Assembly and Operating Manual

GSW-V

Vacuum grippers

Translation of Original Operating Manual

Hand in hand for tomorrow

Imprint

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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cms@de.schunk.com

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

Table of Contents

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 ▸ 1.1.2 [🗋 6] 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 Applicable documents

- General terms of business *
- Catalog data sheet of the purchased product *

The documents labeled with an asterisk (*) can be downloaded from **schunk.com/downloads**.

1.1.3 Sizes

This operating manual applies to the following sizes:

- GSW-V 20
- GSW-V 25
- GSW-V 32

1.1.4 Variants

This operating manual applies to the following variations:

- GSW-V

1.2 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:

- Observe the specified maintenance and lubrication intervals
- Observe the ambient conditions and operating conditions

Parts touching the workpiece and wear parts are not included in the warranty.

1.3 Scope of delivery

The scope of delivery includes

- Vacuum grippers GSW-V in the version ordered
- Assembly and Operating Manual

1.4 Accessories

A wide range of accessories are available for this product

For information regarding which accessory articles can be used with the corresponding product variants, see catalog data sheet.

2 Basic safety notes

2.1 Intended use

The product is designed exclusively for gripping and temporarily holding workpieces or objects.

- The product may only be used within the scope of its technical data, ▶ 3 [🗋 13].
- The product is intended for installation in a machine/ automated system. The applicable guidelines for the machine/ automated system must be observed and complied with.
- The product is intended for industrial and industry-oriented use. Its use outside enclosed spaces is only permitted if suitable protective measures are taken against outdoor exposure. The product is not suitable for use in salty air.
- The product can be used within the permissible load limits and technical data for holding workpieces during simple machining operations, but is not a clamping device according to EN 1550:1997+A1:2008.
- Appropriate use of the product includes compliance with all instructions in this manual.
- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.2 Not intended use

NOTICE

The use of the GSW-V together with a shrink holder is to be seen as improper use. The manufacturer bears no liability for damage resulting from such use.

2.3 Constructional changes

Implementation of structural changes

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

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Ambient conditions 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 is used only in the context of its defined application parameters, ▶ 3 [🗋 13].
- Make sure that the product is a sufficient size for the application.
- 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.

2.6 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.

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.

2.7 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

2.8 Notes on safe operation

Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.

- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

2.9 Transport

Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.10 Malfunctions

Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

2.11 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.12 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.

- 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.
- Do not reach into the open mechanism or movement area of the product during operation.

2.13 Notes on particular risks

⚠ DANGER

Risk of fatal injury from suspended loads!

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.

⚠ WARNING

Risk of injury from objects falling and being ejected!

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

- Take appropriate protective measures to secure the danger zone.

⚠ WARNING

Risk of injury from sharp edges and corners!

Sharp edges and corners can cause cuts.

- Use suitable protective equipment.

⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

⚠ WARNING

Risk of injury from crushing and impacts!

Serious injury could occur during movement of the base jaw, due to breakage or loosening of the gripper fingers or if the workpiece is lost.

- Wear suitable protective equipment.
- Do not reach into the open mechanism or the movement area of the product.

⚠ WARNING

Risk of injury due to spring forces!

Parts are under spring tension on products which clamp using spring force or which have gripping force maintenance. While disassembling components can move unexpectedly and cause serious injuries.

- Disassemble the product cautiously.
- Make sure that no residual energy remains in the system.

⚠ WARNING

Risk of injury from objects falling during energy supply failure

Products with a mechanical gripping force maintenance can, during energy supply failure, still move independently in the direction specified by the mechanical gripping force maintenance.

- Secure the end positions of the product with SCHUNK SDV-P pressure maintenance valves.

3 Technical data

Size	20	25	32
Mechanical operating data			
Weight [kg]	0.12	0.15	0.23
IP rating	67	67	67
Ambient temperature [°C]			
Min.	-10	-10	-10
Max.	90	90	90
Max. vacuum [bar]	-0.8	-0.8	-0.8
Operating data for media connection			
Pressure medium	Cooling lubricant (filtered, max. particle size 30 µm)		
Min. pressure [bar]	20	20	20
Max. pressure [bar]	60	60	60
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]		
Min. pressure [bar]	4	4	4
Max. pressure [bar]	8	8	8
Air consumption at 4 bar [l/min.]	220	200	250
Air consumption at 6 bar [l/min.]	300	300	350

More technical data is included in the catalog data sheet. Whichever is the latest version.

4 Assembly

4.1 Mechanical connection

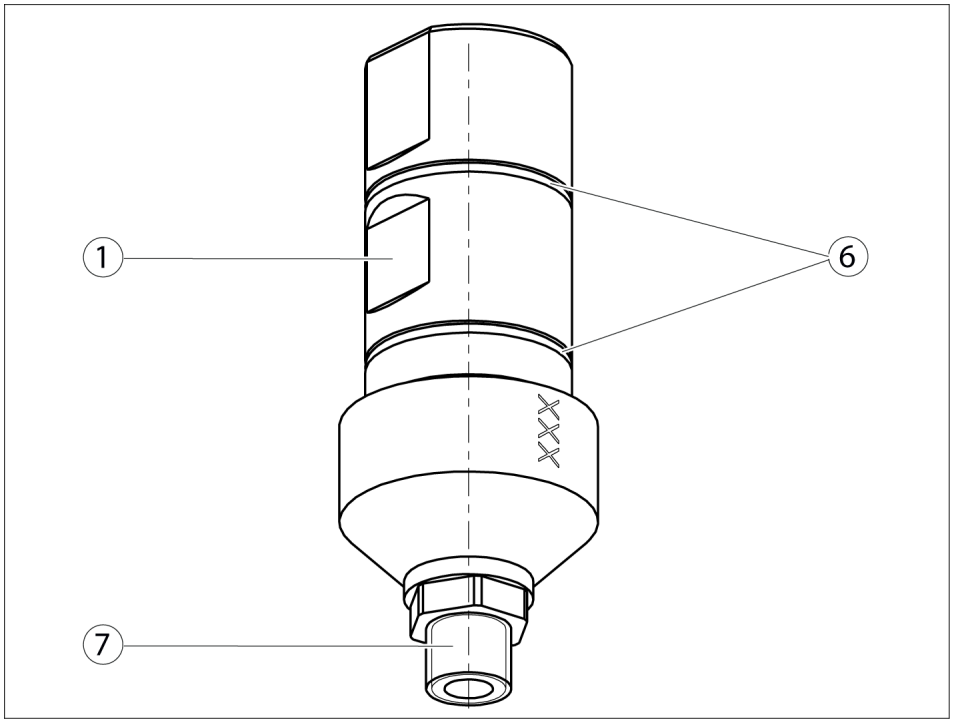
Evenness of the mounting surface

The values apply to the whole mounting surface to which the product is mounted.

Edge length	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

Tab.: Requirements for evenness of the mounting surface (Dimensions in mm)

Mounting



Assembly options

NOTE

Do not use a shrink holder!

1. Check whether the 0-rings (6) are fitted on the shank; fit 0-rings (6) if necessary.
2. Clamp the module with the shank or via the clamping face (1) in the toolholder.

3. Screw in the suction unit reducer (7). Note thread size! ▶ 7.3 [🗋 19]
   Or: replace the reducer directly for the suction unit.

⚠ WARNING

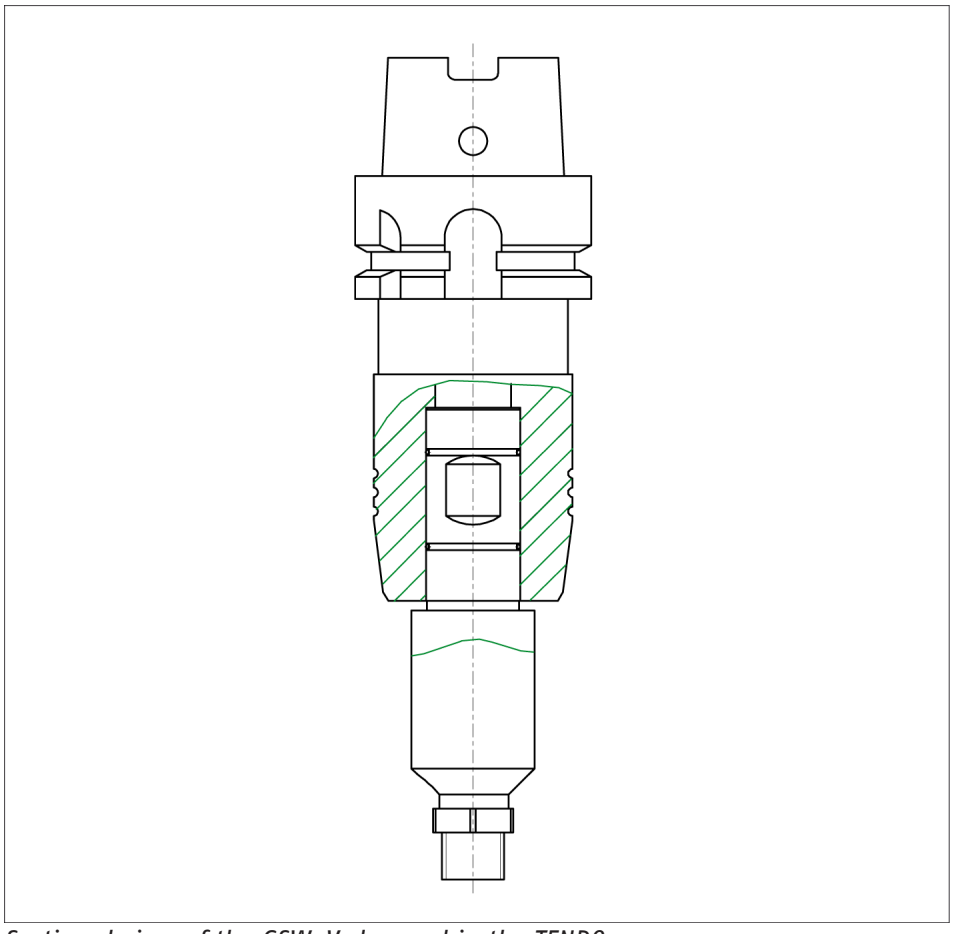
Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

4.2 Assembly example

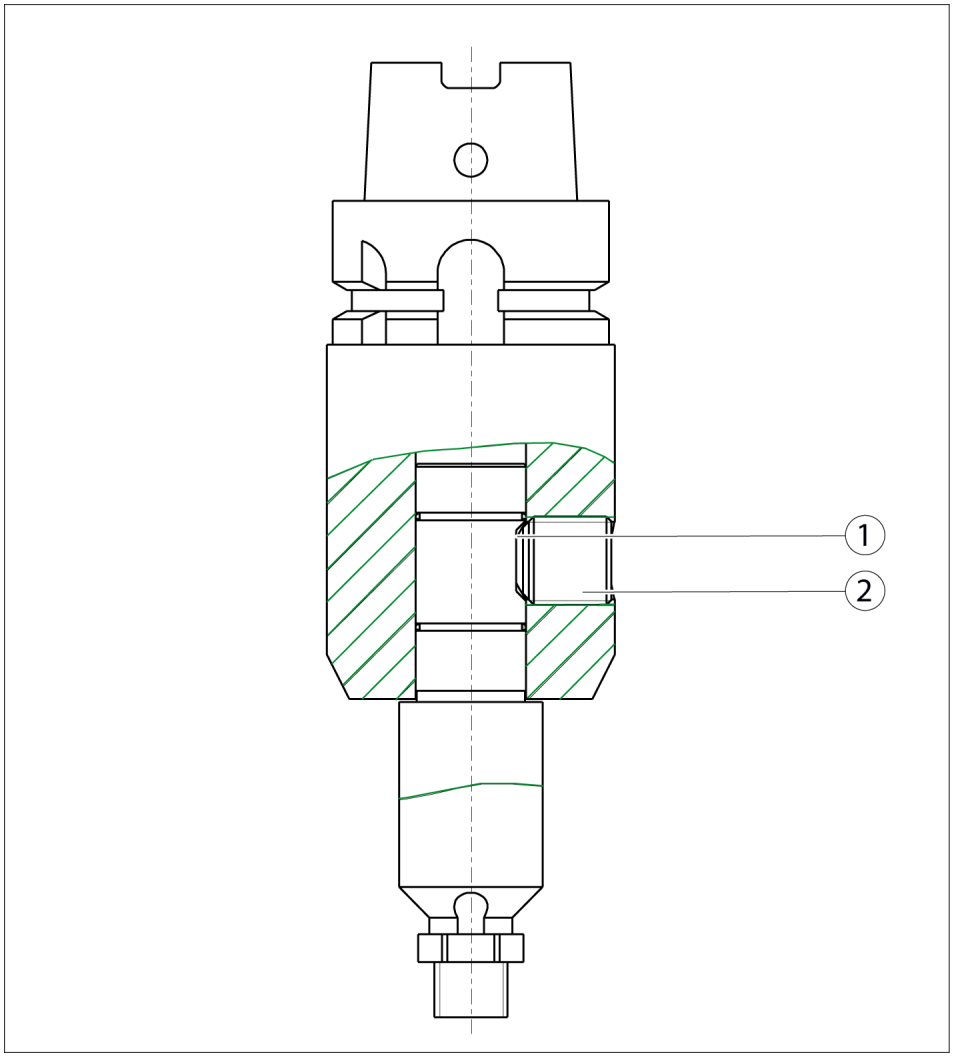
4.2.1 TENDO reducer



Sectional view of the GSW-V clamped in the TENDO

The TENDO toolholder clamps the shank of the GSW-V using distributed clamping.

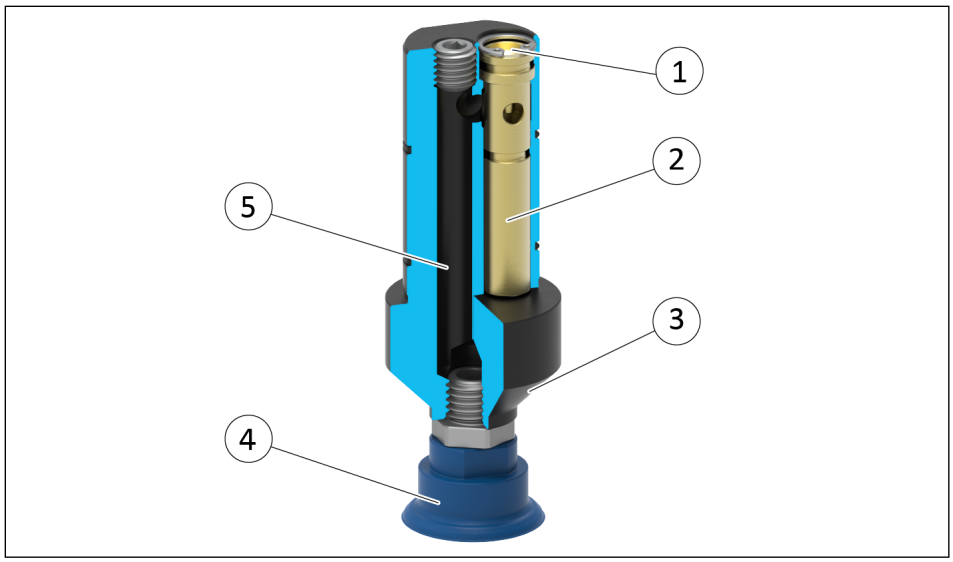
4.2.2 WELDON toolholder



Sectional view of the GSW-V clamped in the WELDON

The shank of the GSW-V is clamped in the clamping face (1) using the set screw (2) of the WELDON toolholder.

5 Operation



Sectional view of GSW-V

Holding the workpiece

⚠ CAUTION

Risk of injury due to the workpiece falling

If the workpiece is very dirty or uneven, it may fall down.

- Only grip workpieces with surfaces that are as clean and even as possible.

1. Apply the vacuum suction unit (4) of the GSW-V to the workpiece.
   ⇨ The vacuum suction unit (4) is slightly flexible so that it can be used for Z-compensation.
2. Switch on the compressed air or cooling lubricant supply of the toolholder.
   ⇨ The compressed air or lubricant enters the Venturi nozzle (2) through the media inlet (1).
   ⇨ This causes the Venturi nozzle (2) to generate a vacuum in the intake duct (5).
   ⇨ The workpiece is now securely held.
   Note: During holding, the gripper continuously supplies coolant or compressed air via the outlet port (3).
3. Position the workpiece using the GSW-V.

Detaching the workpiece

1. Set down the workpiece at its destination position using the GSW-V.
   ⇨ Use the slight flexibility of the vacuum suction unit (4) for Z-compensation again if required.
2. Switch off the compressed air or cooling lubricant supply.
   ⇨ The vacuum will no longer be generated.
   ⇨ The workpiece is no longer held.
3. Lift the GSW-V off the workpiece.

6 Troubleshooting

6.1 No air/cooling water is coming out of the product

Possible cause	Corrective action
Nozzle clogged/dirty	Inspect the nozzle and clean it if necessary ▸ 7.2 [🗋 19]

6.2 Loss of workpiece

Possible cause	Corrective action
Nozzle clogged/dirty	Check and, if need be, clean the nozzle ▸ 7.2 [🗋 19]
The recommended workpiece weight is exceeded / technical data exceeded	Pay attention to the technical data ▸ 3 [🗋 13]

7 Maintenance

7.1 Notes

- Clean the contact surface of the vacuum suction unit if required.
- Wearing parts can be reordered and replaced ▸ 7.3 [🗋 19] if needed.

Original spare parts

Use only original spare parts of SCHUNK when replacing spare and wear parts.

7.2 Cleaning the nozzle

Position of the item numbers ▸ 7.3 [🗋 19]

⚠ WARNING

Risk of injury due to unexpected movements!

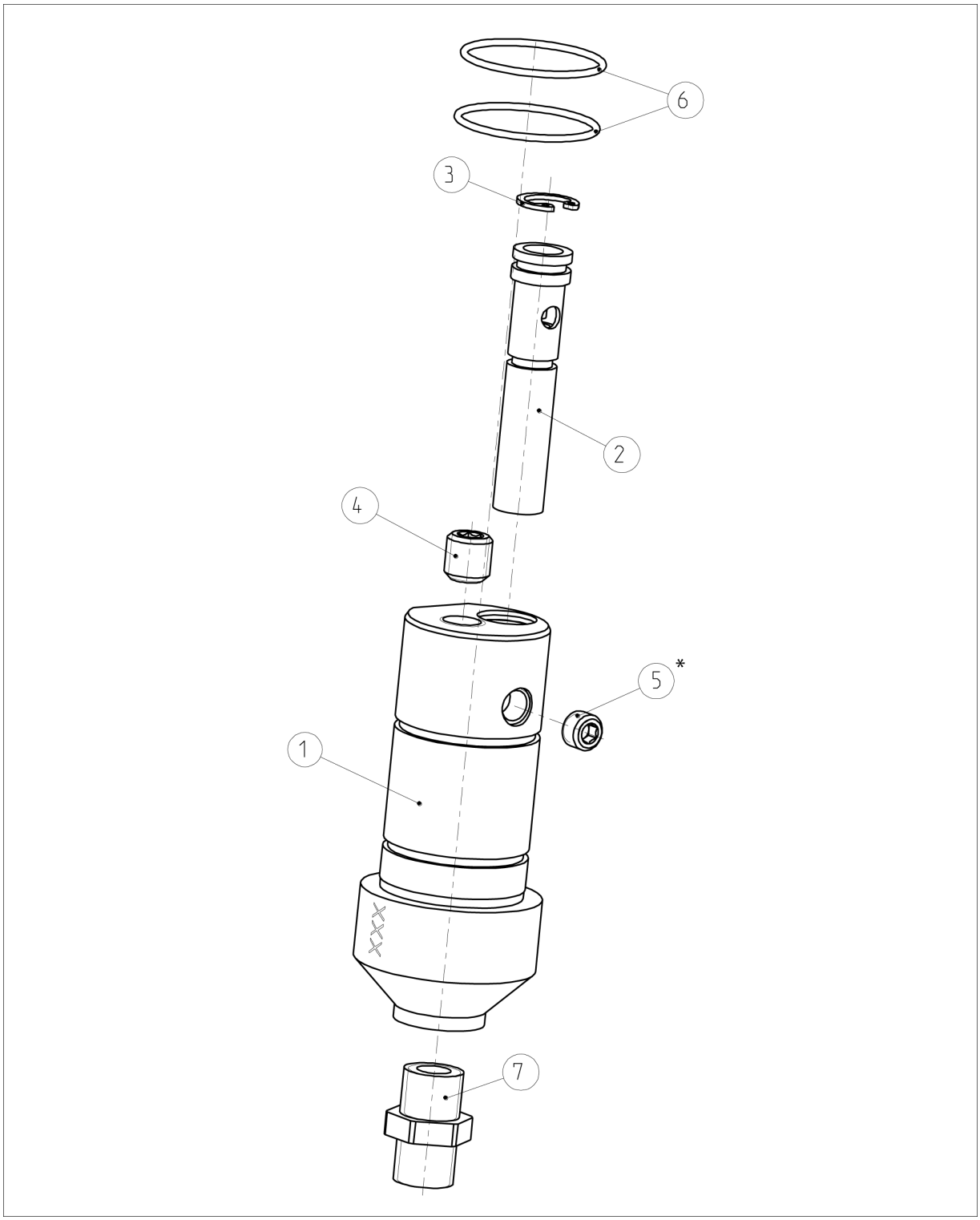
If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

1. Remove the GSW-V from the machine.
2. Screw out the suction unit with reducer (7).
3. Rinse the GSW-V or blast it through (with compressed air) until the nozzle is clear again.
4. Screw in the suction unit with reducer (7) again.

7.3 Assembly drawing

The following figure is an example image.
It serves for illustration and assignment of the spare parts.
Variations are possible depending on size and variant.



* starting from Size GSW-V 32

8 Spare and wearing parts

Position of the item numbers ▸ 7.3 [🗋 19]

8.1 GSW-V 20

Item	ID number	Quantity	Designation
1	5518730	1	GSW-V housing
2	9952178	1	Vacuum insert
3	9939202	1	Safety ring DIN 472, 13 x 1.00
4	9942019	3	Set-screw ISO 4026/45H, M4 x 4 mm, PA coated
6	9611115	2	O ring DIN 3771, 18.00 x 1.00 mm
7	9952180	1	Reducer G1/4 AG / G1/8 AG

Suction unit with GSW-V20 ID number	Individual suction ID number	Designation
0309121	0309135	Suction unit type 30 G1/4
0309122	0309136	Suction unit type 80 G1/4
0309123	0309137	Suction unit type 125 G1/4

8.2 GSW-V 25

Item	ID number	Quantity	Designation
1	5518731	1	GSW-V housing
2	9952178	1	Vacuum insert
3	9939202	1	Safety ring DIN 472, 13 x 1.00
4	9670521	2	Set-screw DIN 915/45H, M8 x 6 mm, PA coated
6	9939228	2	O ring DIN 3771, 23.00 x 1.00 mm
7	9952180	1	Reducer G1/4 AG / G1/8 AG

Suction unit with GSW-V20 ID number	Individual suction ID number	Designation
0309126	0309135	Suction unit type 30 G1/4
0309127	0309136	Suction unit type 80 G1/4

Suction unit with GSW-V20 ID number	Individual suction ID number	Designation
0309128	0309137	Suction unit type 125 G1/4

8.3 GSW-V 32

Item	ID number	Quantity	Designation
1	5518732	1	GSW-V housing
2	9952178	1	Vacuum insert
3	9939202	1	Safety ring DIN 472, 13 x 1.00
4	9670522	1	Set-screw DIN 915/45H, M10 x 10 mm, PA coated
5	9670521	1	Set-screw DIN 913/A2, M8 x 6 mm, PA coated
6	9935428	2	O ring DIN 3771, 29.00 x 1.50mm
7	9952179	1	Reducer G1/4

Suction unit with GSW-V20 ID number	Individual suction ID number	Designation
0309131	0309135	Suction unit type 30 G1/4
0309132	0309136	Suction unit type 80 G1/4
0309133	0309137	Suction unit type 125 G1/4

9 Translation of the original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1 Section B.

Manufacturer/ Distributor	SCHUNK SE & Co. KG Spanntechnik | Greiftechnik | Automatisierungstechnik Bahnhofstr. 106 – 134 D-74348 Lauffen/Neckar

We hereby declare that the partly completed machine described below

Product designation:	Vacuum grippers / GSW-V /pneumatic
ID number	0309120, 0309121, 0309122, 0309123, 0309125, 0309126, 0309127, 0309128, 0309130, 0309131, 0309132, 0309133,

meets the following basic occupational health and safety of the Machinery Directive 2006/42/EC:

No. 1.1.1, No. 1.1.2, No. 1.1.3, No. 1.1.5, No. 1.3.2, No. 1.5.3, No. 1.5.4, No. 1.5.6, No. 1.5.8, No. 1.5.10, No. 1.5.11, No. 1.5.13

The partly completed machinery may not be put into operation until it has been confirmed that the machine into which the partly completed machinery is to be installed complies with the provisions of the Machinery Directive (2006/42/EC). The declaration shall be rendered invalid if modifications are made to the product.

Applied harmonized standards, especially:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:
Stefanie Walter, Address: see manufacturer's address

Signature: see original declaration

Lauffen/Neckar, February 2025

Dr.-Ing. Manuel Baumeister,
Head of Systems Engineering,
Technology & Innovation

10 Information on the RoHS Directive, REACH Regulation and Substances of Very High Concern (SVHC)

RoHS Directive

SCHUNK products are classified as "large-scale stationary installations" or as "large-scale stationary industrial tools" within the meaning of Directive 2011/65/EU and its extension 2015/863/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)", or fulfill their intended function only as part of one. Therefore products from SCHUNK do not fall within the scope of the directive at this time.

REACH Regulation

Products from SCHUNK fully comply with the regulations of Regulation (EC) No. 1907/2006 "concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)" and its amendment 2022/477. SCHUNK attaches great importance to completely avoiding chemicals of concern to humans and the environment wherever possible.

Only in rare exceptional cases do SCHUNK products contain SVHC substances on the candidate list with a mass content above 0.1%. In accordance with Article. 33 (1) of Regulation (EC) No. 1907/2006, SCHUNK complies with its duty to "communicate information on substances in articles" and lists the components concerned and the substances used in an overview that can be viewed at **schunk.com\SVHC**.

Signature: see original declaration

Lauffen/Neckar, February 2025

Dr.-Ing. Manuel Baumeister,
Head of Systems Engineering,
Technology & Innovation

SCHUNK SE & Co. KG
Spanntechnik | Greiftechnik | Automatisierungstechnik

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02-2025

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