

Jaw-Quick-Change BSWS

Assembly and Operating Manual



Imprint

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Dear customer,

congratulations on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.

You are going to increase the process reliability of your production and achieve best machining results – to the customer's complete satisfaction.

SCHUNK products are inspiring.

Our detailed assembly and operation manual will support you.

Do you have further questions? You may contact us at any time – even after purchase.

Kindest Regards

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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.

Illustrations in this manual are provided for basic understanding and may differ from the actual product design.

In addition to these instructions, the documents listed under Link Mitgeltende Unterlagen are applicable.

1.1 Presentation of Warning Labels

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

	<p>! DANGER</p> <p>Danger for persons! Non-observance will inevitably cause irreversible injury or death.</p>
	<p>! WARNING</p> <p>Dangers for persons! Non-observance can lead to irreversible injury and even death.</p>
	<p>! CAUTION</p> <p>Dangers for persons! Non-observance can cause minor injuries.</p>
	<p>NOTICE</p> <p>Material damage! Information about avoiding material damage.</p>

1.2 Applicable documents

- General terms of business *
- Catalog data sheet of the purchased product *
- Assembly and operating manual of the gripper *

The documents marked with an asterisk (*) can be downloaded on our homepage www.schunk.com.

2 Basic safety notes

2.1 Intended use

The Jaw-Quick-Change (BSWS) was designed for a fast manual change of top jaws.

The product is intended for installation in a machine/system. The requirements of the applicable guidelines must be observed and complied with.

The product may be used only in the context of its defined application parameters ([☞ 6, Page 13](#)).

The product is designed for industrial use.

To use this unit as intended, it is also essential to observe the technical data and installation and operation notes in this manual and to comply with the maintenance intervals.

2.2 Not intended use

It is not intended use if the product is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.3 Environmental and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product and the top jaws are a sufficient size for the application.
- Observe maintenance and lubrication intervals, ([☞ 9.1, Page 24](#)).
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.4 Product safety

Dangers arise from the product, if:

- the product is not used in accordance with its intended purpose.
- the product is not installed or maintained properly.
- the safety and installation notes are not observed.

Avoid any manner of working that may interfere with the function and operational safety of the product.

Wear protective equipment.

NOTE

More information is contained in the relevant chapters.

2.4.1 Protective equipment

Provide protective equipment per EC Machinery Directive.

2.4.2 Gripper fingers

Requirements for the gripper fingers

Stored energy within the product creates the risk of serious injuries and significant property damage.

- Arrange the gripper fingers in a way that the product reaches either the position "open" or "closed" in a de-energized state.
- Only exchange the gripper fingers when no residual energy remains in the product.

2.4.3 Constructional changes

Making constructional changes

Modifications, constructional changes and subsequent work, e.g. additional threads, drill holes and safety devices may impair the operation and safety or damage the product.

- Constructional changes may only be done with SCHUNK's permission.

2.5 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

- Trained electrician** Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.
- Pneumatics specialist** Pneumatics specialists have been trained for this particular area of responsibility and know the relevant standards and regulations.
- Hydraulic specialist** Hydraulic specialists have been trained for this particular area of responsibility and knows the relevant standards and regulations.
- Qualified personnel** Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.
- Instructed person** Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
- Service personnel of the manufacturer** Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.6 Personal protective equipment

Using personal protective equipment

Not wearing personal protective equipment while working with the product, may result in dangers that impact the personnel's safety and health.

- While working with the product, observe the health and safety regulations and wear the required personal safety equipment.
- Observe the valid safety and accident prevention regulations.
- In case of sharp edges and corners and rough surfaces, wear protection gloves.
- In case of hot surfaces, wear heat-resistant protection gloves.
- When dealing with hazardous substances, wear protection gloves and goggles.
- In case of moving parts, wear tight protection clothes.

2.7 Notes on particular risks

Generally valid

- Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- Make sure that no residual energy remains in the system
- Do not move parts by hand when the energy supply is connected.
- Do not reach into the open mechanism or the movement area of the module.
- Perform maintenance, modifications, and additions outside the danger zone.
- For all work, secure the product against accidental operation.
- Take a precautionary approach by maintenance and disassembly.
- Only specially trained staff should disassemble the module.

**! WARNING****Risk of injury from objects falling and being ejected!**

Falling and ejected objects during operation can lead to serious injury or death.

- The danger zone must be cordoned off by a protective barrier.

**! WARNING****Risk of injury due to unexpected movement of the machine/system!**

- Switch off the energy supply.

3 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Intended use in 1-shift operation
- Observe the mandatory maintenance and lubrication intervals
- Observe the environmental and operating conditions

Parts touching the work piece and wear parts are not part of the warranty.

4 Scope of delivery

The scope of delivery includes

Jaw-Quick-Change (BSWS)

- For each BSWS-A in the ordered model:
 - 2 adapters
- For each BSWS-B in the ordered model:
 - 1 base with change system
 - Accessory pack

Jaw-Quick-Change (BSWS) without additional height

- For each BSWS-AR in the ordered model:
 - 2 adapters
 - Accessory pack
- For each BSWS-ABR in the ordered model:
 - 1 aluminum top jaw with change system
- For each BSWS-SBR in the ordered model:
 - 1 steel top jaw with change system

Kit for customer-specific top jaws

- For each BSWS-UR in the ordered model:
 - 1 change system kit for installation in customer-specific top jaw

5 Accessories

For the kit for customer-specific top jaws:

- For each BSWS-AR in the ordered model:
 - 2 adapters
 - Accessory pack

A wide range of accessories are available for this product

For information about which accessories can be used with the appropriate product version see catalog.

6 Technical Data

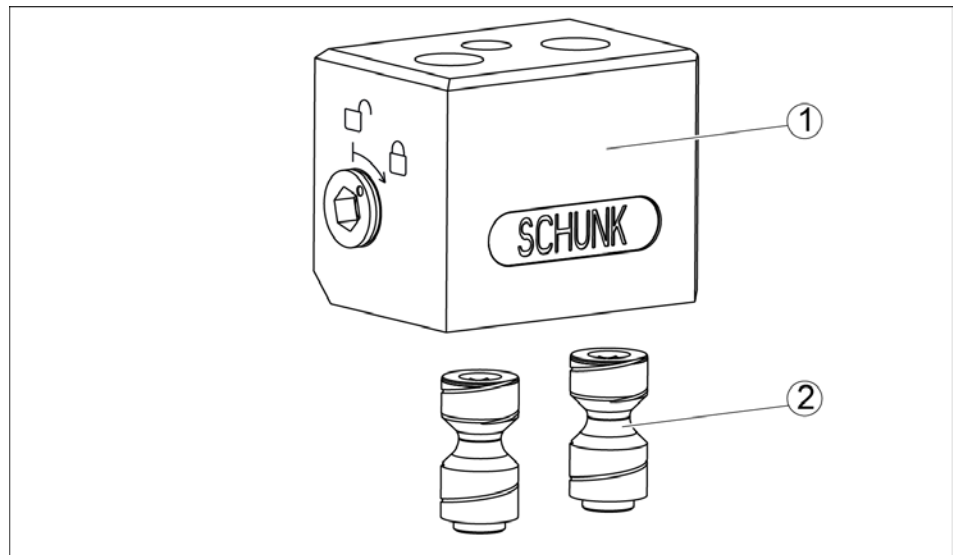
Type	BSWS-A Weight [kg]	BSWS-B Weight [kg]
50	0.002	0.02
64	0.005	0.04
80	0.011	0.08
100	0.024	0.1
125	0.046	0.27
160	0.077	0.48
200	0.16	0.9
240	0.3	1.5
300	0.41	1.9

Type	BSWS-AR Weight [kg]	BSWS-ABR Weight [kg]	BSWS-SBR Weight [kg]	BSWS-UR Weight [kg]
50	0.01	0.08	0.2	0.006
64	0.015	0.13	0.34	0.009
80	0.03	0.27	0.66	0.015
100	0.06	0.45	1.19	0.027
125	0.1	0.78	2.1	0.044
160	0.19	1.7	3.5	0.094

More technical data are included in the catalog data sheet. Which-ever is the latest version.

7 Design and description

7.1 Quick-change jaw system (BSWS-A with BSWS-B)



Quick-change jaw system

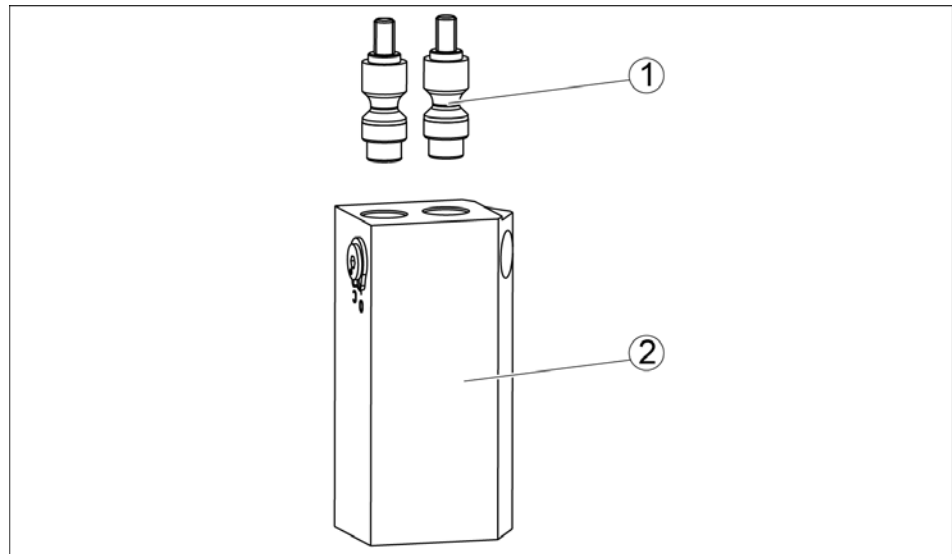
1	Base (BSWS-B)	2	Adapter (BSWS-A)
---	---------------	---	------------------

The quick-change jaw system consists of two adapters (BSWS-A) and a base with change system (BSWS-B) per base jaw on the gripper, ([5, Page 13](#)).

NOTE

The base with change system (BSWS-B) cannot be combined with the adapters (BSWS-AR).

7.2 Quick-change jaw system without additional height (BSWS-AR with BSWS-ABR or BSWS-SBR)



Quick-change jaw system without additional height

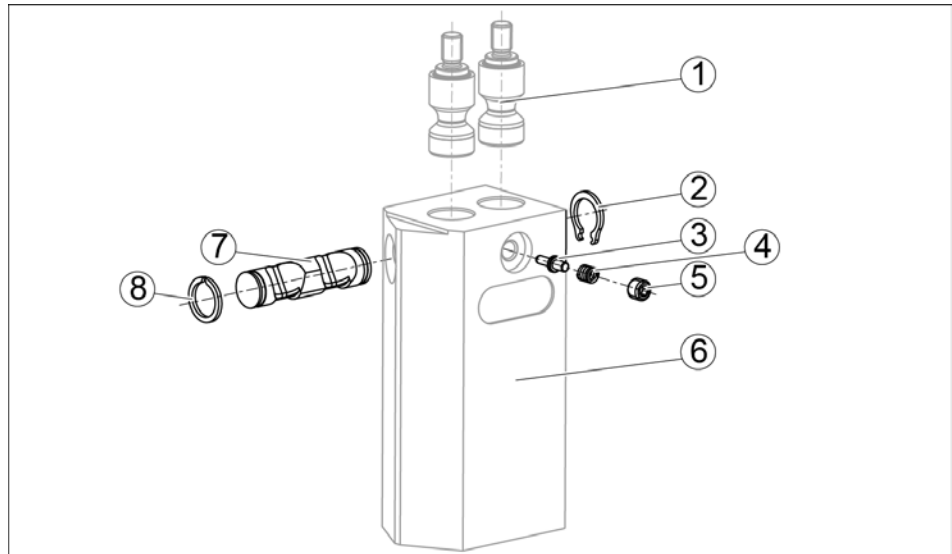
1	Adapter (BSWS-AR)	2	Top jaw with change system in aluminum (BSWS-ABR) or steel (BSWS-SBR)
---	-------------------	---	---

The quick-change jaw system without additional height consists of two adapters (BSWS-AR) and one top jaw with change system made of aluminum (BSWS-ABR) or steel (BSWS-SBR) per base jaw on the gripper, ([5, Page 13](#)).

NOTE

The top jaw with change system made of aluminum (BSWS-ABR) or steel (BSWS-SBR) cannot be combined with the adapters (BSWS-A).

7.3 Kit for customer-specific top jaws (BSWS-UR)



Kit for customer-specific top jaws

1	Adapter (BSWS-AR)	6	Top jaw, customer-specific
Kit (BSWS-UR), consisting of:			
2	Safety ring	5	Set-screw
3	Thrust bolt	7	Lock bolt
4	Spring	8	Safety ring

The kit for customer-specific top jaws consists of one kit (BSWS-UR) and one customer-specific top jaw per base jaw on the gripper, ([5, Page 13](#)).

Two adapters (BSWS-AR) are required for assembly on the gripper.


NOTE


The customer-specific top jaw with the kit (BSWS-UR) cannot be combined with the adapters (BSWS-A).

8 Assembly

NOTE

Assembling the kit is explained using the PGN-plus gripper as an example. Assembly on other grippers is done in the same way.

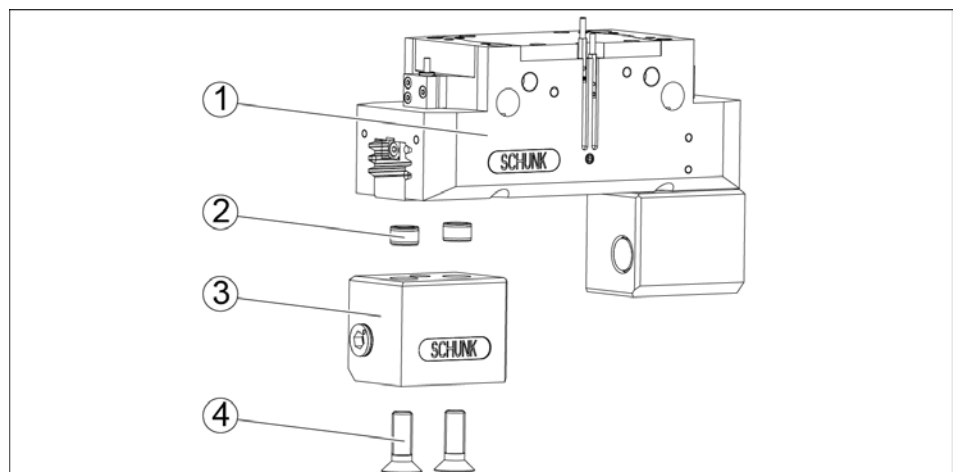
	<p>! WARNING</p>
	<p>Risk of injury when machine/system moves unexpectedly!</p> <ul style="list-style-type: none"> • Switch off power supply before assembly and installation. • Make sure that no residual energy remains in the system.

	<p>NOTICE</p>
	<p>Property damage due to incorrect top jaws!</p> <p>When using top jaws, the maximum permissible length and the maximum weight must not be exceeded.</p> <ul style="list-style-type: none"> • Observe specifications in the catalog data sheet.

8.1 Assembly of quick-change jaw system

A BSW-A (adapter) and a BSW-B (base) are required for each base jaw of the gripper in order to assemble the quick-change jaw system.

8.1.1 Assembling the base on the gripper



Assembling the base on the gripper

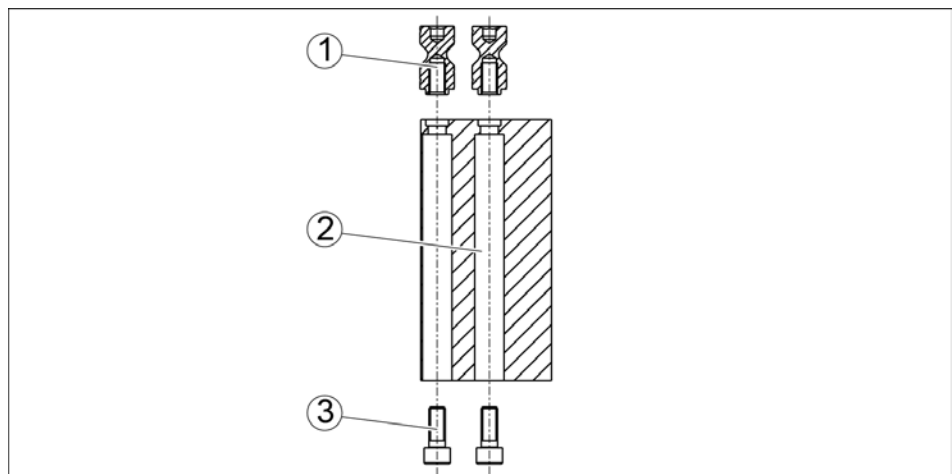
- 1 Secure the base (3) via the centering sleeves (2) on the base jaw of the gripper (1) and screw it on using the mounting screws (4).

- ⇒ The locking face of the lock bolt points toward the outer face of the gripper (1).
- ⇒ Observe the tightening torque.

Tightening torque Mounting screws, base

Type	Tightening torque [Nm]
BSWS 50	1.8
BSWS 64	4.5
BSWS 80	9
BSWS 100	15
BSWS 125	15
BSWS 160	72
BSWS 200	150
BSWS 240	150
BSWS 300	360

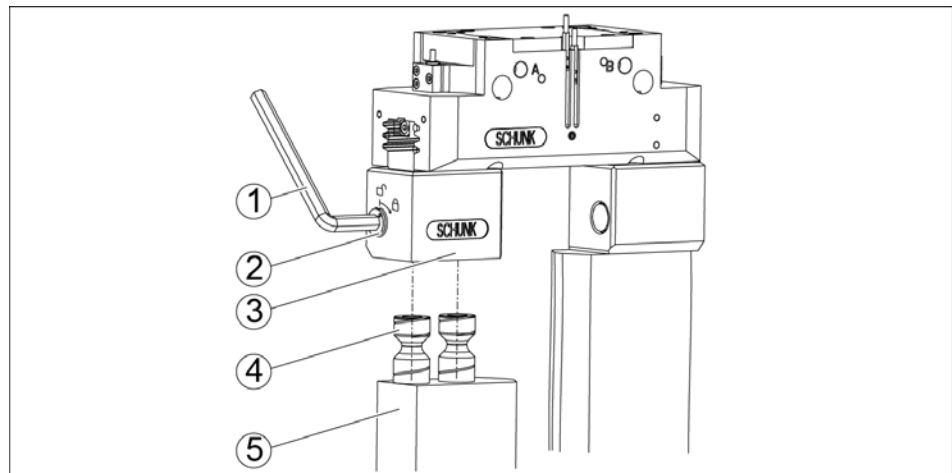
8.1.2 Assembling the adapter on the top jaw







Assembling the adapter on the top jaw

- 1 Screw both adapters (1) onto the top jaw (2) using the mounting screws (3).
- ⇒ Observe the tightening torque.

8.1.3 Assembling the top jaw on the base



Assembling the top jaw on the base

- 1 Treat all greased areas with lubricant. ([↩ 9.2, Page 24](#))
- 2 Turn the lock bolt (2) using an Allen key (1) into the following position: .
- 3 Push the adapter (4) on the top jaw (5) into the base (3) as far as it will go.
- 4 Turn the lock bolt (2) toward the following symbol: .
 - ⇒ The symbol  only indicates which direction to turn. The mark does not have to be exactly on .
 - ⇒ Observe the tightening torque.

Tightening torque

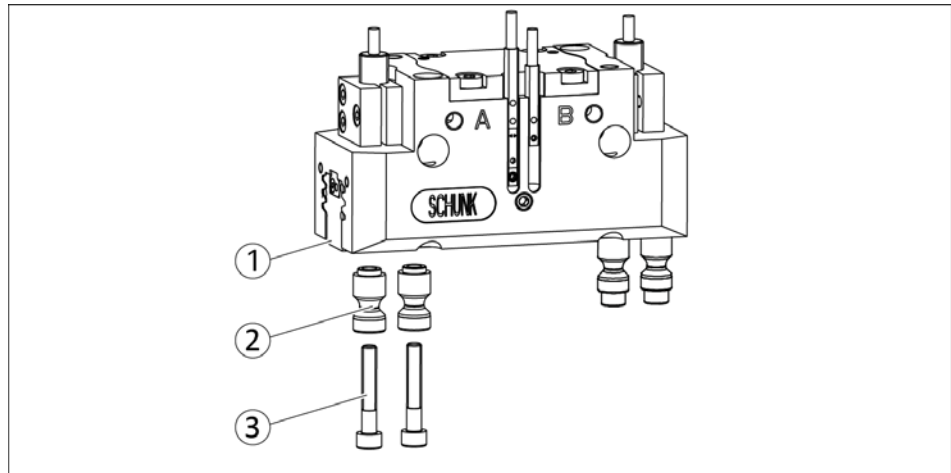
Lock bolt (2)

Type	Tightening torque [Nm]
BSWS 50	3
BSWS 64	7
BSWS 80	7
BSWS 100	13
BSWS 125	20
BSWS 160	60
BSWS 200	70
BSWS 240	80
BSWS 300	100

8.2 Assembly of quick-change jaw system without additional height

A BSWS-AR (adapter) and a BSWS-ABR or BSWS-SBR (top jaw) are required for each base jaw of the gripper in order to assemble the quick-change jaw system without additional height.

8.2.1 Assembling the adapter to the gripper



Assembling the adapter to the gripper

- 1 Fasten both adapters (2) to the base jaw of the gripper (1) and screw them on using the mounting screws (3).

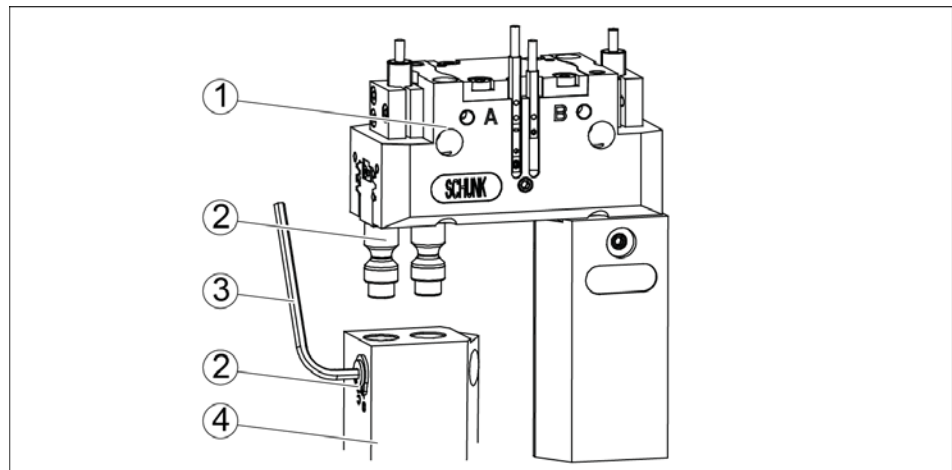
⇒ Observe the tightening torque.

Tightening torque

Fastening screws adapter

Type	Tightening torque [Nm]
BSWS50	2,1
BSWS64	5,3
BSWS80	11
BSWS100	18
BSWS125	18
BSWS160	85

8.2.2 Assembling the top jaw on the gripper



Assembling the top jaw on the gripper

- 1 Treat all greased areas with lubricant. ([↩ 9.2, Page 24](#))
- 2 Turn the lock bolt (2) using an Allen key (1) into the following position:
- 3 Push the top jaw (5) as far as it will go onto the adapter (2) on the gripper (1).
- 4 Turn the lock bolt (2) toward the following symbol:
 - ⇒ The symbol only indicates which direction to turn. The mark does not have to be exactly on
 - ⇒ Observe the tightening torque.

Tightening torque Lock bolt (2)

Type	Tightening torque [Nm]
BSWS 50	3
BSWS 64	7
BSWS 80	7
BSWS 100	13
BSWS 125	20
BSWS 160	60

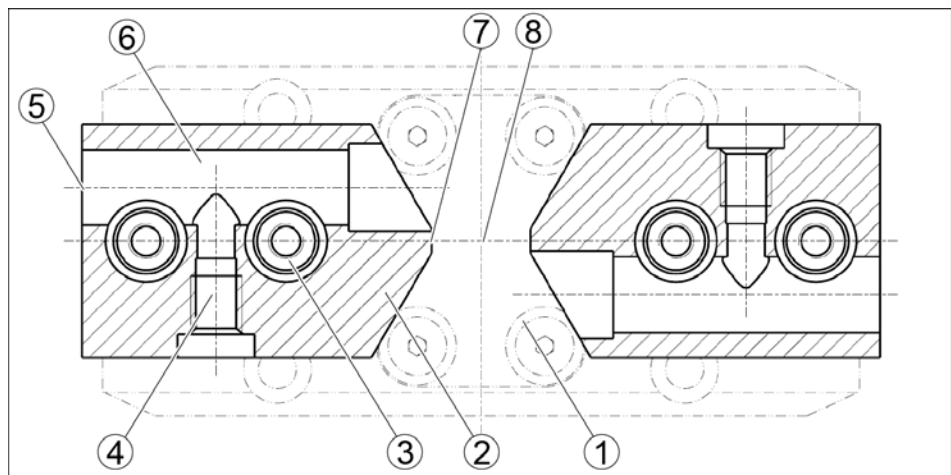
8.3 Assembly of the kit for customer-specific top jaws

A BSWs-AR (adapter) and a SCHUNK-produced top jaw with BSWs-UR are required for each base jaw of the gripper in order to assemble the kit for customer-specific top jaws.

8.3.1 Notes on producing customer-specific top jaws

When producing specific top jaws, you must ensure that the bore holes are produced according to the same production dimensions on all of the top jaws.

The production dimensions in the catalog data sheet must be used for the in-house production of customer-specific top jaws. You can download the catalog data sheet at www.schunk.com. A 3D CAD template can be downloaded at www.schunk.com under *CAD data service*.



Sectional drawing of a customer-specific top jaw


1	Gripper	5	Locking face, lock bolt
2	Top jaw	6	Bore hole, lock bolt
3	Adapter	7	Top jaw, gripper center face
4	Bore hole, thrust bolt	8	Tool center point

Install the lock bolt into the top jaw so that the locking face (5) points toward the outer face of the gripper. The gripper center face (7) of the top jaw (2) must point toward the center of the gripper, the tool center point (8).

Installing the locking mechanism in a reversed ("mirrored") position is not possible.

9 Maintenance

9.1 Maintenance and lubrication intervals

	NOTICE
	<p>Damage caused by insufficient lubricant! Lubricants harden more quickly at temperatures above 60°C, leading to possible product damage.</p> <ul style="list-style-type: none"> Reduce the lubricant intervals accordingly.

Maintenance- and lubrication interval

Size	50 - 300
Interval [cycles] *	1000
* One cycle corresponds to one change procedure.	

9.2 Lubricants/Lubrication points

During maintenance, lubricate the following parts:

- Lock bolt
- Adapter
- Pressure piece

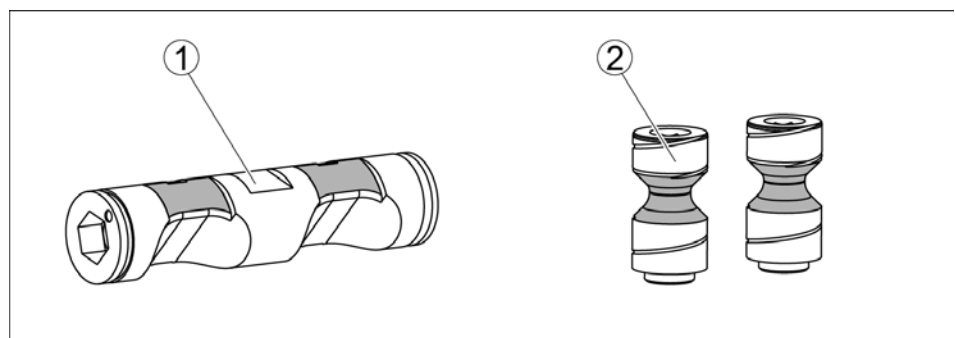
Apply a thin film of lubricant using a lint-free cloth.

Recommended lubricants

Lubricant point	Lubricant
Metallic sliding surfaces	LINOMAX

NOTE

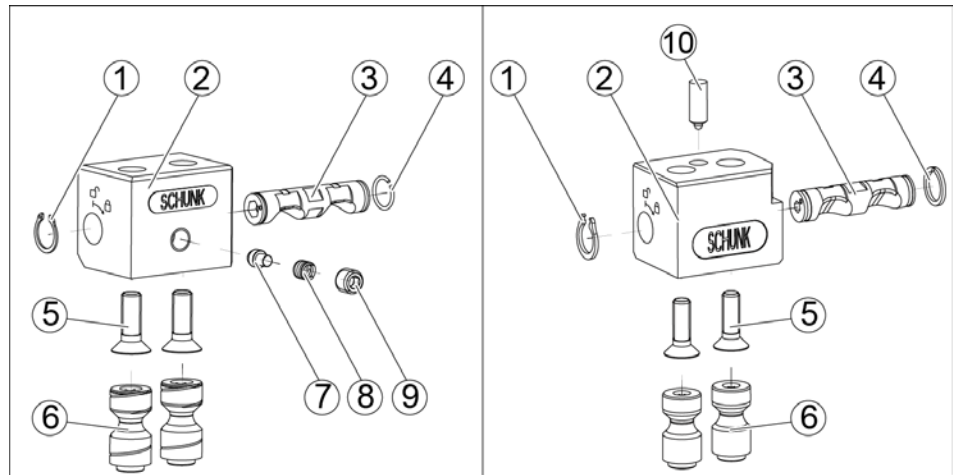
Do not lubricate or oil the points on the lock bolt (1) and on the adapters (2) marked gray in the drawing.




Areas not to be lubricated

9.3 Maintenance of quick-change jaw system

9.3.1 Disassembling the base



Disassembling the base, sizes 50-160 and 200-300

- 1 Turn the lock bolt (3) to the following symbol: .
- 2 Remove the top jaw with adapter (6).
- 3 Unscrew the screws (5) and remove the base (2) from the gripper.
- 4 Remove the pressure piece:
 - ⇒ Sizes 50 to 160:
Screw out set-screw (9) and remove spring (8) and thrust bolt (8).
 - ⇒ Sizes 200 to 300:
Screw out spring-loaded pressure piece (10).
- 5 Remove the safety rings (1 and 4).
- 6 Pull the lock bolt (3) out of the housing of the base (2).

9.3.2 Servicing and assembling the base

- Maintenance**
- Clean all parts thoroughly and check for damage and wear.
 - Replace all damaged parts.
 - Treat all greased areas with lubricant. ([👉 9.2, Page 24](#))

Assembly Assembly is done in the reverse order of disassembly. Observe the following when doing this:

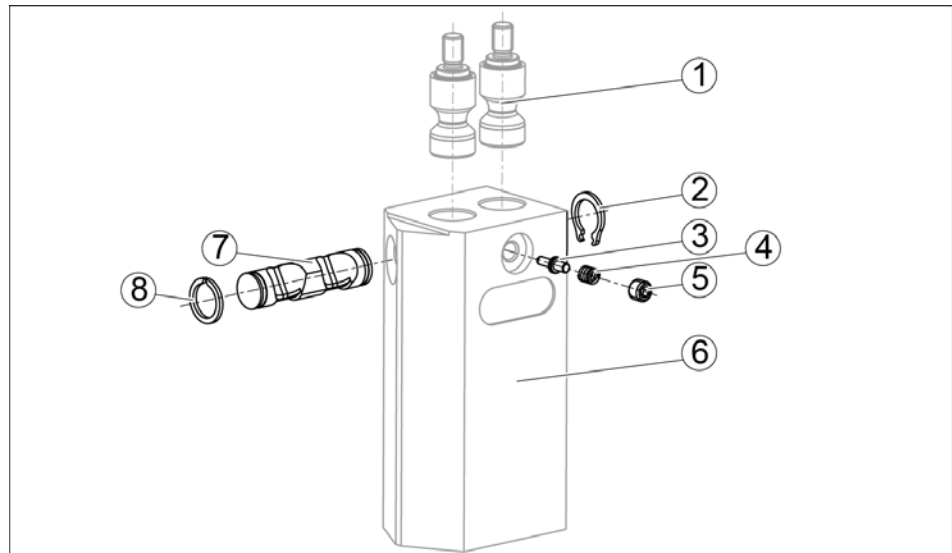
- Secure the screws of the adapters with Loctite No. 243.
- Tighten the screws of the adapters with tightening torque, ([👉 8.2.1, Page 20](#)).
- Sizes 50 to 160:
 - Secure the set-screw with Loctite No. 243.
 - Screw in the set-screw until it is flush with the surface of the base.
 - **NOTICE! Do not screw the set-screw all the way in.**
- Sizes 200 to 300:
 - Secure the pressure piece with Loctite No. 243.
 - Observe the depth of engagement.

Depth of engagement Pressure piece


Type	Depth of engagement [mm] (Tolerance ±0.1 mm)
BSWS 200	5.2
BSWS 240	8
BSWS 300	13.4

9.4 Maintenance of quick-change jaw system without additional height

9.4.1 Disassembling the top jaw



Disassembling the top jaw

- 1 Turn the lock bolt (7) to the following symbol: .
- 2 Pull the top jaw (6) off the adapters (1).
- 3 Screw out set-screw (5) and remove spring (4) and thrust bolt (3).
- 4 Remove the safety ring (2).
- 5 Pull the lock bolt (7) out of the top jaw (6).
- 6 Remove the safety ring (8).

9.4.2 Servicing and assembling the top jaw

- Maintenance**
- Clean all parts thoroughly and check for damage and wear.
 - Replace all damaged parts.
 - Treat all greased areas with lubricant. ([👉 9.2, Page 24](#))

Assembly Assembly is done in the reverse order of disassembly, ([👉 8.3.2, Page 23](#)).

Observe the following when doing this:

- Secure the screws of the adapters with Loctite No. 243.
- Tighten the screws of the adapters with tightening torque, ([👉 8.2.1, Page 20](#)).
- Secure the set-screw with Loctite No. 243.
- Screw in the set-screw until it is flush with the countersink of the top jaw.
 - **NOTICE! Do not screw the set-screw all the way in.**

9.5 Maintenance of the kit for customer-specific top jaws

The top jaws are disassembled, serviced and assembled in the same way as for the quick-change jaw system without additional height, ([👉 9.4, Page 27](#)).