamping frequency of the product, the maintenance intervals need to be adapted and noted accordingly. For maintenance intervals with two or more specifications, the specification that applies first is valid.

If you have any questions regarding the annual check and calibration of the product, our technical after-sales service is available during our business hours:

**Service telephone: +49-7133-103-2956**

**service.toolholder@de.schunk.com**

## 8 Disassembly

### 8.1 Basic information



#### **⚠ WARNING**

**Risk of injury if the product falls during transport, assembly or disassembly.**

Due to the oily surface required to preserve it, the product can slip through your hands, resulting in injury.

- Take appropriate safety measures to prevent the product from falling.
- Wear suitable protective equipment, especially protective gloves and safety boots.



#### **⚠ CAUTION**

**Risk of crushing and impact when assembling and disassembling the product.**

- Do not reach between the product and machine.
- Wear suitable protective equipment.



#### **⚠ CAUTION**

**Allergic reactions if oil comes into contact with the skin.**

Skin contact with oil may cause allergic reactions.

- Wear suitable protective equipment, especially protective gloves.

#### **NOTICE**

**Risk of damage to the product**

Improper disassembly may impair the functioning of the product or damage the product.

- Do not remove or adjust set-screws, stops, ball clamping screws or other pre-assembled parts.

## **8.2 Dismounting the dial indicator**

- 1.** Remove the product from the spindle.
- 2.** Loosen the clamping screw.
- 3.** Pull the dial indicator out of the bracket.
- 4.** Unscrew the measuring contact and fasten it to the new dial indicator.

## 9 Storage

When storing the product for a longer period of time, observe the following points:

- Clean the product and attachments and lubricate lightly.
- Apply the transport lock (foam).
- Store the product and attachments in the transport box provided.
- Only store the product and attachments in dry rooms.
- Protect the product and attachments from major temperature fluctuations.
- Comply with the storage temperature specified in the technical data.

**NOTE:** Before reassembling, clean the product and all attachments and check for damage and functionality.



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