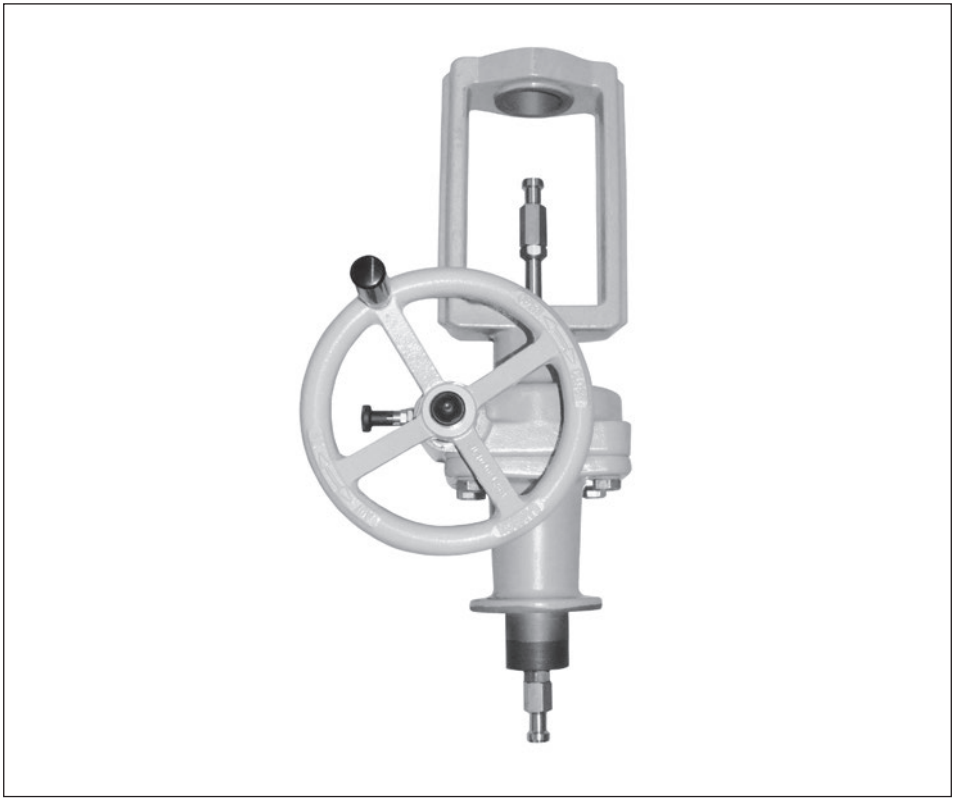
MOUNTING AND
OPERATING INSTRUCTIONS

EB 8312-2 EN

Translation of original instructions



Type 3273 Side-mounted Handwheel

30 mm rated travel

Edition March 2021

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.

➔ If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersalesservice@samsongroup.com).

Documents relating to the device, such as the mounting and operating instructions, are available on our website at ***www.samsongroup.com > Service & Support > Downloads > Documentation***.

Definition of signal words

⚠ DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

⚠ WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

1 Safety instructions and measures

Intended use

The SAMSON Type 3273 Hand-operated Handwheel is mounted on a valve and is intended for the following activities in combination with a pneumatic actuator (e.g. SAMSON Type 3271 or Type 3277 Actuator):

- To manually move the valve to the closed or open position for maintenance or repair work (e.g. while exchanging the actuator)
- To manually move the valve upon air supply failure
- To hold the valve in the fail-safe position while performing maintenance and repair work on the pneumatic actuator
- Special version: to operate a mounted valve without pneumatic actuator

The side-mounted handwheel in combination with a pneumatic actuator is not suitable to perform control tasks. The side-mounted handwheel is designed to operate under exactly defined conditions (e.g. thrust, travel, actuator area). Therefore, operators must ensure that the side-mounted handwheel is only used in operating conditions that meet the specifications used for sizing at the ordering stage. In case operators intend to use the handwheel in other applications or conditions than specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data and nameplate for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

The handwheel is not suitable for the following applications:

- Limiting the valve travel
- Controlling the flow rate through the valve (except for the special version without pneumatic actuator)
- Use outside the limits defined during sizing and by the technical data

Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts
- Performing service and repair work not described

Qualifications of operating personnel

The handwheel must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices must be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Personal protective equipment

We recommend wearing the following protective equipment:

– Safety gloves due to the moving parts (actuator stem, threaded rod, plug stem, handwheel)

➔ Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

Safety devices

The side-mounted handwheel is locked by a locking bolt, which locks the gear, to prevent accidental adjustment of the valve travel (see Fig. 11 and section 7.1).

Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the handwheel by the signal pressure or moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warning and caution notes in these mounting and operating instructions.

Responsibilities of the operator

Operators are responsible for proper use and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions as well as the referenced documents to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third parties are not exposed to any danger.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the referenced documents and observe the specified hazard statements, warnings and caution notes. Furthermore, operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- Mounting and operating instructions for the mounted actuator, e.g. for Type 3271 or Type 3277 Pneumatic Actuator:
  - ▶ EB 8310-2 (1000 cm²) (Type 3271 only)
  - ▶ EB 8310-3 (1400-60 cm²) (Type 3271 only)
  - ▶ EB 8310-4 (355 cm²)
  - ▶ EB 8310-5 (175 and 750 cm²)
  - ▶ EB 8310-6 (240, 350 and 700 cm²)
- Mounting and operating instructions for the valve on which it is mounted
- ▶ AB 0100 for tools, lubricant and tightening torques
- When a substance is used in the device, which is listed as being a substance of very high concern on the candidate list of the REACH regulation:
  Information on safe use of the part affected
  ▶ www.samsongroup.com > About SAMSON > Material Compliance > REACH

  If a device contains a substance which is listed as being a substance of very high concern on the candidate list of the REACH regulation, this circumstance is indicated on the SAMSON delivery note.

1.1 Notes on possible severe personal injury

⚠ DANGER

The handwheel poses no hazard with possible severe personal injury.

➔ Observe hazard statements in the associated valve and actuator documentation.

1.2 Notes on possible personal injury

⚠ WARNING

Crush hazard arising from moving parts.

The handwheel contains moving parts (actuator stem, threaded rod, plug stem, handwheel), which can injure hands or fingers if inserted into it.

➔ Do not insert hands or finger into the yoke while the valve is in operation.

➔ While working on the handwheel, disconnect and lock the pneumatic air supply as well as the control signal.

➔ Use the locking bolt to lock the handwheel.

Risk of personal injury due to incorrect removal of the anti-rotation fixture with clamps under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps of the anti-rotation fixture on the plug stem are under tension.

➔ Follow the instructions in this document during mounting or removal.

➔ First remove the actuator from the valve or ensure it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture on the plug stem.

Exposure to hazardous substances poses a serious risk to health.

Certain lubricants and cleaning agents are classified as hazardous substances. These substances have a special label and a material safety data sheet (MSDS) issued by the manufacturer.

➔ Make sure that an MSDS is available for any hazardous substance used. If necessary, contact the manufacturer to obtain an MSDS.

➔ Inform yourself about the hazardous substances and their correct handling.

1.3 Notes on possible property damage

NOTICE

Risk of handwheel damage due to the use of unsuitable tools.

➔ To turn the handwheel, do not use any additional tools, such as a lever or wrench.

Risk of handwheel damage due to the use of excessive force.

➔ Do not turn the handwheel any further when it has reached its end position by exerting force.

Risk of damage to control valve components due to excessively high or low tightening torques.

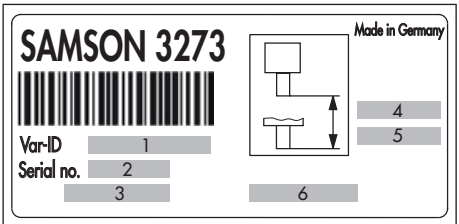
Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

➔ Observe the specified tightening torques (▶ AB 0100).

2 Markings on the device

2.1 Nameplate of the side-mounted handwheel

It includes all details required to identify the handwheel:



1 Configuration ID
2 Serial number
3 Year of manufacture
4 Operating travel (mm)
5 Operating travel (inch)
6 Maximum thrust (kN)

Fig. 1: *Nameplate*

The nameplate is located on the top bonnet (see Fig. 2).

2.2 Valve nameplate

See associated valve documentation.

2.3 Actuator nameplate

See associated actuator documentation.

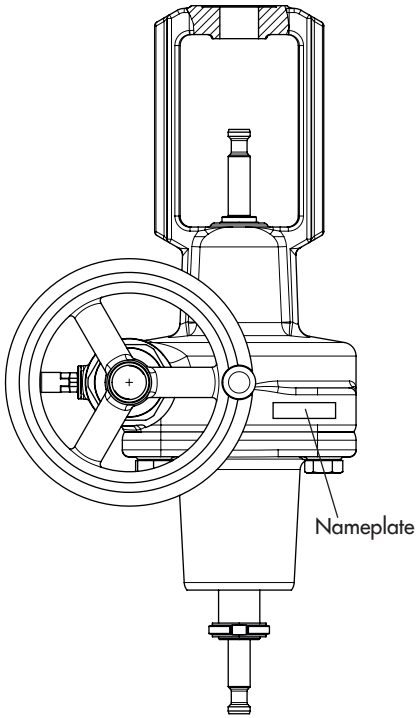


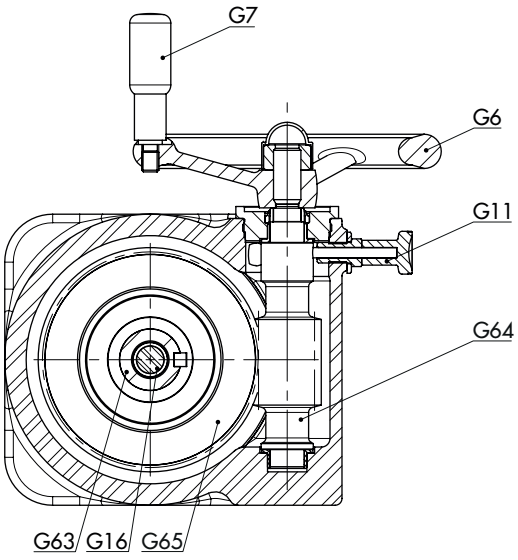
Fig. 2: *Nameplate position*

3 Design and principle of operation

The Type 3273 Side-mounted Handwheel with 30 mm travel is suitable for mounting on SAMSON Series 240, 250, 280 and 290 Valves or on suitable interfaces together with the Type 3271 or Type 3277 Pneumatic Actuators with areas of 175 to 1400-60 cm². A special version of the side-mounted handwheel can also be used to move the valve when a pneumatic actuator is not mounted on it.

The side-mounted handwheel is mounted between the valve and actuator. The handwheel can remain mounted on the valve during maintenance and repair work or while exchanging the pneumatic actuator. The handwheel can be used in this case to move the valve manually to its closed or open position. The handwheel can be used to move the valve manually opposing the spring force of the pneumatic actuator upon signal or supply air failure.

The worm shaft unit, consisting of the worm shaft and worm-geared wheel, is driven over the handwheel. The spindle nut transfers the rotary motion to the threaded rod, which moves the valve. Depending on the direction of rotation and mounted valve, the threaded rod extends or retracts.



G6 Handwheel
G7 Handle
G11 Locking bolt
G16 Threaded rod
G63 Spindle nut
G64 Worm shaft
G65 Worm-geared wheel

Fig. 3: *Sectional drawing of Type 3273 Side-mounted Handwheel*

For mounted SAMSON globe valves

The handwheel is marked 'Open/Close' and has directional arrows.

– Turn the handwheel clockwise: the globe valve closes.
– Turn the handwheel counterclockwise: the globe valve opens.

For mounted SAMSON three-way valves

A label is affixed to the handwheel, which indicates in which direction the threaded rod is moved when the handwheel is turned (see Fig. 4).

The gear is locked by the locking bolt to prevent accidental adjustment.

3.1 Versions

– **Version with 30 mm Ø connection** for Type 3271 and Type 3277 Actuators with 175 to 750 cm² actuator areas (see Table 1)
– **Version with 60 mm Ø connection** for Type 3271 Actuators with 1000 or 1400-60 cm² actuator area (see Table 1)
– **Special version** without pneumatic actuator · On request

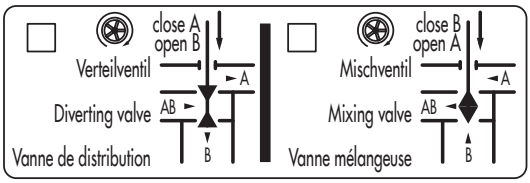


Fig. 4: *Label on handwheel when mounted on SAMSON three-way valves*

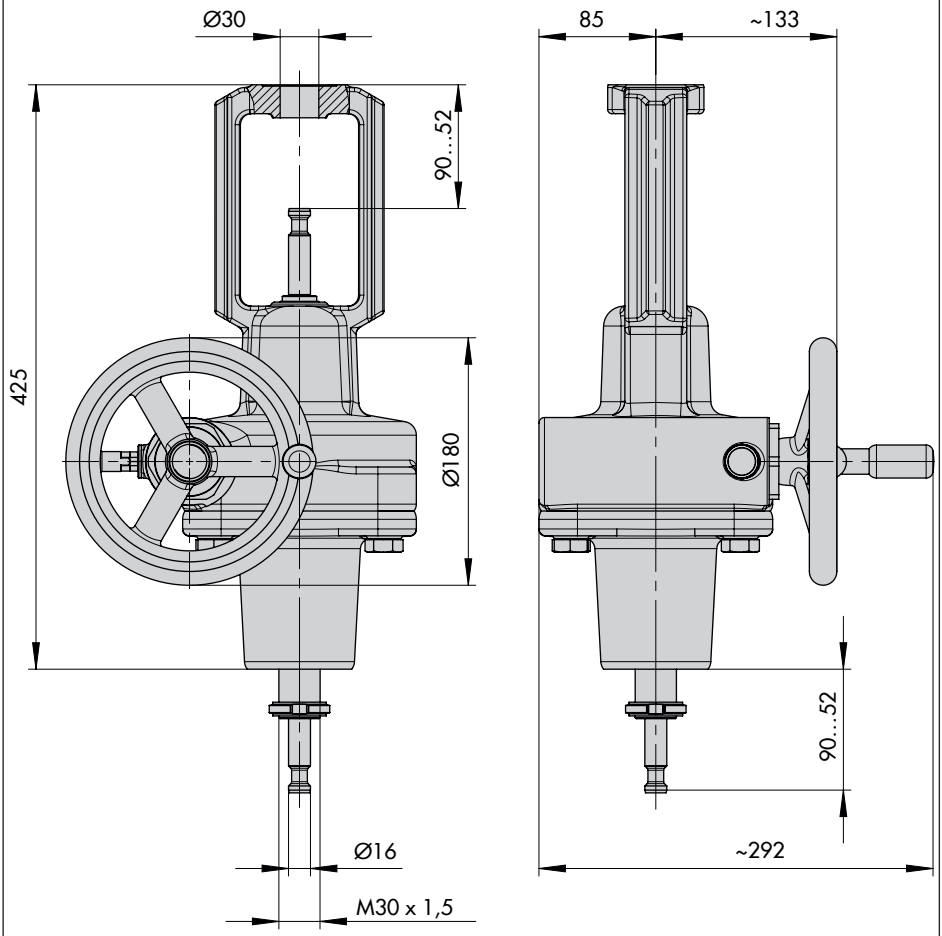
3.2 Technical data

Table 1: *Technical data for Type 3273 up to 30 mm rated travel*

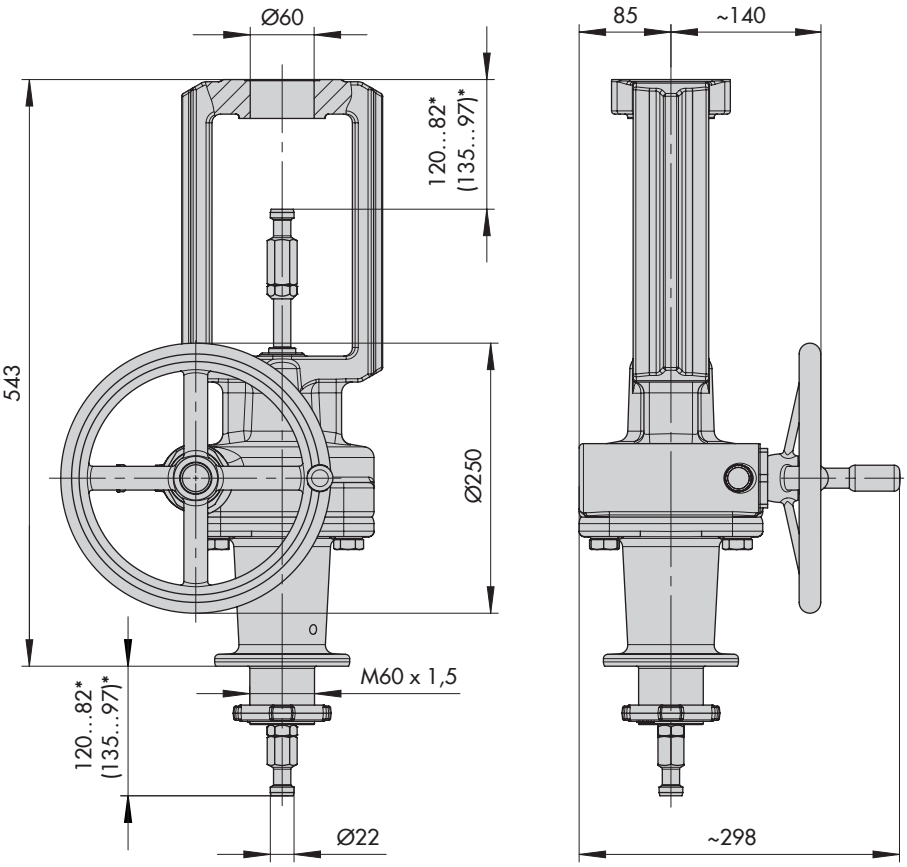
Type 3273	Version with connection	
	Ø 30 mm (see dimensional drawing on p. 14)	**Ø 60 mm (see dimensional drawing on p. 15)**
Rated travel	30 mm [1]	30 mm [1]
Max. travel range	38 mm	38 mm
Max. thrust	35 kN	50 kN
Operating forces	According to DIN EN 12570	
Max. number of turns	With 30 mm travel: 147 With 15 mm travel: 73.5	
Max. handwheel diameter	180 mm	250 mm
Mounted on actuators with actuator areas	175, 240, 350, 355, 700, 750 cm²	1000, 1400-60 cm²
Materials		
Body material and permissible ambient temperature	1.0619/A216 WCC: –29 to +120 °C 1.5638/A352 LC3: –60 to +90 °C	
Spindle	1.4404/A479 316L	
Threaded nut	1.4104/A582 430F	
Handwheel	Cast iron or aluminum	
Weight (gear only)	26 kg	37 kg

[1] Also for pneumatic actuators with 30 mm rated travel and up to 25 % (7.5 mm) spring compression

Dimensional drawings · Version with Ø 30 mm connection



Dimensional drawings · Version with Ø 60 mm connection



* For "Actuator stem retracts" direction of action: swap top and bottom stem connector nuts

4 Shipment and on-site transport

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

4.1 Accepting the delivered goods

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Check that the specifications on the handwheel nameplate match the specifications in the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).
3. Determine the weight and dimensions of the units to be lifted and transported in order to select the appropriate lifting equipment and lifting accessories, if required. Refer to the transport documents and section 3.2.

4.2 Removing the packaging from the handwheel

Proceed as follows to lift and install the handwheel:

1. Remove the packaging from the handwheel.
2. Dispose and recycle the packaging in accordance with the local regulations.

4.3 Transporting and lifting the handwheel

⚠ DANGER

Danger due to suspended loads falling.

➔ *Stay clear of suspended or moving loads.*

➔ *Close off and secure the transport paths.*

⚠ WARNING

Risk of lifting equipment tipping over and risk of damage to lifting accessories due to exceeding the rated lifting capacity.

➔ *Only use approved lifting equipment and accessories whose minimum lifting capacity is higher than the weight of the item being transported (including the packaging, if applicable).*

❗ NOTICE

Risk of handwheel damage due to incorrectly attached slings.

The handwheel is not designed to take the weight of the entire handwheel unit.

➔ *When lifting the handwheel unit, make sure that the slings attached to the yoke bear the entire load.*

➔ *Do not attach load-bearing slings to the handwheel.*

➔ *Observe lifting instructions (see section 4.3.2).*

Tip

Our after-sales service can provide more detailed transport and lifting instructions on request.

4.3.1 Transporting the handwheel

The handwheel can be transported using lifting equipment (e.g. crane or forklift).

➔ Leave the handwheel in its transport container or on the pallet to transport it.

➔ Observe the transport instructions.

Transport instructions

– Protect the handwheel against external influences (e.g. impact).
– Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
– Protect the handwheel against moisture and dirt.
– Observe the permissible ambient temperatures (see section Table 1).

4.3.2 Lifting the handwheel

To mount the handwheel, use lifting equipment (e.g. crane or forklift) to lift it.

Lifting instructions

– Use a hook with safety latch to secure the slings from slipping off the hook during lifting and transporting.
– Secure slings against slipping.
– Make sure the slings can be removed after mounting the handwheel.
– Prevent the handwheel from tilting or tipping.
– Do not leave loads suspended when interrupting work for longer periods of time.

Lifting the handwheel

1. Attach the lifting tackle to the yoke.
2. Carefully lift the handwheel. Check whether the lifting equipment and accessories can bear the weight.
3. Move the handwheel at an even pace to the site of installation.
4. Mount the handwheel. See section 5.
5. Remove the lifting tackle.

4.4 Storing the handwheel

NOTICE

Risk of handwheel damage due to improper storage.

➔ *Observe the storage instructions.*

➔ *Avoid long storage times.*

➔ *Contact SAMSON in case of different storage conditions or longer storage times.*

Storage instructions

– Protect the handwheel against external influences (e.g. impact).
– Secure the handwheel in the stored position against slipping or tipping over.

- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the handwheel against moisture and dirt. Store it at a relative humidity of less than 75 %. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
- Make sure that the ambient air is free of acids or other corrosive media.
- Observe the permissible ambient temperatures (see section Table 1).
- Do not place any objects on the handwheel.
- Pack the handwheel in airtight packaging.

Tip

SAMSON's After-sales Service can provide more detailed storage instructions on request.

5 Installation

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

NOTICE

Risk of damage to control valve components due to excessively high or low tightening torques.

Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

➔ *Observe the specified tightening torques (▶ AB 0100).*

NOTICE

Risk of damage to control valve components due to the use of unsuitable tools.

Certain tools are required to work on the control valve.

➔ *Only use tools approved by SAMSON (▶ AB 0100).*

NOTICE

Risk of damage to control valve components due to the use of unsuitable lubricants.

The lubricants to be used depend on the material of the control valve. Unsuitable lubricants may corrode and damage surfaces.

➔ *Only use lubricants approved by SAMSON (▶ AB 0100).*

NOTICE

Risk of malfunction due to different travels.

➔ *Make sure that the travels of the actuator, handwheel and valve match. If in doubt, contact our after-sales service.*

NOTICE

Risk of control valve damage due to incorrect mounting.

➔ *Versions with fork-shaped anti-rotation fixture at the plug stem must only be mounted by our after-sales service or after they have given their consent.*

NOTICE

Risk of malfunction due to incorrect mounting of the stem connector nut.

Two different stem connector nuts with varying lengths exist for mounting the handwheel on Type 3271 Actuators with 1000 or 1400-60 cm² actuator area.

➔ *For "stem extends" direction of action, screw the long stem connector nut (G70) from above and the short stem connector nut (G71) from below onto the threaded rod.*

➔ *For "stem retracts" direction of action, screw the short stem connector nut (G71) from above and the long stem connector nut (G70) from below onto the threaded rod.*

5.1 Preparation for installation

Proceed as follows:

➔ Remove the actuator first if the valve and actuator have already been assembled without handwheel. See associated actuator documentation.

➔ Check the handwheel for damage.

➔ Check whether the handwheel (model, travel, thrust and handwheel diameter) fits the actuator and valve.

If the valve, actuator and handwheel are delivered separately, assemble the components as described in the following section.

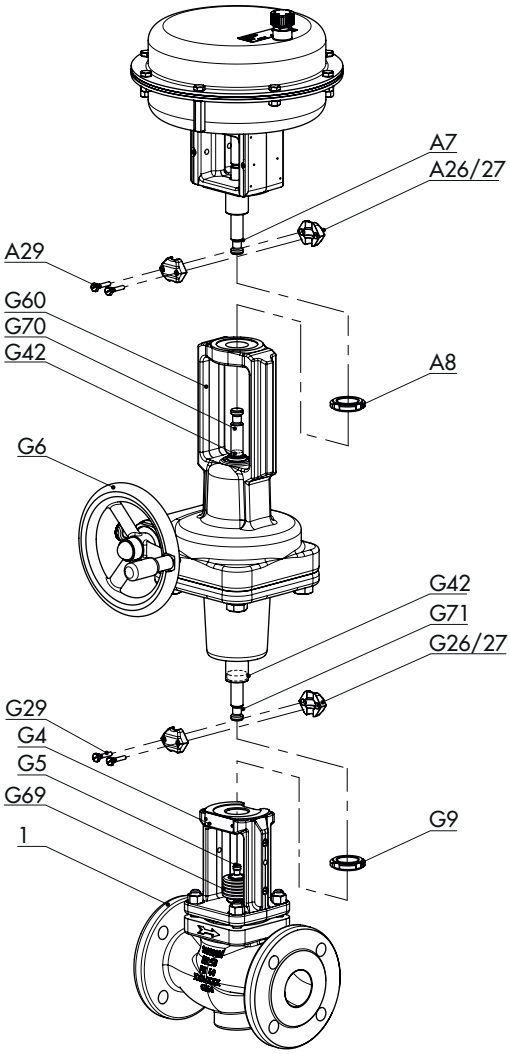
➔ See associated valve and actuator documentation for additional mounting instructions.

5.2 Mounting the handwheel onto the valve

5.2.1 Valve without anti-rotation fixture

See Fig. 5

1. Place the handwheel on the yoke (G4) so that it faces the operating side. The inscription on the valve body (1) serves as a guide (as it also faces the operating side).
2. Apply a suitable lubricant to the thread of the fastening nut (G9).
3. Slide the fastening nut (G9) over the stem connector nut (G71) and screw it tight at the yoke (G4). Observe tightening torques.
4. Move the handwheel to the neutral position (see section 7.1).
5. Place the stem connector nut (G5) on the plug stem, screw it tight and use a suitable tool to lock it at the lock nut. Observe tightening torques.
6. Turn the handwheel to slowly extend the threaded rod downward until the ready-mounted stem connector nut (G71) on the threaded rod touches the stem connector nut (G5) on the valve.
7. Connect the threaded rod and plug stem using the stem connector clamps (G26/27). Tighten the hex screws (G29). Observe tightening torques.
8. Optionally, a protective bellows (G69) can be mounted around the plug stem on the valve side.



1	Valve body
G4	Yoke [1]
A7	Actuator stem
A8	Ring nut
A26/27	Stem connector clamp
A29	Hex bolt
G5	Stem connector nut [2]
G6	Handwheel
G9	Nut
G 26/27	Stem connector clamp
G29	Hex bolt
G42	Lock nut
G60	Top bonnet (with yoke)
G69	Protective bellows
G70	Stem connector nut
G71	Stem connector nut

1) Replaces the flange of the valve (2)
2) Replaces the stem connector nut of the valve (9)

Fig. 5: *Type 3273 Side-mounted Handwheel between valve and actuator ("stem extends" direction of action)*

5.2.2 Valve with clamp-type anti-rotation fixture

See Fig. 6, Fig. 7, Fig. 8 and Fig. 9

Before mounting the handwheel and actuator, the external clamp-type anti-rotation fixture must be mounted onto the plug stem in some cases. The valve must be closed beforehand.

Series 240 Valves (DN 200/NPS 8 and larger) and Series 250 Valves (DN 125/ NPS 6)

1. Unthread the lock nut and stem connector nut on the valve from the plug stem (if they are mounted).
2. Undo the castellated nut (92) to remove the yoke from the valve.

i ***Note***

Depending on the valve (model, valve size etc.), the yoke (belonging to the valve) is used instead of the yoke (G4) of the handwheel.

3. Insert ball bearings (310) into the recesses in the bonnet.
4. Place the yoke (G4) on the bonnet in such a way that the ball bearings fit into the recesses of the yoke.
5. Fasten the yoke (G4) using the castellated nut (92).
6. Position the travel indicator scale (84) on the hanger (83) with the screws (85) according to Table 3.
7. Use a soft-faced hammer or lever press to press the sliding washers (309) with their beveled part first (without using any lubricant) into the recesses of the clamps (301) as far as they will go. Remove any excess material.
8. Apply a thin film of lubricant (114) to the threads of the stem connector rod (G5) and screws (303).

Legend for Fig. 6

A7	Actuator stem
A8	Ring nut
A26/ 27/ 29	G26/ 27/ 29 Stem connector clamp
G1	Yoke (belonging to the actuator)
G2	Stem connector nut (belonging to the actuator)
G4	Yoke (belonging to the valve)
G5	Stem connector rod (belonging to the valve)
G6	Handwheel
G9	Fastening nut (belonging to the valve)
G16	Threaded rod
G42	Lock nut (belonging to the actuator)
G51	Lock nut (belonging to the valve)
G60	Top bonnet
G64	Worm shaft

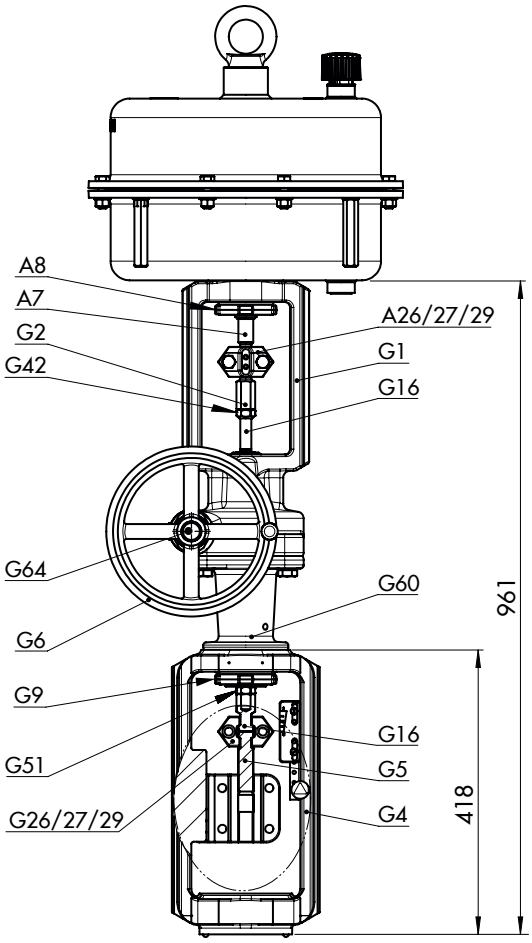
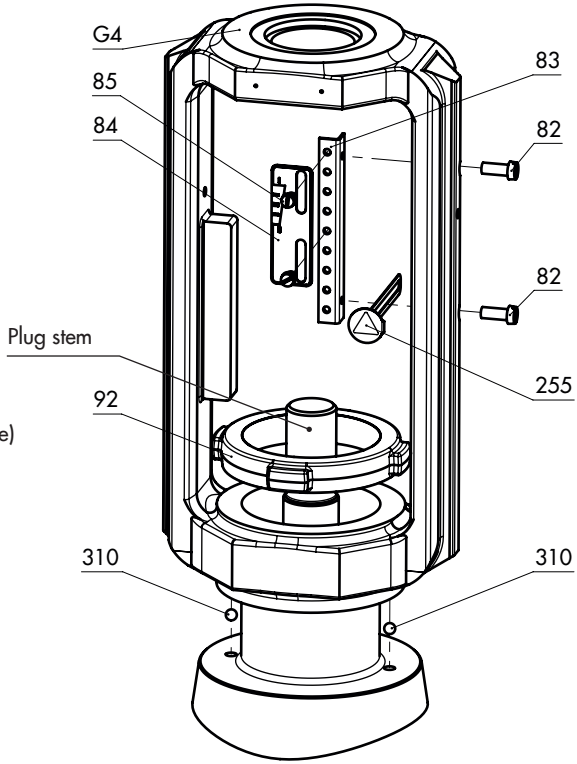
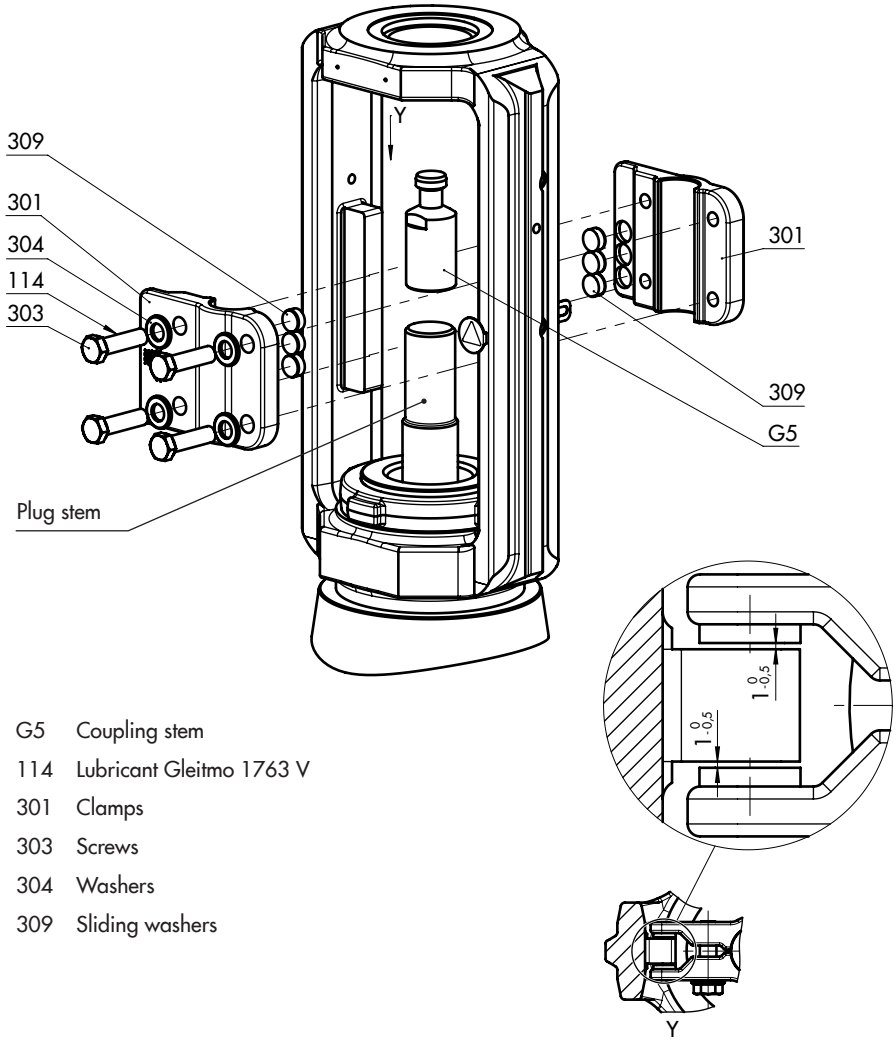


Fig. 6: *Type 3273 Handwheel with 30 mm travel for mounting on Series 240 and 250 Valves with clamp-type anti-rotation fixture and Type 3271 Actuator with 1000 or 1400-60 cm² actuator area*



G4 Yoke (belonging to the valve)
82 Screws
83 Hanger
84 Travel indicator scale
85 Screws
92 Castellated nut
255 Warning label
310 Ball bearing

Fig. 7: *Overview of yoke assembly with travel indicator scale in the standard version*



G5 Coupling stem
114 Lubricant Gleitmo 1763 V
301 Clamps
303 Screws
304 Washers
309 Sliding washers

Fig. 8: *Overview of clamp-type anti-rotation fixture assembly in the standard version*

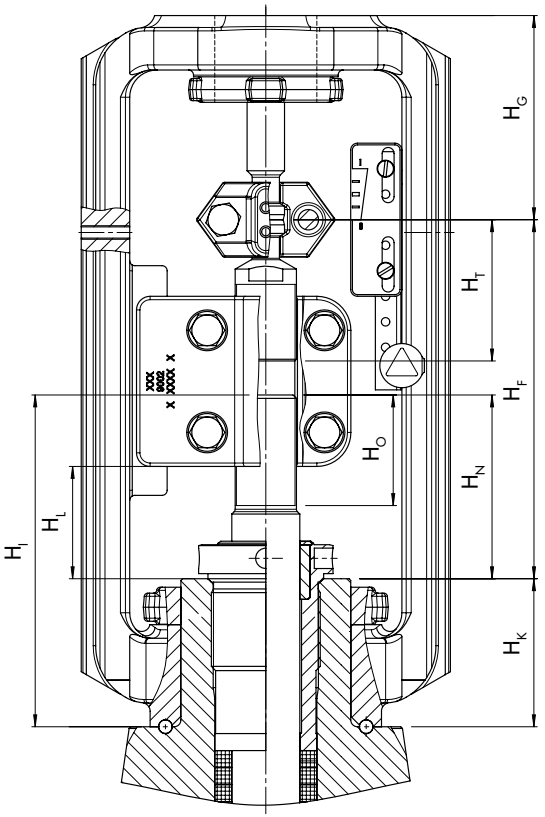


Fig. 9: *Mounting dimensions*

Table 3: *Mounting dimensions (see Fig. 9 for dimensional drawing)*

Actuator	Travel	Actuator preloading		Dimension when the valve is closed [mm]							
[cm²]	[mm]	[%]	[mm]	H_F	H_G	H_I	H_K	H_L	H_N	H_O	H_T
DN 125 to 150/NPS 6 · Standard version											
355 750	15	0	0	263.5	67.5	192	87	48	105	70	145
	15	50	15	256	75						
	15	75	22.5	263.5	67.5						
	30	0	0	241	90						120
	30	25	7.5	248.5	82.5						
1000 1400-60	15	100	60	226	105	192	87	48	105	70	103
	30	0	0	211	120						88
	30	75	45								
DN 200 to 250/NPS 8 to 10 up to seat bore 200 · Standard version											
355 750	30	0	0	241	90	195	87	61	108	65	120
1000 1400-60	30	0	0	211	120	195	87	66	108	65	83
	30	75	45								
DN 250/NPS 10, seat bore 250 and DN 300 to 500/NPS 12 to 20 · Standard version											
1000 1400-60	30	0	0	281	135	237	87	100	150	110	121
	30	75	45	296	120						135

NOTICE

Impaired functioning due to incorrectly applied lubricant.

➔ *Do not apply any lubricant to the threads of the clamps (301) or the plug stem.*

9. Position the clamps (301) and stem connector rod (G5) on the plug stem according to Table 3 and tighten screws (303) and washers (304) by hand.
10. Place the handwheel on the yoke (G4) (belonging to the valve) so that it faces the operating side. The inscription on the valve body (1) serves as a guide (as it also faces the operating side).
11. Apply a suitable lubricant to the thread of the fastening nut (G9).
12. Slide the fastening nut (G9) over the stem connector nut (G71) and screw it tight at the yoke (G4). Observe tightening torques.
13. Move the handwheel to the neutral position (see section 7.1).
14. Turn the handwheel to slowly extend the threaded rod (G16) downward until the threaded rod (G16) rests on the stem connector rod (G5).
15. Readjust the stem connector rod (G5), if necessary.
16. Gradually tighten the screws (303) in a crisscross pattern. Observe the tightening torques specified in Table 2.

Table 2: *Tightening torques*

Screw size	Tightening torque [Nm]
M12	50
M16	121

17. Check and ensure the following:
    - There is a nominal clearance of 0.5 to 1 mm between the sliding washers and their contact surface on the yoke on each side (see detailed view Y in Fig. 8).
    - The anti-rotation fixture does not get stuck on the yoke and can move freely in the direction of travel.
18. Mount the stem connector clamp (G26/27/29) on the threaded rod (G16) and stem connector rod (G5).

Aligning the travel indicator scale

After mounting the actuator (see section 5.3) the travel indicator scale must be aligned. To do so, align '0' on the travel indicator scale with the tip of the stem connector clamp (see Fig. 9).

1. Move the valve to the closed position.
2. Loosen the screws on the travel indicator scale.
3. Align the travel indicator scale.
4. Fix the travel indicator scale into place by tightening the screws.

5.3 Mounting the actuator on the handwheel

⚠ WARNING

Risk of personal injury due to incorrect removal of the anti-rotation fixture with clamps under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps (301) of the anti-rotation fixture on the plug stem are under tension.

- ➔ *Follow the instructions in this document during mounting or removal.*
- ➔ *Do not loosen the screws (303) of the anti-rotation fixture while the force generated by the supply air and/or the actuator springs is transmitted to the actuator stem and the stem connector rod (G5).*
- ➔ *First remove the actuator from the valve or ensure it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture on the plug stem.*

Tip

The handwheel and actuator are assembled with special attention paid to the actuator's bench range and direction of action. These details are specified on the actuator nameplate (see the associated actuator documentation).

1. Move the handwheel to the neutral position (see section 7.1).
2. Remove the clamps of the stem connector (A26/27) and the ring nut (A8) from the actuator.
3. Apply a suitable lubricant to the threaded nipple on the top bonnet (G60).
4. **In the "actuator stem extends" version:** apply a signal pressure to the connection on the bottom diaphragm chamber to completely retract the actuator stem (A7).

   In the "actuator stem retracts" version: vent the actuator to retract the actuator stem (A7) completely.
5. Place the actuator on the top bonnet (G60) of the handwheel.
6. Apply a suitable lubricant to the ring nut (A8).
7. Slide the ring nut (A8) over the actuator stem (A7) and fasten it on the actuator. Observe tightening torques.
8. Adjust the rated travel of the actuator over the stem connector nut (G70). The rated travel corresponds to the distance from the bottom of the actuator stem to the tip of the stem connector nut.
9. Use a suitable tool to lock the stem connector nut (G70) at the lock nut (G42) on the actuator side.
10. **In the "actuator stem extends" version:** vent the actuator to extend the actuator stem (A7) completely. It must touch the stem connector nut (G70).

    In the "actuator stem retracts" version: apply a signal pressure to the actuator to extend the actuator stem (A7) completely. It must touch the stem connector (G70).
11. Connect the threaded rod and actuator stem (A7) using the stem connector

clamps (A26/27). Tighten the hex screws (A29). Observe tightening torques.

6 Start-up

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

6.1 Quick check

To test the valve's ability to function after mounting the side-mounted handwheel, the following quick checks can be performed:

Travel motion

The movement of the actuator stem must be linear and smooth.

➔ Open and close the valve, observing the movement of the actuator stem.

➔ Apply the maximum and minimum control signals to check the end positions of the valve.

Handwheel

➔ Shut off the signal pressure line.

➔ Unlock the handwheel (see section 7.2).

➔ Turn the handwheel to open and close the valve.

Fail-safe position

➔ Shut off the signal pressure line.

➔ Check whether the valve moves to the fail-safe position.

7 Operation

The handwheel is ready for use when mounting and start-up have been completed.

⚠ WARNING

Crush hazard arising from moving parts (actuator stem, threaded rod, plug stem, handwheel).

➔ *Do not insert hands or finger into the yoke while the valve is in operation.*

! NOTICE

Operation disturbed by a blocked actuator stem, threaded rod or plug stem.

➔ *Do not impede the movement of the actuator stem, threaded rod or plug stem by inserting objects into their path.*

The valve position is adjusted by the handwheel in manual operation. It can be adjusted either when the supply air is still applied or has failed or when no pneumatic actuator is mounted onto the valve (special version).

7.1 Working in automatic operation

In automatic operation, the valve is moved by the pneumatic signal. The side-mounted handwheel is locked by the locking bolt to prevent accidental adjustment of the valve travel.

In automatic operation, the handwheel is in the neutral position. The groove at the top end of the threaded rod must be aligned with the top of the guide tube (see Fig. 10).

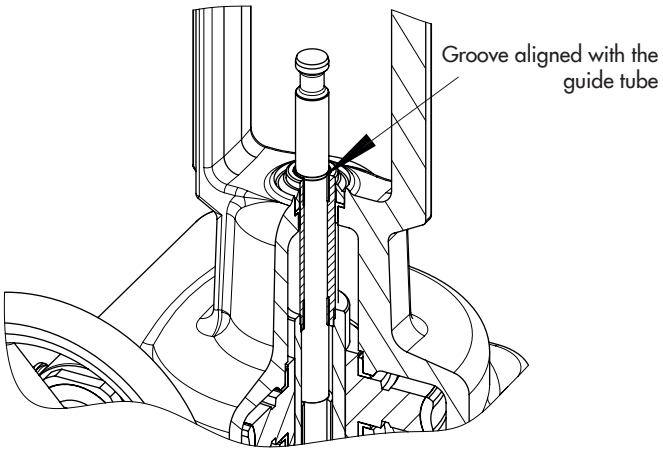


Fig. 10: *Neutral position in automatic operation*

After the handwheel has been unlocked and turned, the threaded rod rises or disappears into the yoke. The travel is adjusted.

7.2 Manual operation

NOTICE

Risk of handwheel damage due to the use of unsuitable tools.

➔ *To turn the handwheel, do not use any additional tools, such as a lever or wrench.*

With mounted pneumatic actuator

1. To change from automatic to manual operation, unlock the handwheel. Pull the locking bolt and turn it 90° to unlock the handwheel (see Fig. 11).
2. Turn the handwheel until the valve reaches its end position.

NOTICE

Risk of valve damage due to the use of excessive force.

➔ *Do not turn the handwheel any further by exerting force after the valve has reached its end position.*

Note

– *The valve travel can only be reached after the neutral travel of the handwheel has been overcome. You will notice at this point that the force needed increases.*
– *The turning direction depends on the mounted valve (see Table 4).*

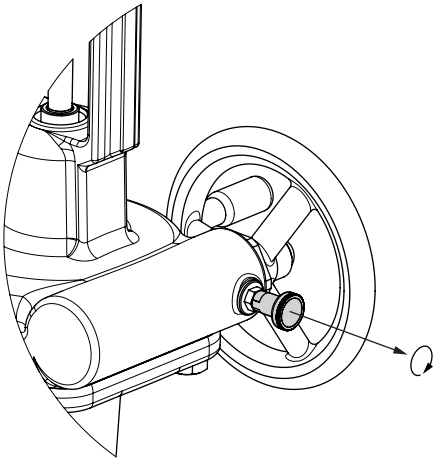


Fig. 11: *Releasing the locking bolt*

3. To change from manual to automatic operation, put the handwheel into the neutral position (see section 7.1).
4. Lock the handwheel. Turn the locking bolt by at least 90° until it engages again to lock the handwheel (see Fig. 11).

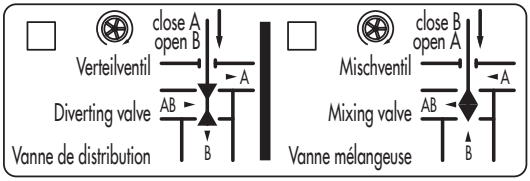
Special version without pneumatic actuator

i ***Note***

There is no neutral travel in versions without pneumatic actuator. One turn of the handwheel always immediately causes a change in valve travel.

1. Pull the locking bolt and turn it 90° to unlock the handwheel (see Fig. 11).
2. Turn the handwheel. The turning direction depends on the mounted valve (see Table 4).
3. Turn the locking bolt by at least 90° until it engages again to lock the handwheel (see Fig. 11).

Table 4: *Turning direction of the handwheel*

	Open the valve	Close the valve
SAMSON globe valve	Turn the handwheel counterclockwise	Turn the handwheel clockwise
SAMSON three-way valve		

☼ ***Tip***

The handwheel is marked 'Open/Close' and has directional arrows in the version for SAMSON globe valves.
A label is affixed to the version for SAMSON three-way valves on the handwheel, which indicates in which direction the threaded rod is moved when the handwheel is turned (see Table 4).

8 Malfunctions

Depending on the operating conditions, check the handwheel at certain intervals to prevent possible failure before it can occur. Plant operators are responsible for drawing up an inspection and test plan.

Tip

Our after-sales service can support you in drawing up an inspection and test plan for your plant.

Troubleshooting

Malfunction	Possible reasons	Recommended action
Actuator or plug stem/threaded rod does not move on demand.	Actuator is blocked.	Check attachment. Remove the blockage.
	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
The handwheel cannot be turned.	The handwheel is still locked.	Unlock the handwheel (see section 7.2).
	The valve plug is already in the end position.	–
The locking bolt cannot be unlocked.	The bolt is worn.	Lubricate the locking bolt. If the locking bolt remains blocked, contact our after-sales service.

Note

Contact our after-sales service for malfunctions not listed in the table.

9 Servicing

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

Note

The handwheel was checked by SAMSON before it left the factory.

- *The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by our after-sales service.*
- *Only use original spare parts by SAMSON, which comply with the original specifications.*

Note

See associated valve and actuator documentation for instructions on how to perform maintenance on the valve and actuator.

9.1 Ordering spare parts and operating supplies

Contact your nearest SAMSON subsidiary or SAMSON's After-sales Service for information on spare parts, lubricants and tools.

Spare parts

See section 14 for details on spare parts.

Lubricant

See document ▶ AB 0100 for details on suitable lubricants.

Tools

See document ▶ AB 0100 for details on suitable tools.

10 Decommissioning

⚠ WARNING

Crush hazard arising from moving parts.

The handwheel contains moving parts (actuator stem, threaded rod, plug stem, handwheel), which can injure hands or fingers if inserted into it.

➔ *Do not insert hands or finger into the yoke while the valve is in operation.*

➔ *While working on the handwheel, disconnect and lock the pneumatic air supply as well as the control signal.*

➔ *Use the locking bolt to lock the handwheel.*

i *Note*

See associated valve and actuator documentation for additional instructions on decommissioning.

To decommission the handwheel for maintenance and repair work on the valve or for disassembly, proceed as follows:

1. Put the control valve out of operation. See associated valve documentation.
2. Disconnect the pneumatic air supply to depressurize the actuator.
3. Release any stored energy.
4. Lock the handwheel.

11 Removal

⚠ WARNING

Crush hazard arising from moving parts.

The handwheel contains moving parts (actuator stem, threaded rod, plug stem, handwheel), which can injure hands or fingers if inserted into it.

➔ *Do not insert hands or finger into the yoke while the valve is in operation.*

➔ *While working on the handwheel, disconnect and lock the pneumatic air supply as well as the control signal.*

➔ *Use the locking bolt to lock the handwheel.*

NOTICE

Risk of damage to control valve components due to excessively high or low tightening torques.

Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

➔ *Observe the specified tightening torques (▶ AB 0100).*

Note

See associated valve and actuator documentation for additional removal instructions.

Before removing the valve, make sure the following conditions are met:

– The control valve is put out of operation (see associated valve documentation).

– The handwheel is locked.

11.1 Removing the handwheel from the actuator and valve

⚠ WARNING

Risk of personal injury due to incorrect removal of the anti-rotation fixture with clamps under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps (301) of the anti-rotation fixture on the plug stem are under tension.

➔ *Follow the instructions in this document during mounting or removal.*

➔ *Do not loosen the screws (303) of the anti-rotation fixture while the force generated by the supply air and/or the actuator springs is transmitted to the actuator stem and the stem connector rod (G5).*

➔ *First remove the actuator from the valve or ensure it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture on the plug stem.*

1. Unscrew the hex screws (A29) at the stem connector clamps (A26/27) between the handwheel and actuator.
2. **In the "actuator stem extends" version:** apply a signal pressure to the connection on the bottom diaphragm chamber to completely retract the actuator stem (A7).

In the "actuator stem retracts" version: vent the actuator to retract the actuator stem (A7) completely.

3. Unscrew the stem connector nut (G70) and lock nut (G42) between the handwheel and actuator.
4. Unscrew the ring nut (A8).
5. Disconnect the signal pressure again.
6. Remove the ring nut (A8) and actuator from the handwheel. Loosely thread the ring nut onto the actuator stem (A7).
7. Remove the protective bellows (G69).
8. Unscrew the hex screws (G29) at the stem connector clamps (G26/27) between the handwheel and valve.
9. Unscrew the top lock nut (G71) between the handwheel and valve, while holding the stem connector nut (G5) stationary.
10. Loosen the bottom lock nut, while holding the stem connector nut (G5) stationary.
11. Unscrew the stem connector nut (G5).

Tip

Turn the handwheel to retract the threaded rod. This makes it easier to remove the stem connector nut (G5) from the plug stem.

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12. Unscrew the fastening nut (G9).
13. Remove the handwheel from the valve.
14. Loosely thread the stem connector nut and lock nuts onto the threaded rod.

11.2 Final steps

Mounting the actuator (without handwheel) on the valve

1. Mount the actuator on the valve. See associated valve and actuator documentation.

Storing the valve and actuator separately

1. Fasten the lock nut (10) and stem connector nut (9) on the valve.
2. Slide the ring nut (A8) over the actuator stem (A7).
3. Tighten the ring nut (A8). Fasten the stem connector clamps (A26/27) with the hex screws (A29). Observe tightening torques.

12 Repairs

If the valve does not function properly according to how it was originally sized or does not function at all, it is defective and must be repaired or exchanged.

NOTICE

Risk of valve damage due to incorrect service or repair work.

➔ *Do not perform any repair work on your own.*

➔ *Contact SAMSON's After-sales Service for repair work.*

12.1 Returning devices to SAMSON

Defective devices can be returned to SAMSON for repair.

Proceed as follows to return devices:

1. Exceptions apply concerning some special device models
   ▶ *www.samsongroup.com > Service & Support > After-sales Service.*
2. Send an e-mail
   ▶ retouren@samsongroup.com to register the return shipment including the following information:
   – Type
   – Article number
   – Configuration ID
   – Original order
   – Completed Declaration on Contamination, which can be downloaded from our website at ▶ *www.samsongroup.com > Service & Support > After-sales Service.*

   After checking your registration, we will send you a return merchandise authorization (RMA).
3. Attach the RMA (together with the Declaration on Decontamination) to the outside of your shipment so that the documents are clearly visible.
4. Send the shipment to the address given on the RMA.

Note

Further information on returned devices and how they are handled can be found at ▶ www.samsongroup.com > Service & Support > After-sales Service.

13 Disposal

➔ Observe local, national and international refuse regulations.

➔ Do not dispose of components, lubricants and hazardous substances together with your household waste.

14 Annex

14.1 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

E-mail address

You can reach our after-sales service at aftersalesservice@samsongroup.com.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on our website (www.samsongroup.com) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

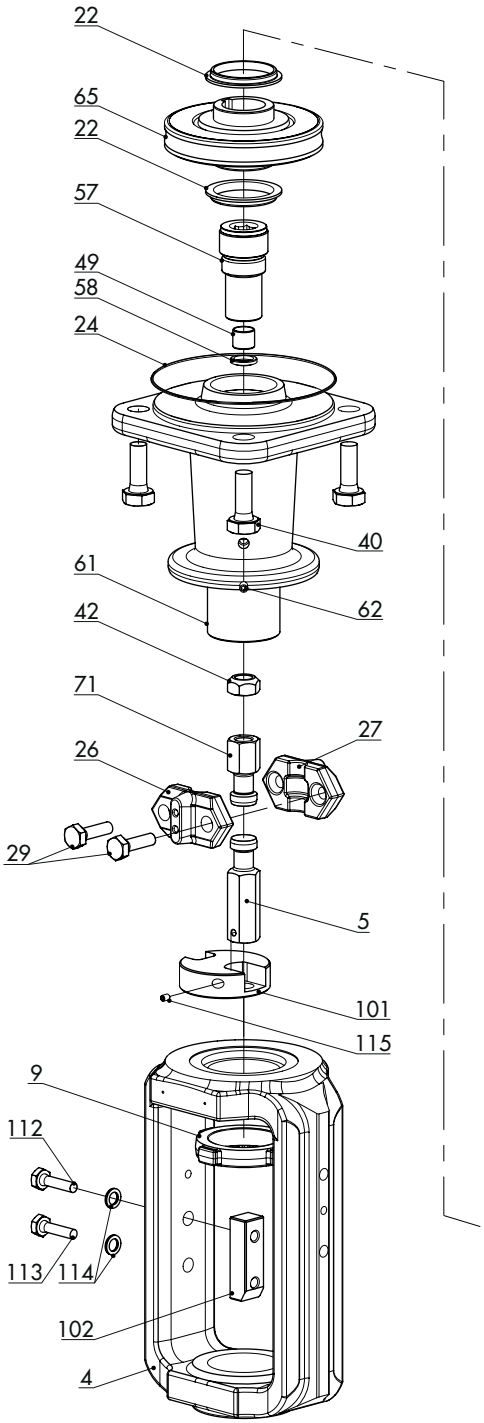
- Order number and position number in the order
- Type designation and model number
- Travel
- Connecting diameter (30 or 60 mm)
- Handwheel diameter (180 or 250 mm)
- Mounted valve (model and valve size)
- Mounted actuator (model and actuator area)
- Installation drawing

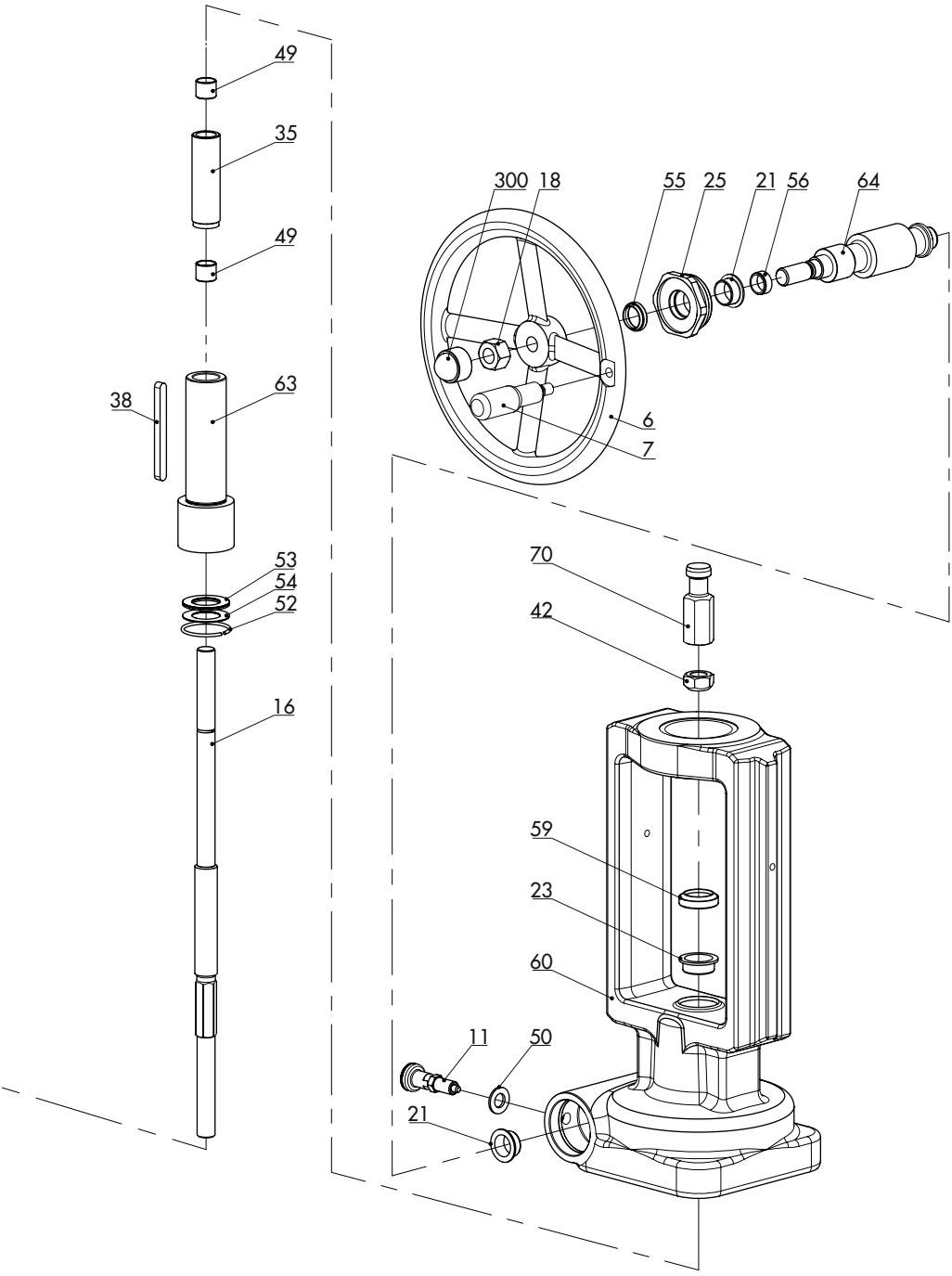
14.2 Spare parts

4 Yoke [1)]
5 Stem connector nut [2)]
6 Handwheel
7 Handle
9 Nut
11 Locking bolt
16 Threaded rod
18 Hex nut
21 Plain bearing
22 Plain bearing
23 Plain bearing
24 O-ring
25 Cover
26 Stem connector clamp
27 Stem connector clamp
29 Hex screw
35 Guide tube (neutral position)
38 Key drive
40 Hex screw
42 Lock nut
49 Plain bearing
50 Shim
52 Snap ring
53 Axial needle bearing
54 Axial disk
55 Wiper ring
56 Ring
57 Connection nipple
58 Wiper ring
59 Wiper ring
60 Top bonnet (with yoke)
61 Bottom bonnet
62 Screw

63 Spindle nut
64 Worm shaft
65 Worm-geared wheel
70 Stem connector nut
71 Stem connector nut
101 Fork-shaped anti-rotation fixture (optional)
102 Holder (optional)
112 Screw (optional)
113 Screw (optional)
114 Washer (optional)
115 Screw (optional)
300 Protective cap

1) Replaces the flange of the valve (2)
2) Replaces the stem connector nut of the valve (9)

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