

Type 3347-1 and Type 3347-7 Pneumatic Control Valves

SAMSON



Type 3347-7, cast body with welding ends



Type 3347-7, bar stock body with threaded connections

Mounting and Operating Instructions

EB 8097 EN

Edition May 2016

Definition of signal words



DANGER!

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



WARNING!

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



NOTICE

Property damage message or malfunction



Note:

Additional information



Tip:

Recommended action

1	General safety instructions	4
2	Design and principle of operation	6
3	Assembling valve and actuator	9
3.1	Assembly and adjustment	9
3.2	Option of preloading springs for "actuator stem extends"	10
3.3	Different rated travels of valve and actuator	10
4	Installation	11
4.1	Notes on installation	11
4.2	Signal pressure line.....	11
5	Operation	11
6	Maintenance	12
6.1	Replacing sealing parts and plug	12
7	Description of nameplates	14
8	Inquiries	15

1 General safety instructions



- The control valve must be mounted, started up, or serviced by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. Make sure employees or third persons are not exposed to any danger. All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up and maintenance, must be strictly observed.
- The control valves comply with the requirements of the European Pressure Equipment Directive 97/23/EC. Valves with a CE marking have a declaration of conformity which includes information about the applied conformity assessment procedure.
The declaration of conformity can be viewed and downloaded at <http://www.samson.de>.
- To ensure appropriate use, only use the valve in applications where the operating pressure and temperatures do not exceed the specifications used for sizing the valve at the ordering stage. The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.
- Any hazards that could be caused in the valve by the process medium, the operating pressure, the signal pressure or by moving parts are to be prevented by taking appropriate precautions.
- Proper shipping and storage are assumed.
- For installation and maintenance, make sure the relevant section of the pipeline is depressurized and, depending on the process medium, drained as well. Depending on the field of application, allow the valve to cool down or heat up to reach ambient temperature before starting any work on it.
- When working on the valve, make sure that the pneumatic air supply as well as the control signal are disconnected to prevent any hazards caused by moving parts.
- Be particularly careful if the actuator springs are preloaded. Such actuators are labeled correspondingly and can also be identified by three long bolts protruding from the bottom of the actuator. Before starting any work on the valve, relieve the compression from the preloaded springs.

According to the ignition risk assessment performed in accordance with EN 13463-1:2009, section 5.2, the non-electrical control valves 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).

2 Design and principle of operation

The Type 3347 Angle Valve can be combined with either a Type 3271 Pneumatic Actuator or a Type 3277 Pneumatic Actuator with integral positioner attachment.

The standard valve body is designed for welding into pipelines. Other versions can be equipped with threaded or flanged ends, or clamp connections.

The control valve is fitted with an easily detachable clamp connection between valve body and bonnet. The body free of dead space is suitable for CIP (Cleaning-In-Place).

The control valves are mainly designed for use as control or on/off valves in the food industry.

The medium flows through the valve in the direction indicated by the arrow. The plug (3) is moved by changing the signal pressure acting on the diaphragm of the actuator.

The plug stem (6) with plug (3) and actuator stem (8.1) are connected by the stem connector (7) and sealed by a PTFE seals (5.1 and 5.3).

In the special version with steam line connection, an additional spring-loaded PTFE ring packing (4.2) is used. In this case, the plug stem can be cleaned through the connection of a steam line.

Fail-safe position

Depending on how the compression springs (8.3) are arranged in the actuator, the valve has two different fail-safe positions:

- **Actuator stem extends:** when the signal pressure is reduced or the air supply fails, the springs move the actuator stem downward and close the valve. The valve opens when the signal pressure is increased enough to overcome the force exerted by the springs.
- **Actuator stem retracts:** when the signal pressure is reduced or the air supply fails, the springs move the actuator stem upward and open the valve. The valve closes when the signal pressure is increased enough to overcome the force exerted by the springs.

Legend for Fig. 1

1 Valve body	5 Valve bonnet	
1.1 Centering ring	5.1 Stem seal	7 Stem connector
1.2 Body gasket	5.2 Body and stem seal	8 Actuator
1.3 Compensating ring	5.3 Wiper ring	8.1 Actuator stem
3 Plug	5.4 Clamp	8.2 Ring nut
4.1 Spring (special version)	5.5 Travel indicator scale	8.3 Compression springs
4.2 Packing (special version)	6 Plug stem	9 Signal pressure connection
4.3 Washers (special version)	6.1 Stem connector nut	10 Compression-type fitting
	6.2 Lock nut	

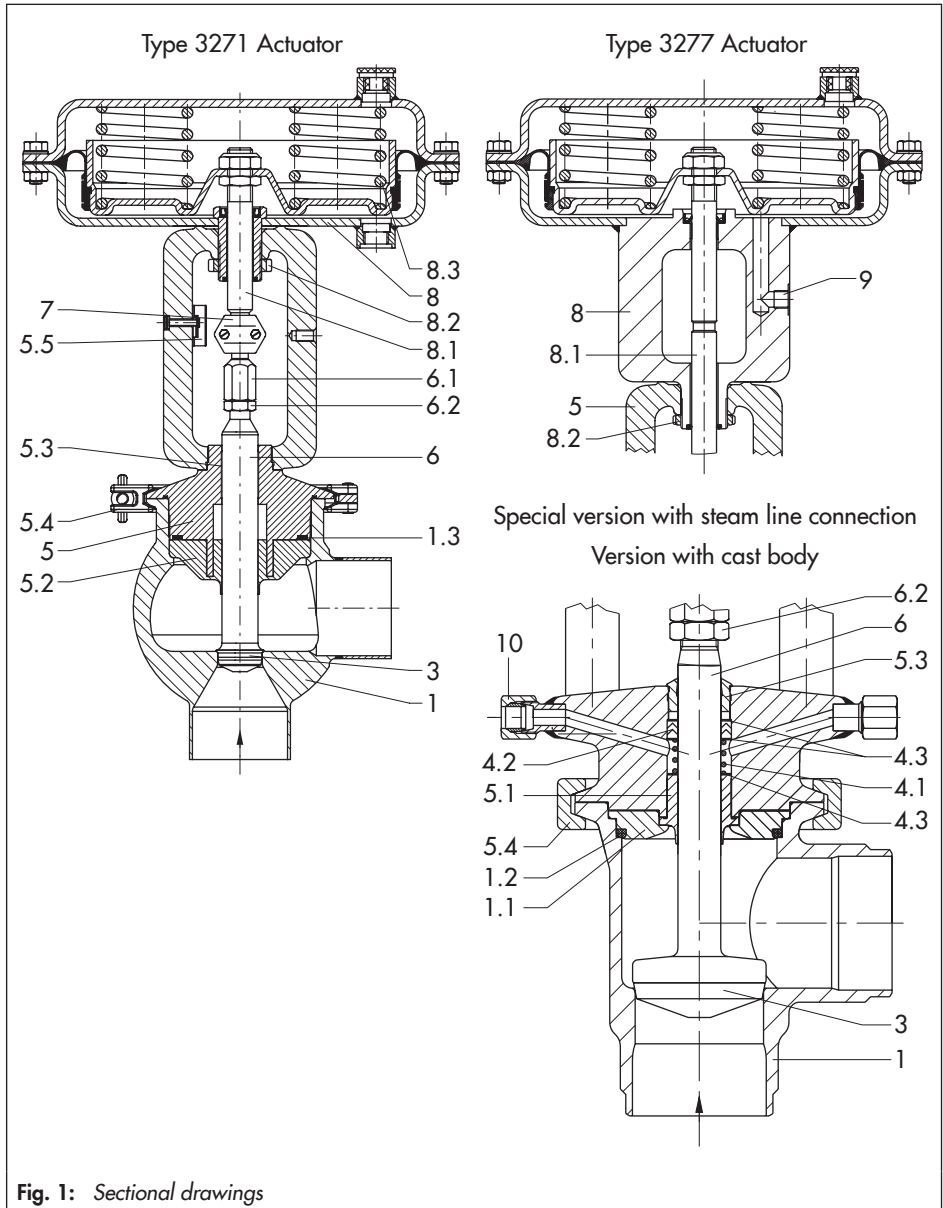


Fig. 1: Sectional drawings

Compliance

The Type 3347 Valve bears the EAC mark of conformity:



3 Assembling valve and actuator

The basic pneumatic actuator can be replaced by a pneumatic actuator with additional handwheel or by an electric actuator.

The standard pneumatic actuator can be replaced by a smaller or larger actuator for all nominal valve sizes.

If the travel range of the actuator is larger than the travel of the valve, the springs in the actuator are preloaded by SAMSON so that the travel ranges match.

3.1 Assembly and adjustment

Proceed as follows if the valve and actuator have not been assembled by SAMSON or if the actuator is to be replaced by an actuator of another type or size:

1. Loosen the lock nut (6.2) and stem connector nut (6.1) on the valve. Firmly press the plug together with the plug stem into the seat. Thread down the lock nut and stem connector nut.
2. Remove the clamps of the stem connector (7) and the ring nut (8.2) from the actuator (8).
3. Slide the ring nut over the plug stem.
4. Place the actuator onto the valve bonnet (5) and secure it with the ring nut (8.2).
5. Read the bench range (e.g. 0.2 to 1 bar) and the actuator's fail-safe action (e.g. "actuator stem extends") from the actuator's nameplate.

The fail-safe action "actuator stem extends" or "actuator stem retracts" is marked by FA or FE on the Type 3271 Actuator, and by a corresponding symbol on the nameplate of the Type 3277 Actuator.

The lower value corresponds to the lower bench range value to be adjusted, whereas the upper value corresponds to the upper bench range value.

! NOTICE

During assembly, make sure that the stem seal (5.1) is not damaged. The maximum possible actuator travel must not exceed the maximum permissible valve travel (see adhesive label on the yoke).

6. For actuators with "actuator stem extends" fail-safe action, apply a signal pressure that corresponds to the lower bench range value (e.g. 0.2 or 0.4 bar) to the connection on the bottom diaphragm chamber.

For actuators with "actuator stem retracts" fail-safe action, apply a signal pressure that corresponds to the upper bench range value (e.g. 1 bar) to the connection on the top diaphragm chamber.
7. Screw on the stem connector nut (6.1) by hand until it touches the actuator stem (8.1). Turn it a further $\frac{1}{4}$ turn and secure this position with the lock nut (6.2)
8. Position clamps of the stem connector (7) and screw them tight.

9. Align travel indicator scale (5.3) with the tip of the stem connector; for actuators with fail-safe action "actuator stem extends" align it with lower marking (valve closed) and for actuators with fail-safe action "actuator stem retracts" align it with top marking (valve open).

Note on removing an actuator

When removing an actuator with "stem extends" fail-safe action from a valve and especially an actuator with preloaded springs, apply a signal pressure that is slightly higher than the lower bench range value (see actuator nameplate) to the lower signal pressure connection to allow the ring nut (8) to be loosened.

3.2 Option of preloading springs for "actuator stem extends"

To achieve a greater positioning force, the springs of the actuators can be preloaded by up to 25 % of their travel or their bench range.

When a preload of, e.g. 0.1 bar, is desired for a bench range of 0.2 to 1 bar, the lower bench range value is shifted by 0.1 bar to 0.3 bar (0.1 bar correspond to a preload of 12.5 %).

When adjusting the valve, set the lower bench range value to 0.3 bar. Write the new bench range with preloaded springs of 0.3 to 1.1 bar on the nameplate.

3.3 Different rated travels of valve and actuator



WARNING!

Actuators that have already been preloaded by the manufacturer without mounting the valve are labeled correspondingly. Additionally, they can be identified by three longer bolts with nuts protruding from the bottom diaphragm case.



NOTICE

Always use actuators with preloaded springs when the valve's rated travel is smaller than the rated travel of the actuator.

4 Installation

4.1 Notes on installation

- The valve must be installed in the upright position with the actuator on top.



NOTICE

For valves with welding ends, after loosening the clamp (5.4), remove the entire valve construction from the valve body before welding it into the pipeline.

- Make sure the valves are installed free of stress. Check to ensure the plug stem moves smoothly.
- Flush the pipeline thoroughly before installing the valve.
- If the valve bonnet is designed for connection to a steam line, connect the compression-type fittings to the steam supply line.



NOTICE

A pressure in the steam line connection (steam or sterile fluid) that is higher than the pressure in the valve itself may affect the process medium inside the valve due to it be mixed with the steam (or sterile fluid). Observe the relevant hygiene regulations.

4.2 Signal pressure line

Connect the signal pressure line for valves with actuator with fail-safe action "actuator stem extends" to the connection on the bottom diaphragm case, and for valves with actuator with fail-safe action "actuator stem retracts" to the connection on the top diaphragm case.

In the Type 3277 Actuator, the lower signal pressure connection is located at the side of the yoke under the bottom diaphragm case.

5 Operation

The actuator's direction of action can be reversed, if required. Refer to the mounting and operating instructions of the pneumatic actuator:

- ▶ EB 8310-X for Type 3271 and Type 3277

6 Maintenance

If the valve leaks, the wiper (5.3), steam seal (5.1), or PTFE V-ring packing (4.2) (in the version with steam line connection) might be defective.

If the valve does not close tightly, tight shut-off may be impaired by dirt stuck between the seat and plug or by damaged facings.

We recommend removing the parts, cleaning them, and, if necessary, replacing them with new ones.



WARNING!

- Before performing any work on the control valve, make sure the relevant plant section has been depressurized and, depending on the process medium, drained as well.
- When used at high temperatures, allow the plant section to cool down to ambient temperature.
- As valves are not free of cavities, remember that residual process medium might still be contained in the valve. We recommend removing the valve from the pipeline or the entire valve construction when the valve is welded into the pipeline.
- Before starting any work on the valve body, disconnect the signal pressure and remove the signal pressure line as well as the actuator.
- During disassembly or assembly of the valve, make sure that the stem seal (5.1) is not damaged. The plug must not be moved beyond the valve travel.

6.1 Replacing sealing parts and plug

NOTICE

Before starting any work on the valve body, remove the actuator from the valve.

1. Apply a signal pressure that is higher than the lower bench range value to the actuator (see nameplate).
2. Remove the stem connector clamps (7) between the actuator stem and the plug stem and unscrew the ring nut (8.2).
3. Lift the actuator off the valve.
4. Remove nuts (6.1 and 6.2).
5. Remove the clamp (5.4). Remove the valve bonnet (5) together with plug (3) and centering ring (1.1).
6. Pull the plug out of the valve bonnet. Make sure that the stem seal (5.1) is not damaged.
7. Use a suitable tool to force out damaged parts, e.g. wiper (5.3) and stem seal (5.1).
In version with steam line connection, also remove packing (4.2), washer (4.3), and spring (4.1). Clean the packing chamber.
8. Check the surface of the plug stem to ensure it is free of score marks and still has a mirror finish. Repolish the surface without any flaws to ensure the stem seal cannot get damaged.
9. Apply a suitable lubricant to the new parts and plug stem.

Contact your nearest SAMSON subsidiary or the SAMSON After-sales Service department for information on suitable lubricants.

10. Place the stem seal initially in the opposite direction with the lip facing toward the thread end over the plug stem to stretch the lip of the stem seal slightly. Carefully pull the stem seal off again.
11. Slide a new centering ring (1.1) with gasket (1.2) over the plug stem (not necessary for the bar stock body version).
12. Carefully slide the stem seal, centering it, over the thread end of the plug stem. The stem seal must fit tightly, but slide easily over the plug stem.
13. Insert the plug stem with stem seal and centering ring (1.1) into the valve bonnet.
14. Push the wiper (5.3) over the plug stem into the valve bonnet.
15. Carefully place the valve bonnet onto the valve body.
16. Apply a suitable lubricant to the clamps (5.4) and the flanges of the valve bonnet and valve body.
17. Place the clamp in position and tighten the clamp screw.
18. Hit the clamp lightly with a plastic hammer and tighten the clamp screw again. Repeat this procedure several times until all parts fit properly to achieve a leak-tight body.
If the weight of the bonnet in the version with steam line connection is too light to

put the clamp back on, slightly compress the packing springs over the bonnet beforehand.

19. Screw the lock nut (6.2) and stem connector nut (6.1) onto the plug stem (6).
20. Mount the actuator and adjust the upper and lower bench range values as described in section 3.1.

7 Description of nameplates

↑	SAMSON 3347 1		Made in France 10
	FDA 2	CE 3 0062	
	DN 4	5	
	$P_{max}^{20^{\circ}C} =$ 6	$T_{max} =$ 7	
	Kvs 8	Serial-No. 9	

- 1 Type designation with revision index
- 2 Compliance with food industry requirements, if applicable
- 3 PED compliance, if applicable
- 4 Nominal size
- 5 Body material
- 6 Maximum pressure (bar or psi)
- 7 Maximum operating temperature (°C or °F)
- 8 Valve flow coefficient according to DIN or ANSI:
% = equal percentage or Lin = linear
- 9 Serial number
- 10 Year of manufacture

→ Actuator nameplate: see the associated actuator documentation.

8 Inquiries

Please submit the following details:

- Type designation and serial number
- Version and nominal size of the valve
- Pressure and temperature of the process medium
- Flow rate in m³/h
- Bench range (spring range) of actuator, e.g. 0.2 to 1 bar
- Installation drawing



Note:

Refer to Data Sheet ► T 8097 for dimensions and weights.



SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samson.de · www.samson.de

EB 8097 EN

2016-10-24 · English