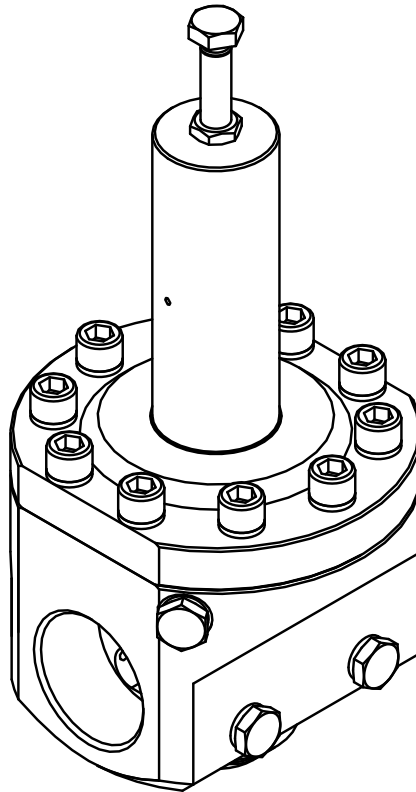


RS(H)20, 25 USER MANUAL

Swagelok



Read the complete manual before installing and using the regulator.



WARNING

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

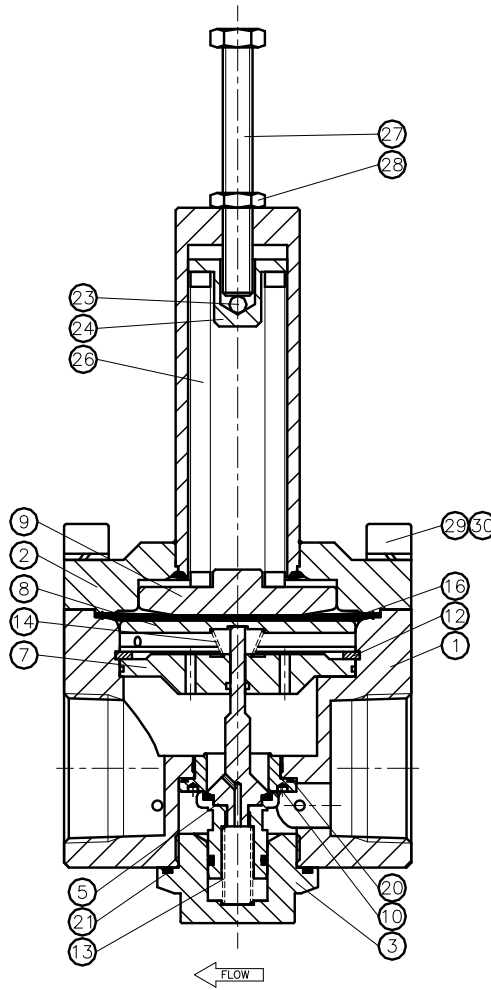
- **depressurize system**
- **purge the system to remove any residual system media left in the regulator.**

CONTENTS

Introduction	3
Installation	4
Operation	5
Maintenance	6
Testing	6
Troubleshooting	7

Introduction

Representative drawing of a standard RS20



1	body	13	valve spring	24	springguide
2	springhousing assembly	14	conical spring	25	
3	bodyplug	15		26	set spring
5	valve assembly	16	diaphragm	27	setscrew
7	bodyplate	18		28	nut
8	diaphragm plate	19		29	socket head cap screw
9	bottom springguide	20	o-ring	30	ring
10	seat	21	o-ring		
11		22			
12	retaining ring	23	ball		

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

The preferred mounting position of the regulator is horizontal with the spring housing facing upwards.

The standard connection of the RS(H)20 is 1" bspp parallel female. To get a proper sealing across the thread, Swagelok recommends using bonded seal rings.

If earthing is required, connect an earth wire under a spring housing bolt.

Operation

Note: All handle directions are when viewed from above.

- Outlet and control pressure settings are obtained by adjusting the set screw with a 19 mm open end wrench.
 - To increase the outlet or control pressure, rotate the set screw *clockwise*.
 - To decrease the outlet or control pressure, rotate the set screw *counter-clockwise* and vent the downstream side of the regulator.
 - 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.



CAUTION

When using the RSH(F)20, 25 with an inlet pressure higher than 200 bar, a safety valve must be installed in the outlet line, because the outlet pressure may not exceed 200 bar.

Maintenance

Required tools for maintenance

- a vice to fasten the regulator
- pincers to take out the o-rings
- a pair of tongs for a retaining ring 70 mm (RS20)
- a torque wrench
- a torque wrench hexagon head key 10 mm
- a torque wrench “open end insert tool”, 46 mm
- an open end wrench, 18 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 hexagon socket head screws and remove the spring housing, set spring, bottom springguide.
- For diaphragm sensing versions the diaphragm and diaphragm plate can be removed.
- For piston sensing versions, the piston plate and the piston can be removed.
- Loosen the bodyplug and remove the valve, valve spring and seat.

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, this 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

- | | |
|----------------------------------|----------------------|
| ▪ Hexagon socket head screws M12 | 80 N·m (707 in. ·lb) |
| ▪ Bodyplug | 50 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/piston, with low- and high outlet pressure.

Check the required outlet pressure range.

A well performing RS(H)20, 25 is 100% bubble tight.

If there is a leakage across the seat or the diaphragm/piston, the damaged parts must be replaced.

Troubleshooting

Problem:	The outlet pressure creeps up, without turning the set screw.
Cause:	A damaged valve and/or seat.
Solution:	Replace the valve and/or the seat.
Problem:	Leakage around the bodyplug.
Cause:	A damaged o-ring or insufficient torque on the bodyplug.
Solution:	Replace the o-ring or tighten the bodyplug according to the torque specifications.
Problem:	Leakage between the body and the spring housing or through the relief hole at the side of the spring housing.
Cause:	A damaged diaphragm/piston o-ring or insufficient torque on the bolts.
Solution:	Replace the diaphragm/piston o-ring or tighten the bolts according to the torque specifications.
Problem:	Controlled pressure drops off sharply even when the flow is within regulator capabilities.
Cause:	The system filter element is clogged.
Solution:	Replace the system filter element.
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 documentation, if available.
Problem:	The outlet pressure does not drop if the set screw 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 set screw.
Cause:	Changes to the inlet pressure will result in changes to the outlet pressure. 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.
Solution:	Maintain a constant inlet pressure to the regulator. See section "operation" about dependency.

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.

Swagelok, Snoop® – Swagelok Company
© 2010-2021 Swagelok Company
MS-CRD-0189, RevB, October 2021