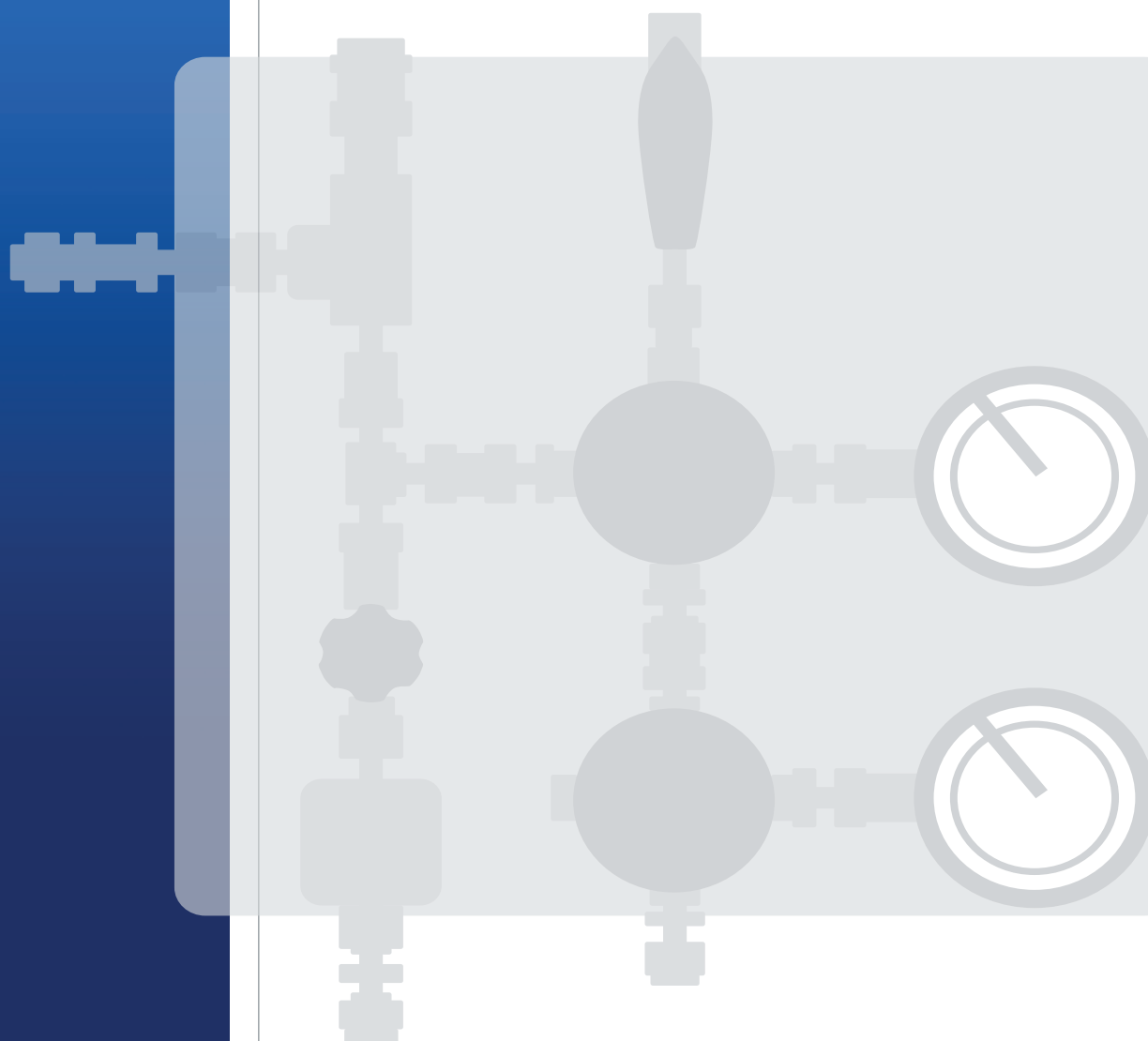


Swagelok® Gas Panel (SGP)

User Manual



Swagelok®

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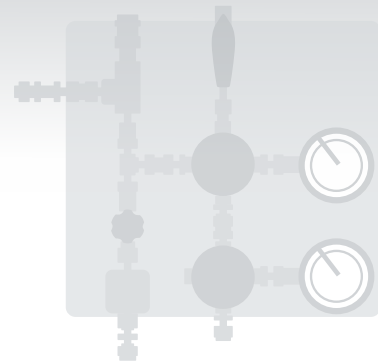
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Swagelok® Gas Panel – Single- and Dual-Stage (SGP)



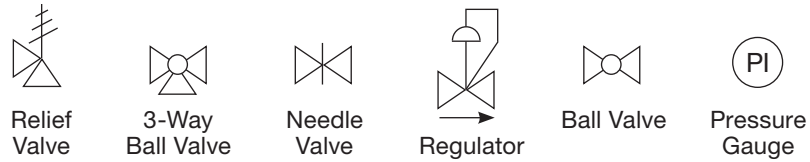
Introduction

The Swagelok® gas panel (SGP) is used predominately to reduce gas pressure at or near the source prior to gas entering a larger distribution network. With many variations possible within a standard footprint, each system can be configured to meet specific needs while being easily integrated into the overall installation. Being the first point of gas control, these systems can be built with either single- or dual-stage pressure regulation to accurately deliver gas while minimizing the supply-pressure effect and providing ease of use. Additionally, several vent and relief options can be incorporated to enhance safety.

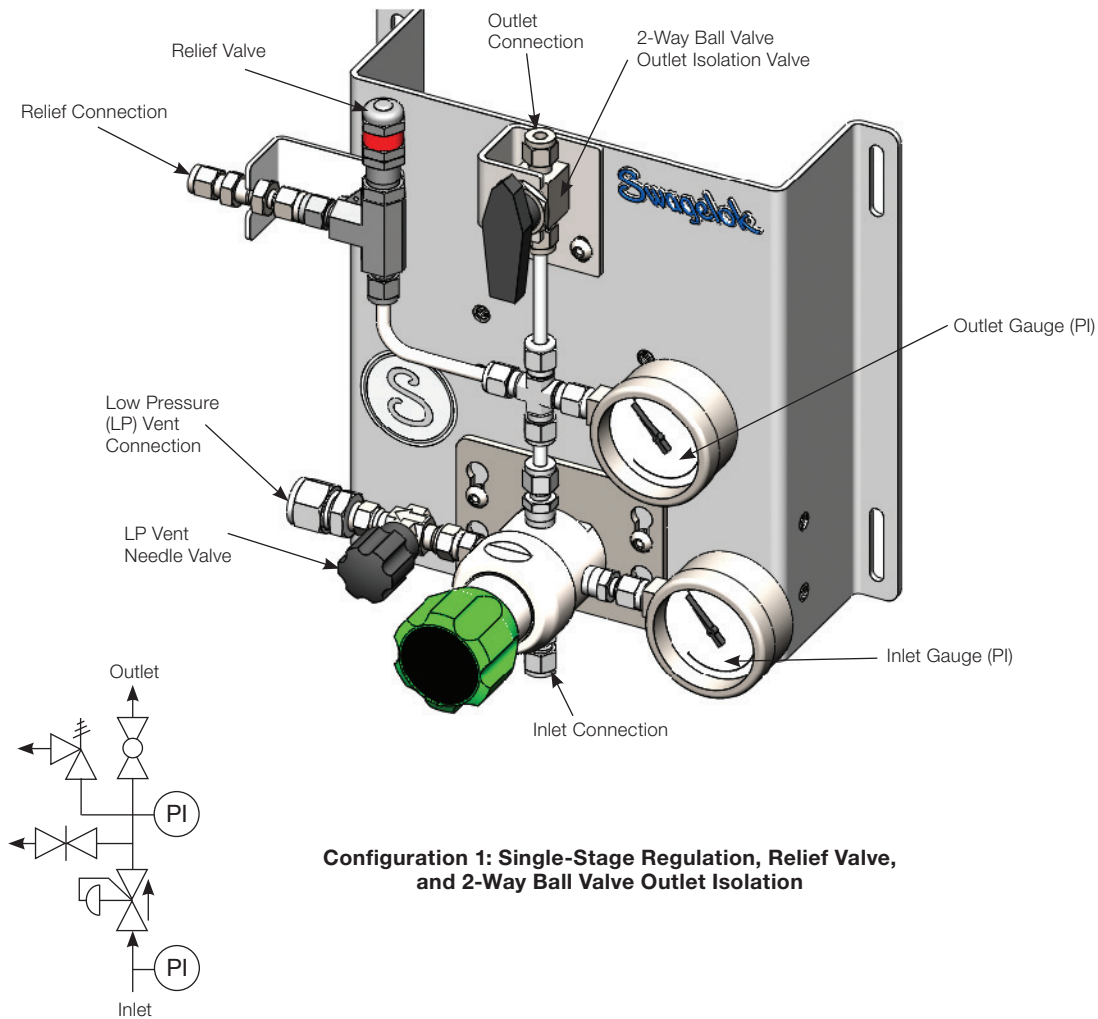
Configurations

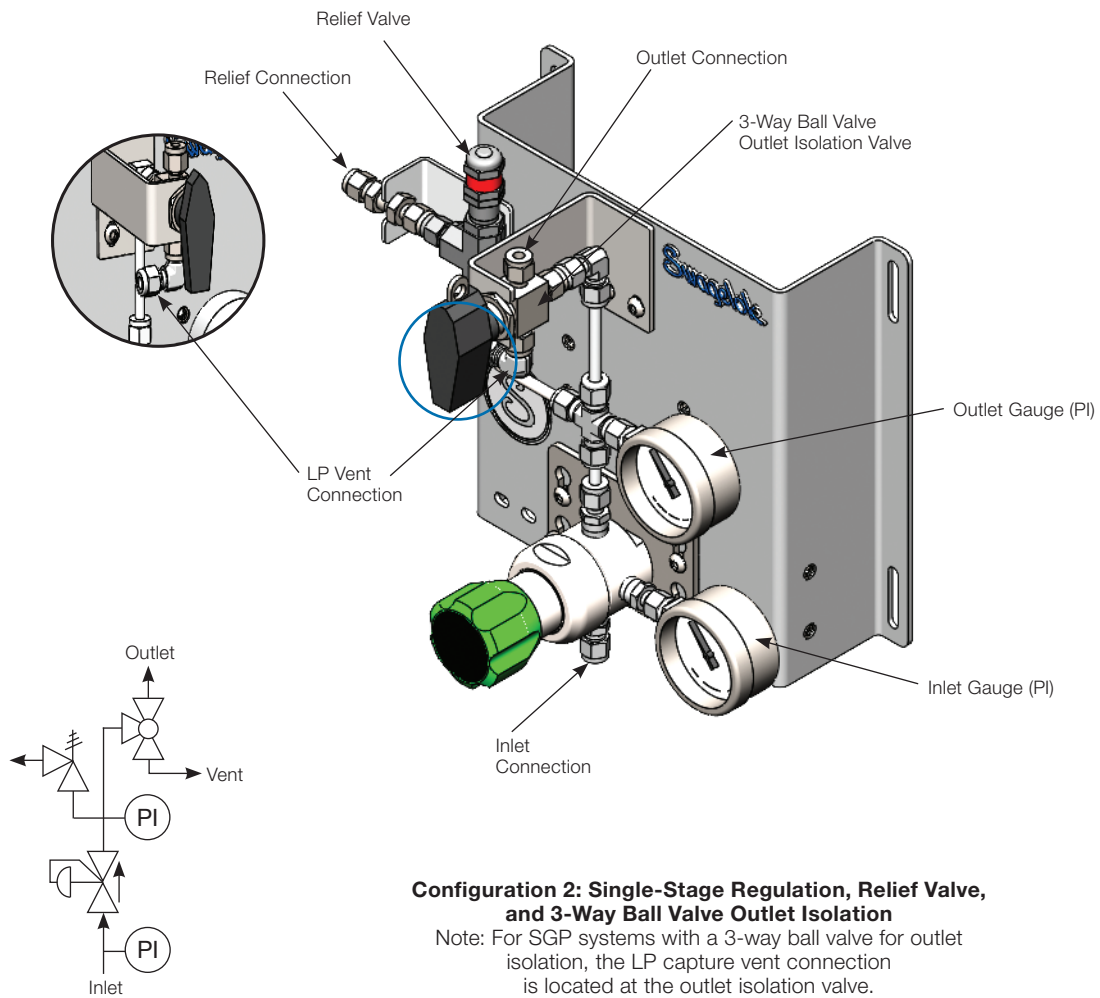
Overview

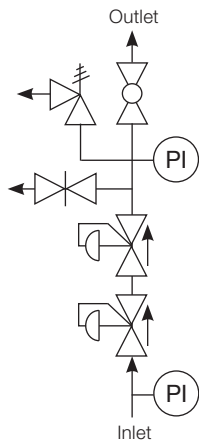
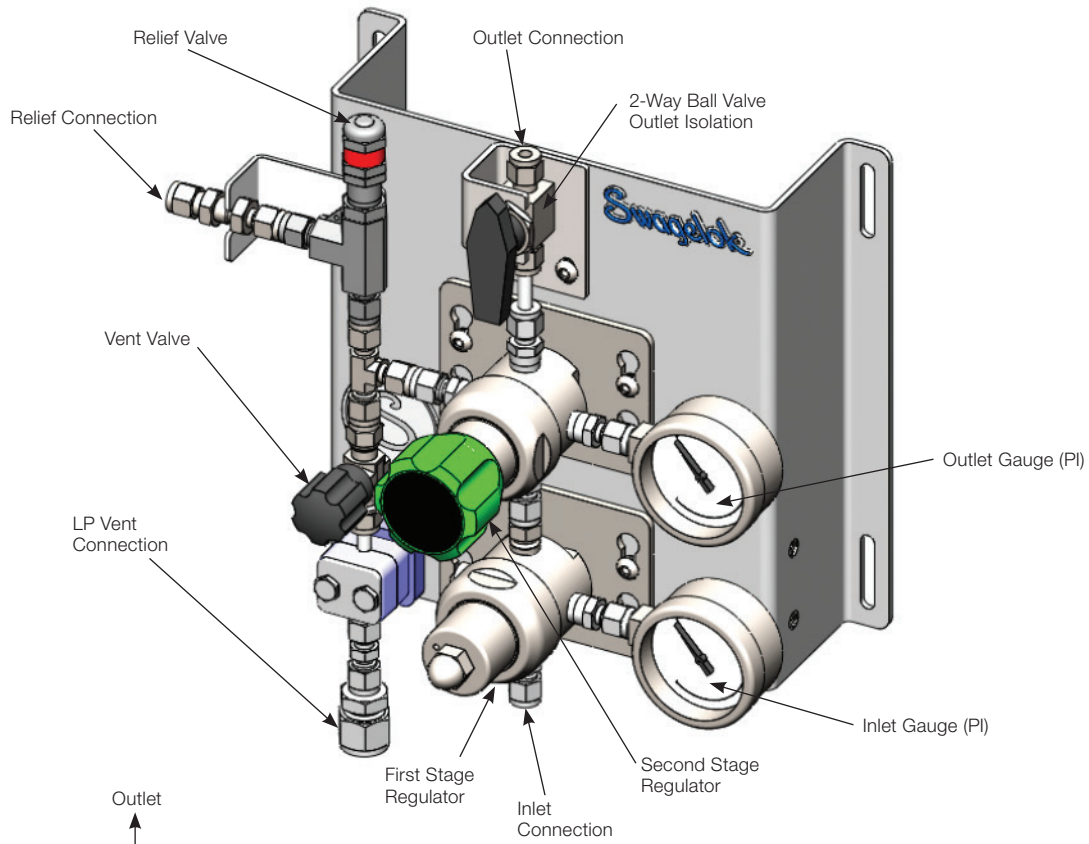
The SGP is available with captured or noncaptured regulator vents, a pressure relief valve, and single- and dual-stage pressure reduction options. See the SGP section of the *Gas Distribution Systems, Application Guide*, MS-02-486, for additional information.



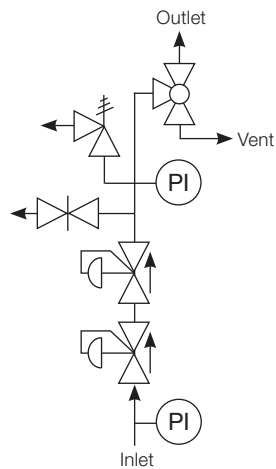
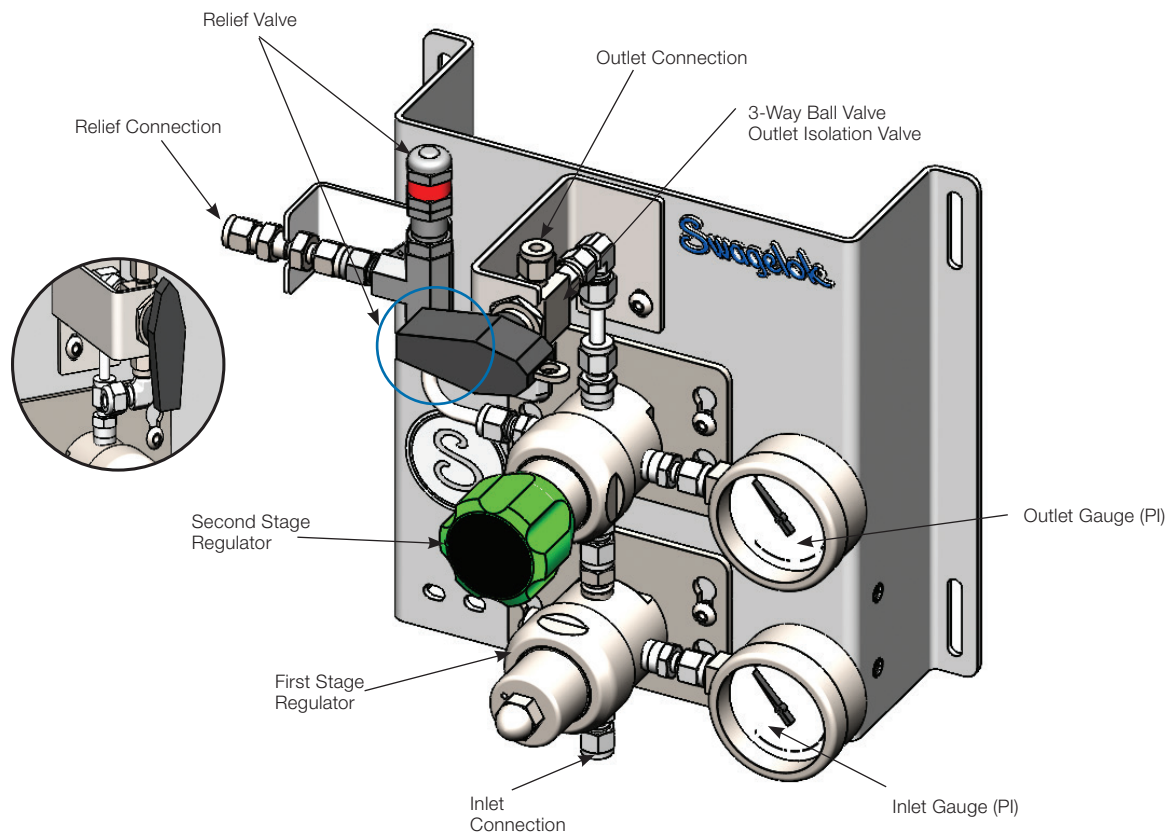
Configuration Symbols





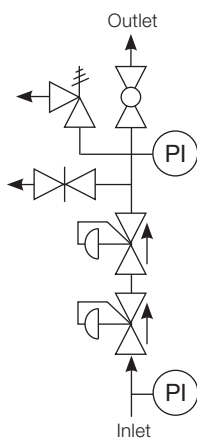
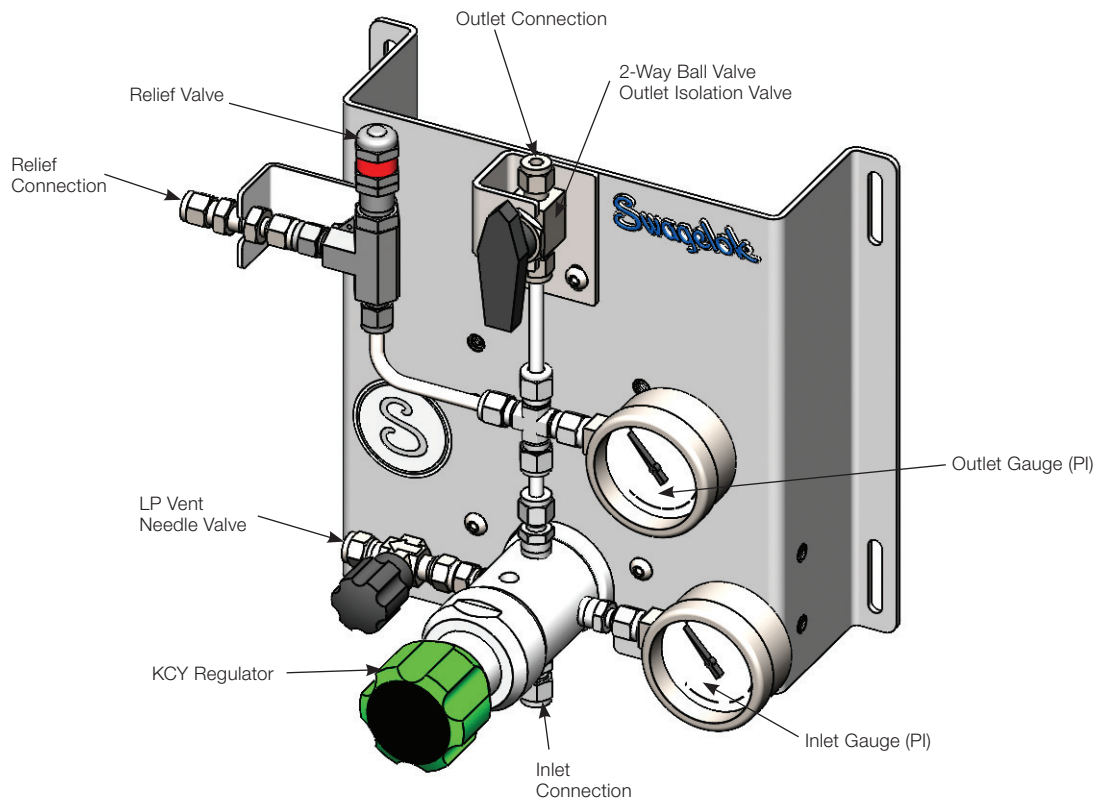


Configuration 3: Dual-Stage Regulation, Relief Valve, and 2-Way Ball Valve Outlet Isolation

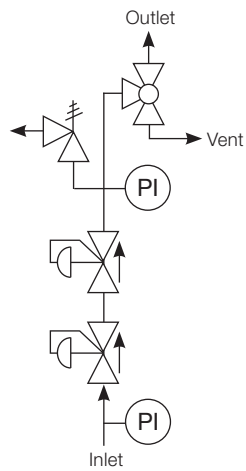
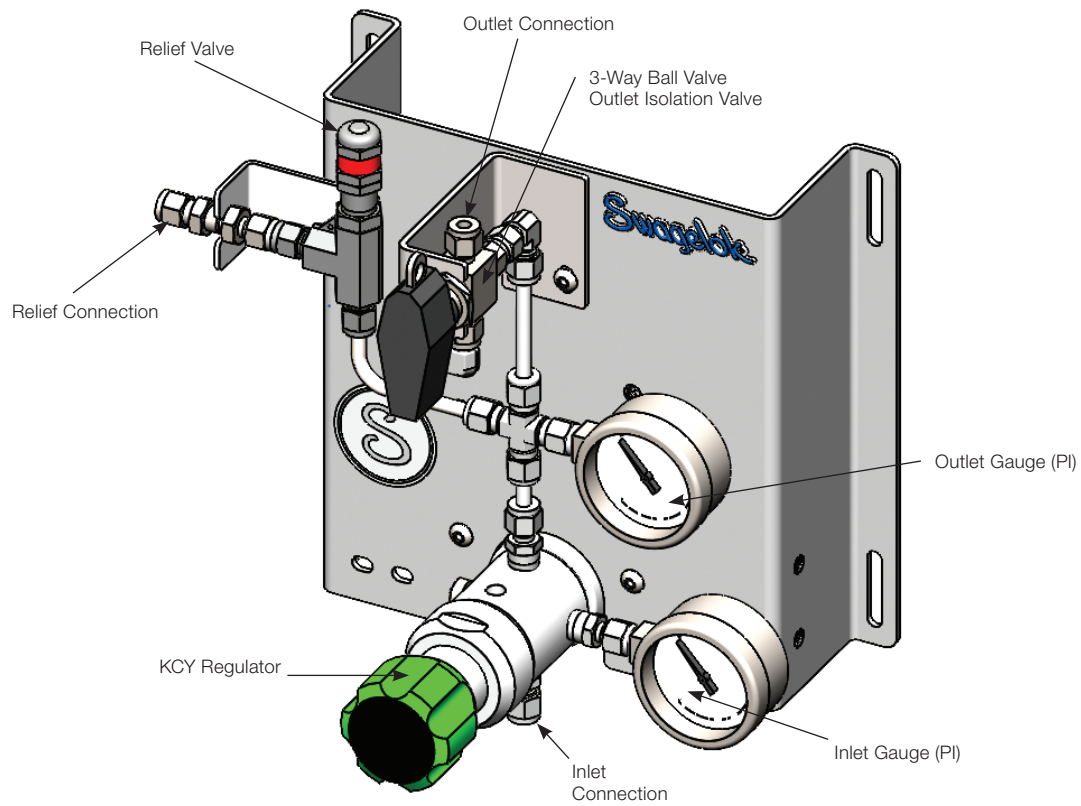


Configuration 4: Dual-Stage Regulation, Relief Valve, and 3-Way Ball Valve Outlet Isolation

Note: For SGP systems with a 3-way ball valve for outlet isolation, the LP capture vent connection is located at the outlet isolation valve.



Configuration 5: KCY Dual-Stage, Single-Body Regulator, Relief Valve, 2-Way Ball Valve Outlet Isolation



Configuration 6: KCY Dual-Stage Regulator, Relief Valve, 3-Way Ball Valve Outlet Isolation

Note: For SGP systems with a 3-way ball valve for outlet isolation, the LP capture vent connection is located at the outlet isolation valve.

Mounting

The SGP must be mounted to a vertical face or wall and utilize all four (4) mounting slots for proper function. Mounting slots are designed for 1/4 in. or 6 mm fasteners.

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

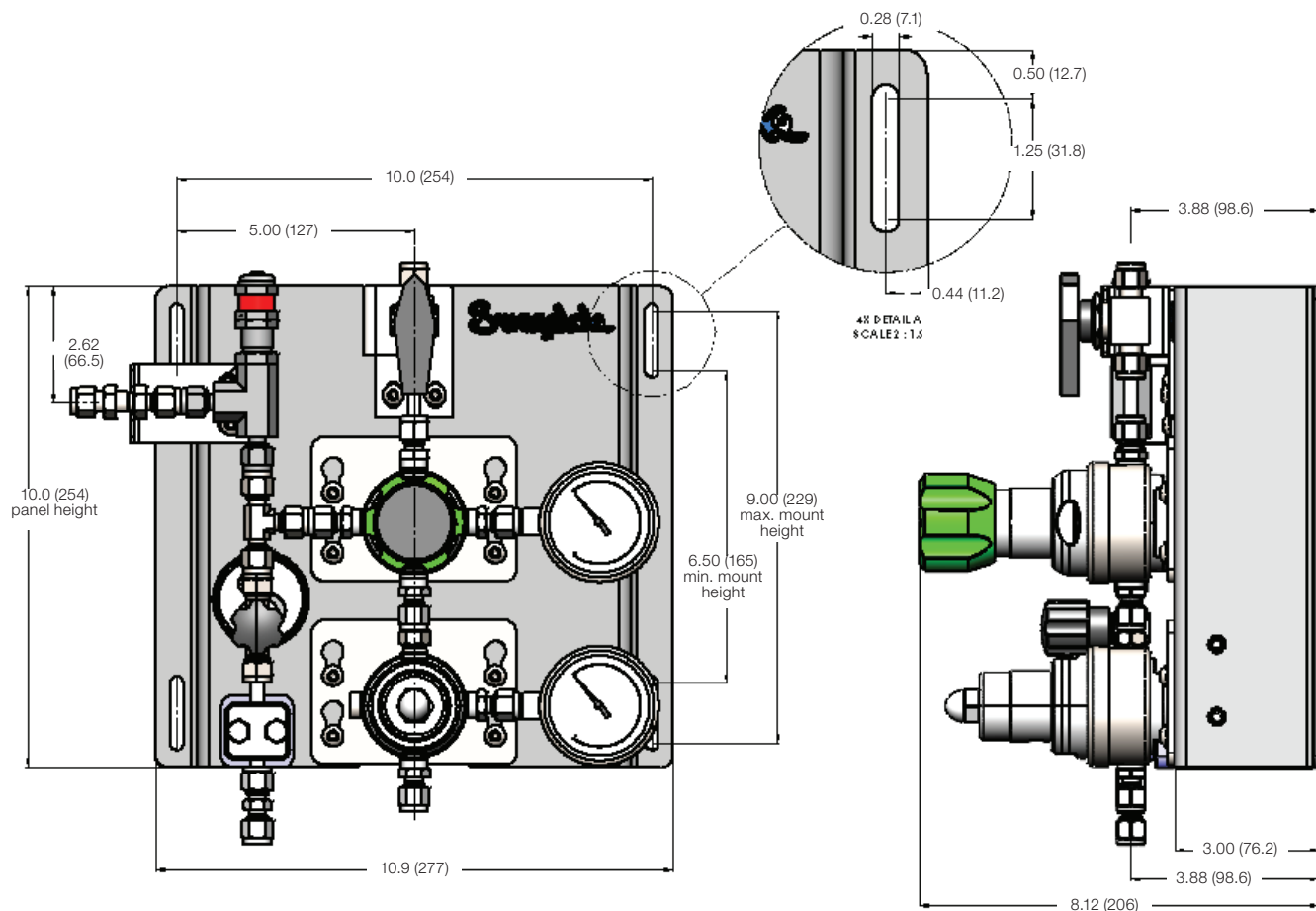
NOTE: The panel and mounting dimensions are the same for both the single-stage and dual-stage SGP.

Approximate maximum weight of SGP panel:

Single-stage: 13.3 lb (6.0 kg)

Dual-stage: 14.8 lb (6.7 kg)

NOTE: Weight will vary based on options ordered.



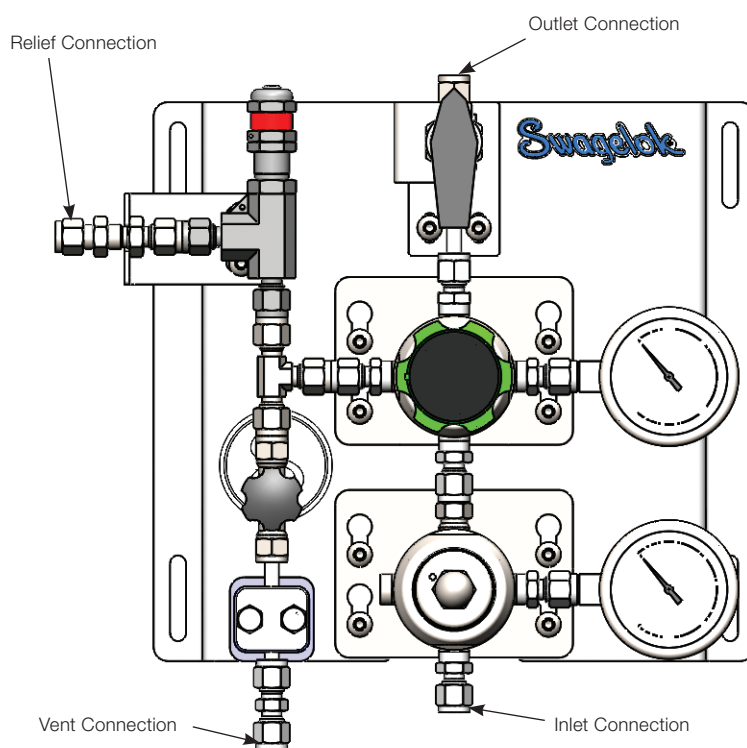
Main Panel Mounting

Installation

SGP systems have 1/4 in. fractional or 6 mm metric Swagelok tube fittings for all internal system connections. The relief valve outlet connection will be a 1/4 in. Swagelok tube fitting for fractional systems or a 6 mm Swagelok tube fitting for metric systems when an R3A series valve is specified. Refer to the supplied data sheet for outlet connection type and size for country/regional-specific relief valves. For systems using a 3-way ball valve for outlet isolation, the vent connection will be located on the outlet isolation valve.

⚠ CAUTION Do not allow any thread sealant to enter the regulator or fluid stream.

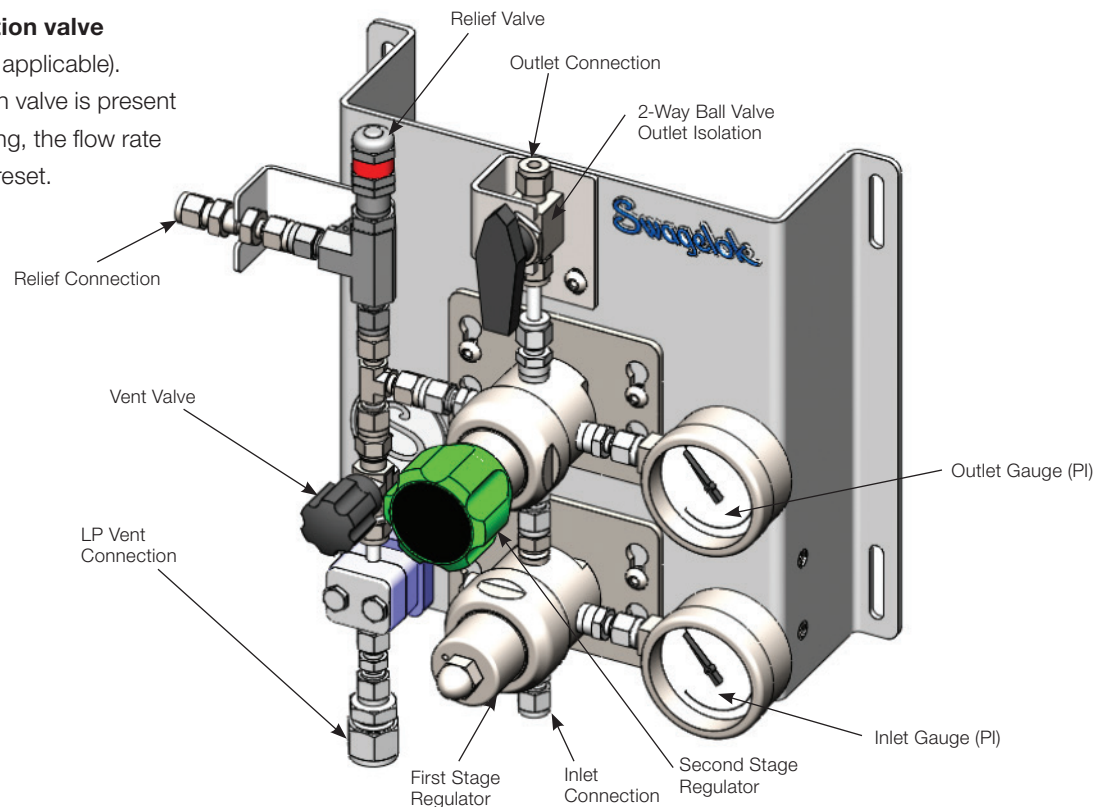
Install Swagelok tube fittings according to the *Swagelok Tube Fitting Instructions for 1 in (25 mm) and smaller fittings, MS-12-01*.



System Startup

- ⚠ **CAUTION** Swagelok ball valves are designed to be used in a fully open or fully closed position.
- ⚠ **CAUTION** Valves that have not been cycled for a period of time may have a higher initial actuation torque or the initial relief pressure may be higher than the set pressure.
- ⚠ **CAUTION** A packing adjustment may be required periodically for ball valves to increase service life and to prevent leakage.
- ⚠ **CAUTION** Some system applications require relief valves to meet specific safety codes. The system designer and user must determine when such codes apply and whether these relief valves conform to them. Country/Regional standard relief valves are to be maintained in accordance with local rules and regulations of the country they are installed in.
- ⚠ **CAUTION** Swagelok proportional relief valves should never be used as ASME Boiler and Pressure Vessel Code safety relief devices.
- ⚠ **CAUTION** Swagelok proportional relief valves are not “Safety Accessories” as defined in the Pressure Equipment Directive 2014/68/EU.

1. Verify the **vent valve** is CLOSED.
2. Verify the **outlet isolation valve** is CLOSED (where applicable).
3. Supply bottle pressure to inlet.
4. Verify **gauges** are reading correct pressures.
5. Set the **outlet regulator** to desired pressure.
6. Verify the **relief valve** is not relieving pressure.
7. Open the **outlet isolation valve** to begin system flow (if applicable).
When no outlet isolation valve is present and the system is flowing, the flow rate should not need to be reset.



Operation

⚠ CAUTION Swagelok pressure regulators are not “Safety Accessories” as defined in the Pressure Equipment Directive 2014/68/EU.

⚠ CAUTION Do not use the regulator as a shutoff device.

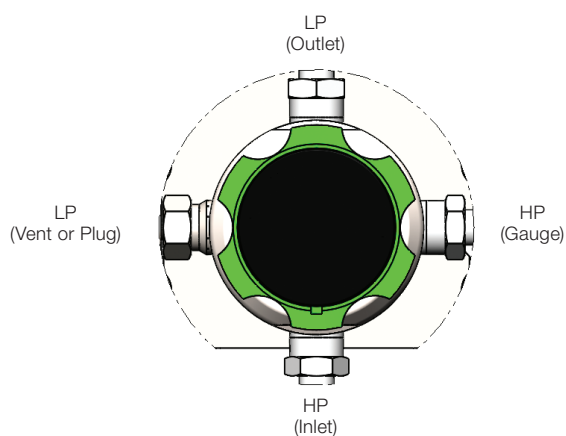
- Turn the regulator handle to adjust to desired outlet pressure
- Turn the vent needle valve handle when venting is desired (if applicable). Refer to the configurations above to identify vent needle valve/vent connection location as it varies between single- and dual-stage designs and based on the outlet isolation valve selected.

Maintenance

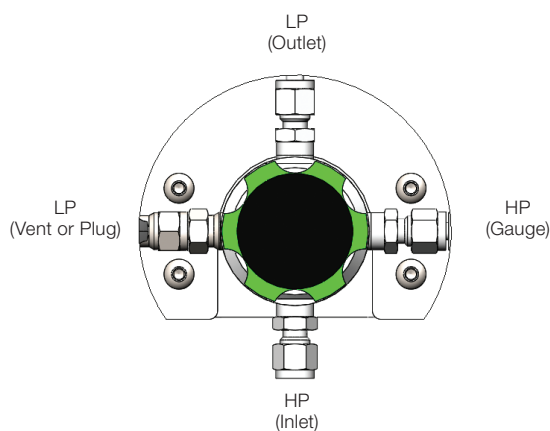
Regulator Port Configurations

The illustrations below are references for the user on the regulator port locations for the first-stage and second-stage (if applicable) regulators. Use this illustration to ensure proper orientation during reassembly should the regulators need to be removed for servicing or replacement.

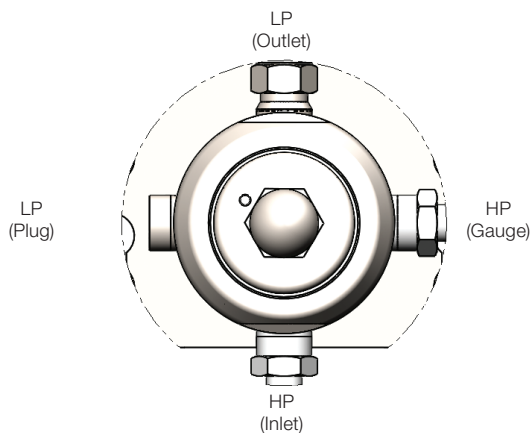
NOTE: For systems using a 3-way ball valve for outlet isolation, the vent connection has been relocated to the outlet isolation valve to prevent the LP vent ports indicated below from becoming plugged. Reference the **Configurations** section of this manual for additional information.



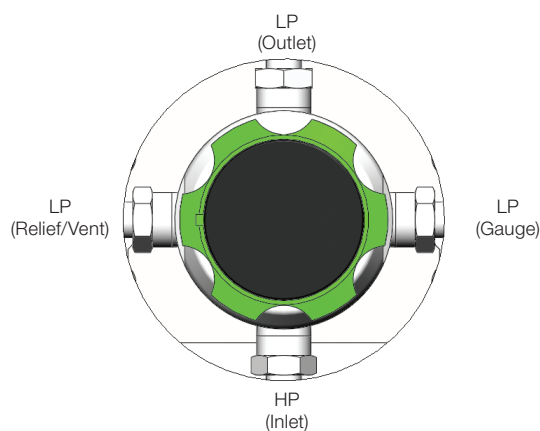
**KPR E-Pattern Port Orientation
(on one-stage systems only)**



KCY E-Pattern Port Orientation



**KPR E-Pattern Port Orientation
(on two-stage systems only)**



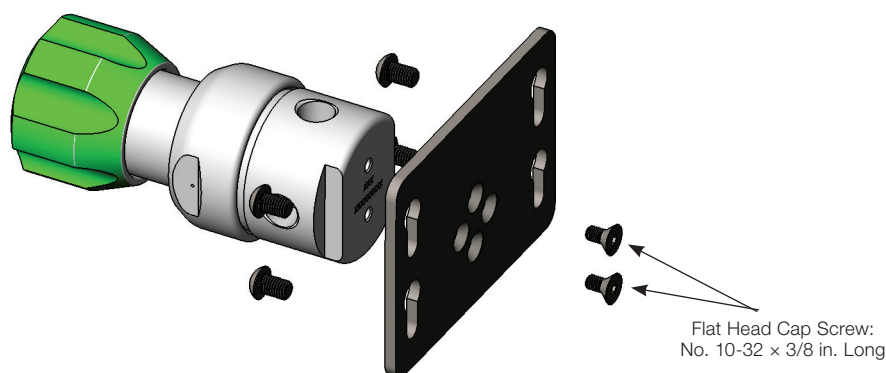
Second-Stage KPR L-Pattern Port Orientation

Regulator Removal/Mounting

⚠ WARNING Before removing regulator from service, to avoid personal injury, you must:

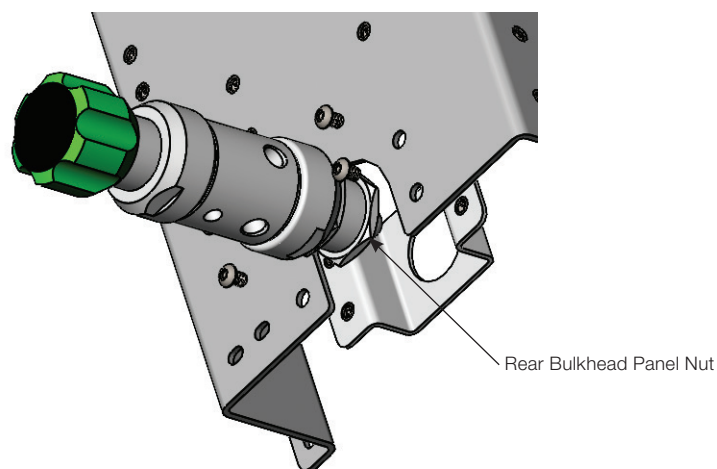
- **Depressurize the system**
- **Cycle the regulator**
- **Purge system to remove any residual system media left in regulator**

The KPR series regulator is assembled to the mounting bracket via two No. 10-32 flat head cap screws. The screw heads are recessed on the rear of the bracket so it can assemble to the main panel flush without interference. To remove the regulator, loosen the 1/4 in. or 6 mm button head cap screws to remove the mounting bracket and access the regulator mounting screws.



KPR Regulator and Bracket Mounting

The KCY series regulator is mounted via bulkhead panel nuts located toward the rear of the regulator as shown in the figure below. The KCY mounting bracket mounts from behind the main panel with 1/4 in. or 6 mm screw heads assembled through the main panel holes as shown. To remove the regulator, only the removal of the rear bulkhead panel nut is required.

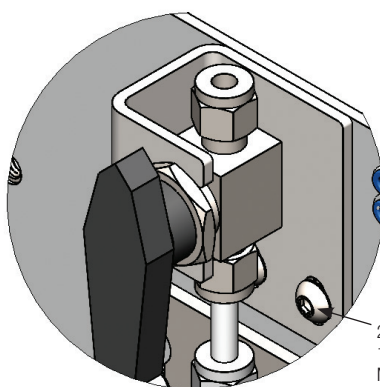


Outlet Isolation Valve Removal/Mounting

⚠ WARNING Before removing valve from service, to avoid personal injury, you must:

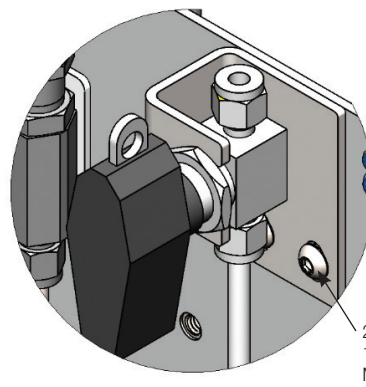
- Depressurize the system
- Cycle the valve
- Purge system to remove any residual system media left in valve

The illustrations below identify all of the SGP outlet isolation selections paired with their respective mounting brackets. To remove a valve from the panel, first unscrew the 1/4 in. or 6 mm button head cap screws securing the bracket to the main panel. Then loosen the 1/4 in. or 6 mm Swagelok tube fitting connection and remove the valve and bracket as a subassembly.



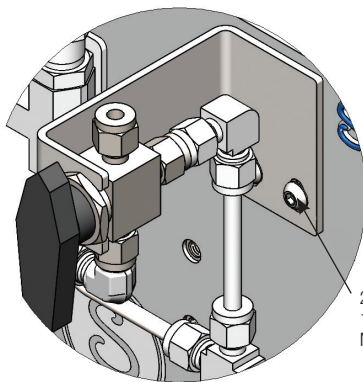
2× B.H.C.S.:
1/4-20 UNC × 3/8 in. Long
M6 × 1.0 × 10 mm Long

1/4-Turn Ball Valve



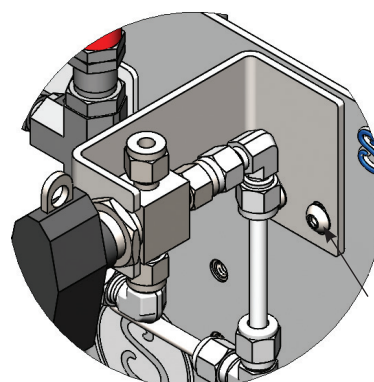
2× B.H.C.S.:
1/4-20 UNC × 3/8 in. Long
M6 × 1.0 × 10 mm Long

1/4-Turn Ball Valve (lockable)



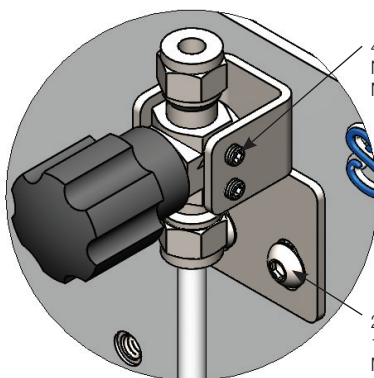
2× B.H.C.S.:
1/4-20 UNC × 3/8 in. Long
M6 × 1.0 × 10 mm Long

3-Way Ball Valve



2× B.H.C.S.:
1/4-20 UNC × 3/8 in. Long
M6 × 1.0 × 10 mm Long

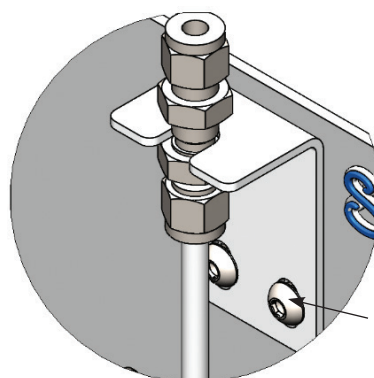
3-Way Ball Valve (lockable)



4× Set Screw:
No. 10-32 × 5/16 in. Long
M6 × 0.8 × 8 mm Long

2× B.H.C.S.:
1/4-20 UNC × 3/8 in. Long
M6 × 1.0 × 10 mm Long

Multiturn Needle Valve



2× B.H.C.S.:
1/4-20 UNC × 3/8 in. Long
M6 × 1.0 × 10 mm Long

No Outlet Isolation Valve

Maintenance by System Component

System Component	Replacement Ordering Information
Proportional relief valve (R3A series)	<i>Proportional Relief Valves, R Series</i> , MS-01-141
Swagelok tube fitting	<i>Gaugeable Tube Fittings and Adapter Fittings</i> , MS-01-140
KPR series regulator	<i>Pressure Regulators, K Series</i> , MS-02-230
KCY series regulator	<i>Pressure Regulators, K Series</i> , MS-02-230
D series needle valve	<i>Nonrotating-Stem Needle Valves, D Series</i> , MS-01-42
Ball valve (40G or 40 series)	<i>One-Piece Instrumentation Ball Valves, 40G Series and 40 Series</i> , MS-02-331
Pressure indicator (PGI series, C model)	<i>Pressure Gauges, Industrial and Process, PGI Series</i> , MS-02-170
Check valve (CPA series)	<i>Check Valves C, CA, CH, CP, and CPA Series</i> , MS-01-176

Reference Instruction Documents

Swagelok Tube Fitting Instructions for 1 in (25 mm) and Smaller Fittings, **MS-12-01**

40G Ball Valve Packing Adjustment, **MS-INS-40G**

R3A Series Externally Adjustable Relief Valve Maintenance Instructions, **MS-CRD-0013**

CA and CPA Series Check Valve Cracking Pressure Adjustment, **MS-CRD-0047**

D Series Maintenance Instructions, **MS-INS-DK-1**

Pressure-Reducing Regulators, KPR Series Maintenance Instructions, **MS-CRD-KPRMAINT**

KCY Series Regulators Maintenance Instructions, **MS-CRD-0239**

Troubleshooting

Symptom	Cause	Remedy
HP inlet pressure gauge shows no (or low) pressure.	The supply line is obstructed.	Check that there is pressure in supply line.
	There is no process pressure.	Check that the process line is pressurized.
LP outlet gauge shows no (or low) pressure.	Outlet regulator set to zero outlet pressure.	Adjust regulator outlet pressure.
	Relief valve is relieving at too low of a pressure.	Check relief valve set point, check outlet regulator pressure setting. If relief valve needs to be reset, contact your authorized Swagelok sales and service center.
	Outlet regulator damaged.	Inspect, repair, and/or replace regulator.
LP outlet gauge shows high pressure.	Regulator creep.	Inspect, repair, and/or replace regulator.
	Pressure gauge is damaged.	Inspect, repair, and/or replace gauge.
	Additional pressure source downstream in system.	Identify and correct system malfunctions.
Relief valve is relieving pressure.	Incorrect relief valve set point.	Check relief valve set point. If relief valve needs to be reset, contact your authorized Swagelok sales and service center.
	Regulator creep.	Inspect, repair, and/or replace regulator.
	Additional pressure source downstream in system.	Identify and correct system malfunctions.

For any symptoms not identified in the above table, please contact your authorized Swagelok sales and service center.

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

⚠ 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.

Warranty Information

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

