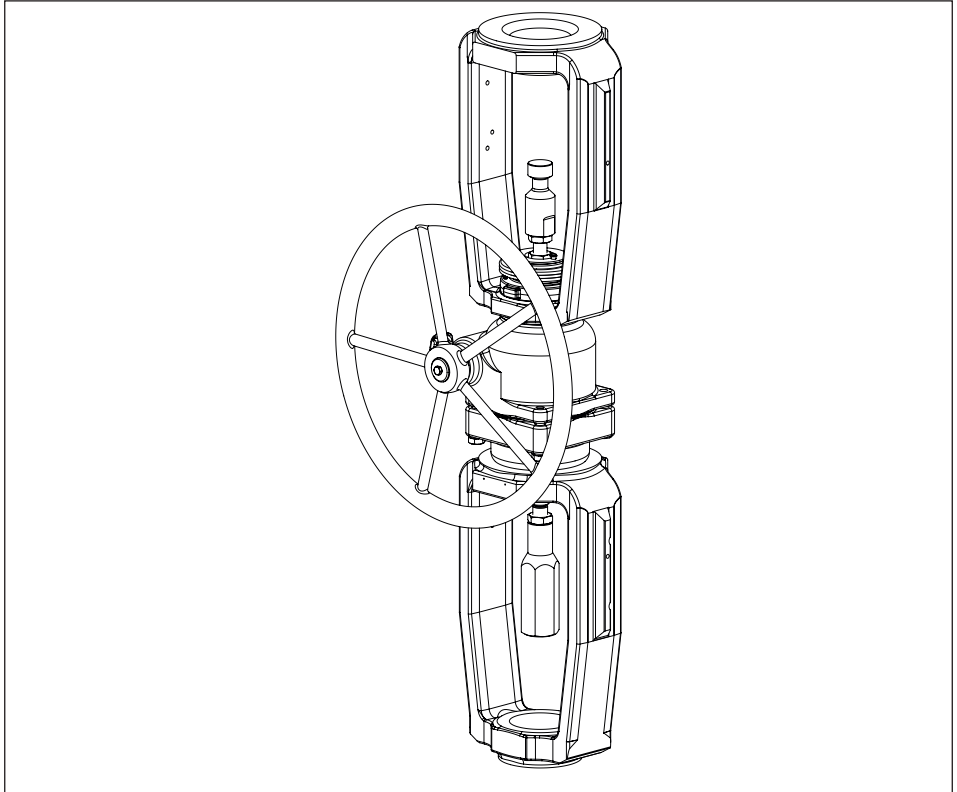


MOUNTING AND OPERATING INSTRUCTIONS



EB 8312-1 EN

Translation of original instructions



Type 3273 Side-mounted Handwheel
60 and 120 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 (aftersaleservice@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

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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 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 (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

Safety instructions and measures

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. 18 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 SAMSON Type 3271 Actuator:
 - ▶ EB 8310-2 (1000 cm²), ▶ EB 8310-3 (1400-60 cm²) and ▶ EB 8310-7 (1400-120 to 2 x 2800 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.

→ Do not use any additional tools, such as a lever or wrench, to turn the handwheel.

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.

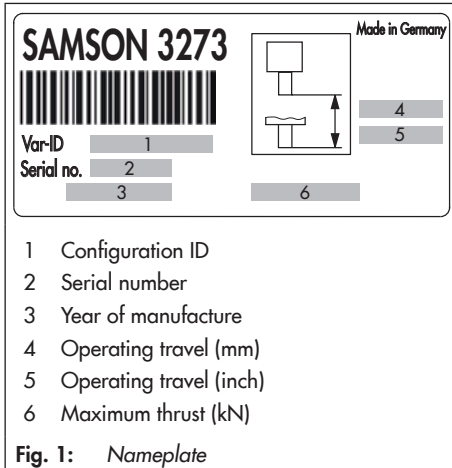
Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

→ 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:



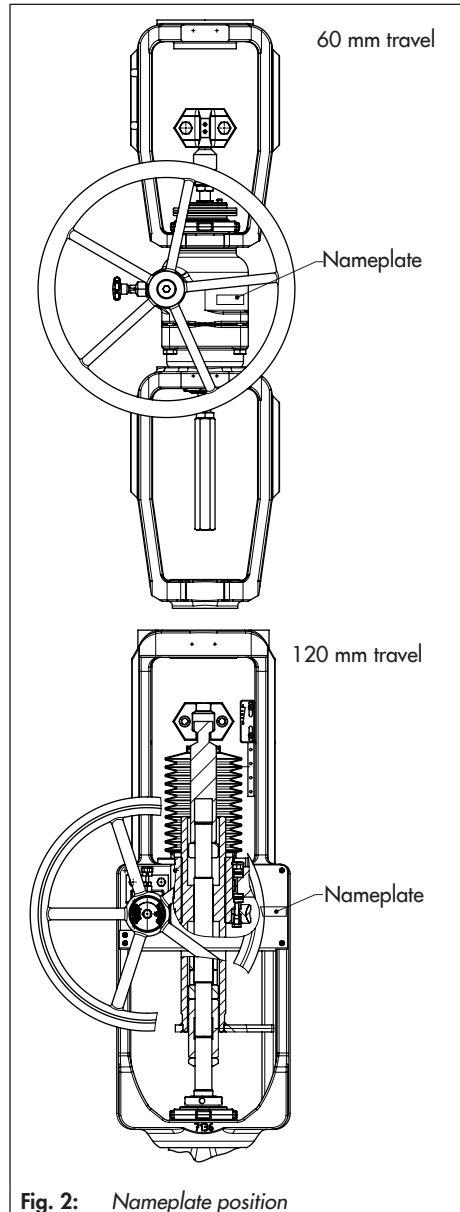
The nameplate is affixed to the top bonnet on handwheels with 60 mm travel. The nameplate is affixed to the cover in versions with 120 mm travel (see Fig. 2).

2.2 Valve nameplate

See associated valve documentation.

2.3 Actuator nameplate

See associated actuator documentation.



3 Design and principle of operation

The Type 3273 Side-mounted Handwheel with 60 and 120 mm travel is suitable for mounting on SAMSON Series 240, 250, 280 and 290 Valves or on valves with compatible interfaces together with the Type 3271 Pneumatic Actuators with 1000, 1400-60, 1400-120, 2800 and 2 x 2800 cm² actuator areas. 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-gear 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.

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 60 mm travel** for Type 3271 Actuators with 1000 to 2800 cm² actuator areas (see Table 1 and Table 2)
- **Version with 120 mm travel** for actuators with 1400-120, 2800 and 2 x 2800 cm² actuator areas (see Table 4 and Table 5)
- **Special version** without pneumatic actuator (see Table 1 and Table 3)

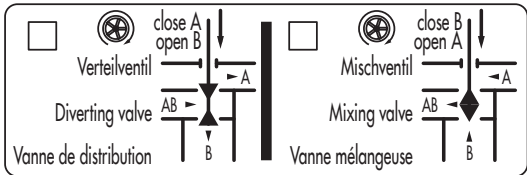
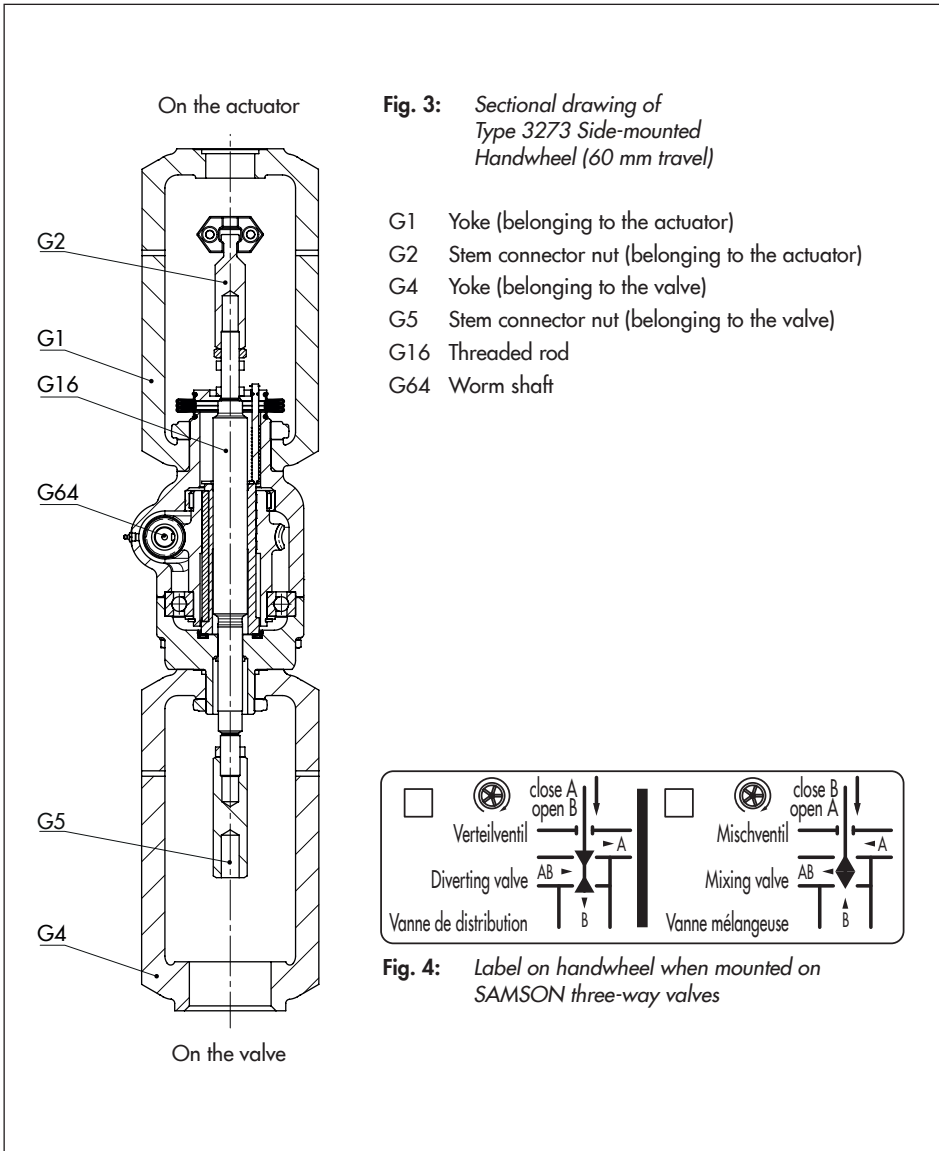


Fig. 4: Label on handwheel when mounted on SAMSON three-way valves

3.2 Technical data

Table 1: *Technical data for Type 3273 up to 60 mm rated travel*

Implementation	Type 3273 up to 60 mm rated travel
Max. travel range	80 mm
Max. thrust	80 kN
Max. number of turns	45
Handwheel diameter	315 or 500 mm
Mounted on actuators with actuator areas	1000, 1400-60, 1400-120, 2800 cm ² Special version: without pneumatic actuator
Materials	
Body material and permissible ambient temperature	EN-JS1030 ¹⁾ · Spheroidal graphite iron · max. 100 °C 1.0619/A216 WCC · Painted cast steel · ≥ -29 °C 1.5638/A352 LC3 · Painted cast steel · ≥ -60 °C
Spindle and threaded nut	1.4104/G-CuSn12Pb
Handwheel	Aluminum

¹⁾ Discontinued

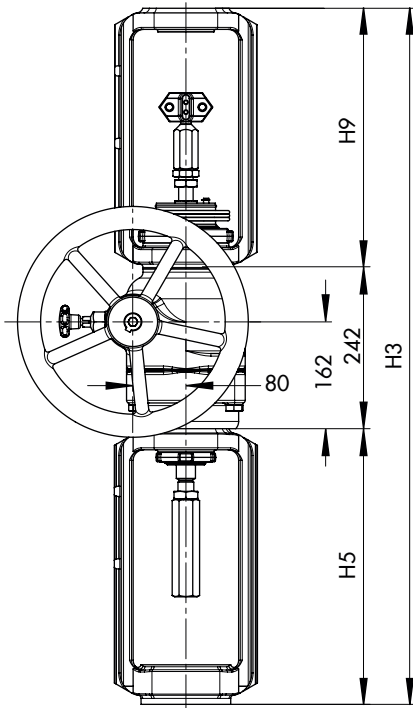
Design and principle of operation

Table 2: Dimensions and weights for Type 3273 up to 60 mm rated travel · See dimensional drawings p. 15

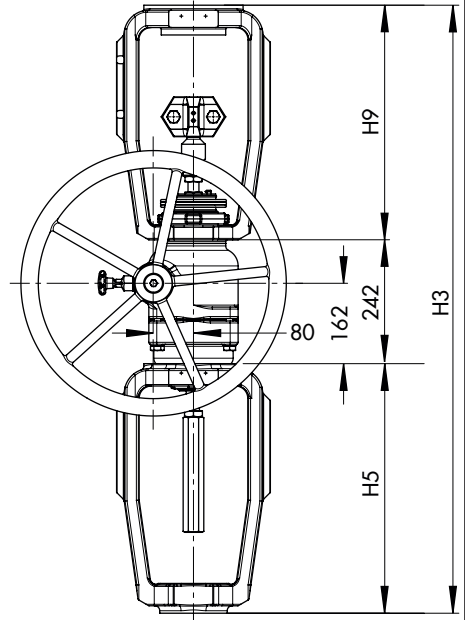
Valve	DN	50 to 100			125 to 150		
	NPS	2 to 4			6		
Seat bore	mm	≤100			≤150		
Travel	mm	Up to 30			Up to 60		
Actuator	cm ²	1000/ 1400-60	1400-120	2800	1000/ 1400-60	1400-120	2800
H3	mm	932	1202		1055	1225	
H5	mm	295	480		418	503	
H9	mm	395	480		395	480	
Weight							
With actuator	kg	180	300	575	184	303	578
Without actuator	kg	70			70		

Valve	DN	200 to 250			300 to 500		
	NPS	8 to 10			12 to 20		
Seat bore	mm	≤200			≤200		
Travel	mm	Up to 60			Up to 60		
Actuator	cm ²	1000/ 1400-60	1400-120	2800	1000/ 1400-60	1400-120	2800
H3	mm	1055	1225		1140	1225	
H5	mm	418	503		503	503	
H9	mm	395	480		395	480	
Weight							
With actuator	kg	187	305	580	190	310	585
Without actuator	kg	70			70		

Dimensional drawings



Type 3273 for actuators up to 1400-60 cm²,
315 mm handwheel diameter



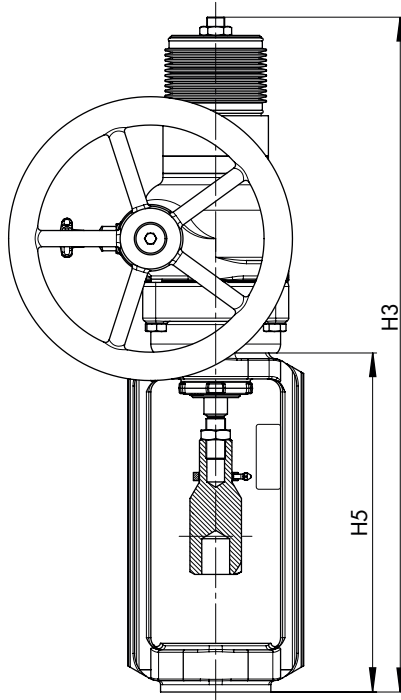
Type 3273 for actuators with
1400-120 cm² and larger, 500 mm
handwheel diameter

Design and principle of operation

Table 3: *Dimensions and weights for Type 3273 without pneumatic actuator · See dimensional drawing on p. 17*

Valve	DN	125 to 150	200 to 250	
	NPS	6	8 to 10	
Handwheel Ø	mm	315	500	
Seat bore	mm	≤250	≤250	>250
H3	mm	Max. 920	Max. 980	Max. 980
H5	mm	418	503	503

Dimensional drawing



Type 3273 without pneumatic actuator

Design and principle of operation

Table 4: Technical data for Type 3273 up to 120 mm rated travel

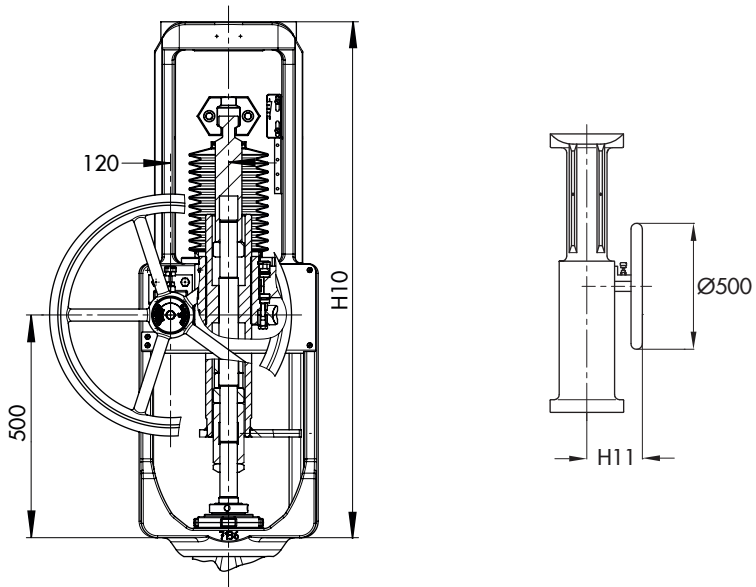
Implementation	Type 3273 up to 120 mm rated travel
Max. travel range	160 mm
Max. thrust	150 kN
Max. number of turns	258
Handwheel diameter	500 mm
Mounted on actuators with actuator areas	1400-120, 2800, 2 x 2800 cm ²
Materials	
Body material and permissible ambient temperature	EN-JS1030 ¹⁾ · Spheroidal graphite iron · max. 100 °C 1.0619/A216 WCC · Painted cast steel · ≥-29 °C 1.5638/A352 LC3 · Painted cast steel · ≥-60 °C
Spindle and threaded nut	EN-GJS-500-7/1.0503
Handwheel	EN-GJL-250 (EN-JL1040)

¹⁾ Discontinued

Table 5: Dimensions and weights for Type 3273 up to 120 mm rated travel · See dimensional drawings p. 19

Actuator	cm ²	1400-120	2800	2 x 2800
H10	mm	1105	1105	1105
H11	mm	220	220	220
Weight without actuator	kg	250	250	250

Dimensional drawings



Type 3273 for 120 mm travel, 500 mm handwheel diameter

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 transportation temperature of -20 to $+65$ °C.

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.

Shipment and on-site transport

- 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 storage temperature from -20 to $+65$ °C.
- 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 (see Fig. 7) must only be mounted by our after-sales service or after they have given their consent.

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 Type 3273 Side-mounted Handwheel for rated travels up to 60 mm

5.2.1 Mounting the handwheel without anti-rotation fixture on the valve

See Fig. 5

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

i Note

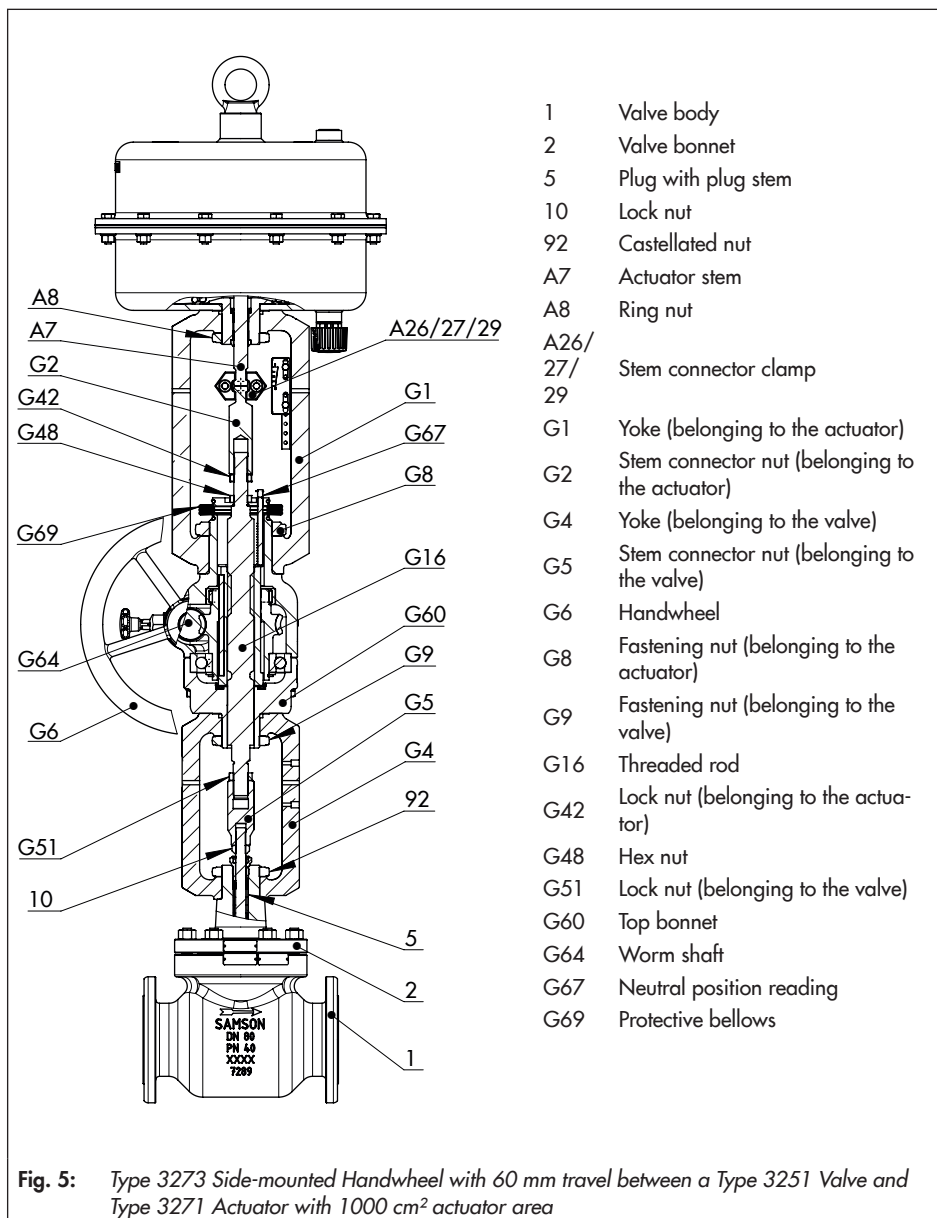
Depending on the valve (model, valve size etc.), the yoke (belonging to the valve) is used instead of the yoke (G4) of the handwheel.

3. 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).
4. Apply a suitable lubricant to the thread on the top bonnet (G60).
5. Place the yoke (G1) (belonging to the actuator) onto the top bonnet (G60). The threaded rod (G16) sticks out.
6. Apply a suitable lubricant to the thread of the castellated nut (92) on the valve.

7. Slide the castellated nut (92) over the plug stem (5) and fasten it to the yoke (G4). Observe tightening torques.
8. Move the handwheel to the neutral position (see section 7.1).
9. Adjust the lock nut (10) until the corresponding dimension is set (see Table 6).
10. Place the stem connector nut (G5) (belonging to the valve) onto the plug stem (5). Turn the handwheel to slowly extend the threaded rod (G16) downward. Tighten the stem connector nut (G5) clockwise until it rests on the bottom lock nut (10).

The top part of the stem connector nut (G5) has a left-hand thread and the bottom part a right-hand thread. The nut pulls the plug stem (5) and threaded rod (G16) together and then holds them together.

11. Thread down the top lock nut (G51) until it touches the stem connector nut (G5).
12. Lock the bottom lock nut (10) in place. To proceed, use a suitable tool to hold the stem connector nut (G5) stationary. Observe tightening torques.
13. Lock the top lock nut (G51) in place. To proceed, use a suitable tool to hold the stem connector nut (G5) stationary. Observe tightening torques.
14. Optionally, a protective bellows (G69) can be mounted around the threaded rod (G16) on the actuator.
15. Apply a suitable lubricant to the thread of the threaded rod (G16).



Installation

16. Loosely thread the stem connector nut (G2) (belonging to the actuator) onto the threaded rod (G16).

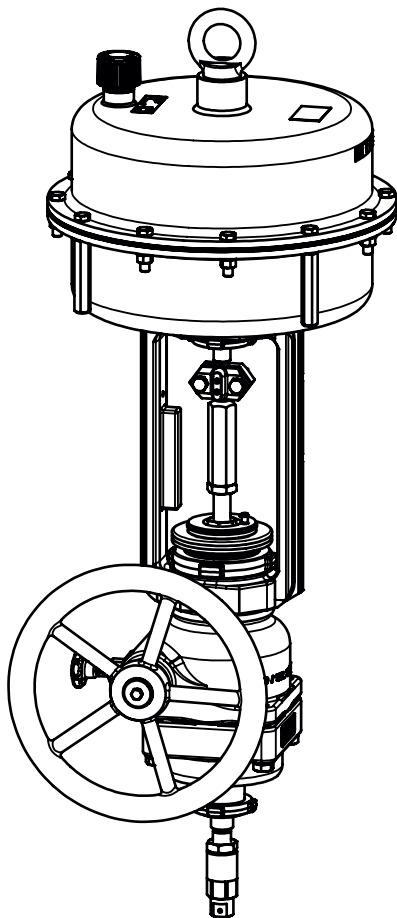
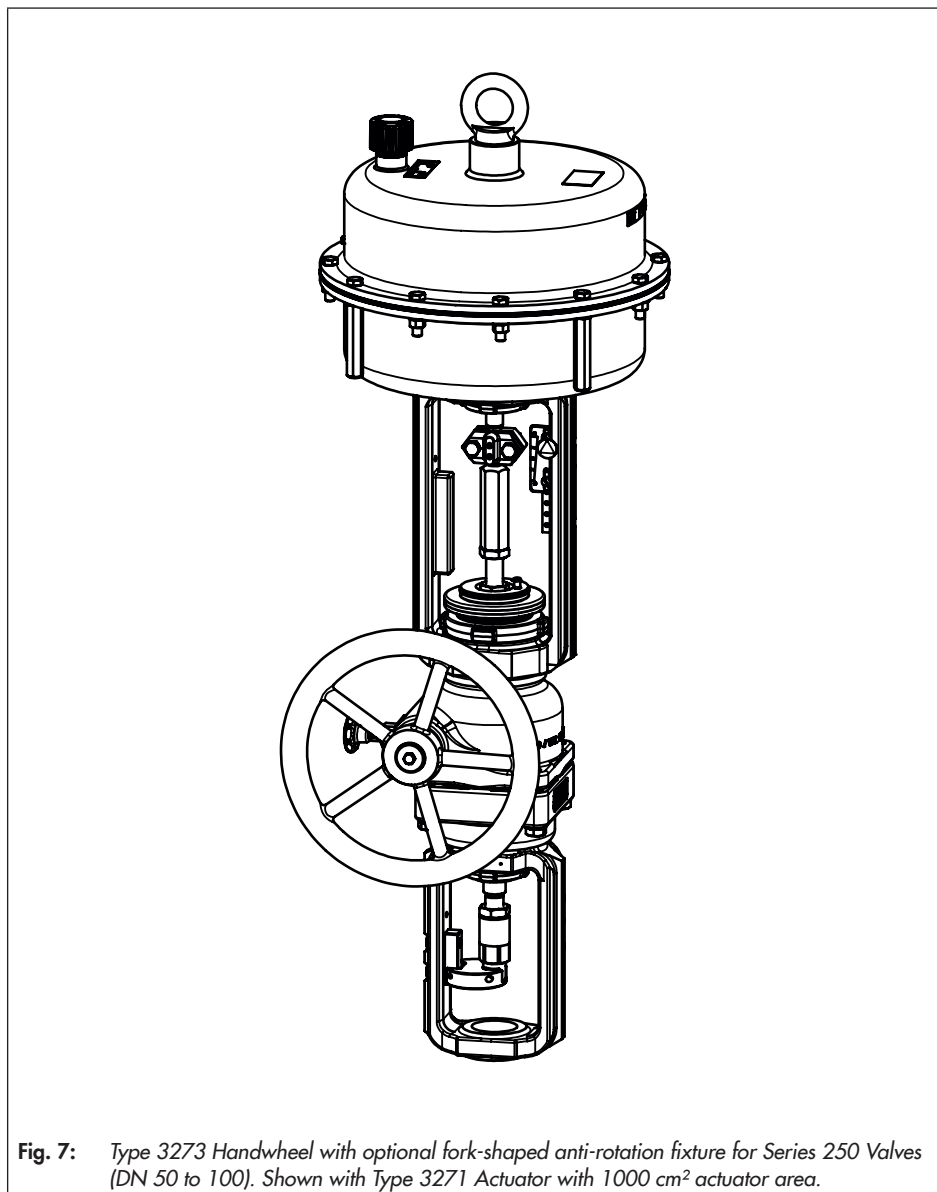
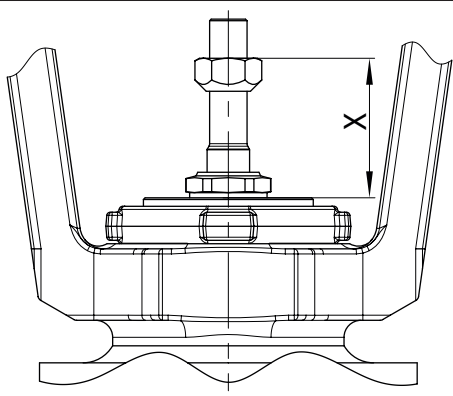


Fig. 6: Type 3273 Handwheel for Series 240 Valves (DN 100 to 150). Shown with Type 3271 Actuator with 1000 cm² actuator area.



Installation

Table 6: Dimension of lock nut (belonging to the valve)

Type/Series	Valve size DN	Dimension X [mm]	
250	50 to 100	37	
240	100 to 150		
250	125 to 150	82	
240/250	200 to 250 ¹⁾		
Type 3253	250 ²⁾		
240/250	250 ²⁾	126	
240/250	300 to 400		

¹⁾ Up to 200 mm seat bore

²⁾ At 250 mm seat bore

Legend for Fig. 8

1	Valve body	G6	Handwheel
2	Valve bonnet	G8	Fastening nut (belonging to the actuator)
5	Plug with plug stem	G9	Fastening nut (belonging to the valve)
10	Lock nut	G16	Threaded rod
92	Castellated nut	G42	Lock nut (belonging to the actuator)
A7	Actuator stem	G48	Hex nut
A8	Ring nut	G51	Lock nut (belonging to the valve)
A26/ 27/ 29	Stem connector clamp	G60	Top bonnet
G1	Yoke (belonging to the actuator)	G64	Worm shaft
G2	Stem connector nut (belonging to the actuator)	G67	Neutral position reading
G4	Yoke (belonging to the valve)	G69	Protective bellows
G5	Stem connector nut (belonging to the valve)		

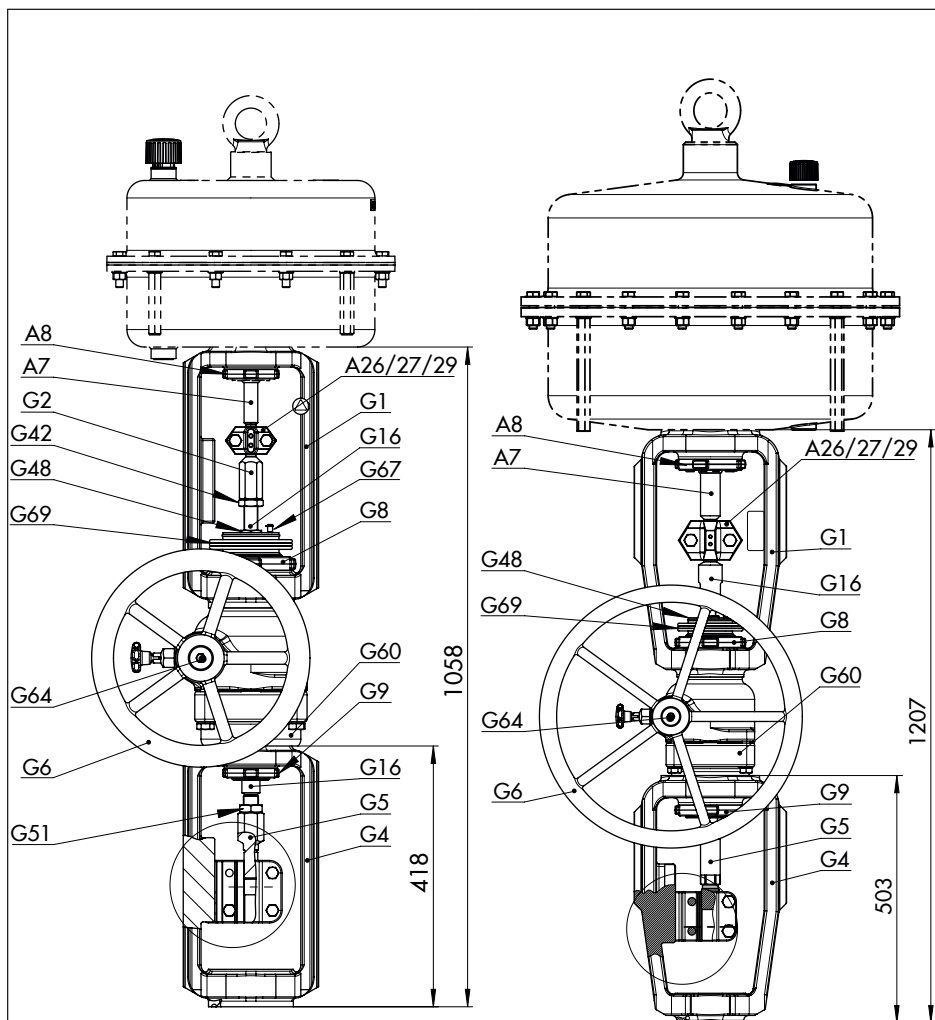


Fig. 8: Type 3273 Handwheel with 60 mm travel for mounting on Series 240 and 250 Valves, with clamp-type anti-rotation fixture
 Left: with Type 3271 Actuator with 1000 or 1400-60 cm² actuator area
 Right: with Type 3271 Actuator with 1400-120 or 2800 cm² actuator area

5.2.2 Mounting the hand-wheel with clamp-type anti-rotation fixture on the valve

See Fig. 8, Fig. 9, Fig. 10 and Fig. 11

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 hand-wheel.

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. 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.

7. Apply a thin film of lubricant (114) to the threads of the stem connector nut (G5) and screws (303).

! NOTICE

Impaired functioning due to incorrectly applied lubricant.

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

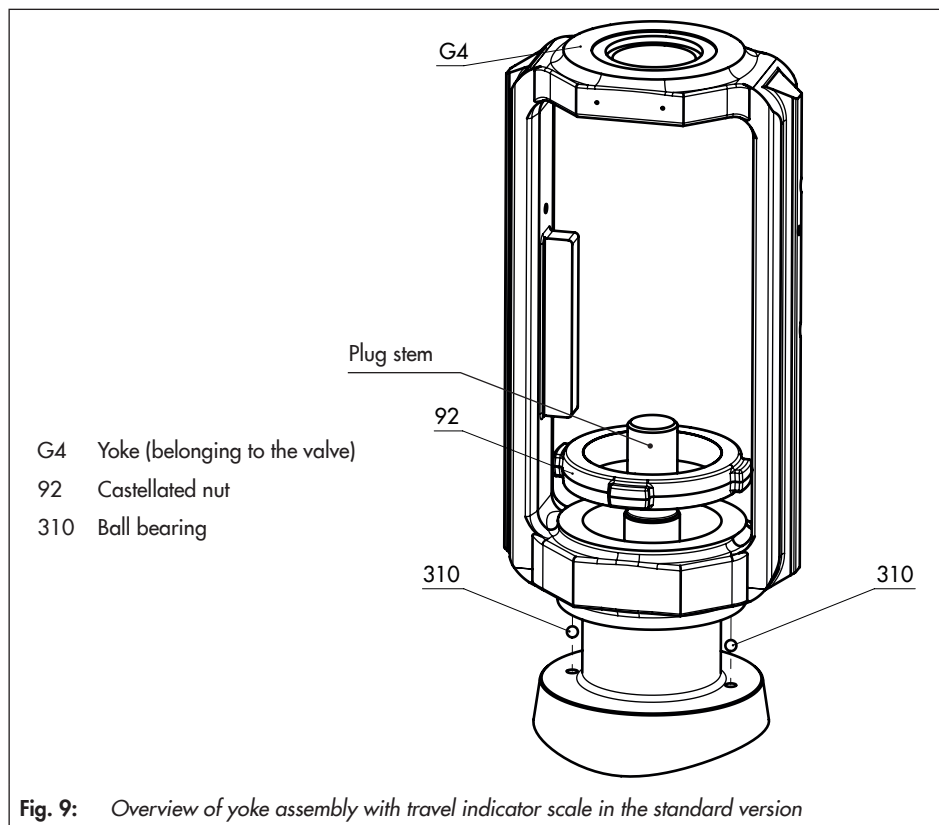
8. Position the clamps (301) and stem connector nut (G5) on the plug stem according to Table 8 and tighten screws (303) and washers (304) by hand.
9. Place the handwheel on the yoke (G4) (belonging to the valve) so that it faces the operating side. The inscription on the valve body (1) serves as a guide (as it also faces the operating side).
10. Apply a suitable lubricant to the thread on the top bonnet (G60).
11. Fasten the handwheel on the yoke (G4) with the fastening nut (G9).
12. Move the handwheel to the neutral position (see section 7.1).
13. Turn the handwheel to slowly extend the threaded rod (G16) downward until the threaded rod (G16) rests on the stem connector nut (G5).
14. Thread the lock nut (G51) upwards on the threaded rod (G16).

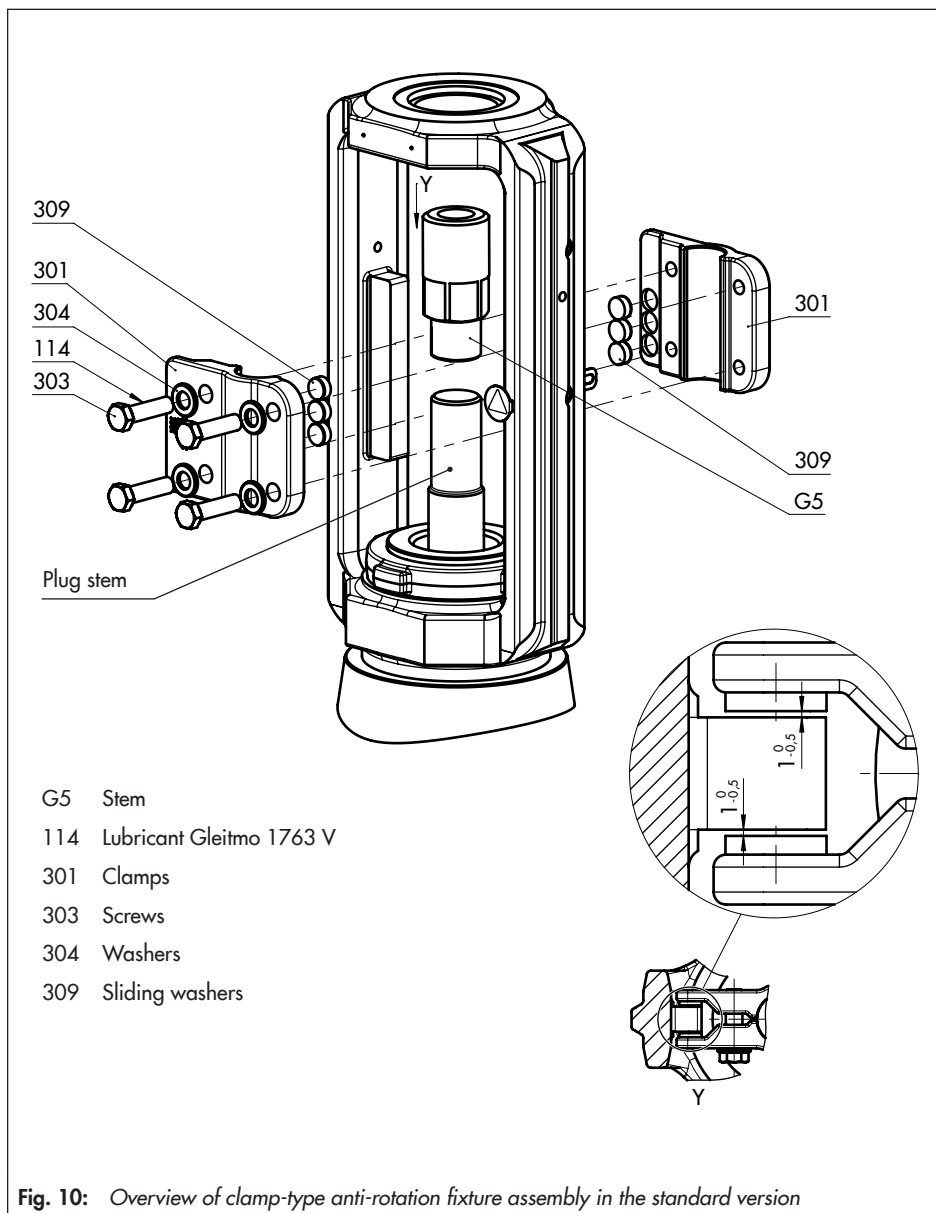
15. Turn the stem connector nut (G5) clockwise (looking onto the plug stem) by the specified number of turns (see Table 8). The top part of the stem connector nut (G5) has a left-hand thread and the bottom part a right-hand thread. The nut pulls the plug stem (5) and threaded rod (G16) together and then holds them together.
16. Thread down the top lock nut (G51) until it touches the stem connector nut (G5).
17. Gradually tighten the screws (303) in a crisscross pattern. Observe the tightening torques specified in Table 7.
20. Place the yoke (G1) (belonging to the actuator) onto the top bonnet (G60). The threaded rod (G16) sticks out.
21. Optionally, a protective bellows (G69) can be mounted around the threaded rod (G16) on the actuator.
22. Apply a suitable lubricant to the thread of the threaded rod (G16).
23. Loosely thread the stem connector nut (G2) (belonging to the actuator) onto the threaded rod (G16).
24. Mount the actuator. See section 14.
25. Fasten the warning label (if used) and travel indicator scale to the yoke (G1) on the actuator using the screws.

Table 7: Tightening torques

Screw size	Tightening torque [Nm]
M12	50
M16	121

18. 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. 10).
 - The anti-rotation fixture does not get stuck on the yoke and can move freely in the direction of travel.
19. Lock the top lock nut (G51) in place. To proceed, use a suitable tool to hold the stem connector nut (G5) stationary. Observe tightening torques.





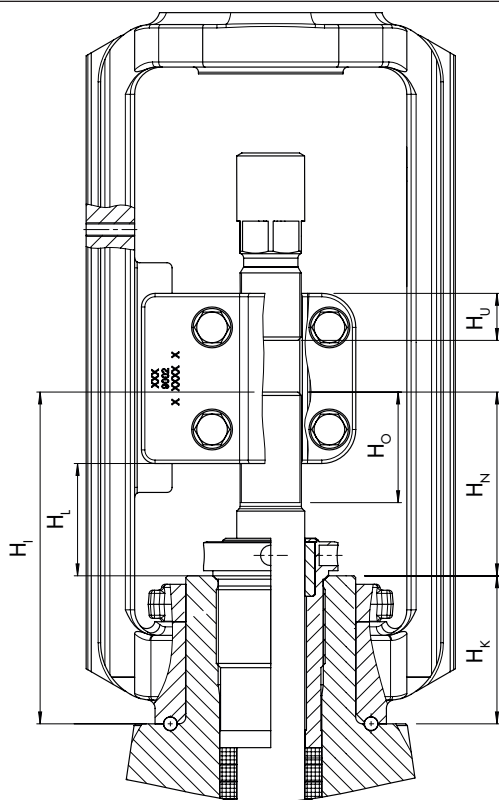


Fig. 11: *Mounting dimensions*

Table 8: Mounting dimensions (see Fig. 11 for dimensional drawing)

Actuator [cm ²]	Travel [mm]	Actuator preloading		Dimension when the valve is closed [mm]						Number of turns (G5) (mounting)
		[%]	[mm]	H _I	H _K	H _L	H _N	H _O	Before mounting H _U	
DN 125 to 150/NPS 6 · Standard version										
1000 1400-60	60	0	0	192	87	48	105	70	10	12 (mounted H _U = 28 mm)
	60	25	15							
1400-120	60	0	0	192	87	63	105	70	14	12 (mounted H _U = 32 mm)
	60	50	60			48				
2800	60	0	0	192	87	48	105	70	14	12 (mounted H _U = 32 mm)
	60	75	90							
DN 200 to 250/NPS 8 to 10 up to seat bore 200 · Standard version										
1000 1400-60	60	0	0	195	87	66	108	65	12	12 (mounted H _U = 30 mm)
	60	25	15			66				
1400-120	60	0	0	195	87	61	108	65	18	12 (mounted H _U = 36 mm)
	60	50	60			48				
2800	60	0	0	195	87	61	108	65	18	12 (mounted H _U = 36 mm)
	60	75	90			48				
DN 250/NPS 10, seat bore 250 and DN 300 to 500/NPS 12 to 20 · Standard version										
1000 1400-60	60	0	0	237	87	100	150	110	12	12 (mounted H _U = 30 mm)
	60	25	15							
1400-120	60	0	0	237	87	100	150	110	18	12 (mounted H _U = 36 mm)
	60	50	60							
2800	60	0	0	237	87	100	150	110	18	12 (mounted H _U = 36 mm)
	60	75	90							

5.2.3 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 (9).
- 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 (A26/27/29) and the ring nut (A8) on the actuator.

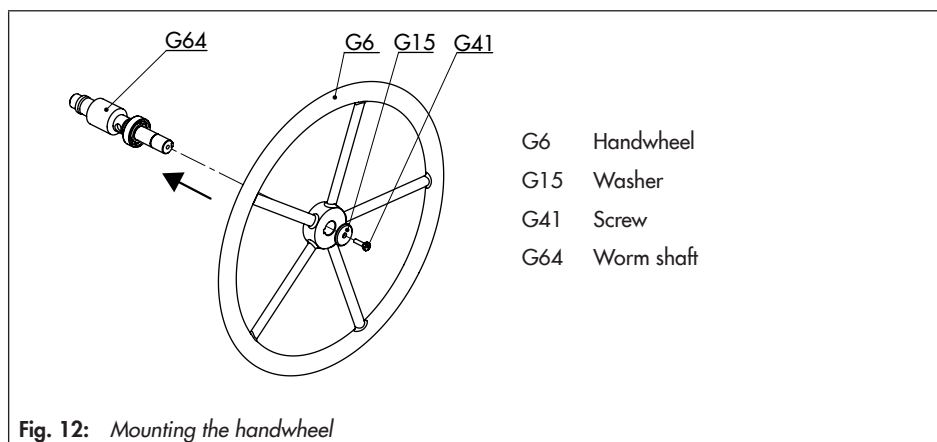
3. Apply a suitable lubricant to the threaded nipple on the yoke (1) on the actuator.
4. **In the "actuator stem extends" version:** apply a signal pressure to the connection on the bottom diaphragm chamber and completely retract the actuator stem (A7).

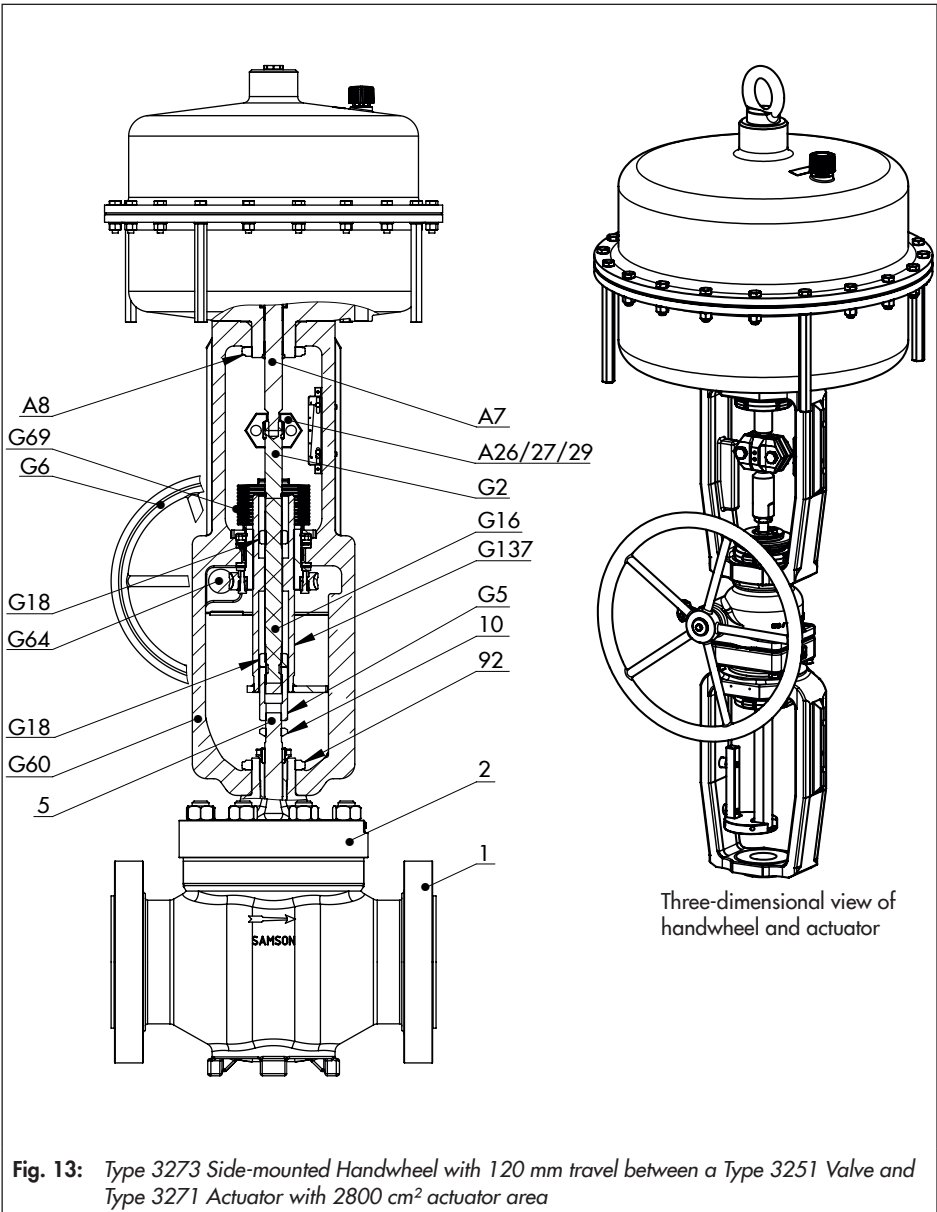
In the "actuator stem retracts" version: vent the actuator to retract the actuator stem (A7) completely.

5. Place the actuator on the yoke (G1).
6. Apply a suitable lubricant to the ring nut (A8). Slide the ring nut (A8) over the actuator stem (A7) and fasten it on the actuator. Observe tightening torques.
7. Adjust the rated travel of the actuator using the stem connector nut (G2). The rated travel corresponds to the distance from the bottom of the actuator stem to the tip of the stem connector nut.
8. Use a suitable tool to lock the stem connector nut (G2) at the lock nut (G42) on the actuator.
9. **In the "actuator stem extends" version:** vent the actuator to extend the actuator stem (A7) completely. It must touch the stem connector nut (G2).
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 (G2).
10. Connect the threaded rod (G16) and actuator stem (A7) using the stem connector clamps (A26/27/29).

5.2.4 Mounting the handwheel

1. Use a suitable tool to insert the handwheel (G6) as far as it will go onto the worm shaft (G64). See Fig. 12.
2. Place on the washer (G15) and fasten tight the handwheel using the hex head screw (G41).





5.3 Type 3273 Side-mounted Handwheel for rated travels up to 120 mm

See Fig. 13

5.3.1 Mounting the handwheel without anti-rotation fixture on the valve

1. Unthread the lock nut and stem connector nut on the valve from the plug stem.
 2. Undo the castellated nut (92) to remove the yoke from the valve.
 3. Place the handwheel on the bonnet (2) 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).
 4. Apply a suitable lubricant to the thread of the castellated nut (92) on the valve.
5. Slide the castellated nut (92) over the plug stem (5) and fasten it to the yoke (G60). Observe tightening torques.
 6. Move the handwheel to the neutral position (see section 7.1).
 7. Adjust the lock nut (10) until the corresponding dimension is set (see Table 6).
 8. Place the stem connector nut (G5) (belonging to the valve) onto the plug stem (5). Turn the handwheel to slowly extend the threaded rod (G16) downward. Tighten the stem connector nut (G5) clockwise until it rests on the bottom lock nut (10).

The top part of the stem connector nut (G5) has a left-hand thread and the bottom part a right-hand thread. The nut pulls the plug stem (5) and threaded rod (G16) together and then holds them together.

Legend for Fig. 13

1	Valve body	G2	Stem connector nut (belonging to the actuator)
2	Valve bonnet	G5	Stem connector nut (belonging to the valve)
5	Plug with plug stem	G6	Handwheel
10	Bottom lock nut (belonging to the valve)	G16	Threaded rod
92	Castellated nut		Top lock nut (belonging to the valve) and lock nut (belonging to the actuator)
A7	Actuator stem	G18	
A8	Ring nut	G60	Yoke
A26/ 27/29	Stem connector clamp	G64	Worm shaft
		G69	Protective bellows
		G137	Spindle with neutral position indicator

9. Thread down the top lock nut (G18) on the valve until it touches the stem connector nut (G5).
10. Lock the bottom lock nut (10) in place. To proceed, use a suitable tool to hold the stem connector nut (G5) stationary. Observe tightening torques.
11. Lock the top lock nut (G18) on the valve in place. To proceed, use a suitable tool to hold the stem connector nut (G5) stationary. Observe tightening torques.
12. Optionally, a protective bellows (G69) can be mounted around the threaded rod (G16) on the actuator.
13. Apply a suitable lubricant to the thread of the threaded rod (G16).
14. Loosely thread the stem connector nut (G2) (belonging to the actuator) onto the threaded rod (G16).

5.3.2 Mounting the handwheel with fork-shaped anti-rotation fixture on the valve

NOTICE

Risk of control valve damage due to incorrect mounting.

→ Versions with fork-shaped anti-rotation fixture at the plug stem (see Fig. 13/ three-dimensional view) must only be mounted by our after-sales service or after they have given their consent.

5.3.3 Mounting the actuator on the handwheel

Tip

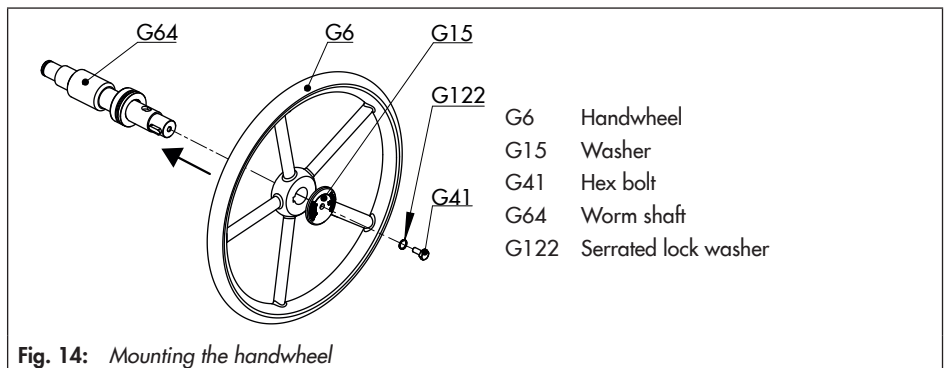
The handwheel and actuator are assembled with special attention paid to the actuator's bench range and direction of action. These details are specified on the actuator nameplate (see the associated actuator documentation).

1. Move the handwheel to the neutral position (see section 7.1).
2. Remove the clamps of the stem connector (A26/27/29) and the ring nut (A8) on the actuator.
3. Apply a suitable lubricant to the threaded nipple on the yoke (G60).
4. **In the "actuator stem extends" version:** apply a signal pressure to the connection on the bottom diaphragm chamber and 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 yoke (G60).
6. Apply a suitable lubricant to the ring nut (A8). Slide the ring nut (A8) over the actuator stem (A7) and fasten it on the actuator. Observe tightening torques.
7. Adjust the rated travel of the actuator over the stem connector nut (G2). The rated travel corresponds to the distance from the bottom of the actuator stem to the tip of the stem connector nut.

8. Use a suitable tool to lock the stem connector nut (G2) at the lock nut (G18) on the actuator.
9. **In the "actuator stem extends" version:** vent the actuator to extend the actuator stem (A7) completely. It must touch the stem connector nut (G2).
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 (G2).
10. Connect the threaded rod (G16) and actuator stem (A7) using the stem connector clamps (A26/27/29).

5.3.4 Mounting the handwheel

1. Use a suitable tool to insert the handwheel (G6) as far as it will go onto the worm shaft (G64). See Fig. 14.
2. Place on the washer (G15). Place the serrated lock washer (G122) underneath the screw (G41) and fasten tight the handwheel with the screw.



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.

60 mm travel

In automatic operation, the handwheel is in the neutral position. The pin of the neutral position indicator moves into the yoke so that

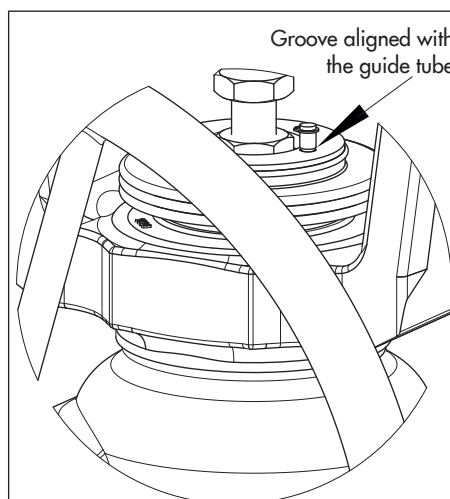


Fig. 15: Neutral position in automatic operation · Version with 60 mm travel

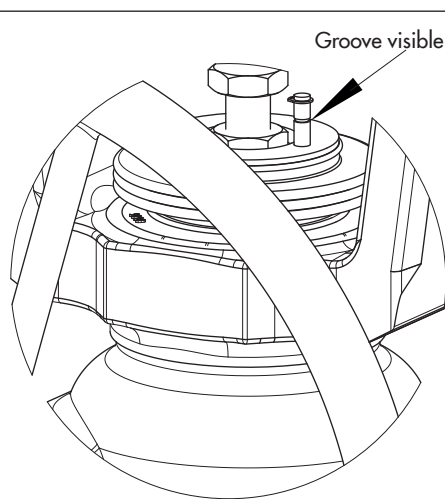


Fig. 16: Manual operation · Version with 60 mm travel

Operation

the circumferential groove at the top is aligned with the top of the guide tube (see Fig. 15).

After the handwheel has been unlocked and turned, the pin rises (see Fig. 16) or disappears into the yoke.

After the handwheel has been unlocked and turned, the anti-rotation fixture slides up or down on the rib of the yoke

120 mm travel

In automatic operation, the handwheel is in the neutral position. The arrow of the anti-rotation fixture points to the label affixed to the yoke of the handwheel (see Fig. 17).

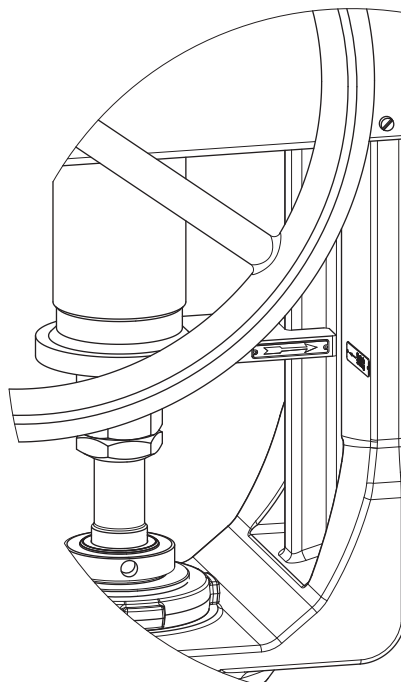


Fig. 17: Neutral position in automatic operation · Version with 120 mm travel

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. 18).
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.

i 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 9).

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. 18).

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. 18).
2. Turn the handwheel. The turning direction depends on the mounted valve (see Table 9).
3. Turn the locking bolt by at least 90° until it engages again to lock the handwheel (see Fig. 18).

Operation

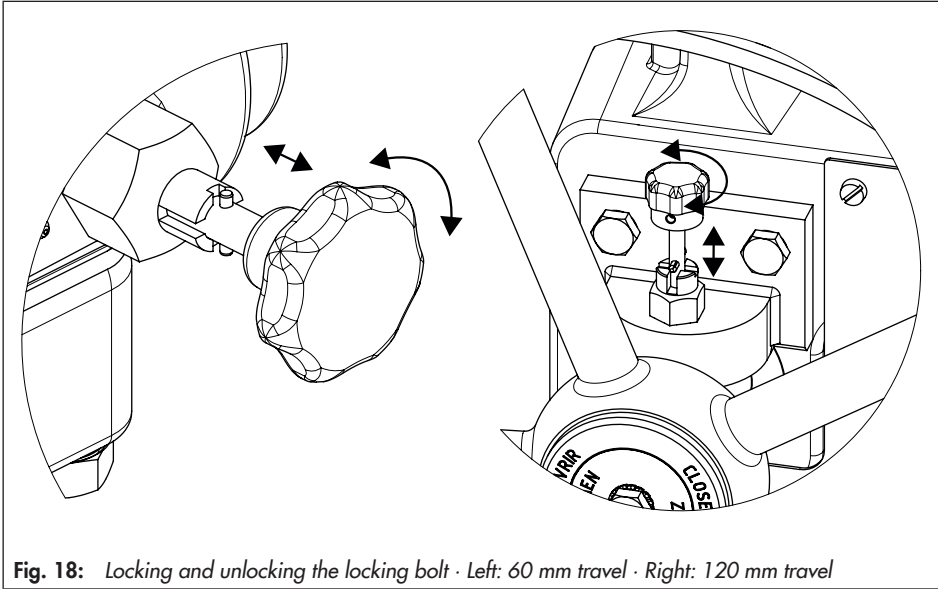


Fig. 18: Locking and unlocking the locking bolt · Left: 60 mm travel · Right: 120 mm travel

Table 9: Turning direction of the handwheel

	Open the valve	Close the valve
SAMSON globe valve	Turn handwheel counterclockwise	Turn 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 9).

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.

i 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.

i 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.*
-

i Note

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

Tools

See document ► AB 0100 for details on suitable tools.

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.

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).

i 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 (9).
- 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.

a) Side-mounted handwheel for rated travels up to 60 mm

1. Undo the stem connector clamps (A26/27/29) between the handwheel and actuator.

2. Loosen the stem connector nut (G2) and lock nut (G42) between the handwheel and actuator.
3. For actuators with "stem extends" fail-safe action and/or preloaded springs: apply approx. 50 % signal pressure to open the valve.
4. Loosen 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. Loosen the top lock nut (G51) between the handwheel and valve, while holding the stem connector nut (G5) stationary.
9. Loosen the top lock nut (10), while holding the stem connector nut (G5) stationary.
10. Loosen the stem connector nut (G5).

**Tip**

Turn the handwheel to retract the threaded rod (G16). This makes it easier to remove the stem connector nut (G5) from the plug stem.

11. Loosen the castellated nut (92).
12. Remove the handwheel from the valve.
13. Loosely thread the stem connector nut and lock nuts onto the threaded rod (G16).

b) Side-mounted handwheel for rated travels up to 120 mm

1. Undo the stem connector clamps (A26/27/29) between the handwheel and actuator.
2. Loosen the stem connector nut (G2) and lock nut (G18) between the handwheel and actuator.
3. For actuators with "stem extends" fail-safe action and/or preloaded springs: apply approx. 50 % signal pressure to open the valve.
4. Loosen 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. Loosen the top lock nut (G18) between the handwheel and valve, while holding the stem connector nut (G5) stationary.
9. Loosen the top lock nut (10), while holding the stem connector nut (G5) stationary.
10. Loosen the stem connector nut (G5).

**Tip**

Turn the handwheel to retract the threaded rod (G16). This makes it easier to remove the stem connector nut (G5) from the plug stem.

11. Loosen the castellated nut (92).
12. Remove the handwheel from the valve.

Removal

13. Loosely thread the stem connector nut and lock nuts onto the threaded rod (G16).

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.

i Note

Depending on the valve (model, valve size etc.), it may be necessary to first mount the yoke of the valve.

Storing the valve and actuator separately

1. Fasten the lock nut (10) and stem connector nut (9) on the valve.
2. If necessary, place the yoke of the valve on the bonnet (2) and fasten using the castellated nut (92). Observe tightening torques.
3. Slide the ring nut (A8) over the actuator stem (A7).
4. Fasten the ring nut (A8) and stem connector clamps (A26/27/29). 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.

i 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

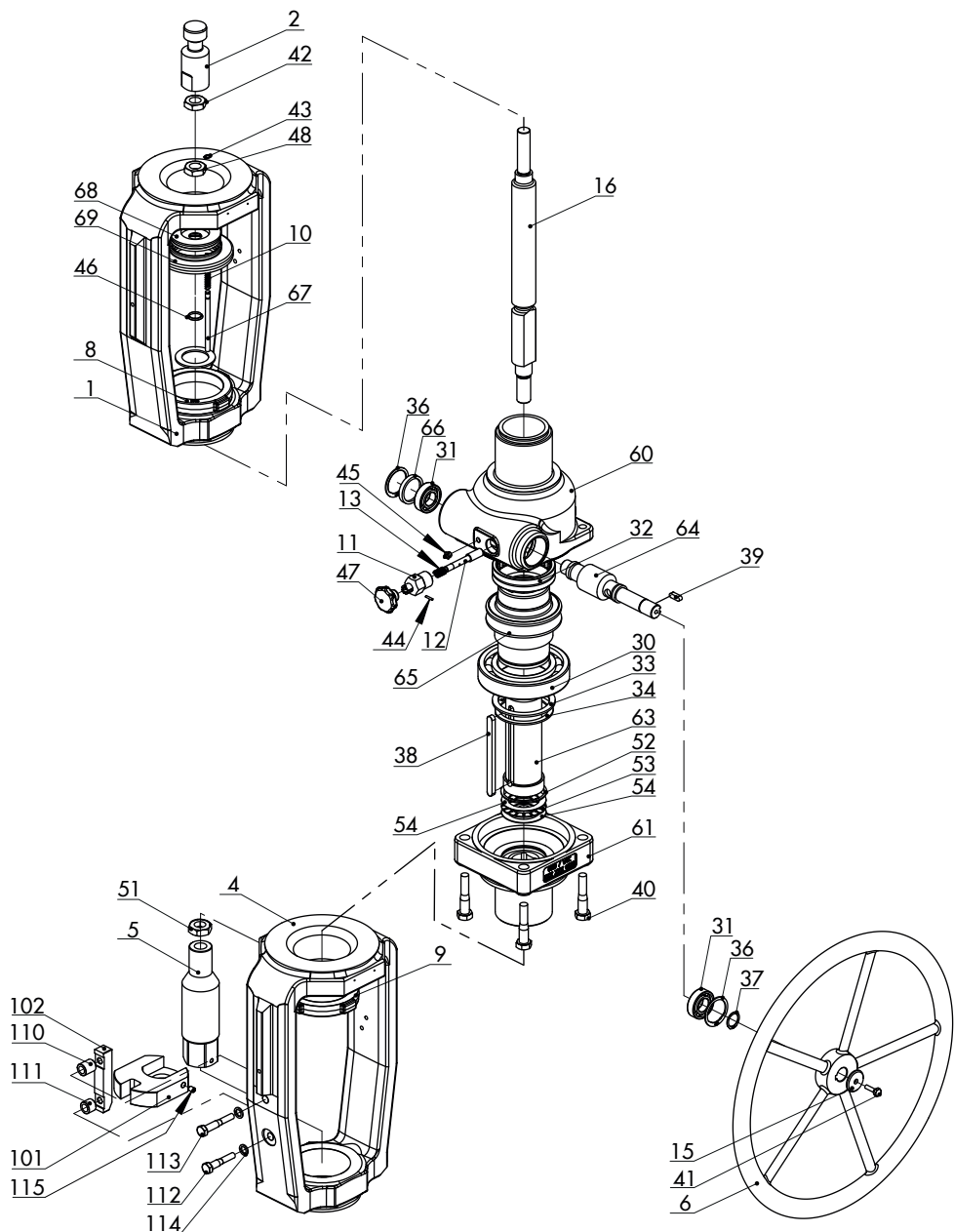
Please submit the following details:

- Order number and position number in the order
- Type designation and model number
- Travel (60 or 120 mm)
- Handwheel diameter (315 or 500 mm)
- Mounted valve (model and valve size)
- Mounted actuator (model and actuator area)
- Installation drawing

14.2 Spare parts

14.2.1 Side-mounted handwheel for rated travels up to 60 mm

- | | |
|--|---|
| 1 Yoke (belonging to the actuator) | 51 Lock nut (belonging to the valve; hex nut with left-hand thread) |
| 2 Stem connector nut (belonging to the actuator) | 52 Retaining ring |
| 4 Yoke (belonging to the valve) | 53 Axial needle bearing |
| 5 Stem connector nut (belonging to the valve) | 54 Sliding washer |
| 6 Handwheel | 60 Top bonnet |
| 8 Fastening nut (belonging to the actuator) | 61 Bottom bonnet |
| 9 Fastening nut (belonging to the valve) | 63 Spindle nut |
| 10 Compression spring | 64 Worm shaft |
| 11 Stop screw | 65 Worm-gear wheel |
| 12 Locking bolt | 66 Cover |
| 13 Compression spring | 67 Neutral position indicator |
| 15 Washer | 68 Washer |
| 16 Threaded rod | 69 Protective bellows |
| 30 Thrust ball bearing | 101 Fork-shaped anti-rotation fixture (optional) |
| 31 Thrust ball bearing | 102 Holder (optional) |
| 32 Needle bearing | 110 Sleeve (optional) |
| 33 Shim | 111 Sleeve (optional) |
| 34 Retaining ring | 112 Screw (optional) |
| 36 Retaining ring | 113 Screw (optional) |
| 37 Retaining ring | 114 Washer (optional) |
| 38 Key drive | 115 Screw (optional) |
| 39 Key drive | |
| 40 Hex screw | |
| 41 Hex screw | |
| 42 Hex nut | |
| 43 Retaining ring | |
| 44 Grooved pin | |
| 45 Grease fitting | |
| 46 O-ring | |
| 47 Button | |
| 48 Hex nut | |



14.2.2 Side-mounted handwheel for rated travels up to 120 mm

- | | |
|---|--|
| 2 Stem connector nut (belonging to the actuator) | 114 Washer (optional) |
| 5 Stem connector nut (belonging to the valve) | 115 Screw (optional) |
| 6 Handwheel | 122 Serrated lock washer |
| 11 Stop screw | 123 Bracket |
| 12 Pin | 124 Hex screw |
| 13 Compression spring | 125 Label indicating neutral position |
| 15 Washer | 126 Arrow indicating neutral position ¹⁾ |
| 16 Threaded rod | 128 Cover |
| 17 Bushing (optional) | 129 Cover |
| 18 Lock nut (belonging to the actuator and valve) | 130 Cap screw |
| 20 Spacer (optional) | 131 Axial needle bearing |
| 24 O-ring | 132 Sliding washer |
| 31 Thrust ball bearing | 133 Retaining ring |
| 33 Ring | 134 Combined needle bearing |
| 34 Retaining ring | 135 Spindle nut |
| 36 Retaining ring | 136 Hex screw |
| 39 Key drive | 137 Spindle with neutral position indicator (125, 126) |
| 41 Hex screw | 138 Needle bearing set combined |
| 44 Grooved pin | 139 Distance ring |
| 47 Button | 140 Threaded pin |
| 55 Radial shaft seal | |
| 60 Yoke | |
| 64 Worm shaft | |
| 65 Worm wheel rim | |
| 66 Protective cap | |
| 68 Ring | |
| 69 Protective bellows | |
| 101 Fork-shaped anti-rotation fixture (optional) | |
| 102 Holder (optional) | |
| 108 Spacer (optional) | |
| 110 Sleeve (optional) | |
| 112 Screw (optional) | |

¹⁾ Plate is riveted

EB 8312-1 EN



SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samsongroup.com · www.samsongroup.com