

# RAPIDO

Jaw quick-change system

## Assembly and Operating Manual

### 1 General

#### 1.1 About this manual

This manual is part of the product and contains important information for safe and correct use. It must be kept accessible at all times. Personnel must have read and understood this manual before starting any work. All safety notes and the associated specifications in particular must be observed and complied with. Illustrations may differ from the actual design.

#### 1.2 Applicable documents

- General terms and conditions\*
- Safety and assembly instructions for chuck jaws\*
- Calculation of the jaw centrifugal forces in the "Technology" chapter of the lathe chuck catalog\*
- For special products: Approval drawing

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

#### 1.3 Warranty

If the product is used as intended, the warranty is valid for 12 months from the date of delivery from the production facility or 100 000 cycles\*:

\* One cycle comprises one complete clamping procedure ("clamping" and "undclamping").

#### 1.4 Illustration of warnings

##### ⚠ WARNING

###### Dangers for persons!

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

##### ⚠ CAUTION

###### Dangers for persons!

Non-observance can cause minor injuries.

##### CAUTION

###### Material damage!

Information about avoiding material damage.

#### 1.5 Scope of delivery

- Product
- Assembly and Operating Manual
- Safety and assembly instructions for chuck jaws (ID 9948429)

**NOTE:** The required mounting accessories or fastening material are usually part of the lathe chuck and are therefore not included in the scope of delivery. Order any required parts separately if necessary.

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**Technical changes:**  
We reserve the right to make technical improvements.

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### 2 Basic safety notes

#### 2.1 Appropriate use

- The product is designed for I.D. and O.D. clamping of rotationally symmetrical workpieces.
- The product is designed for mounting on a lathe chuck. The applicable guidelines and specifications for the lathe chuck must be complied with.
- The product is intended for industrial use.
- The product may only be used and operated within the scope of the technical data and the specifications in this manual, ▶ Chap. 3.

#### 2.2 Inappropriate use

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

- The information in the technical data is not observed when using and operating the product ▶ Chap. 3.
- The product is used as a pressing or punching tool, a load-handling device or as lifting equipment.
- Tools are clamped with the product.
- The specified values for speeds of rotation and clamping forces are not adhered to.
- The maintenance and storage instructions are not observed ▶ Chap. 5.
- The product is used in corrosive media.

#### 2.3 Ambient conditions and operating conditions

The ambient and operating conditions must correspond or be adapted to the version of the product and the specifications in the technical data.

#### 2.4 Structural changes

Structural changes such as modification and reworking, e.g. additional threads, bore holes or attachments, may only be carried out with the written approval of SCHUNK.

#### 2.5 Notes on safe operation

- Install the product according to the specifications in these instructions and the information in the applicable documents.
- Make sure that the supporting jaws and the changing jaws are a sufficient size for the application.
- Maintain and service the product on a regular basis.
- All repair work must be performed by SCHUNK.
- The operational safety and function of the product must not be impaired by external influences.
- Follow the country-specific applicable safety, accident prevention, and environmental protection regulations for the application field of the product.

#### 2.6 Personnel qualifications

- All operations may only be carried out by personnel that are qualified and instructed for the respective operation.
- Personnel qualifications must comply with the on-site country-specific requirements and laws.

#### 2.7 Personal protective equipment

- When working on and with the product, follow the respective country-specific legal requirements for occupational health and safety, and wear the necessary personal protective equipment.
- Follow country-specific accident prevention regulations and the general safety notes.

#### 2.8 Transport

To avoid product damage, the transport and handling of the product must be adapted according to the version, weight and packaging of the product. If necessary, use additional aids.

### 3 Technical data

#### General

Maximum permissible workpiece unclamping length	0.5 x clamping diameter
Flat work surface workpiece	must be present
Operating temperature range [°C]	+10 to +60
Maximum product temperature [°C]	+60
Storage temperature [°C]	+20 ±10

**CAUTION!** For special products, comply with the specifications on the corresponding approval drawing!

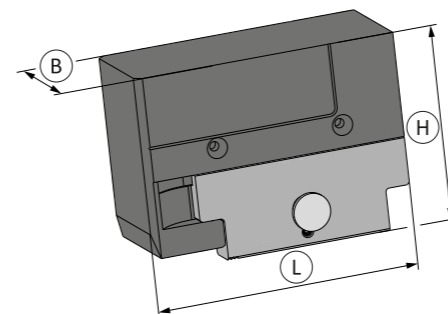
#### Changing jaw

Chuck size	210	260	315	400
Changing jaw	1499871/1499870	low high	low high	low high
Mass/piece [kg]	1.3	1.7 2.3	2.4 3.7	4.7 7.7

#### Supporting jaws

Chuck size	210	260	315	400
Supporting jaw	1452176	1445381 1449746	1435822	1452178 1452177
Serration	1.5 mm x 60°	1/16" x 90°	1.5 mm x 60°	1/16" x 90°
Mass/piece [kg]	0.7	0.7 0.8	0.8 0.9	0.9 1.5

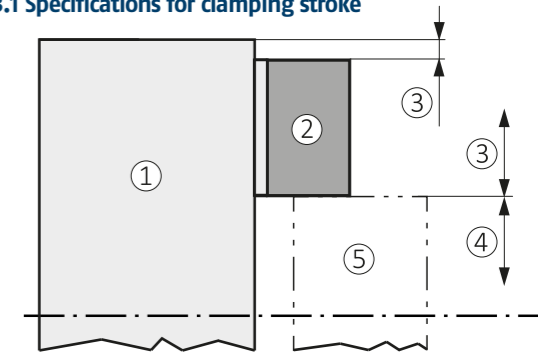
#### Combination specifications



Chuck size	210	260	315	400
Changing jaw	1499871/1499870	low high	low high	low high
Supporting jaw	1452176/1445381	1449746/1435822	1452178/1452177	1452181/1448483
L [mm]	96.6	95	113	146
W [mm]	40	50	50	65
H [mm]	40	40	60	80
Mass (supporting jaw + changing jaw)/piece	2	2.4 3.1	3.2 4.6	5.6 9.2
Clamping range* (outside) [mm]	∅ 40 - 190	∅ 60 - 240	∅ 80 - 310	∅ 100 - 400
Clamping range* (inside) [mm]	∅ 110 - 280	∅ 130 - 295	∅ 155 - 350	∅ 200 - 450
Max. clamping force [kN]	80	110	130	185
Max. speed of rotation [RPM]	3,200	2,800	2,300	1,700

\* Clamping range may vary, depending on the lathe chuck used

#### 3.1 Specifications for clamping stroke

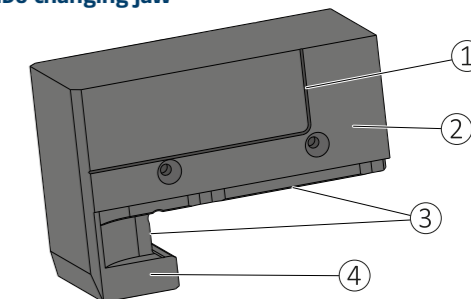


- ① Workpiece
- ② Reserve clamping stroke\*\*
- ③ Opening stroke\*\*
- ④ Product
- ⑤ Lathe chuck

Total clamping stroke of lathe chuck used [mm]	min. 2
Opening stroke** [mm]	min. 1
Reserve clamping stroke** [mm]	min. 1

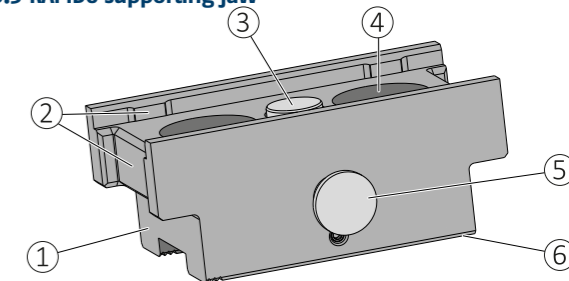
\*\* with clamped workpiece

#### 3.2 RAPIDO changing jaw



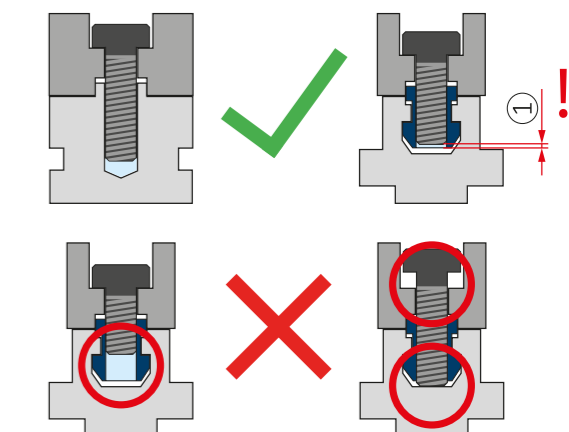
- ① Safety line
- ② Changing jaw
- ③ Contact surface, supporting jaw
- ④ Hook

#### 3.3 RAPIDO supporting jaw



- ① Supporting jaw
- ② Contact surface, changing jaw
- ③ Locking pin
- ④ Mounting holes
- ⑤ Actuating bolt
- ⑥ Fine serration

#### 3.4 Specifications for assembly



- ① approx. 0.7 (min. 0/max. 2) mm

Mounting screws	M8, M12, M16 or M20 DIN 7984 12.9
Tightening torque of the mounting screws [Nm]	see Safety and assembly instructions for chuck jaws (ID 9948429)
T-nuts	Single T-nuts or special combination T-nuts***

\*\*\* Observe the specifications in the Assembly and Operating Manual of the lathe chuck

## 4 Operation

### 4.1 Basic information

#### ⚠ WARNING

**High risk of injury if the product falls during transport, assembly or disassembly!**

- Do not stand under the product.
- Use assembly device.
- Take appropriate safety measures to prevent the product from falling.
- Only mount the product on lathe chucks with appropriate dimensions, connection dimensions and interfaces.
- Wear suitable protective equipment.

#### ⚠ WARNING

**Risk of injury due to incorrect assembly!**

If assembled incorrectly, the product may be flung out during rotation, causing severe injuries.

- Comply with the specifications for the mounting position of the product.
- Make sure that the product is mounted and seated correctly.
- Comply with the specifications for mounting the product in the applicable documents.
- Regularly check the mounting of the product.
- Take suitable protective measures to secure the danger zone.
- Wear suitable protective equipment.

#### ⚠ WARNING

**Risk of injury if the product breaks due to ejected parts!**

If the calculated clamping force is exceeded during the clamping procedure, the product may break, resulting in serious injuries.

- Adhere exactly to the calculated clamping forces.
- Do not exceed the maximum RPM.
- Ensure that the flat work surface of the workpiece on the lathe chuck or the product is clean.
- Take suitable protective measures to secure the danger zone.

#### ⚠ WARNING

**Risk of injury due to the workpiece being flung out if the RPM is too high or if the clamping force is not suitable!**

As the RPM increases, the effective clamping force decreases by the amount by which the centrifugal force increases. When the RPM limit is exceeded, the clamping force drops below the required minimum clamping force  $F_{gmin}$ . The workpiece can be released spontaneously as a result.

- Observe the specifications in the technical data.
- Do not exceed the calculated machining RPM.
- Do not exceed or fall below the calculated clamping force
- Check the clamping force of the lathe chuck regularly.
- Take suitable protective measures to secure the danger zone.
- Wear suitable protective equipment.

#### ⚠ CAUTION

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

- Do not reach between the supporting jaw and the lathe chuck.
- Do not reach between the changing jaw and the supporting jaw.
- Wear suitable protective equipment.

#### CAUTION

**Potential impairment of the clamping function and damage to the product due to inappropriate use!**

- Only use the product for its intended purpose.
- Observe the specifications in the technical data.
- Follow the installation instructions.

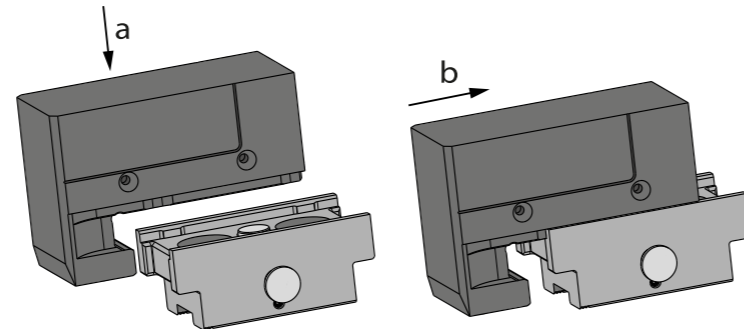
### 4.2 Assembly of the support jaw

**CAUTION! A set of identical supporting jaws must always be mounted!**

1. Observe the technical data ▶ Chap. 3.4 and the marking on the product.
2. Check the lathe chuck used is correctly mounted.
3. Clean all interfaces of the supporting jaw and lathe chuck. The contact surfaces must be completely clean and free from chips and dirt particles. **CAUTION! This is the only way to ensure correct mounting of the supporting jaw!**
4. Ensure that the lathe chuck is completely open.
5. Mount the supporting jaw correctly and in the correct position according to the specifications in the operating manual of the lathe chuck used. **CAUTION! The supporting jaw must not protrude beyond the lathe chuck after assembly!**

**CAUTION! The supporting jaw must not be reworked or modified! Regrinding, turning or welding of the supporting jaw is not permitted!**

### 4.3 Assembly of the interchangeable insert

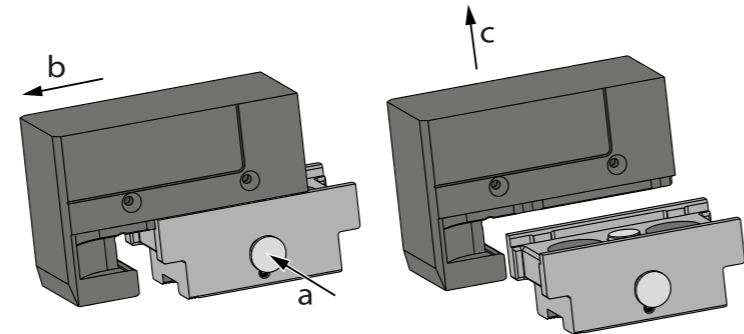


**CAUTION! A set of identical changing jaws must always be mounted!**

1. Observe the technical data ▶ Chap. 3 and the marking on the product.
2. Select the suitable changing jaw according to the combination specifications ▶ Chap. 3.
3. Clean all interfaces of the changing jaw and supporting jaw. The contact surfaces must be completely clean and free from chips and dirt particles. **CAUTION! This is the only way to ensure correct mounting of the changing jaw!**
4. Place the changing jaw in the correct position on the supporting jaw (a).  
⇒ The locking pin is pressed down by the changing jaw.
5. Push on the changing jaw as far as the stop (b).  
⇒ When the locking pin audibly engages, the changing jaw is mounted.
6. Check the clamping function according to the specifications in the operating manual of the lathe chuck used.

**CAUTION! Repairing, regrinding or welding the changing jaw is not permitted!**

### 4.4 Removal of the interchangeable insert



1. Unclamp and remove the workpiece according to the specifications in the operating manual of the lathe chuck used.
2. Secure the changing jaw against falling.
3. Press the actuating bolt on the supporting jaw as far as the stop and hold it down (a).
4. Pull off the changing jaw by pulling forwards (b).
5. Release the actuating bolt.
6. Remove the changing jaw (c).

### 4.5 Changing the interchangeable insert

**CAUTION! A set of identical changing jaws must always be mounted!**

1. Remove changing jaw from supporting jaw ▶ Chap. 4.4.
2. Install new changing jaw ▶ Chap. 4.3.

### 4.6 Turning the interchangeable insert

For a damping contour, the changing jaws have to be turned. **CAUTION! The changing jaw may only be turned within the area defined by the safety line! The safety line must not be crossed!**

**Turning via the jaw turning ring**

1. Mount supporting jaws ▶ Chap. 4.2.
2. Mount changing jaws ▶ Chap. 4.3.
3. Unscrew the changing jaws according to the specifications in the operating manual of the jaw turning ring used. **CAUTION! The safety line must not be crossed when turning!**

**Turning via jaw turning fixture**

1. Mount supporting jaws ▶ Chap. 4.2.
2. Mount changing jaws ▶ Chap. 4.3.
3. Turn the changing jaws according to the specifications in the operating manual of the jaw turning fixture used. **CAUTION! The safety line must not be crossed when turning!**

**CAUTION! Repairing, regrinding or welding the changing jaw is not permitted!**

### 4.7 Clamping the workpiece

The unclamping length of the workpiece must not exceed the specifications in the technical data ▶ Chap. 3.

The specifications for mass, clamping force and speed of rotation refer to changing jaws that have not been turned. **WARNING After turning, the clamping force required for the clamping procedure must be determined in accordance with VDI guideline 3106!**

- If the clamping force is too low, the workpiece can be ejected under rotation.
- If the clamping force is too high, the changing jaws may break.

The specification of the max. speed of rotation refers to 1/3 of the residual clamping force of the specified max. permissible clamping force according to DIN 6386-1.

This only applies when the maximum clamping force is set. According to DIN EN 1550, the required machining RPM must be calculated by the users themselves, taking into account the clamping force actually used, the turning depth and the total weight of the supporting jaws and changing jaws. For this, observe the relevant specifications in the operating manual of the lathe chuck used.

## 5 Maintenance and storage

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**

**All repair work may only be performed by SCHUNK!**

### 5.1 Intervals and tasks

Operation	Interval period
Cleaning and testing of the product	weekly or after 3,000 clamping operations
Functional test of the support jaw mechanism	weekly or after 3,000 clamping operations
Check/retighten the mounting screws	after 40 operating hours or 10,000 clamping operations

The specified maintenance intervals are based on practical experience gathered by SCHUNK and are recommended. Depending on the ambient and operating conditions, as well as the clamping frequency of the product, the maintenance intervals must be adapted and noted accordingly. For maintenance intervals with two or more specifications, the valid specification is the one that applies first.

#### 5.1.1 Cleaning and testing of the product

#### ⚠ CAUTION

**Injury of the eyes by dirt particles**

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

- Wear suitable protective equipment, particularly protective goggles.

1. Unclamp and remove the workpiece according to the specifications in the operating manual of the lathe chuck used.
2. If necessary, disassemble the product from the lathe chuck.
3. Remove changing jaw from supporting jaw ▶ Chap. 4.4.
4. Thoroughly clean the supporting jaw and changing jaw with compressed air.
5. Use a suitable aid to carefully remove any stubborn dirt.
6. Wipe all surfaces dry with a clean cloth.
7. Carefully check the supporting jaw and changing jaw for cracks, damage and wear, replace if necessary.

**CAUTION! Damage, cracks or wear can compromise the functionality of the product! If the product is damaged, worn or cracks appear, the product must no longer be used!**

#### 5.1.2 Functional test of the support jaw mechanism

#### CAUTION

**Material damage due to disassembly of locking pin or actuating bolt!**

Disassembling the locking pin or actuating bolt may damage the product and disable functions.

- Do not disassemble the locking pin or actuating bolt.
- All repair work must be performed by SCHUNK.

1. Unclamp and remove the workpiece according to the specifications in the operating manual of the lathe chuck used.
2. If necessary, disassemble the product from the lathe chuck.
3. Remove changing jaw from supporting jaw ▶ Chap. 4.4.
4. Press the actuating bolt on the supporting jaw as far as the stop.  
⇒ The locking pin moves down into the supporting jaw.

**CAUTION! If the locking pin does not move or if it is difficult to press the actuating bolt, send the product to SCHUNK for inspection. All repair work may only be performed by SCHUNK!**

### 5.2 Storage

When storing the product for a longer period of time, the following points must be observed:

- Press the actuating bolt to the stop several times every 4 weeks to prevent it from sticking.
- Clean the product.
- Lightly oil the entire surface of the product.
- Only store the product in a clean and dry environment.
- Store the product in a suitable transport container.
- Protect the product from excessive temperature fluctuations.

**NOTE:** Before recommissioning, clean the product and check for cracks, damage, wear and functionality!

## 6 Disposal

- Follow local regulations on dispatching product components for recycling or proper disposal.
- Alternatively, you can return the product to SCHUNK for correct disposal.