

Type 2780-1 and Type 2780-2 Pneumatic Actuators



Type 2780-1

Type 2780-2

Translation of original instructions

Mounting and Operating Instructions

EB 5840 EN

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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.

- 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 Department (aftersaleservice@samson.de).



The mounting and operating instructions for the devices are included in the scope of delivery. The latest documentation is available on our website (www.samson.de) > Product documentation. You can enter the document number or type number in the [Find:] field to look for a document.

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 2780 Actuator is designed for operating a mounted globe valve. In combination with the valve, the actuator is used to shut off the flow of liquids, gases or vapors in the pipeline. The actuator is suitable for throttling service and can be used in HVAC plants.

The actuator is designed to operate under exactly defined conditions (e.g. thrust, travel). Therefore, operators must ensure that the actuator is only used in applications that meet the specifications used for sizing the actuator at the ordering stage. In case operators intend to use the actuator in other applications or conditions than specified, SAMSON must be contacted.

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 actuator is not suitable for the following applications:

- Use outside the limits defined during sizing and in the technical data
- Use outside the limits defined by the accessories mounted on the actuator

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

- Use of non-original spare parts
- Performing servicing and repair work not described in these instructions

Qualifications of operating personnel

The actuator must be mounted, started up, serviced, and repaired by fully trained and qualified personnel only; the accepted industry codes and practices are to 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 personal protective equipment when handling the Type 2780 Pneumatic Actuator:

- Protective gloves when mounting or removing the actuator

i Note

More information on the safe handling of the diaphragms installed in the pneumatic actuators is available in ► <http://www.samson.de/reach-en.html>.

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

Revisions and other modifications

Revisions, conversions or other modifications to 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 Type 2780 Actuator does not have any special safety equipment.

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 actuator by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. They must observe all hazard statements, warning and caution notes in these mounting and operating instructions, especially for installation, start-up, and servicing.

Responsibilities of the operator

The operator is responsible for proper operation and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third persons 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 specified hazard statements, warning and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards and regulations

According to the ignition risk assessment performed in accordance with EN 13463-1:2009, section 5.2, the non-electrical actuators do not have their own potential ignition source even in the rare incident of an operating fault. As a result, they do not fall within the scope of Directive 2014/34/EU.

→ For connection to the equipotential bonding system, observe the requirements specified in section 6.4 of EN 60079-14 (VDE 0165 Part 1).

Referenced documentation

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

- Mounting and operating instructions for the mounted valve
- Mounting and operating instructions for mounted valve accessories (positioner, solenoid valve etc.)
- ► WA 0029 for tools and lubricant

1.1 Notes on possible severe personal injury

DANGER

Risk of bursting in the actuator.

Actuators are pressurized. Improper opening can lead to actuator components bursting.

→ Before starting any work on the actuator, depressurize all plant sections concerned and the actuator.

1.2 Notes on possible personal injury

WARNING

Crush hazard arising from moving parts.

The actuator contains moving parts (actuator stem), which can injure hands or fingers if inserted into the actuator.

- Do not insert hands or finger into the yoke while the valve is in operation.
- While working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.

Risk of personal injury when the actuator vents.

While the valve is operating, the actuator may vent during closed-loop control or when the valve opens or closes.

- Install the control valve in such a way that the actuator does not vent at eye level.
- Use suitable silencers and vent plugs.
- Wear eye protection when working in close proximity to the control valve.

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. These actuators can be identified by two long bolts protruding from the bottom of the actuator.

- Before starting any work on the actuator, relieve the compression from the preloaded springs (see section 9.3).

1.3 Notes on possible property damage

NOTICE

Risk of actuator damage due to excessively high or low tightening torques.

Observe the specified torques on tightening actuator components. Excessively tightened torques lead to parts wearing out quicker. Parts that are not tightened far enough may loosen.

- Observe the specified tightening torques (▶ WA 0029).

! NOTICE

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

Certain tools are required to work on the actuator.

→ Only use tools approved by SAMSON (▶ WA 0029).

Risk of actuator damage due to the use of unsuitable lubricants.

The lubricants to be used depend on the actuator material. Unsuitable lubricants may corrode and damage the valve surface.

→ Only use lubricants approved by SAMSON (▶ WA 0029).

2 Markings on the actuator

2.1 Actuator nameplate

The nameplate is stuck on the diaphragm casing. It includes all details required to identify the actuator:

- 1 Type designation
- 2 Configuration ID
- 3 Serial number
- 4 Permissible supply pressure p_{max}
- 5 Bench range in bar
- 6 Bench range in psi
- 7 Operating travel in mm
- 8 Symbol for manual override
- 9 Symbol indicating fail-safe action



Actuator stem extends (FA)



Actuator stem retracts (FE)

- 10 Date of manufacture (month and year)

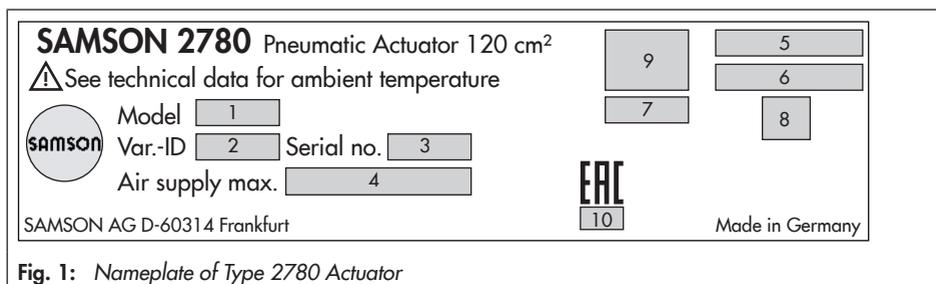


Fig. 1: Nameplate of Type 2780 Actuator

3 Design and principle of operation

The pneumatic actuators are used especially for attachment to Type 3222 and Type 3213 Valves. In this case, force-locking attachment is used.

The actuators mainly consist of two diaphragm cases, the actuator stem (A2/A5), rolling diaphragm (A48), and springs (A25-29). The housings have an actuator area of 120 cm² and are made of die-cast aluminum.

The signal pressure creates a force at the diaphragm surface, which is opposed by the springs in the actuator. The direction of action of the actuator stem depends on how the springs are installed in the actuator. A maximum of six springs, partly fitted in one another, can be installed in the actuator.

The Type 2780-2 Actuator is designed for the direct attachment of a positioner as standard. A yoke is located on the bottom diaphragm case for attachment of a pneumatic or electropneumatic positioner.

3.1 Direction of action

The direction of action is determined by how the springs and diaphragm plate are arranged in the actuator. With direction of action "actuator stem retracts", the compressed air is applied to the signal pressure connection on the top diaphragm case. With direction of action "actuator stem extends", the compressed air is applied to the signal pres-

sure connection on the bottom diaphragm case.

The actuator's direction of action can be reversed (see section 6.1).

3.2 Signal pressure routing

Type 2780-1x (see Fig. 2)

In the "actuator stem extends" version, the signal pressure is routed through the bottom signal pressure connection (S_{FA}) to the bottom diaphragm chamber. In the "actuator stem retracts" version, the signal pressure is routed through the top signal pressure connection (S_{FE}) to the top diaphragm chamber.

Type 2780-2x (see Fig. 3 and Fig. 4)

In the Type 2780-2 Actuator, the signal pressure is transmitted to the diaphragm chamber through the holes (S_{FA} , S_{FE}) on the left or right side of the yoke and over a **switchover plate**. The fail-safe action of the actuator ("actuator stem extends" or "actuator stem retracts") determines how the positioner must be attached and the switchover plate must be aligned.

Turn the switchover plate to align the correct symbol for the fail-safe action with the marking. The attachment either on the left or right side of the actuator is determined by the required direction of action of the positioner (>> or <<).

If the actuator is operated without a positioner, a **connecting plate** is required instead of the switchover plate. In this case, the signal pressure is routed directly over the signal

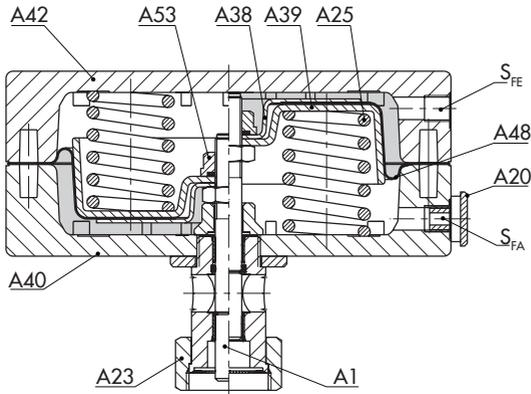
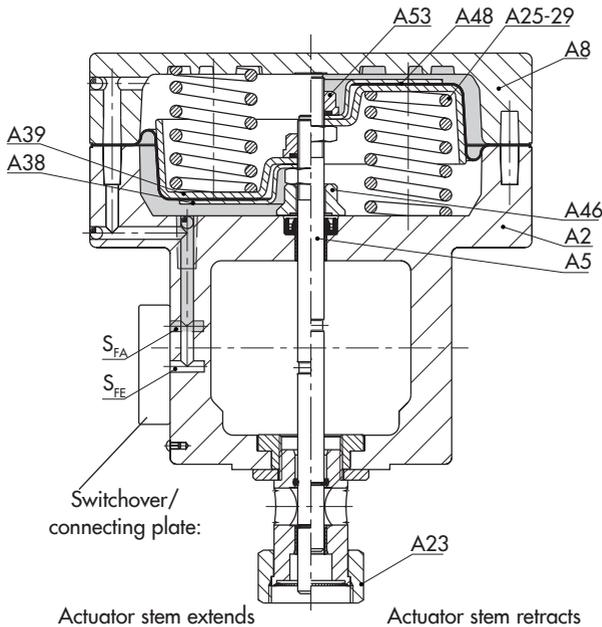


Fig. 2: Type 2780-1

Actuator stem extends

Actuator stem retracts



- A1 Actuator stem
- A2 Lower actuator section
- A5 Actuator stem
- A8 Diaphragm case
- A20 Vent plug
- A23 Coupling nut
- A25-29 Compression spring
- A38 Metal plate
- A39 Diaphragm plate
- A40 Bottom diaphragm case
- A42 Top diaphragm case
- A46 Stop bushing
- A48 Diaphragm
- A53 Collar nut
- S_{FA} Signal pressure connection (actuator stem extends)
- S_{FE} Signal pressure connection (actuator stem retracts)

Fig. 3: Type 2780-2

pressure connection of the connecting plate to the actuator diaphragm chamber.

Turn the connecting plate to align the correct symbol for the fail-safe action with the marking.

Additional points that apply concerning the connecting plate:

- ➔ Make sure that the gasket for the connecting plate is correctly inserted.
- ➔ The connecting plate has threaded holes with NPT and G threads. Seal the signal

pressure connection that is not used with the rubber seal and square plug.

Accessories

Switchover plates and connecting plates are listed as accessories.

		With in- dex	Order no.
Switchover plate	New	.01	1400-6822
	Old	.00	1400-6819
Connect- ing plate	New	.01	1400-6823
	G thread	.00	1400-6820
	NPT thread	.00	1400-6821

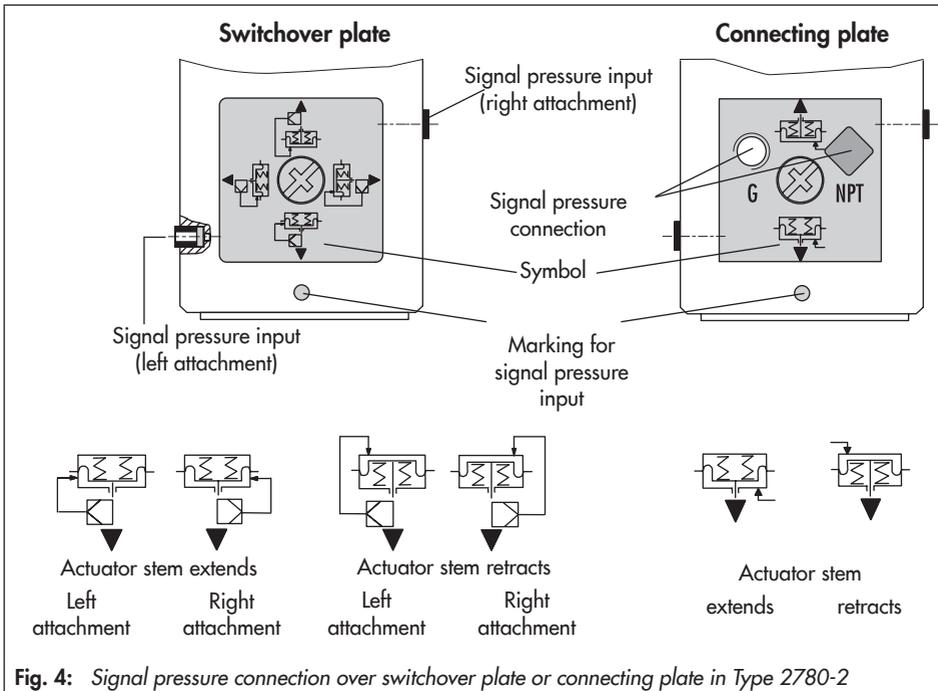


Fig. 4: Signal pressure connection over switchover plate or connecting plate in Type 2780-2

i Note

Actuators with device index .01 are equipped with new connecting plates. Old and new connecting plates are not interchangeable.

3.3 Fail-safe action

When the signal pressure is reduced or the control signal fails, the fail-safe position of the control valve depends on whether the springs are installed in the top or bottom diaphragm chamber.

Actuator stem extends (FA)

When the signal pressure is reduced or the control signal fails, the springs move the actuator stem downward and close the globe valve. The valve opens when the signal pressure is increased enough to overcome the spring force.

Actuator stem retracts (FE)

When the signal pressure is reduced or the control signal fails, the springs move the actuator stem upward and open a mounted globe valve. The valve closes when the signal pressure is increased enough to overcome the spring force.

3.4 Technical data

The nameplate provide information on the actuator version (see section 2.1).

i Note

More information is available in Data Sheet
▶ T 5840.

Compliance

The Type 2780-1 and Type 2780-2 Pneumatic Actuators bear the EAC mark of conformity.



Ambient temperature

The permissible ambient temperature for NBR diaphragm material is -35 to $+80$ °C.

Supply pressure

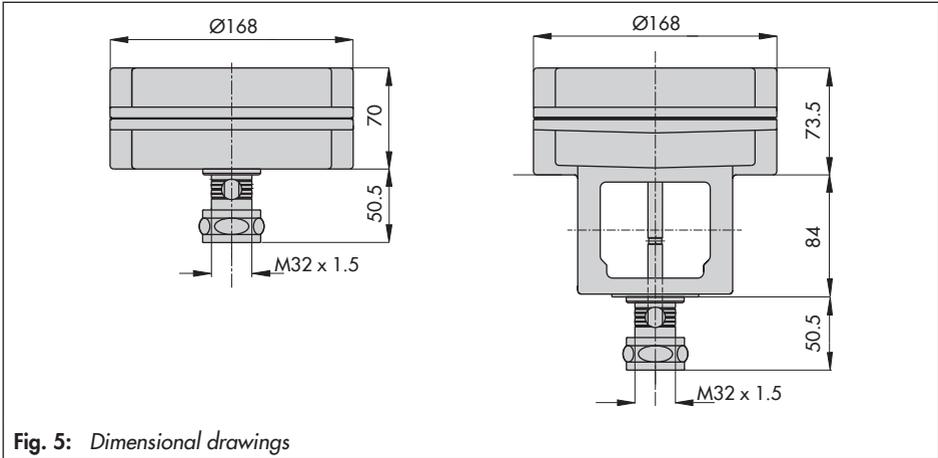
The maximum permissible supply pressure is 4 bar in throttling service.

Dimensions

Dimensions (see Fig. 5)

Weights

Version	Weight
Type 2780-1	2 kg
Type 2780-2	3.2 kg



4 Preparation

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Compare the shipment received against the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.1 Unpacking

Note

Do not remove the packaging until immediately before mounting.

Proceed as follows to lift and mount the actuator:

1. Remove the packaging from the actuator.
2. Dispose of the packaging in accordance with the valid regulations.

4.2 Transporting and lifting

Tip

SAMSON's After-sales Service department can provide more detailed transport and lifting instructions on request.

4.2.1 Transporting

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

- ➔ Leave the actuator in its transport container or on the pallet to transport it.
- ➔ Observe the transport instructions.

Transport instructions

- Protect the actuator against external influences (e.g. impact).
- Do not damage the corrosion protection (paint, surface coatings). Remove any damage immediately.
- Protect the actuator against moisture and dirt.
- The permissible transportation temperature of standard control valves is -20 to $+65$ °C.

Note

Contact SAMSON's After-sales Service department for the transportation temperatures of other valve versions.

4.2.2 Lifting

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

Lifting instructions

- Secure slings against slipping.
- Make sure the slings can be removed from the actuator once it has been mounted onto the valve.
- Prevent the actuator from tilting or tipping.
- Do not leave loads suspended when interrupting work for longer periods of time.
- Make sure that the slings attached to the valve body bear the entire load (see Fig. 6).

Lifting the entire control valve assembly

See associated valve documentation.

Tip

We recommend using a hook with safety latch (see Fig. 6). The safety latch prevents the slings from slipping during lifting and transporting.

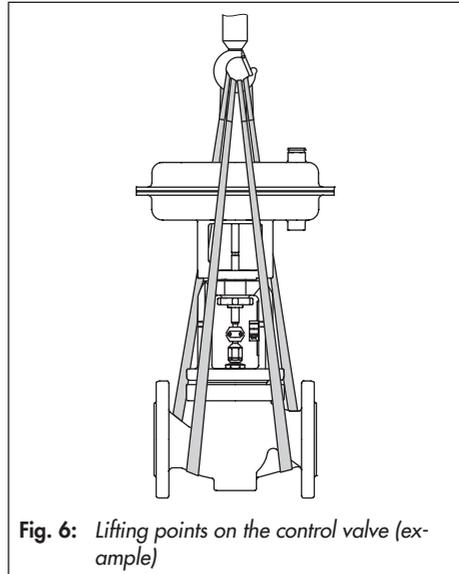


Fig. 6: Lifting points on the control valve (example)

4.3 Storage

NOTICE

Risk of actuator damage due to improper storage.

- Observe storage instructions.
- Avoid long storage times.
- Contact SAMSON in case of different storage conditions or long storage periods.

Note

We recommend regularly checking the actuator and the prevailing storage conditions during long storage times.

Storage instructions

- When the valve and actuator are already assembled, observe the storage conditions for control valves. See associated valve documentation.
- Protect the actuator against external influences (e.g. impact).
- Do not damage the corrosion protection (paint, surface coatings). Remove any damage immediately.
- Protect the actuator 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.
- The permissible storage temperature of standard control valves is -20 to $+65$ °C.

i Note

Contact SAMSON's After-sales Service department for the storage temperatures of other valve versions.

- Do not place any objects on the actuator.

Special storage instructions for elastomers

Elastomer, e.g. actuator diaphragm

- To keep elastomers in shape and to prevent cracking, do not bend them or hang them up.
- We recommend a storage temperature of 15 °C for elastomers.
- Store elastomers away from lubricants, chemicals, solutions, and fuels.

Tip

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

4.4 Preparation for installation

Proceed as follows:

- ➔ Check the actuator for damage.
- ➔ Check to make sure that the type designation, material, and ambient temperature range of the actuator match the plant conditions.
- ➔ Check the pressure gauge installed on valve accessories to make sure it functions.
- ➔ When the valve and actuator are already assembled, check the tightening torques of the bolted joints (▶ WA 0029). Components may loosen during transport.

5 Mounting and start-up

SAMSON control valves are delivered ready for use. In special cases, the valve and actuator are delivered separately and must be assembled on site. The procedure to mount and start up the actuator are described in following.

NOTICE

Risk of actuator damage due to excessively high or low tightening torques.

Observe the specified torques on tightening actuator components. Excessively tightened torques lead to parts wearing out quicker.

Parts that are not tightened far enough may loosen.

Observe the specified tightening torques

(▶ WA 0029).

NOTICE

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

Only use tools approved by SAMSON

(▶ WA 0029).

Note

See associated valve documentation for additional mounting instructions.

5.1 Mounting the actuator onto the valve

Proceed as follows if the valve and actuator have not been assembled by SAMSON:

Tip

The valve 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 section 2.1).

1. Unscrew the nut (12) at the valve.
2. Press the plug together with the plug stem firmly into the seat ring.
3. Thread the nut (12) downward.
4. Remove the coupling nut (A23) at the actuator.
5. Slide the coupling nut (A23) over the plug stem (15).
6. Place the actuator on the valve. Fasten the actuator stem (A1) and plug stem (15) together using the coupling nut (A23) (tightening torque 20 Nm).
7. Determine the lower and upper signal pressure range values:

The lower signal pressure range value is the same as the minimum value of the bench range.

The upper signal pressure range value is the same as the maximum value of the bench range.
8. Select the correct signal pressure connection as described in section 3.2 and proceed depending on the direction of action as follows:

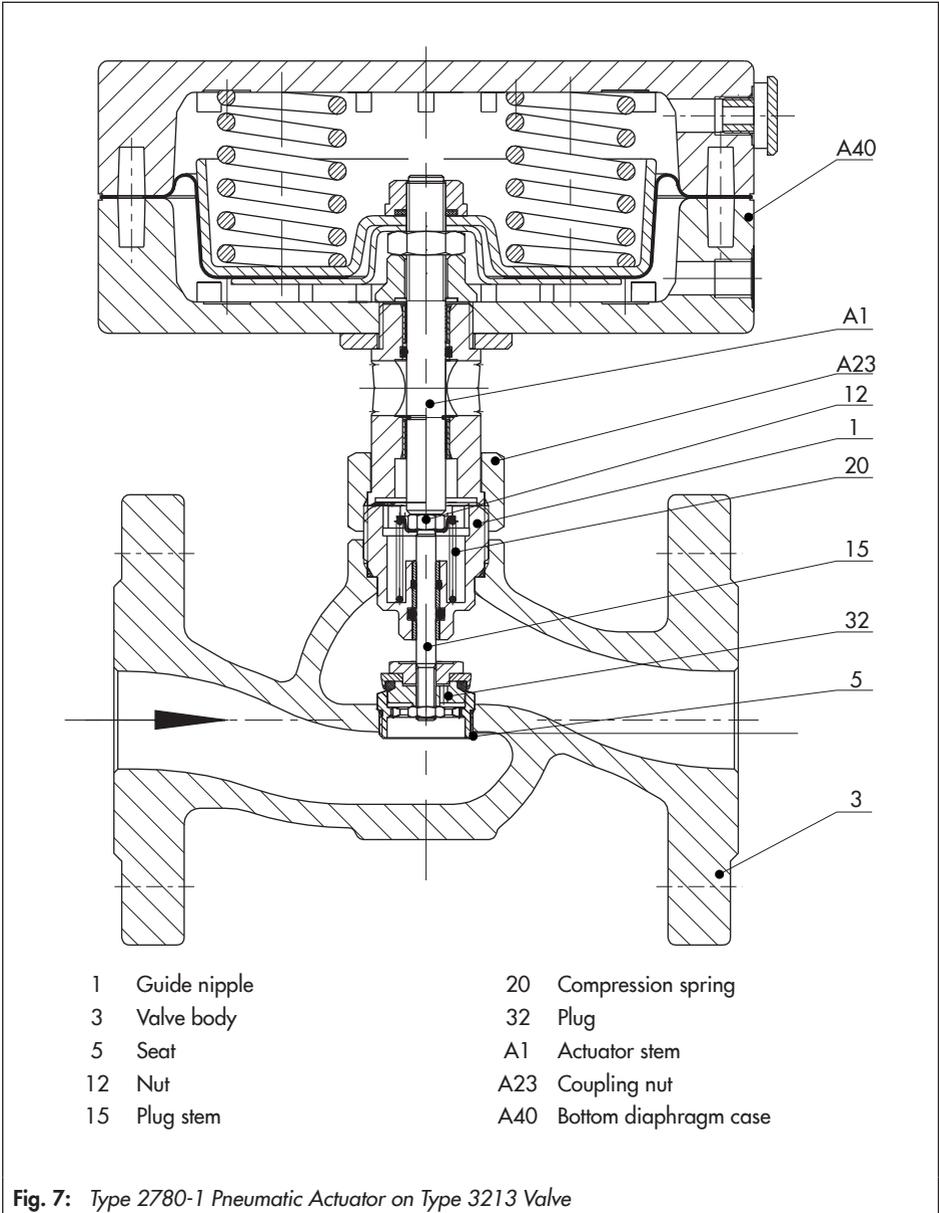


Fig. 7: Type 2780-1 Pneumatic Actuator on Type 3213 Valve

Actuator stem extends

Apply lower signal pressure range value to the signal pressure connection.

Actuator stem retracts

Apply upper signal pressure range value to the signal pressure connection.

5.2 Additional fittings

Vent plug

Vent plugs are screwed into the exhaust air ports of pneumatic devices. They ensure that any exhaust air that forms can be vented to the atmosphere (to avoid excess pressure in the device). Furthermore, the vent plugs allow air intake to prevent a vacuum from forming in the device.

- Locate the vent plug on the opposite side to the workplace of operating personnel.
- On mounting valve accessories, make sure that they can be operated from the workplace of the operating personnel.

i Note

The workplace of operating personnel is the location from which the valve, actuator and any mounted valve accessories can be accessed to operate them.

6 Operation

⚠ WARNING

Crush hazard arising from moving parts (actuator stem).

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

⚠ WARNING

Risk of personal injury when the actuator vents.

Wear eye protection when working in close proximity to the control valve.

ⓘ NOTICE

Operating disturbed by a blocked actuator stem.

Do not impede the movement of the actuator stem by inserting objects into its path.

ⓘ NOTICE

- Only apply the signal pressure to the diaphragm chamber of the actuator that does not contain any springs.*
- It is essential that air can pass through the vent plug (A20) for the Type 2780-1 Actuator to work properly.*

6.1 Reversing the direction of action (fail-safe action)

The direction of action (and fail-safe action) of pneumatic actuators can be changed. The fail-safe action is indicated on the nameplate by a symbol (see section 2.1).



Actuator stem extends (FA)



Actuator stem retracts (FE)

⚠ DANGER

Risk of bursting in the actuator.

Actuators are pressurized. Improper opening can lead to actuator components bursting.

Before starting any work on the actuator, depressurize all plant sections concerned and the actuator.

⚠ WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator.

Before starting any work on the actuator, relieve the compression from the preloaded springs (see section 9.3).

ⓘ NOTICE

Risk of malfunction due to incorrect details on the nameplate after the reversal of the direction of action.

After reversal, the symbol and configuration ID on the nameplate are no longer valid. Contact SAMSON to request a new nameplate.

i Note

The actuator's direction of action can only be reversed after it has been removed from the valve. See section 9.2 on how to remove the actuator.

Reversal of the direction of action from stem extends to stem retracts

1. If necessary, remove the actuator from the valve. See section 9.2.
2. Undo the nuts and bolts on both cases (A42, A40).

3. Lift off the top diaphragm case (A42) and remove springs (A25).
4. Pull the actuator stem (A1) together the diaphragm plate (A39), diaphragm (A48), metal plate (A38), and bushing (A46) out of the bottom diaphragm case (A40).
5. Completely unscrew the collar nut (A53), while holding the actuator stem (A1) stationary using a suitable tool which cannot damage the sealing.
6. Remove the diaphragm plate (A39) together with the diaphragm (A48) and metal plate (A38) from the actuator stem (A1) and place them back on again turned over.
7. Tighten the collar nut (A53).

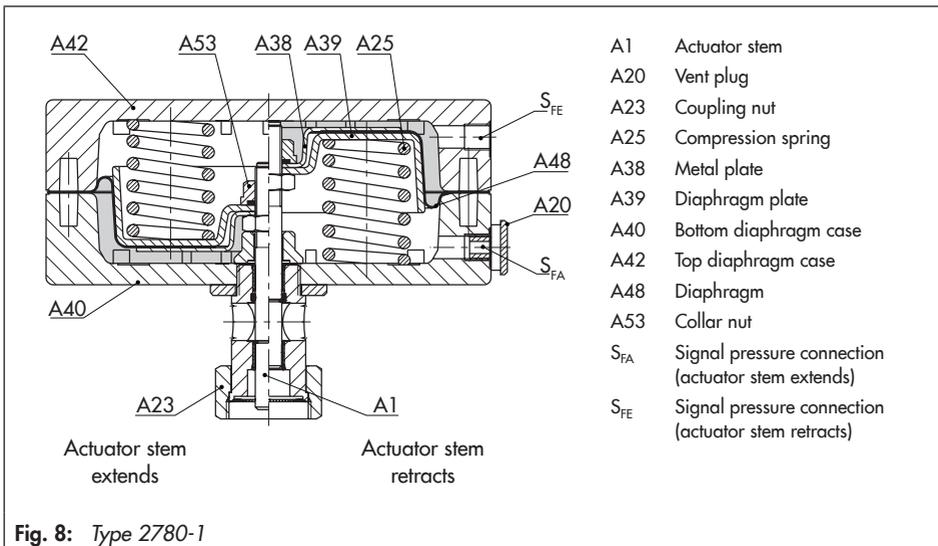


Fig. 8: Type 2780-1

8. Apply a suitable sealant and lubricant to the actuator stem (A1).
 9. Turn over the top diaphragm case (A42) and place the actuator stem (A1) together with the ready-assembled diaphragm parts inside it.
 10. Slide the bushing (A46) over the actuator stem (A1).
 11. Place the springs (A25) in the top diaphragm case (A42), centering them in the intended recesses.
 12. Place on the bottom diaphragm case (A40).
 13. Fasten the top and bottom diaphragm cases (A42, A40) together with the nuts and bolts.
 14. In Type 2780-1, remove the vent plug (A20) and screw it into the bottom signal pressure connection (S_{FA}).
The actuator springs, which now push against the diaphragm plate from below, cause the actuator stem to retract. The signal pressure is connected to the top connection (S_{FE}) on the top diaphragm case. As a result, the actuator stem extends opposing the spring force as the signal pressure increases.
 15. Affix a new nameplate with changed symbol and new configuration ID to the actuator.
- Reversal of the direction of action from stem retracts to stem extends**
1. If necessary, remove the actuator from the valve. See section 9.2.
 2. Undo the nuts and bolts on both cases (A42, A40).
 3. Lift off the top diaphragm case (A42).
 4. Pull the actuator stem (A1) together the diaphragm plate (A39), diaphragm (A48), metal plate (A38), and bushing (A46) out of the bottom diaphragm case (A40).
 5. Completely unscrew the collar nut (A53), while holding the actuator stem (A1) stationary using a suitable tool which cannot damage the sealing.
 6. Remove the diaphragm plate (A39) together with the diaphragm (A48) and metal plate (A38) from the actuator stem (A1) and place them back on again turned over.
 7. Tighten the collar nut (A53).
 8. Apply a suitable sealant and lubricant to the actuator stem (A1).
 9. Slide the bushing (A46) over the actuator stem (A1).
 10. Place the actuator stem (A1) together with the ready-assembled diaphragm parts into the bottom diaphragm case (A40).
 11. Place the springs (A25) in the bottom diaphragm case (A40), centering them in the intended recesses.
 12. Place on the top diaphragm case (A42).
 13. Fasten the top and bottom diaphragm cases (A42, A40) together with the nuts and bolts.

14. In Type 2780-1, screw the vent plug (A20) into the top signal pressure connection (S_{FE}).

The actuator springs, which now push against the diaphragm plate from above, cause the actuator stem to extend. The signal pressure is connected to the bottom connection (S_{FA}) on the bottom diaphragm case. As a result, the actuator stem retracts opposing the spring force as the signal pressure increases.

15. Affix a new nameplate with changed symbol and new configuration ID to the actuator.

7 Servicing

DANGER

Risk of bursting in the actuator.

Actuators are pressurized. Improper opening can lead to actuator components bursting.

Before starting any work on the actuator, depressurize all plant sections concerned and the actuator.

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator.

Before starting any work on the actuator, relieve the compression from the preloaded springs (see section 9.3).

NOTICE

Risk of actuator damage due to incorrect service or repair.

- Do not perform any service or repair work other than the activities described in this section on your own. Contact SAMSON's After-sales Service department.
- Service and repair work must only be performed by staff trained for this purpose.

NOTICE

Risk of actuator damage due to excessively high or low tightening torques.

Observe the specified torques on tightening actuator components. Excessively tightened torques lead to parts wearing out quicker. Parts that are not tightened far enough may loosen.

Observe the specified tightening torques (▶ WA 0029).

NOTICE

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

Only use tools approved by SAMSON (▶ WA 0029).

NOTICE

Risk of actuator damage due to the use of unsuitable lubricants.

Only use lubricants approved by SAMSON (▶ WA 0029).

Note

- The product warranty becomes void if servicing or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service department.
- Only use original spare parts by SAMSON, which comply with the original specifications.

Tip

SAMSON's After-sales Service department can support you to draw up an inspection plan for your plant.

7.1 Replacing the diaphragm

Version with fail-safe action "actuator stem extends" (FA)

1. If necessary, remove the actuator from the valve. See section 9.2.
2. Undo the nuts and bolts on both cases (A42, A40).
3. Lift off the top diaphragm case (A42) and remove springs (A25).
4. Unscrew the collar nut (A53).
5. Remove the diaphragm plate (A39) together with the diaphragm (A48), metal plate (A38), and actuator stem (A1) out of the bottom diaphragm case (A40).
6. Place a new diaphragm on the metal plate (A38). Place on the diaphragm plate (A39).
7. Check the sealing element on the collar nut (A53). If necessary, renew it.
8. Apply a suitable sealant and lubricant to the actuator stem (A1).
9. Insert the actuator stem (A1) together with the diaphragm plate (A39), diaphragm (A48), and metal plate (A38) into the bottom diaphragm case (A40).
10. Tighten the collar nut (A53).
11. Place the springs (A25) in the bottom diaphragm case (A40), centering them in the intended recesses.
12. Place on the top diaphragm case (A42).
13. Fasten the top and bottom diaphragm cases (A42, A40) together with the nuts and bolts.

14. Mount the actuator on the valve (see section 5.1).

Version with fail-safe action "actuator stem retracts" (FE)

1. If necessary, remove the actuator from the valve. See section 9.2.
2. Undo the nuts and bolts on both cases (A42, A40).
3. Lift off the top diaphragm case (A42).
4. Unscrew the collar nut (A53).
5. Remove the diaphragm plate (A39) together with the diaphragm (A48), metal plate (A38), and actuator stem (A1) out of the bottom diaphragm case (A40).
6. Place a new diaphragm on the metal plate (A38). Place on the diaphragm plate (A39).
7. Check the sealing element on the collar nut (A53). If necessary, renew it.
8. Apply a suitable sealant and lubricant to the actuator stem (A1).
9. Insert the actuator stem (A1) together with the diaphragm plate (A39), diaphragm (A48), and metal plate (A38) into the bottom diaphragm case (A40).
10. Tighten the collar nut (A53).
11. Place on the top diaphragm case (A42).
12. Fasten the top and bottom diaphragm cases (A42, A40) together with the nuts and bolts.
13. Mount the actuator on the valve (see section 5.1).

7.2 Return shipment

Defective actuators can be returned to SAMSON for repair.

Proceed as follows to return valves to SAMSON:

1. Put the control valve out of operation.
See associated valve documentation.
2. Remove the actuator from the valve (see section 9.2).
3. Send the actuator to your nearest SAMSON subsidiary. SAMSON subsidiaries are listed on our website at
▶ www.samson.de > Contact.

7.3 Ordering spare parts and operating supplies

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

Spare parts

See section 10.2 for details on spare parts.

Lubricant

Details on suitable lubricants can be found in the document ▶ WA 0029.

Tools

Details on suitable tools can be found in the document ▶ WA 0029.

8 Malfunctions

Depending on the operating conditions, check the actuator at certain intervals to prevent possible failure before it can occur. Operators are responsible for drawing up a test plan.



Tip

SAMSON's After-sales Service department can support you to draw up an inspection plan for your plant.

Troubleshooting

Malfunction	Possible reasons	Recommended action
Actuator stem does not move on demand.	Actuator is blocked.	Check attachment. Unblock the actuator.
	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
	Signal pressure not connected to the correct diaphragm chamber.	See section 3.2.
Actuator stem does not stroke through its complete travel range.	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
	Valve accessories incorrectly set.	Check the actuator without valve accessories. Check the settings of the valve accessories.



Note

Contact SAMSON's After-sales Service department for malfunctions not listed in the table.

9 Decommissioning and disassembly

⚠ DANGER

Risk of bursting in the actuator. Actuators are pressurized. Improper opening can lead to actuator components bursting. Before starting any work on the actuator, depressurize all plant sections concerned and the actuator.

⚠ WARNING

Risk of personal injury due to preloaded springs. Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator. Before starting any work on the actuator, relieve the compression from the preloaded springs (see section 9.3).

9.1 Decommissioning

To decommission the actuator for service and repair work or 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.

9.2 Removing the actuator from the valve

1. Put the control valve out of operation. See associated valve documentation.
2. Undo the coupling nut (A23) on the actuator stem (A1) and plug stem (15).
3. Lift the actuator off the valve.
4. Slide the coupling nut (A23) onto the actuator stem (A1) and tighten it.
5. Screw tight the nut (12) on the valve.

9.3 Relieving the spring compression

1. Undo the short nuts and bolts on the diaphragm cases.
2. Undo the the long nuts and bolts on the diaphragm cases evenly in a crisscross pattern.

9.4 Disposal

- ➔ Observe local, national, and international refuse regulations.
- ➔ Do not dispose of components, lubricants, and hazardous substances together with your other household waste.

10 Appendix

10.1 After-sales service

Contact SAMSON's After-sales Service department for support concerning servicing or repair work or when malfunctions or defects arise.

E-mail

You can reach the After-sales Service Department at aftersaleservice@samson.de.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives, and service facilities worldwide can be found on the SAMSON website, in all SAMSON product catalogs or on the back of these Mounting and Operating Instructions.

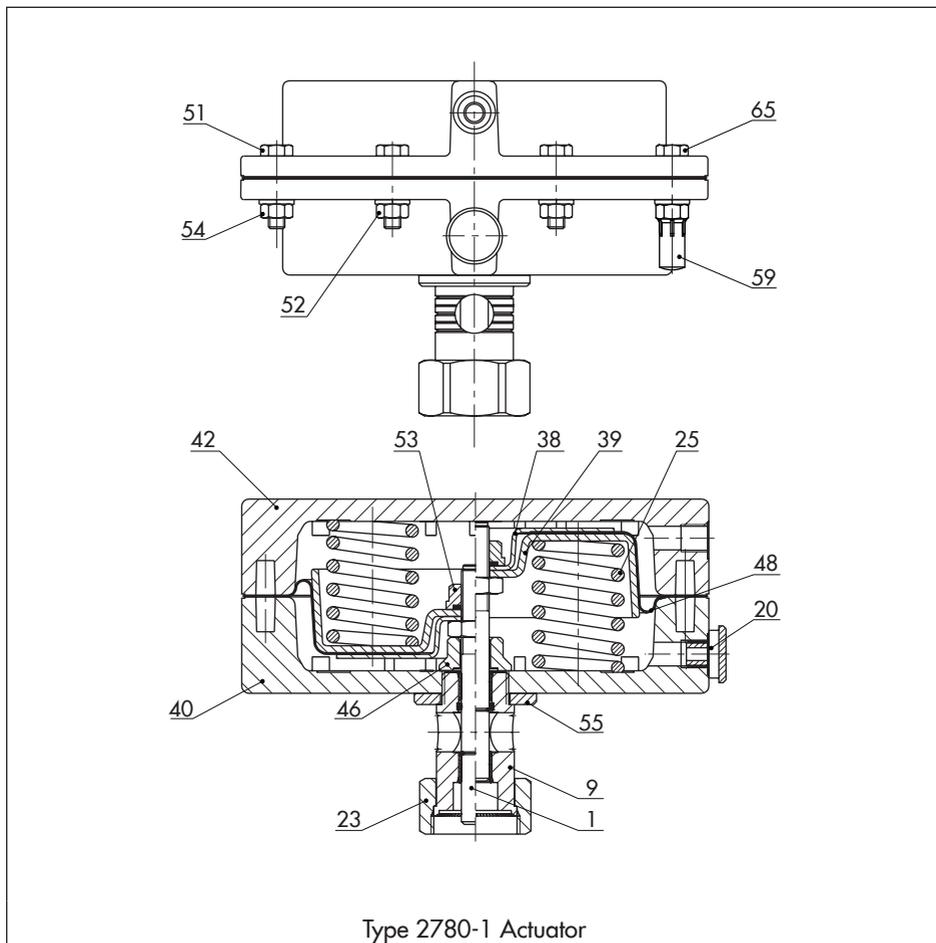
Required specifications

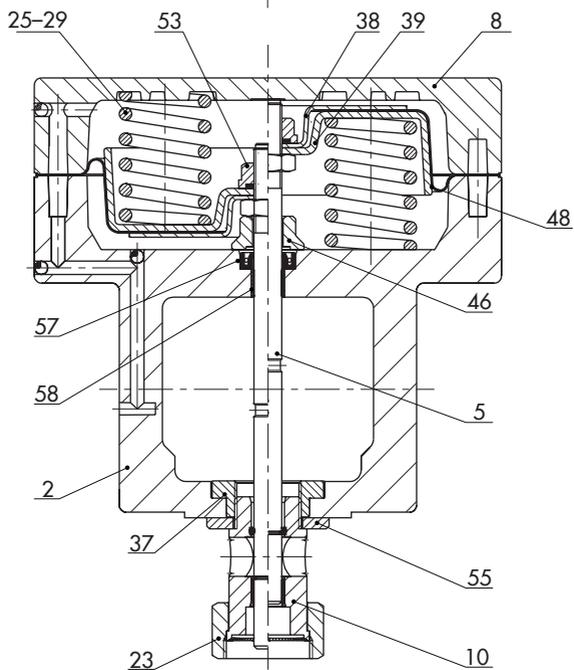
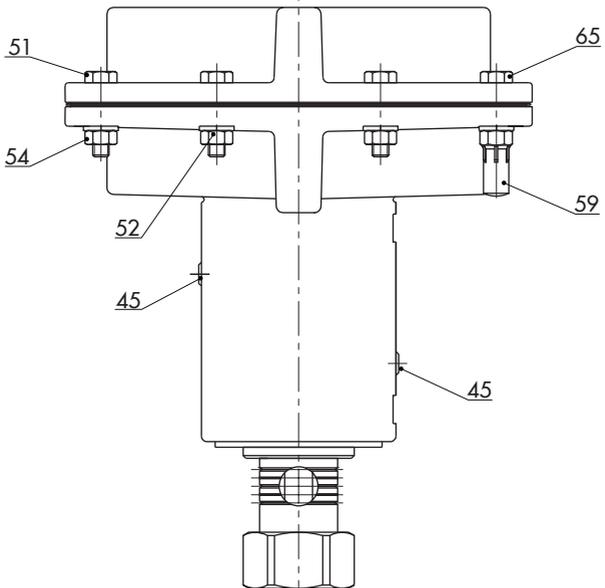
Please submit the following details:

- Order number and position number in the order
- Type, model number, actuator area, travel and bench range (e.g. 0.4 to 1 bar) of the actuator
- Direction of action
- Type designation of mounted valve.
- Installation drawing

10.2 Spare parts

1	Actuator stem
2	Lower actuator section
5	Actuator stem
8	Top diaphragm case
9	Bushing
10	Bushing
20	Vent plug
23	Coupling nut
25-29	Compression spring
37	Threaded bushing
38	Metal plate
39	Diaphragm plate
40	Bottom diaphragm case
42	Top diaphragm case
45	Seal
46	Stop bushing
48	Diaphragm
51	Hexagon bolt
52	Hexagon nut
53	Hexagon nut (collar nut)
54	Washer
55	Washer
57	Radial shaft seal
58	Dry bearing
59	Hexagon nut (preloading)
65	Hexagon bolt (preloading)





Type 2780-2 Actuator



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