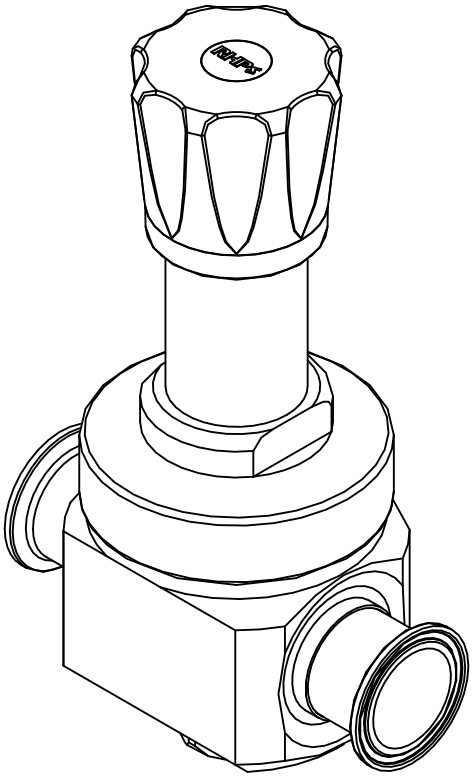
RHPS Series
PRS(TC)12
User Manual



Read the complete manual before installing and using the regulator.

WARNING

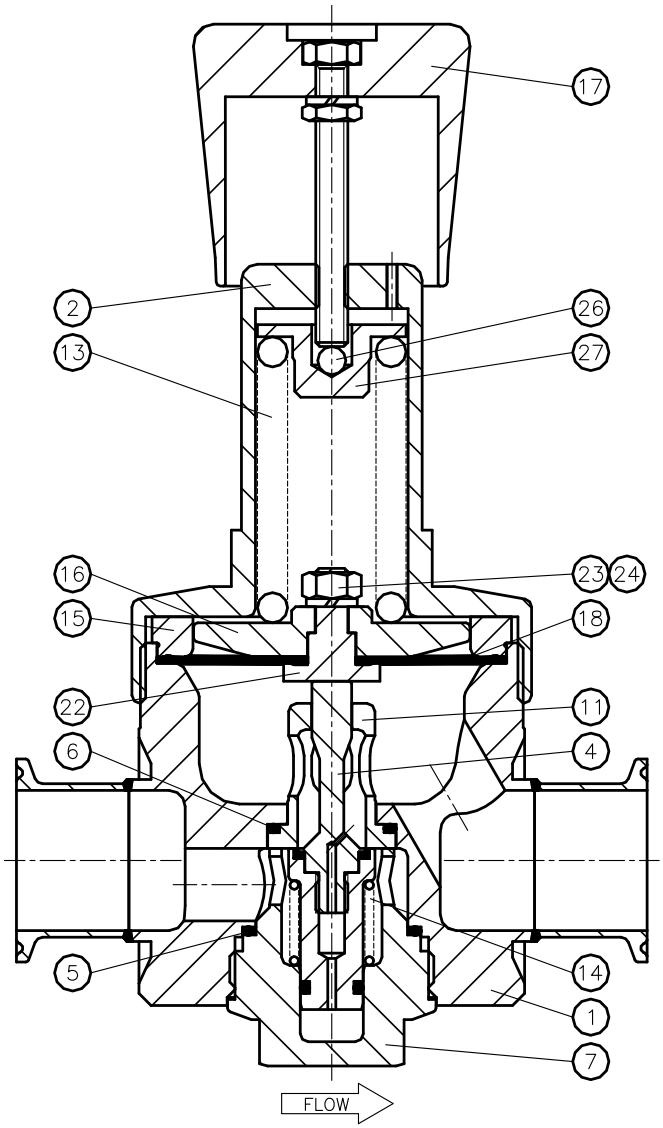
Before removing a regulator from the system for service, you must

- **depressurize system**
- **purge the system to remove any residual system media left in the regulator.**

Contents

Introduction

Representative drawing of the standard PRS(TC)12



1	body assembly	15	clamp ring
2	spring housing	16	bottom springguide
4	valve assembly	17	knob assembly
5	o-ring	18	diaphragm
6	o-ring	22	diaphragm screw
7	bodyplug	23	ring
11	seat	24	nut
13	set spring	26	ball
14	valve spring	27	springguide

Installation

WARNING

When installing a Swagelok® self-venting regulator, position the vent connection or line away from operating personnel. Operating personnel must protect themselves from exposure to system fluids.

CAUTION

Do not use the regulators as a shutoff device.

Connections to System

Before connecting to system, verify the regulator is closed by turning the handle or adjusting knob:

- Counterclockwise, when viewed from above, until it stops for pressure reducing regulators,
- Clockwise, when viewed from above, until it stops for back-pressure regulators.

The preferred mounting position of the regulator is horizontal with the adjustment knob facing upwards.

If grounding is required, connect a ground wire under a spring housing bolt.

If possible, the system should contain a filter.

Operation

Note: All handle directions are when viewed from above.

- Outlet and control pressure settings are obtained by adjusting the handle (or adjustment knob).
  - To increase the outlet or control pressure, rotate the handle *clockwise*.
  - To decrease the outlet or control pressure, rotate the handle *counter-clockwise* and vent the downstream side of the regulator.
  - The adjustment knob is provided with an anti-turnout locking ring, do not force it.
  - Make the final setting in the direction of increasing pressure to obtain the most accurate set points.
  - Once fluid is flowing through the system, fine tuning may be required.
- Icing of the regulator at high flow rates or high pressure drops may occur if the gaseous media or atmosphere contains moisture.
- An auxiliary upstream filter is recommended for use in all but the cleanest of media.
- Installation of a downstream pressure relief is recommended for regulator and system protection.
- If the shut-off valve at the outlet side is closed after changing the set pressure, the outlet pressure will rise a little because of the closing force required for bubble-tight closing of the regulator.
  - This phenomenon is usually referred to as the "**lock-up**" and does not indicate a problem with the regulator.
- A decrease in the flow will result in a rise of the outlet pressure.
  - An increase in the flow will result in a fall of the outlet pressure and is usually referred to as the "**droop**".
  - This phenomenon does not indicate a problem with the regulator.
- A decrease of the inlet pressure will result in a rise of the outlet pressure.
  - An increase of the inlet pressure will result in a fall of the outlet pressure.
  - This phenomenon is usually referred to as the "**dependency**" or "supply pressure effect" and does not indicate a problem with the regulator.

Maintenance

Required tools for maintenance

- a vice to fasten the regulator
- pincers to take out the O-rings
- a torque wrench
- an open end wrench, 13 mm
- an open end wrench, 24 mm
- an open end wrench, 36 mm
- an open end wrench, 50 mm
- media and temperature compatible lubricant for reassembling threaded parts
- media and temperature compatible lubricant for O-rings
- Snoop® liquid leak detector

Disassembly instructions

- Loosen the spring housing and remove the spring housing, spring, bottom spring guide with diaphragm and clamp ring.
- Loosen the bodyplug to remove the valve assembly, seat and valve spring.
- Push the valve-assembly down when loosening the bodyplug.
- The force of the valve spring may cause galling of the threads.

Inspection of disassembled parts

- Check all parts for abnormal wear. Replace parts in case of doubt.

Points of attention before assembly

- All parts must be clean and undamaged before starting assembly.
- Swagelok recommends replacing all O-rings and the diaphragm before assembly.
- All threaded parts must be lightly lubricated before assembly to avoid galling of threads.
- All o-rings need to be lightly lubricated to improve the lifetime of the o-ring and the performance of the regulator.

Assembly instructions

Follow the points for disassembly in reverse order to assemble the regulator.

Recommended torques

CAUTION

Only tighten the bolts or parts if the regulator is completely depressurized.

-	Diaphragm screw	15.0 N·m (132 in.·lb)
-	Bodyplug	50.0 N·m (442 in.·lb)
-	Spring housing	50.0 N·m (442 in.·lb)

Testing

Check the regulator for leakage across the seat, with low and high inlet pressure.
Check the regulator for leakage across the diaphragm, with low and high outlet pressure.
Check the required outlet pressure range.

A well performing PRS(TC)12 is 100 % bubble tight.
If there is a leakage across the seat or the diaphragm, the damaged parts must be replaced.

Troubleshooting

Problem:	The outlet pressure creeps up without turning the adjustment knob.
Cause:	A damaged valve and/or seat.
Solution:	Replace the valve and/or the seat.

Problem:	Constant leak through the relief hole at the side of the spring housing.
Cause:	A damaged diaphragm.
Solution:	Replace the diaphragm.

Problem:	The required outlet pressure can not be reached.
Cause:	The inlet pressure is not high enough.
Solution:	Make sure that the inlet pressure is sufficient.

Problem:	The outlet pressure rises too much when going from a dynamic to a static situation.
Cause:	There is too much flow in the dynamic situation.
Solution:	A larger regulator is required. Check the specific application data with the flow curves in our product literature, if available.

Problem:	The outlet pressure does not drop if the adjustment knob is turned counterclockwise.
Cause:	The regulator is non-venting.
Solution:	A shut-off valve in the outlet line must be opened to reduce the outlet pressure.

Problem:	The outlet pressure has changed without turning the adjustment knob.
Cause:	Changes to the inlet pressure will result in changes to the outlet pressure.
Solution:	Maintain a constant inlet pressure to the regulator. See section “operation” about dependency.

Problem:	Controlled pressure drops off sharply even when the flow is within regulator capabilities.
Cause:	The regulator filter element or system filter element is clogged.
Solution:	Replace the filter element.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty.
For a copy, visit swagelok.com or contact your authorized Swagelok representative.

For additional information, ***see*** ***www.swagelok.com****.*

WARNING:
Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.

MS-CRD-0173, RevA, October 2021