

EZH and EZHSO Series Pressure Reducing Regulators

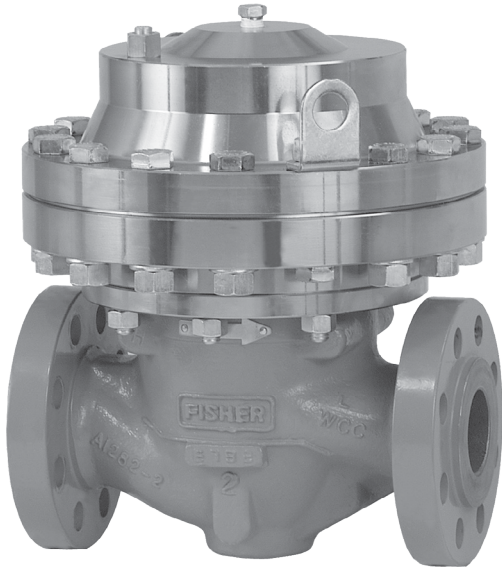


Figure 1. EZH Series Pressure Reducing Regulator

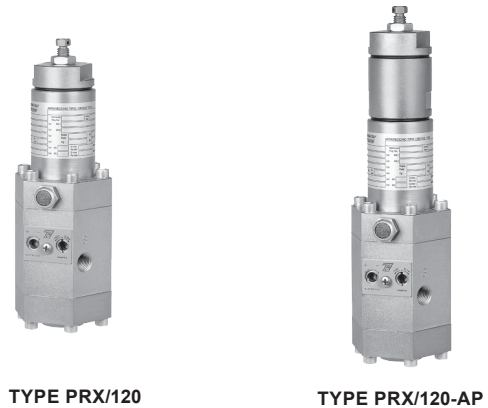


Figure 2. PRX Series Pressure Reducing Pilots



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion and/or fire causing property damage and personal injury or death.

Fisher™ regulators must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies, Inc. (Emerson) instructions.

If the regulator vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Call a gas service person to service the unit. Only a qualified person must install or service the regulator.

Introduction

Scope of the Manual

This manual provides installation, startup and maintenance instructions and parts ordering information for the EZH and EZHSO Series pressure reducing regulators, PRX Series pilots and Type SA/2 pilot supply filter regulator. Information on other equipment used with this regulator is found in separate manuals.

Product Description

The EZH Series (Spring-to-Close) and EZHSO Series (Spring-to-Open) regulators are accurate pilot-operated, pressure-balanced, soft-seated regulators. They are designed for use in high pressure natural gas transmission/city gate stations, large capacity distribution systems and power plant feeds. They provide smooth and reliable operation, tight shutoff and long life.

EZH and EZHSO Series

Specifications

Ratings and specifications for the EZH and EZHSO Series are listed in the Specifications section below. Specifications for specific regulator constructions are stamped on a nameplate attached to either the main actuator or the pilot spring case.

Available Configurations

Type EZH: Spring-to-close pilot-operated pressure reducing regulator for low to high outlet pressure

Type EZHSO: Spring-to-open pilot-operated pressure reducing regulator for low to high outlet pressure

Type EZHOSX: Type EZH with a Type OS2 slam-shut device for overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection

Type EZHSO-OSX: Type EZHSO with a Type OS2 slam-shut device for overpressure (OPSO) or overpressure and underpressure (OPSO/UPSO) protection

Body Sizes, End Connection Styles and Pressure Ratings⁽¹⁾

See Table 1

Maximum Inlet and Outlet (Casing) Pressures⁽¹⁾

1500 psig / 103 bar

Maximum Emergency (Design Casing Pressure)⁽¹⁾

1500 psig / 103 bar

Maximum Operating Differential Pressure⁽¹⁾⁽³⁾

Main Valve: 1500 psid / 103 bar d

Pilot: 1233 psid / 85.0 bar d

Outlet Pressure Ranges

See Table 2

Pressure Registration

External

Pilot Connections

1/4 NPT

Minimum Differential Pressures⁽¹⁾

SERIES	MAIN VALVE BODY SIZE		MINIMUM DIFFERENTIAL			
			For 90% Capacity		For 100% Capacity	
	NPS	DN	psid	bar d	psid	bar d
EZH	1	25	15.2	1.1	15.7	1.1
	2	50	12.0	0.83	13.8	0.95
	3	80	10.6	0.73	12.8	0.88
	4	100	15.8	1.1	16.4	1.1
	6, 8, 12 X 6	150, 200, 300 X 150	----	----	14.0 for standard version 3.0 ⁽⁴⁾ for low differential option	0.97 for standard version 0.21 ⁽⁴⁾ for low differential option
EZHSO	1	25	55	3.8	55	3.8
	2	50				
	3	80				
	4	100	----	----	25.6	1.8
	6, 8, 12 X 6	150, 200, 300 X 150	----	----	14.0	0.97

Process Temperature Capabilities⁽¹⁾

Nitrile (NBR) Version: -20 to 180°F / -29 to 82°C

Fluorocarbon (FKM) Version: 0 to 180°F / -18 to 82°C⁽²⁾

Polyurethane (PU) Version:

NPS 1, 2, 6, 8 and 12 X 6 /

DN 25, 50, 150, 200 and 300 X 150 Sizes:

-22 to 180°F / -30 to 82°C

NPS 3 to 4 / DN 80 to 100 Sizes:

-4 to 180°F / -20 to 82°C

Options

- Travel Indicator
- Whisper Trim™ Cage
- Up to 25% Hydrogen Blend (By Volume) Construction
- 100% Hydrogen Construction
- Pressure loaded using the PRX Series pilot

1. The pressure/temperature limits in this Instructional Manual and any applicable standard or code limitation should not be exceeded.

2. Types PRX and SA/2 Fluorocarbon (FKM) elastomer is limited to 0°F / -18°C.

3. Maximum Operating Differential Pressure is 1400 psid / 96.5 bar d for NPS 1 / DN 25 EZHSO Series.

4. Low differential version has a maximum inlet pressure rating of 290 psi / 20.0 bar and process temperature limitation of -4 to 180°F / -20 to 82°C.

Pilot Descriptions

The EZH and EZHSO Series pressure-reducing regulators include a PRX Series pilot mounted on the main valve.

Type PRX/120: Outlet pressure range of 14.5 to 435 psig / 1.00 to 30.0 bar. The Type PRX/120 can be used as the pilot on single stage pressure reducing regulators, as the monitor or working pilot in wide-open monitor systems or as the working pilots in working monitor systems.

Type PRX/120-AP: Outlet pressure range of 435 to 1160 psig / 30.0 to 80.0 bar. The Type PRX/120-AP can be used as the pilot on single stage pressure reducing regulators, as the monitor or working pilot in wide-open monitor systems or as the working pilots in working monitor systems.

Type PRX/125: Identical to the Type PRX/120 except the restriction screw is removed. The Type PRX/125 can only be used as the monitor override pilot on working monitor applications.

EZH and EZHSO Series

Table 1. Main Valve Body Sizes, End Connection Styles and Body Ratings

MAIN VALVE BODY SIZE		MAIN VALVE BODY MATERIAL	END CONNECTION STYLE	STRUCTURAL DESIGN RATING	
NPS	DN			psig	bar
1 and 2	25 and 50	LCC or WCC Steel	NPT or SWE	1500	103
1, 2, 3, 4, 6, 12 X 6 and 8	25, 50, 80, 100, 150, 300 X 150 and 200		CL150 RF	290	20.0
			CL300 RF	750	51.7
			CL600 RF or BWE	1500	103

Table 2. Outlet Pressure Ranges

TYPE	OUTLET PRESSURE RANGE		AC (ACCURACY CLASS)		PILOT CONTROL SPRING INFORMATION					
	psig	bar	EZH Series	EZHSO Series	Spring Color	Part Number	Wire Diameter		Free Length	
							In.	cm	In.	cm
PRX/120 PRX/125 PRX/131	14.5 to 26 23 to 44 41 to 80 73 to 123	1.00 to 1.8 1.6 to 3.0 2.8 to 5.5 5.0 to 8.5	2.5%	2.5%	Yellow Green Blue Black	M0255240X12 M0255230X12 M0255180X12 M0255220X12	0.110 0.126 0.138 0.157	0.28 0.32 0.35 0.40	2.16	5.49
	116 to 210 203 to 334 319 to 435	8.0 to 14.5 14.0 to 23.0 22.0 to 30.0	1%	2.5%	Silver Gold Aluminum	M0255210X12 M0255200X12 M0255860X12	0.177 0.197 0.236	0.45 0.50 0.60	2.16 2.00 2.00	5.49 5.10 5.10
PRX/120-AP PRX/125-AP PRX/131-AP	435 to 1160	30.0 to 80.0	1%	2.5%	Clear	M0273790X12	0.335	0.85	3.93	10.0

Table 3. Failure Mode Analysis

PART NAME	CONDITION	CAUSE	EFFECT	REGULATOR REACTION MODE	
				Type EZH	Type EZHSO
Filter	Filter Blocked /Clogged	Debris or aromatics present in the gas	Decrease of supply pressure gives decrease of loading pressure	Close	Open
Pilot disk	Pilot cannot be closed	Debris or aromatics present, Sour gas	Increase loading pressure	Open	Open
Pilot lower diaphragm	Pilot cannot control	Debris or aromatics present, Sour gas	Decrease loading pressure	Close	Open
Pilot upper diaphragm	Pilot cannot feed the regulator	Debris or aromatics present, Sour gas	Decrease loading pressure	Close	Open
Regulator diaphragm	Not proper performance of the Loading Pressure Chamber	Debris or aromatics present, Sour gas	Balancing of Pressures and charge or discharge of the loading pressure chamber	Close	Open
Pilot	Frozen Pilot, Type SA/2 working	Moisture in the gas, high-pressure drop	Type SA/2 loading upper casing of regulator, Pilot not supplying loading pressure to lower casing	Close	Close

Type PRX/125-AP: Identical to the Type PRX/120-AP except the restriction screw is removed. The Type PRX/125-AP can only be used as the monitor override pilot on working monitor applications.

Type PRX/131: Set pressure range of 14.5 to 435 psig / 1.00 to 30.0 bar. The Type PRX/131 is used as a booster or quick dump pilot to increase main valve closing speed on a single stage pressure reducing regulator or on the monitor regulator in wide-open monitor systems.

Pilot Supply Filter Regulator

The Type SA/2 pilot supply filter regulator provides a constant supply pressure to the PRX Series pilot that is approximately 45 psi / 3.1 bar over set pressure. The Type SA/2 has an integral 5-micron filter.

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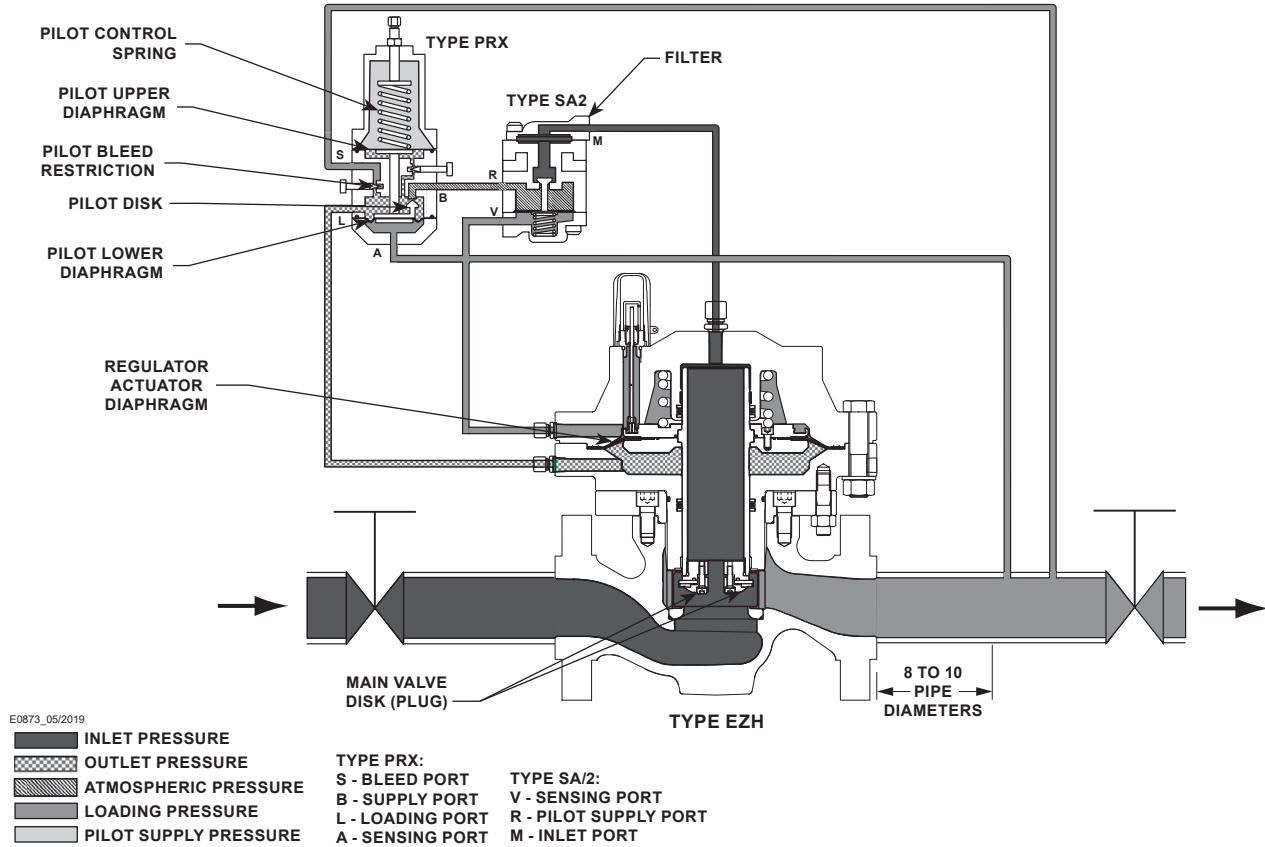


Figure 3. Type EZH (Spring-to-Close) Operational Schematic

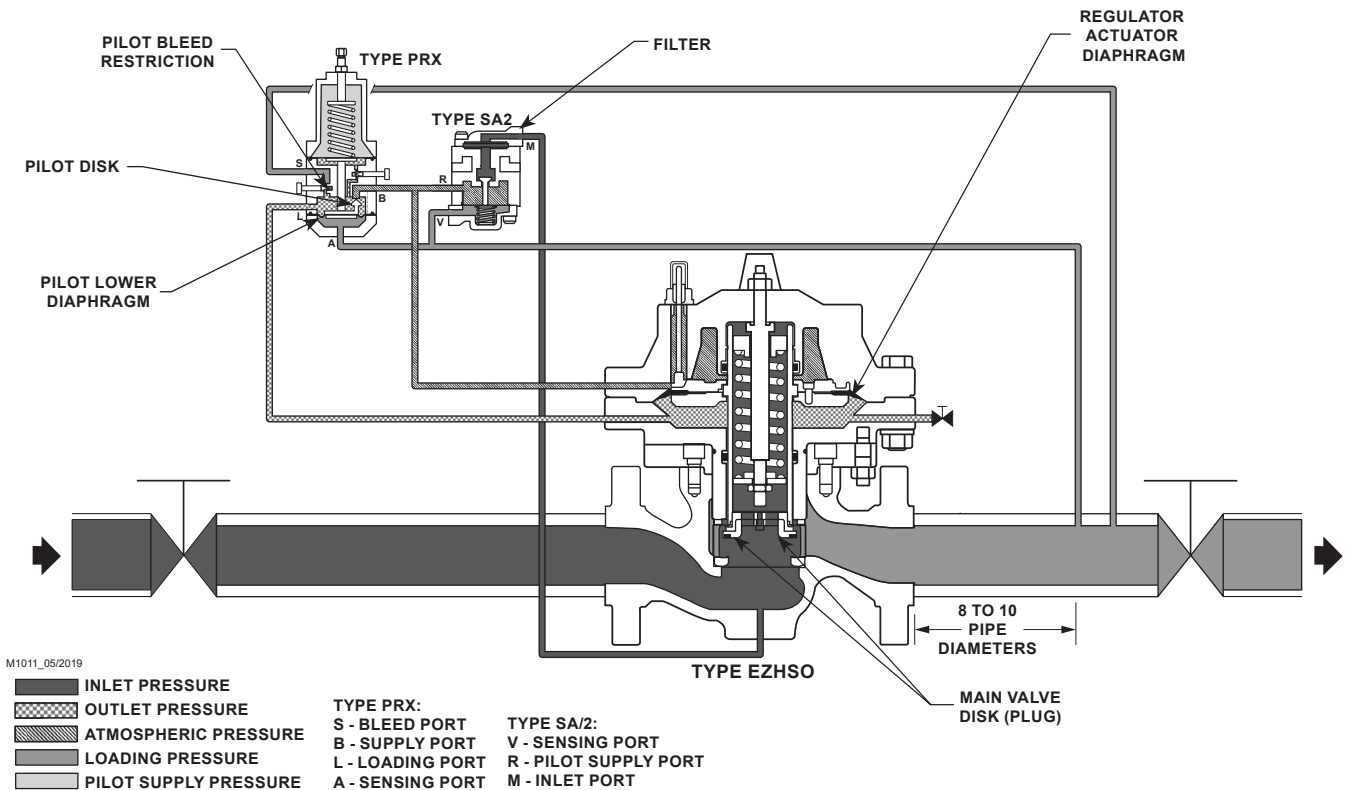


Figure 4. Type EZHSO (Spring-to-Open) Operational Schematic

Principle of Operation

EZH Series – Spring-to-Close Version



The pilot-operated EZH Series (Spring-to-Close version) will fail in close position with a main valve diaphragm failure or lack of pressure supply to the pilot (see Table 3 for Failure Mode Analysis).

The EZH Series (Figure 3) uses inlet pressure, which is reduced through pilot operation to load the regulator actuator diaphragm (lower chamber). Outlet pressure is supplied to the regulator actuator diaphragm (upper chamber). This pressure assists the main spring that tends to close the regulator, and opposes loading pressure in the actuator. Outlet pressure and also opposes the pilot control spring.

The PRX Series pilot is supplied with pressure coming from pre-regulator Type SA/2, which reduces inlet pressure to the value of outlet pressure plus approximately 45 psi / 3.1 bar.

When outlet pressure drops below the setting of the pilot control spring, pilot control spring force on the pilot diaphragm opens the pilot valve disk, providing additional loading pressure to the lower chamber of the regulator actuator diaphragm. This diaphragm loading pressure opens the main valve disk, supplying the required flow to the downstream system. Any excess loading pressure in the lower chamber of the actuator diaphragm and pilot escapes downstream through the bleed restriction in the pilot.

When the gas demand in the downstream system has been satisfied, the outlet pressure increases. When outlet pressure increases over the setting of the pilot spring, the pilot valve disk will be closed, reducing loading pressure to the lower chamber of the regulator actuator diaphragm; the pressure in the upper case and the main spring will force the regulator to close. The excess loading pressure acting under the regulator actuator diaphragm and pilot bleeds to the downstream system through a bleed restriction in the pilot.

A check valve, set at 75 psi / 5.2 bar, is installed between outlet pressure and loading pressure impulse lines on the NPS 4 / DN 100 and larger sizes; this valve is designed to protect the main valve diaphragm assembly from excessive differential pressure during startup if incorrect start up procedures are used. Do not exceed 75 psi / 5.2 bar differential pressure between the outlet pressure and loading pressure impulse lines.

EZHSO Series – Spring-to-Open Version



The pilot-operated EZHSO Series (Spring-to-Open version) will fail in open position with a main valve diaphragm failure or lack of pressure supply to the pilot (see Table 3 for Failure Mode Analysis).

The EZHSO Series (Figure 4) uses inlet pressure, which is reduced through pilot operation to load the regulator actuator diaphragm (lower chamber). Pilot supply pressure is provided to the regulator actuator diaphragm (upper chamber). This pressure opposes the main spring force that tends to open the regulator, and opposes the loading pressure. Outlet pressure opposes the pilot control spring.

The PRX Series Pilot is supplied with pressure coming from pre-regulator Type SA/2, which reduces inlet pressure to the value of outlet pressure plus approximately 45 psi / 3.1 bar.

When outlet pressure drops below the setting of the pilot control spring, pilot control spring force on the pilot diaphragm opens the pilot valve disk, providing additional loading pressure to the lower chamber of the regulator actuator diaphragm. This diaphragm loading pressure opens the main valve disk, supplying the required flow to the downstream system. Any excess loading pressure in the lower chamber of the regulator actuator diaphragm and pilot escapes downstream through the bleed restriction in the pilot.

When the gas demand in the downstream system has been satisfied, the outlet pressure increases. When outlet pressure increases over the setting of the pilot spring, the pilot valve disk will be closed, reducing loading pressure to the lower chamber of the regulator actuator diaphragm; the pressure in the upper case will force the regulator to close. The excess loading pressure acting under the regulator actuator diaphragm and pilot bleeds to the downstream system through a bleed restriction in the pilot.

A check valve, set at 75 psi / 5.2 bar, is installed between pilot supply pressure and loading pressure impulse lines on the NPS 4 / DN 100 and larger sizes; this valve is designed to protect the main valve diaphragm assembly from excessive differential pressure during incorrect start-up procedures.

Monitoring Systems

Monitoring regulation is overpressure protection by containment; therefore, there is no relief valve to vent to the atmosphere. When the working regulator fails to control the pressure, a monitor regulator installed in series, sensing the downstream pressure, goes into operation to maintain the downstream pressure at a slightly higher than normal set pressure. During an overpressure situation, monitoring keeps the customer on line. Also, testing is relatively easy. To perform a periodic test on a monitoring regulator, increase the outlet set pressure of the working regulator and watch the outlet pressure gauge to determine if the monitoring regulator takes over at the appropriate outlet pressure. Validate that the monitor take-over occurs in the desired response time. If slower than desired, the restrictor should be backed out further and if that is insufficient, a PRX/131 booster can be used.

Wide-Open Monitoring System (Figure 5)

There are two types of wide-open monitoring systems: upstream and downstream. The difference between upstream and downstream monitoring is that the functions of the regulators are reversed. Systems can be changed from upstream to downstream monitoring and vice-versa, by simply reversing the

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setpoints of the two regulators. The decision to use either an upstream or downstream monitoring system is largely a matter of personal preference or company policy.

In normal operation of a wide open configuration, the working regulator controls the system's outlet pressure. With a higher outlet pressure setting, the monitor regulator senses a pressure lower than its setpoint and tries to increase outlet pressure by going wide open. If the working regulator fails, the monitoring regulator assumes control and holds the outlet pressure at its outlet pressure setting.

Figure 5 shows an upstream wide-open monitor Type EZH (failed-close) and a downstream active regulator Type EZHSO (failed-open). In this installation, if the Type EZHSO regulator no longer controls downstream pressure, it will remain open, causing the Type EZH monitor regulator to take control of the downstream pressure. Should the Type EZH fail, the monitor regulator will go closed and protect the downstream system from an overpressure condition.

Working Monitoring System (Figure 6)

In a working monitoring system, the upstream regulator requires two pilots and it is always the monitoring regulator. The additional pilot permits the monitoring regulator to act as a series regulator to control an intermediate pressure during normal operation. In this way, both units are always operating and can be easily checked for proper operation. See Installation section.

In normal operation, the working regulator controls the outlet pressure of the system. The monitoring regulator's working pilot controls the intermediate pressure and the monitoring pilot senses the system's outlet pressure. If the working regulator fails, the monitoring pilot will sense the increase in outlet pressure and take control.

Working monitor installations require an EZH or EZHSO Series main valve with a Type PRX/120 or PRX/120-AP working pilot and a Type PRX/125 or PRX/125-AP monitoring pilot for the upstream regulator and an EZH or EZHSO Series with the appropriate Type PRX/120 or PRX/120-AP pilot for the downstream regulator.

Installation

WARNING

Personal injury or equipment damage, due to bursting of pressure-containing parts may result if this regulator is overpressured or is installed where service conditions could exceed the limits given in the Specification section and on the appropriate nameplate or where conditions exceed any rating of the adjacent piping or piping connections. To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices to prevent service conditions from exceeding those limits. Also, be sure the installation is in compliance with all applicable codes and regulations.

Additionally, physical damage to the regulator could break the pilot off the main valve, causing personal injury and property damage due to bursting of pressure-containing parts. To avoid such injury and damage, install the regulator in a safe location.

All Installations

An EZH or EZHSO Series Regulator bleeds no gas to atmosphere during normal operation, making it suitable for installation in pits and other enclosed locations without elaborate venting systems. This regulator also can be installed in pits subject to flooding by venting the pilot spring case above the expected flood level so that the pilot diaphragm is always exposed to atmospheric pressure.

1. Only personnel qualified through training and experience should install, operate and maintain a regulator. Before installation, make sure that there is no damage to or debris in the regulator. Also, make sure that all tubing and piping are clean and unobstructed.

CAUTION

Eyebolts are installed to aid in the handling and installation of the Regulator Assembly only. Always utilize both eyebolts and do not attempt to lift more weight than the regulator with these eyebolts.

2. Install the regulator so that the flow arrow on the main valve matches the flow direction of process fluid through the regulator. The EZH and EZHSO Series may be installed in any position, but it is normally installed in a horizontal pipeline with the pilot or pilots above the body.
3. Apply pipe compound to the external pipeline threads before installing a regulator with threaded NPT end connections. Use gaskets between pipeline and regulator flanges when installing a regulator with flanged end connections. When installing butt weld end connections, remove trim before welding and make sure to use approved welding practices. Use approved piping procedures when installing the regulator.

WARNING

A regulator may vent some gas to the atmosphere. In hazardous or flammable gas service, vented gas may accumulate, causing personal injury, death or property damage due to fire or explosion. Install vent line(s) from the regulator pilot(s) to a remote, safe location away from air intakes or any hazardous location. The end of the vent line or stack opening must be pointed down and protected against condensation or clogging.

4. The PRX Series Pilots have a 1/4 NPT vent connection in the spring case. The pilot vent opening should be pointed down. Protect the vent opening from condensation or clogging. To remotely vent gas from the spring case,

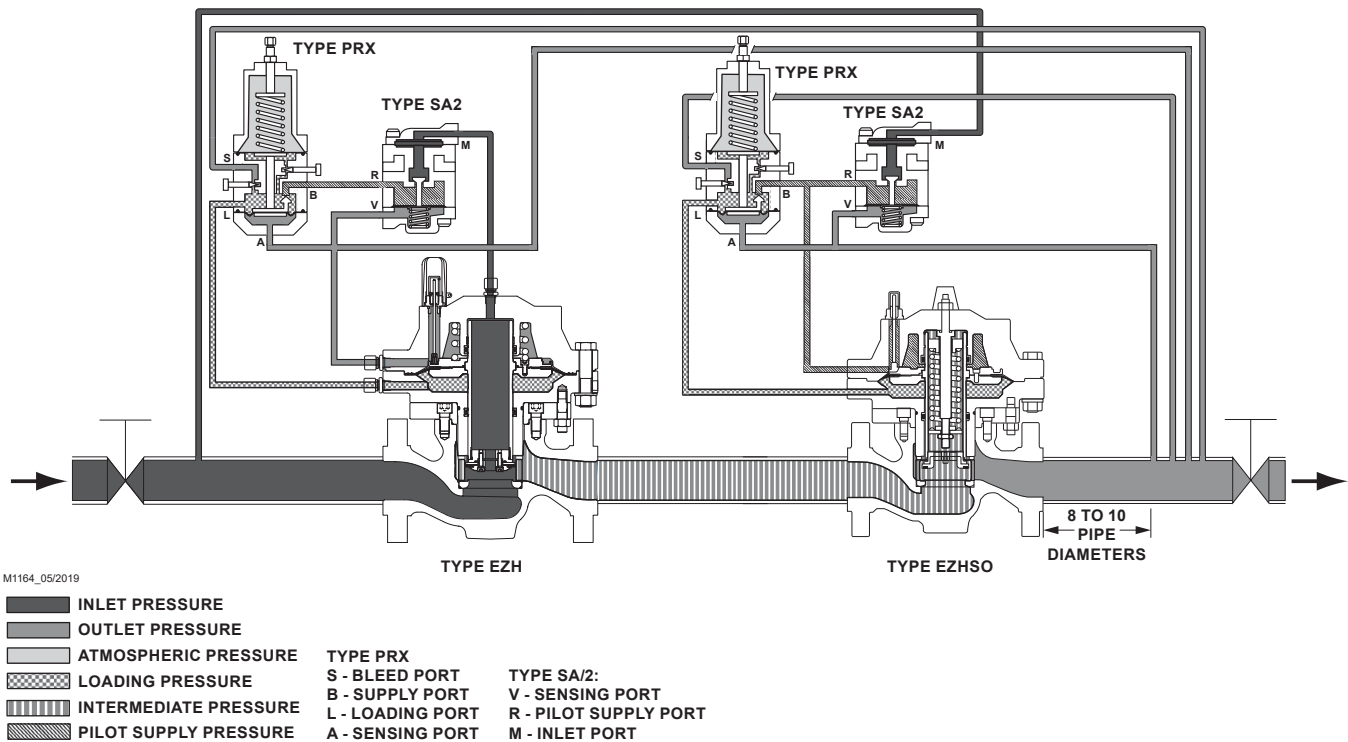


Figure 5. Wide-Open Monitoring System Operational Schematics

remove the screened vent and connect 1/4 in. / 6.4 mm piping or tubing to the spring case connection. The piping or tubing should vent to a safe location, have as few elbows as possible and have a screened vent that points down on its exhaust. Install the regulator and any remote vent piping or tubing so that the vent is pointed down and protected from condensation, freezing or substances that may clog it.

CAUTION

To avoid freeze-up because of pressure drop and moisture in the gas, use anti-freeze practices, such as heating the supply gas or adding a de-icing agent to the supply gas.

- The PRX Series Pilot connections are 1/4 NPT. For the NPS 1 to 4 / DN 25 to 100 EZH Series, connect a downstream control (sense) line from the “A” port on the bottom of the PRX Series pilot to a straight run of pipe 6 to 10 pipe diameters from the regulator outlet as shown in Figures 3 and 4, using 3/8 in. / 9.5 mm or larger outside diameter tubing. For the NPS 6 / DN 150 and larger sizes, connect the downstream control line from the port on the upper casing to a straight run of pipe 6 to 10 pipe diameters from the regulator outlet using 1/2 in. / 12.7 mm or larger piping. If such a distance is not practical, connect the control line away from elbows, swages, nipples or any area where abnormal flow velocities occur.

Note

The optimal location for the sense and bleed lines is between the regulator and the downstream block valve. To prevent damage to the pilot during startup, the sense and bleed lines should be located on the same side of the downstream block valve.

- The PRX Series pilot connections are 1/4 NPT. Connect a downstream bleed line from the “S” port on the PRX Series pilot with a straight run of pipe 6 to 10 pipe diameters to the regulator outlet as shown in Figures 3 and 4, using 3/8 in. / 9.5 mm or larger outside diameter tubing.

Note

Separate sensing lines must be used for the “S” and the “A” ports.

CAUTION

To prevent damage to the pilot during Startup, the sense and bleed lines should be located on the same side of the downstream block valve.

- Install hand valves in the downstream sense and bleed lines if desired. If hand valves are installed, they should be full flow valves, such as a full port ball valve. For EZHSO Series single regulator installations, a vent valve downstream of the regulator is needed. It should be installed directly in the PRX Series pilot bleed line connection (line from Port S to pipe). A full bore NPS 1/4 ball valve for the vent line is preferred to provide sufficient flow.

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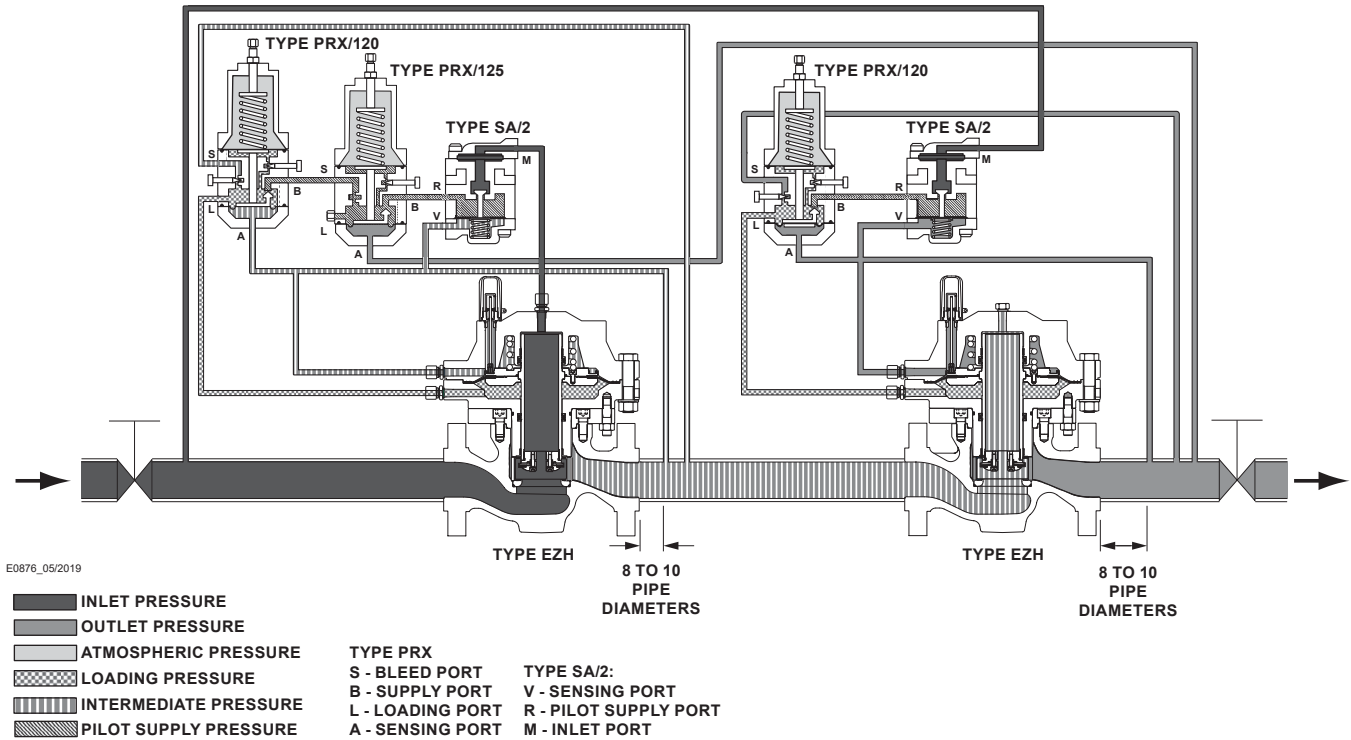


Figure 6. Working Monitoring System Operational Schematics

- For optional remote pneumatic loading of a PRX Series Pilot, make the spring case piping connections just as they would be made for remote venting in step 4.

Wide-Open Monitor Regulator



The working regulator must be rated for the maximum allowable operating pressure of the system because this will be its inlet pressure if the monitoring regulator fails. Also, the outlet pressure rating of the monitoring pilot and any other components that are exposed to the intermediate pressure must be rated for full inlet pressure.

- Follow the procedures in the All Installations section and then continue with step 2 of this section. The sense and bleed control lines of both the upstream and downstream pilots will be connected to the downstream piping (see Figure 5).
- Connect the pilot supply line for the downstream regulator to the outlet "R" port of the Type SA/2 pilot supply filter regulator.

Working Monitor Regulator

- Follow the procedure in the All Installations section and then continue with step 2 of this section. The sense line of the upstream monitor pilot (from Port A on the Type PRX/125) and the bleed (Port S) and sense lines (Port A) of the downstream pilot will be connected to the downstream piping (see Figure 6).

- Connect an inlet supply line from the upstream piping to the inlet "M" port of the downstream Type SA/2 pilot supply filter regulator.
- Connect a control (sense) line from the "A" port of the upstream working Type PRX/120 pilot to the intermediate pressure portion of piping, using 3/8 in. / 9.5 mm or larger outside diameter tubing.
- Connect a downstream bleed line from the "S" port of the upstream working Type PRX/120 pilot to the intermediate pressure portion of piping, using 3/8 in. / 9.5 mm or larger outside diameter tubing.

Startup and Adjustment

Pre-startup Considerations

Each regulator is factory-set for the outlet pressure specified on the order. If no setting was specified, outlet pressure was factory-set at the mid-range of the pilot control spring. Before beginning the start-up procedure in this section, make sure the following conditions are in effect:

- Block valves isolate the regulator
- Vent valves are closed
- A bypass, if any, is in operation

In all cases, check the pilot control spring setting to make sure it is correct for the application.

CAUTION

Be sure to slowly introduce pressure into the system to prevent downstream overpressure due to potential rapid pressure increase. Pressure gauges should always be used to monitor downstream pressure during Startup. Procedures used in putting this regulator into operation must be planned accordingly if the downstream system is pressurized by another regulator or by a manual bypass.

Note

When using a Type SA/2 pilot supply filter regulator, the differential pressure across the main regulator must be at least 45 psid / 3.1 bar d for optimum regulator performance. The Type SA/2 can be removed if differential pressure across the main regulator is less than 45 psid / 3.1 bar d and inlet pressure stays at or below 200 psig / 13.8 bar.

Pilot Adjustment

The adjustment of the regulators is performed by means of the pilot adjustment screw, which varies the compression of the control spring. Adjustment is performed while the regulator is in operation with the aid of a pressure gauge to monitor downstream pressure. The shutoff valve downstream of the regulator must not be completely closed, as it is necessary that a small quantity of gas flows downstream to allow the outlet side to vent, when it is necessary to lower the pressure. For PRX Series Pilots (Figure 13), loosen locknut (key 2) and turn the adjusting screw into the spring case (clockwise) to increase and out of the spring case (counterclockwise) to decrease the downstream pressure. When the desired setpoint adjustment is completed and verified, tighten the locknut to lock the adjusting screw in position. No adjustment is needed to the Type SA/2 pilot supply filter regulator.

Adjusting the monitor regulator (Figure 6) is the same as adjusting the main regulator. Monitor setpoints are set slightly higher than the main regulator. The monitor pressure setting should be adjusted so it is at minimum two times the pilot accuracy band pressure above the working regulator pressure setting.

PRX Series Pilot Restrictor and Damper Screw Adjustment

Note

The Type PRX/125 (upstream monitor pilot in working monitor installations) does not have a restrictor screw.

The Damper and Restrictor screws on the PRX Series pilot control the regulator's proportional band (droop) and speed of response. To tune, follow the steps outlined below referencing Figure 13.

1. **For a working regulator**, start with the restrictor screw (R) 1 turn counterclockwise from fully seated (turn restrictor fully clockwise then 1 turn counterclockwise) and the damper screw (D) fully counterclockwise.
For a monitor regulator, start with the restrictor screw (R) 2 turns counterclockwise from fully seated (turn restrictor fully clockwise then 2 turns counterclockwise) and the damper screw (D) fully counterclockwise.
2. If the desired performance has not been achieved, turn the restrictor screw an additional quarter turn counterclockwise. This increases the flow path of the restrictor. If additional tuning is required, repeat this step until desired performance is achieved.

Startup

1. Make sure all block valves, vent valves and control line valve(s) are closed.
2. Back out the pilot adjusting screw(s).
3. Introduce upstream pressure by slowly opening inlet valve.
4. **EZHSO Series Monitor Installations and all EZH Series Installations:** Crack open the outlet block valve or bypass valve to allow minimum flow.

For EZHSO Series Single Regulator Installation: Vent pressure from bleed line until regulator closes and then shut-off vent. A full bore NPS 1/4 ball valve for the vent line is preferred. Slowly open downstream valve, making sure that there is a constant sufficient pressure drop across the regulator. If downstream pressure climbs too close to upstream pressure (a minimum DP of 55 psi / 3.8 bar must be guaranteed), the regulator will again fully open. In this case, start-up procedure needs to be repeated.

For a single regulator (Figure 3), set the pilot to the desired outlet (control) pressure according to the Pilot Adjustment procedure.

For a wide-open downstream monitor installation (Figure 5), adjust the upstream working pilot until intermediate pressure is higher than the desired setpoint of the monitor pilot. Adjust the downstream monitoring pilot to the desired monitoring takeover pressure. Reduce the upstream pilot to the normal outlet pressure setting.

For a wide-open upstream monitor installation (Figure 5), adjust the downstream working pilot to a setpoint higher than the setpoint of the monitor pilot. Adjust the upstream monitoring pilot to the desired monitoring takeover pressure. Reduce the downstream pilot to the normal outlet pressure setting.

For a working monitor installation (Figure 6), turn out the adjusting screw of the downstream pilot, removing spring tension. Adjust the upstream working pilot to the desired intermediate pressure setting. Turn out the adjusting screw of the upstream monitor pilot (Type PRX/125), removing tension. Turn in the adjusting screw of the downstream pilot. Adjust the upstream monitor pilot to the desired setpoint. Establish final desired downstream pressure by adjusting the downstream pilot.

5. After adjusting the PRX Series pilot(s) to the desired pressure setting(s), slowly open the downstream block valve wide open.
6. Close the bypass valve, if used.

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Shutdown

CAUTION

If the pilot bleed control line pressure is shutdown first, the downstream system may be subjected to full inlet pressure.

1. If the pilot setting must be changed, be sure to keep some tension on the spring. This will prevent trapping inlet pressure during blow down.
2. Slowly close the valves in the following order:
 - a. Inlet block valve
 - b. Outlet block valve
 - c. Control line valve(s), if used.
3. Open the vent valves to depressurize the system.

Maintenance

The regulator parts are subject to normal wear and must be inspected periodically and replaced as necessary. The frequency of inspection and replacement depends on the severity of service conditions and on applicable federal, state and local codes and regulations. **Use Torque Specifications (Table 4) for proper torque values.**

WARNING

To avoid personal injury or property damage from sudden release of pressure, isolate the regulator from the pressure system and release all pressure from the pilot and main valve before performing maintenance operations.

Do not disassemble the EZHSO Series sleeve assemblies or NPS 4 / DN100 and larger EZH Series sleeve assemblies. The ball bearings (key 83) preventing disassembly must not be removed.

Use proper lifting techniques, when lifting the upper and lower actuator casings (keys 11 and 5) off the EZH or EZHSO Series body (key 1). The actuator assembly weighs more than 100 lbs / 45 kg.

CAUTION

Customer cannot use another type of eyebolt in the regulator. Only Emerson parts can be used to repair the unit.

Eyebolts are installed to aid in the handling and installation of the Regulator Assembly only. Do not attempt to lift more weight than the regulator with these eyebolts.

Polyurethane (PU) Disk Conversion

To convert EZH and EZHSO Series units to a Polyurethane (PU) disk from a Nitrile (NBR) or Fluorocarbon (FKM) disk, the user will need to order; retainer (key 31) and disk assembly (key 30). If the unit was shipped prior to 2016, to achieve bubble-tight shutoff the seat ring (key 2) should be replaced. For the NPS 4 / DN 100 Type EZHSO, the Polyurethane (PU) sleeve assembly is also required. Please contact your local Sales Office with any questions about parts selection.

Main Valve and Actuator Maintenance

Disk Maintenance

NPS 1 through 3 / DN 25 through 80 (Refer to Figures 8 and 9)

1. Remove nuts (key 26).
2. Carefully lift the upper actuator casing and lower actuator casing assembly (keys 11 and 5) off the body (key 1).
3. **For EZH Series:** Remove the hex socket cap screws (key 33) and lock washers (key 32). Lift off the disk holder assembly (key 30) and disk retainer (key 31). **For EZHSO Series:** Remove the hex socket cap screw (key 154). Lift off the disk holder assembly (key 30). Do not attempt to remove the sleeve adaptor (key 27).
4. Remove the O-ring (key 29). Inspect the O-ring for damage or wear and replace if necessary. Lightly lubricate O-ring before placing in the sleeve adaptor (key 27).
5. Remove the cage (key 3), seat ring (key 2) and O-ring (key 34). Inspect the O-ring for damage or wear and replace if necessary. Lightly lubricate O-ring before placing in the body (key 1).
6. Set the seat ring (key 2) back in the body (key 1) with the curved side down and the seat edge up. Place the cage (key 3) on top of seat ring. The cage will engage the step on the seat ring.
7. Place the disk holder assembly (key 30) and disk retainer (key 31) on the sleeve adaptor (key 27).
8. **For EZH Series:** Insert the lock washers (key 32) and hex socket cap screws (key 33) and tighten. **For EZHSO Series:** Place small amount of general purpose threadlocker onto the hex socket cap screw (key 154) and tighten.
9. Carefully lift the upper actuator casing and lower actuator casing assembly (keys 11 and 5) and place on the body (key 1). Secure with stud bolts and nuts (keys 24 and 26).

Disk Maintenance

NPS 4, 6, 8, 12 X 6 / DN 100, 150, 200 and 300 X 150 (Refer to Figures 8 and 9)

1. If present, remove travel indicator assembly by unscrewing the travel indicator fitting (key 141), then pull out the stem (key 139). Please see the Travel Indicator Maintenance section for the proper maintenance procedure. **For EZHSO Series:** Remove closing cap (key 146), unscrew 2 nuts (key 151), and remove washer (key 193).

2. Remove cap screws (key 77).
3. Carefully lift the cap (key 70) off of the upper actuator casing (key 11).
4. Remove O-ring (key 75). Inspect the O-ring for damage or wear and replace if necessary.
5. Remove the O-ring (key 69). Inspect the O-ring for damage or wear and replace if necessary. Lubricate O-ring before placing inside the cap (key 70).
6. Loosen captured screws (key 68) until free to spin.
7. **For EZH Series:** Fit eyebolt (key 35) into the upper spring seat (key 73) threaded hole.
8. Carefully remove the sleeve assembly from the sleeve guide (key 61) using the eyebolt (key 35).

Note

The sleeve assembly may be oriented upside down for ease of maintenance, but care should be taken not to drop small components into the sleeve assembly.

9. Remove socket head cap screws (key 33) and lock washers (key 32 on EZH Series and key 154 on EZHSO Series.)
10. **For EZH Series:** Lift off the disk retainer (key 31) and disk holder assembly (key 30).
For EZHSO Series: Lift off the disk holder assembly (key 30).
11. Remove the O-ring (key 29). Inspect the O-ring for damage or wear and replace if necessary. Lightly lubricate O-ring before placing in the sleeve adaptor (key 27).
12. **For EZH Series:** Place disk holder assembly (key 30) onto disk retainer (key 31). Place disk retainer (key 31) with the disk holder assembly (key 30) into sleeve adaptor (key 27) and align screw holes.
For EZHSO Series: Place disk holder assembly (key 30) into sleeve adaptor (key 27) and align screw holes.
13. Place lock washer (key 32) onto the screws (key 33).
14. **For EZH Series:** Screw together the disk retainer assembly into the sleeve adaptor (key 27).
For EZHSO Series: Place small amount of general purpose threadlocker onto the hex socket cap screw (key 154) and tighten.
15. Lubricate the sleeve (key 14).
16. Carefully insert the sleeve assembly into the sleeve guide (key 61) utilizing eyebolt (key 35). Align sleeve utilizing the socket hex cap screw (key 74) as a guide.

Note

The O-rings (key 9) may need to be removed and stretched by hand in order for the sleeve assembly to have sufficient clearance to slide back into the sleeve guide.

17. Screw captured screws (key 68) to affix the sleeve system. Place O-ring (key 69) on cap (key 70).
18. Remove eyebolt (key 35) from upper spring seat (key 73) threaded hole.

19. Carefully place the cap (key 70) on the upper actuator casing (key 11).
20. Lubricate cap screws (key 77) and attach cap (key 70) to the upper casing using cap screws (key 77).

Note

Rotate the cap such that the outer holes for sensing lines are in line with upper casing holes for sensing lines: to validate the alignment and before attaching cap, check that travel indicator is aligned on the cap and on the upper actuator casing.

21. Mount O-ring (key 75) on the space between the cap (key 70) and the upper actuator casing (key 11).
22. Screw the eyebolts (key 35) on the cap (key 70).
23. **For EZHSO Series:** Place the washer (key 193) on the stem (key 147). Assemble one nut (key 151) to the stem (key 147) until the specified torque is achieved and then install another nut (key 151) to lock the position of stem. Screw on the closing cap (key 146). Mount O-ring (key 75) on the cap (key 70).
24. If present, set the stem (key 139) through the casing hole and tap it into the groove in the diaphragm plate (key 18). Slide the travel indicator fitting (key 141) over the stem and tighten to the cap (key 70).

Intermediate Flange O-ring Maintenance

NPS 1, 2, 3, 6, 8 and 12 X 6 / DN 25, 50, 80, 150, 200 and 300 X 150

1. Remove nuts (key 26).
2. Carefully lift the upper actuator casing and lower actuator casing assemblies (keys 11 and 5) off the body (key 1).
3. Remove cap screws (key 6).
4. Lift off intermediate flange (key 25).
5. Remove O-ring (key 7). Inspect the O-ring for damage or wear and replace if necessary. Lightly lubricate O-ring before placing in the body (key 1).
6. Place the intermediate flange (key 25) on the body, make sure to position the stud bolt (key 24) holes on the outsides of the body (key 1). Secure with cap screws (key 6).
7. Carefully lift the upper actuator casing and lower actuator casing assemblies (keys 11 and 5) and position it in the body (key 1).
8. Screw in stud bolts and nuts (keys 24 and 26).

Actuator Assembly Maintenance

**NPS 1 through 3 / DN 25 through 80
(Refer to Figures 8 and 9)**

1. Make a mark on the upper actuator casing (key 11), lower actuator casing (key 5), intermediate flange (key 25) and body (key 1) to indicate proper alignment.
2. Remove travel indicator assembly (keys 138, 139, 140, 141, 142A or 142B, 143, 144, 145, 160 and 192), if present, by loosening the travel indicator fitting (key 141) and lifting out the travel indicator assembly. See the Travel Indicator Maintenance section for the proper maintenance procedure.

EZH and EZHSO Series

Table 4. Torque Specifications

PART NAME		TORQUE SPECIFICATIONS AND TOOL RECOMMENDATIONS					
		Body Size					
		NPS 1 / DN 25	NPS 2 / DN 50	NPS 3 / DN 80	NPS 4 / DN 100	NPS 6, 8 and 12 X 6 / DN 150, 200 and 300 X 150	
Hex Head Cap Screw (key 6)	Tool Size	13/16-in. or 21 mm	3/4-in. or 19 mm	15/16-in. or 24 mm	1-1/8-in. or 29 mm	19 mm Allen	
	Torque	Ft-Lbs	50 to 60	50 to 60	70 to 95	140 to 155	374 to 414
		N•m	68 to 81	68 to 81	95 to 129	190 to 210	507 to 561
Allen Head Screw (key 16)	Tool Size	4 mm	5 mm	5 mm	6 mm	6 mm	
	Torque	Ft-Lbs	4.2 to 5.8	4.2 to 5.8	4.2 to 5.8	8.3 to 9.6	17.7 to 19.8
		N•m	5.6 to 7.9	5.6 to 7.9	5.6 to 7.9	11 to 13	24 to 27
Hex Head Cap Screw (keys 21 and 39)	Tool Size	19 mm	24 mm	32 mm	41 mm	41 mm	
	Torque	Ft-Lbs	50 to 55	130 to 150	250 to 270	280 to 310	483 to 497
		N•m	68 to 75	176 to 203	339 to 366	380 to 420	655 to 675
Stud Bolts (key 24)	Tool Size	3/4-in.	3/4-in.	1-1/8-in.	----	----	
	Torque	Ft-Lbs	50 to 70	50 to 70	100 to 120	----	221 to 244
		N•m	68 to 95	68 to 95	136 to 163	----	299 to 331
Hex Head Nut (key 26)	Tool Size	3/4-in. or 19 mm	3/4-in. or 19 mm	1-1/4-in. or 32 mm	----	30 mm	
	Torque	Ft-Lbs	45 to 50	45 to 50	80 to 95	----	140 to 160
		N•m	61 to 68	61 to 68	108 to 129	----	190 to 220
Allen Head Screw (key 33)	Tool Size	3 mm	4 mm	5 mm	5 mm	5 mm	
	Torque	Ft-Lbs	2.5 to 3.3	4.2 to 5	6.7 to 8.3	6.7 to 8.3	6.7 to 8.3
		N•m	3.4 to 4.5	5.6 to 6.8	9 to 11	9 to 11	9 to 11
Allen Screws (keys 68 and 74)	Tool Size	----	----	----	4 mm	4 mm	
	Torque	Ft-Lbs	----	----	----	3	3
		N•m	----	----	----	4	4
Hex Head Cap Screw (key 77)	Tool Size	----	----	----	20 mm	30 mm	
	Torque	Ft-Lbs	----	----	----	90 to 110	221 to 244
		N•m	----	----	----	122 to 149	299 to 331
Hex Head Nut (key 151)	Tool Size	17 mm	17 mm	17 mm	17 mm	24 mm	
	Torque	Ft-Lbs	32	32	45	45	45
		N•m	43	43	61	61	61
Hex Head Nut (key 152)	Tool Size	----	19 mm	19 mm	19 mm	24 mm	
	Torque	Ft-Lbs	----	40	60	45 to 50	45 to 50
		N•m	----	54	81	61 to 68	61 to 68
Hex Head Cap Screw (key 154)	Tool Size	3 mm	5 mm	6 mm	3 mm	----	
	Torque	Ft-Lbs	1.3	4.2	10	3.2	----
		N•m	1.8	5.6	14	4.3	----
Hex Head Nut (key 155)	Tool Size	19 mm	----	----	----	----	
	Torque	Ft-Lbs	30	----	----	----	----
		N•m	41	----	----	----	----

- For EZH Series:** Loosen out the hex nuts (key 23) and remove the washers (key 22) and the cap screws (key 21). Remove all the short bolts first, then evenly remove the two long bolts (key 39), indicated with (LB) on the head and brackets (key 35). Make sure to balance the upper actuator casing while removing the spring tension. Carefully lift the upper actuator casing (key 11) off the lower actuator casing (key 5). Remove spring (key 13).

For EZHSO Series: Remove protective cap (key 146). Loosen and remove hex nuts (key 151) and washer (key 193). Remove cap screws (key 21), washers (key 22) and hex nuts (key 23). Carefully lift the upper actuator casing (key 11) off the lower actuator casing (key 5).
- Remove the socket head cap screws (key 16). Lift off the diaphragm (key 20) and the inlet plate (key 18). Remove O-rings (keys 15 and 17). Inspect the diaphragm and O-rings for damage or wear and replace if necessary.

- Inspect the upper actuator casing (key 11), O-ring (key 9), anti-friction split rings (key 8) and anti friction ring (key 4) for damage or wear. If damaged, remove the O-ring and split rings and replace with new parts. Lightly lubricate the O-ring and split rings. Place the split rings in the body first, then slide the O-ring between the split rings. Lubricate and reinstall the anti-friction ring (key 4).
- Remove hex nuts (key 26) from the stud bolts (key 24). Lift off the lower actuator casing (key 5).

For EZH Series: Remove the hex socket cap screws (key 33) and spring lock washers (key 32). Lift off the disk holder assembly (key 30) and disk retainer (key 31).

For EZHSO Series: Remove the hex socket cap screw (key 154). Lift off the disk holder assembly (key 30).
- Slide the sleeve (key 14) out of the lower actuator casing (key 5) and slide the outlet plate (key 19) off of the sleeve. Check the sleeve for scratches, burrs or other damage and replace if necessary.

8. Inspect the lower actuator casing (key 5), O-rings (keys 9 and 62), anti-friction split rings (key 8) and anti-friction ring (key 4) for damage or wear. If damaged, remove the O-ring and split rings and replace with new parts. Lightly lubricate the O-ring (key 9) and split rings. Place the split rings in the body first, then slide the O-ring (key 9) between the split rings. Lubricate and mount O-ring (key 62) outside of the lower actuator casing (key 5).
9. Slide the outlet plate (key 19) onto the sleeve (key 14) and slide the sleeve into the lower actuator casing (key 5).
For EZH Series: Place the disk holder (key 30) and disk retainer (key 31) on the sleeve adaptor (key 27). Insert the spring lock washers (key 32) and hex socket cap screws (key 33) and tighten.
For EZHSO Series: Place the disk holder assembly (key 30) on the sleeve adaptor (key 27). Put a small amount of general purpose threadlocker onto hex socket cap screw (key 154) then insert and tighten.
10. Lightly lubricate the O-rings (keys 15 and 17) and the inner and outer diaphragm (key 20) edges. Place the inlet plate (key 18) and the diaphragm (key 20) on the sleeve (key 14). Make sure O-rings (keys 15 and 17) are correctly positioned. Insert and tighten the hex socket cap screws (key 16).

Note

When tightening fasteners arranged in a circular pattern, alternate the tightening of each fastener with the fastener directly across from it using a “star” criss-cross pattern for five times, until proper specified torque is achieved. Each time around, when all screws are tightened to the required torque, the diaphragm will compress a little until the plates are in direct, metal-to-metal, contact. It will take at least five times around before this happens. Only then will the applied torque on each screw remain at the required value.

11. Carefully lift the lower actuator casing assembly (key 5) and place on the body (key 1). **Make sure to match up the alignment marks.** Secure with stud bolts and nuts (keys 24 and 26).
12. **For EZH Series:** Lightly lubricate the spring (key 13) and place on the inlet plate (key 18).
13. Carefully place the upper actuator casing (key 11) on the lower actuator casing (key 5). **Make sure to match up the alignment marks.** Insert the two long bolts (key 39) 180° apart and away from flanges. Place the washers (key 22), hex nuts (key 23) and brackets (key 35) on the long bolts and evenly tighten. Using proper bolting techniques, install remaining short bolts (key 21), washers and hex nuts.
14. **For EZHSO Series:** Install washer (key 193), tighten hex nuts (key 151) and install protective cap (key 146).
15. Place travel indicator assembly (keys 138, 139, 140, 141, 142A or 142B, 143, 144, 145, 160 and 192) in the upper actuator casing (key 11), if present and tighten the travel indicator fitting (key 141).

Actuator Assembly Maintenance

**NPS 4, 6, 8, 12 X 6 / DN 100, 150,
200, 300 X 150 (Refer to Figures 8 and 9)**

1. If present, remove the travel indicator assembly by unscrewing the travel indicator fitting (key 141), then pull out the stem (key 139). Please see the Travel Indicator Maintenance section for the proper maintenance procedure. **For EZHSO Series:** Remove closing cap (key 146), unscrew 2 nuts (key 151), and washer (key 193).
2. Remove hex head cap screws (key 21), washers (key 22) and hex nuts (key 23). Carefully lift the upper actuator casing (key 11) off the lower actuator casing (key 5). Inspect the upper actuator casing (key 11), O-rings (key 9 for EZH Series and key 158 for EZHSO Series) and anti-friction rings (key 8 for EZH Series and key 157 for EZHSO Series) for damage or wear. If damaged, remove and replace with new parts. Place the anti-friction rings in the body first, then slide the O-ring between the anti-friction rings.
3. Loosen captured screws (key 68) until free to spin. Unscrew an eyebolt (key 35) from the cap and remove the screws (key 77) to remove cap (key 70) from the upper actuator casing (key 5). Attach an eyebolt to the upper spring seat (key 73) and lift up and remove the sleeve assembly (key 14). Lift off the diaphragm/plates assembly. Remove O-ring (key 15) and replace it as needed. Inspect diaphragm (key 20) for damage or wear; remove screws (key 16), lift off inlet plate (key 18) to replace diaphragm (key 20) and O-ring (key 17).
4. Align screw holes on the cap (key 70) to the sleeve guide screws (key 66). Remove sleeve guide (key 61) utilizing cap (key 70) to unscrew or by using a crowbar. Inspect O-rings (keys 9, 64 and 153) for damage or wear, replace anti-friction ring (key 8) and O-ring (key 9) if necessary. Unscrew the cap screws (key 6) and on NPS 4 / DN 100 constructions, remove crush washers (key 67). Lift off lower casing (key 5). On the NPS 4 / DN 100 construction, inspect O-ring (keys 7 and 63) for damage or wear. Replace if necessary.
5. Remove cage (key 78).
6. Remove seat ring (key 2). Inspect seat ring for damage or wear. If damaged, replace with new parts.
7. Remove O-ring (key 34) from body (key 1). Inspect for damage or wear. If damaged, replace with new parts. On the NPS 8 and 12 X 6 / DN 200 and 300 X 150 constructions, the seat adaptor (key 197) and O-ring (key 198) should also be inspected for damage and replaced if damaged.
8. Lubricate O-ring (key 34) and replace into the body.
9. Place seat ring (key 2) on top of O-ring (key 34) in body (key 1) with the curved side down and seat edge up.
10. Place cage (key 78) on the top of seat ring (key 2).
11. Place lower casing (key 5) on top of the body. On NPS 4 / DN 100 constructions, replace washer (key 67) with new parts. Tighten cap screws (key 6). Screw sleeve guide (key 61) into lower casing (key 5) utilizing cap (key 70) or by using a crowbar.

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12. Lubricate the sleeve (key 14) in the upper plate contact area and assemble the diaphragm/plates assembly on the sleeve assembly. Tighten screws (key 16) using a “star” criss-cross pattern for five times until proper specified torque is achieved.
13. Screw the captured screws (key 68) – already on the sleeve – to fix the diaphragm/plates assembly on the sleeve assembly. Tighten screws (key 68) using a “star” criss-cross pattern for five times until proper specified torque is achieved.
14. Lubricate lower casing (key 5) on the diaphragm contact area.
15. Carefully insert the sleeve assembly into the sleeve guide (key 61) utilizing the eye-bolts (key 35) that fits in the upper spring seat (key 73) threaded hole.

Note

The O-rings (key 9) may need to be removed and stretched by hand in order for the sleeve assembly to have sufficient clearance to slide back into the sleeve guide.

16. Lubricate the diaphragm (key 20) on the upper casing contact area.
17. Lubricate and mount the O-ring (key 69) on the cap (key 70). Lubricate and mount O-rings (key 9) and anti-friction rings (key 8) inside the cap (key 70).
For EZHSO Series: lubricate and mount O-ring (key 153) on the stem (key 147). Unscrew the eyebolts (key 35) from the upper spring seat (key 73) and carefully place the cap on the upper actuator casing (key 11). Align the travel indicator hole on the cap (key 70) to the upper actuator casing travel indicator hole. Lubricate cap screws (key 77) and attach cap (key 70) to the upper casing (key 11) using cap screws (key 77). Bag diaphragm flat to lower actuator casing diaphragm flange contact area. Carefully place the upper actuator casing on the top of the lower actuator casing/trim system using a stud to guide.

Note

Rotate the upper casing such that the outer holes for sensing lines are perpendicular to gas flow and outer holes of lower casing.

18. Lubricate threads on bolts (key 21).
19. Bolt together the upper and lower actuator casings (keys 11 and 5) using cap screws (key 21), washers (key 22) and hex nuts (key 23). Tighten cap screws using a “star” criss-cross pattern for five times until proper specified torque is achieved.
20. Mount O-ring (key 75) on the cap (key 70).
For EZHSO Series: Place the washer (key 193) on the stem (key 147). Assemble one nut (key 151) to the stem (key 147) until the specified torque is achieved and then assemble another nut (key 151) to lock the position of stem. Screw on the closing cap (key 146).
21. Screw the eyebolts (key 35) on the cap (key 70).

22. If present, set the stem (key 139) through the casing hole and tap it into the groove in the diaphragm plate (key 18). Slide the travel indicator fitting (key 141) over the stem and tighten to the cap (key 70).

EZH Series Travel Indicator Maintenance

A new and improved travel indicator has been phased in during 2013. The new version improves the O-ring stem seal to minimize leakage and extend service life. The components of the legacy and new versions are not interchangeable. If maintenance is performed on the new travel indicator, it is recommended to replace the entire travel indicator assembly with the new version. Part numbers for the assemblies are shown in the parts list. Figure 7 shows the difference between the designs. The spare parts kits will support either design. Take care to use the correct O-ring (key 142A or 142B) when performing maintenance, see parts list for the appropriate part number.

1. Remove plastic travel indicator cover (key 138).
2. Loosen travel indicator bushing (key 140) and remove it by sliding it over the travel indicator stem (key 139).
3. Remove indicator fitting (key 141) and inspect O-ring (key 143). Remove O-ring (key 142B) and back-up rings (key 160). Replace and lubricate O-ring if damaged. Pull up on the travel indicator stem (key 139) to force the spring collet (key 144) out of the diaphragm head groove. Examine these parts and the stem for wear and replace if necessary.
4. Examine the retaining ring (key 145) for wear and replace if necessary.
5. Insert the travel indicator stem (key 139) and spring collet (key 144) back into the diaphragm head groove. Replace the indicator fitting (key 141) and O-ring (key 143) and tighten with a referenced torque of 20 ft-lbs / 27.1 N•m.
6. Lubricate the O-ring (key 142B) and back-up rings (key 160, 2 required). Place one back-up ring on the stem (key 139) followed by the O-ring and then the other back-up ring. Push into groove of the indicator fitting (key 141).
7. Slide the travel indicator bushing (key 140) over the travel indicator stem (key 139) and tighten firmly in place with a torque of 3.7 ft-lbs / 5.0 N•m.
8. Replace the travel indicator cover (key 138) and tighten firmly in place.

PRX Series Maintenance



Always remove spring (key 7) tension before performing maintenance on this unit. To remove spring tension, loosen locknut (key 2) and back out adjusting screw (key 1) until compression is removed from the spring.

Lower Diaphragm Maintenance

1. Disconnect pilot and remove it from the line.
2. Remove machine screws (key 10) from lower cover (key 21) and the separate lower cover from the body (key 16).
3. Use a wrench to hold the stem (key 23) and break loose the stem nut (key 20). Remove the stem nut and washer (key 11).
4. Remove the upper diaphragm plate (key 13), diaphragm (key 14), pad holder (key 22) and O-ring (key 18). Inspect parts for damage or wear, replace if necessary.
5. Remove orifice (key 19) and O-ring (key 17). Inspect the parts for damage or wear and replace if necessary. Lightly lubricate the O-ring and place in the body (key 16). Install the orifice.
6. Set the pad holder (key 22) in the body (key 16).
7. Lightly lubricate the rims of the diaphragm (key 14) and place it on top of the pad holder (key 22). Set the upper diaphragm plate (key 13) on the diaphragm (key 14).
8. Lightly lubricate the O-ring (key 18) and place it in the lower cover (key 21).
9. Place the washer (key 11) and stem nut (key 20) on the stem (key 23) and tighten. *If also performing Upper Case Maintenance, skip to step 2 of the Upper Case Maintenance section.*
10. Insert machine screws (key 10) in the lower cover (key 21) and tighten uniformly to ensure proper seal.

Upper Diaphragm Maintenance

1. Disconnect pilot and remove it from the line.
2. Loosen locknut (key 2) and back out adjusting screw (key 1) until compression is removed from the spring. Remove cap (key 3).
3. Lift the upper spring seat (key 6), spring (key 7) and O-ring (key 4) out of the upper cover (key 8). Inspect O-ring and replace if necessary.
4. Remove the machine screws (key 10) and the washers (key 11), separate the upper cover (key 8) from the body (key 16) and lift the lower spring seat (key 9) away from upper diaphragm nut (key 26). Use a wrench to hold stem (key 23) securely while removing the upper diaphragm nut.
5. Remove remaining loose components: washer (key 11), upper diaphragm plate (key 13), diaphragm (key 14), lower diaphragm plate (key 15) and O-rings (keys 18 and 25). Inspect diaphragm and O-rings for damage or wear and replace if necessary.
6. Lightly lubricate the O-ring (key 25). Place O-ring over the stem (key 23) and press it down into the body (key 16).
7. Set the lower diaphragm plate (key 15) into the body (key 16).
8. Lightly lubricate the rims of the diaphragm (key 14) and place it in the body (key 16) on top of the lower diaphragm plate (key 15).
9. Set the upper diaphragm plate (key 13) on top of the diaphragm (key 14).

10. Place washer (key 11) and stem nut (key 26) on the stem (key 23) and tighten using a wrench to hold the stem.
11. Place the lower spring seat (key 9) on the upper diaphragm nut (key 26) and mount the upper cover (key 8) on top of the body (key 24) and the diaphragm (key 14).
12. Place and uniformly tighten the machine screws (key 10) to hold the body (key 24) and upper cover (key 8) together. Position the diaphragm convolution facing down and make sure that the diaphragm is not deformed and is properly installed.
13. Install spring (key 7) and upper spring seat (key 6) on top of the lower spring seat (key 9) inside the upper cover (key 8). Install Cap (key 3).
14. Screw in adjusting screw (key 1) at desired spring compression and use the lock nut (key 2) to lock the adjusting screws position. Refer to Pilot Adjustment section (page 9) to adjust pilot settings.

Damper and Restrictor Maintenance

1. Remove screw (key 31) and plate (key 29) off from the body (key 16).
2. Remove ring nuts (key 30).
3. Remove damper adjusting screw with hole (key 27). Remove and inspect O-ring (key 28) for damage or wear and replace if necessary. Lightly lubricate O-ring before placing on the adjusting screw. Insert damper adjusting screw into the body (key 16) and tighten. Insert ring nut (key 30) and tighten. Back out damper adjusting screw until it stops.
4. Remove restrictor adjusting screw with hole (key 32). Remove and inspect O-ring (key 28) for damage or wear and replace if necessary. Lightly lubricate O-ring before placing on the adjusting screw. Insert restrictor adjusting screw into the body (key 16) and completely tighten. Insert ring nut (key 30) and completely tighten. Back out restrictor adjusting screw 1/2 turn.

Note

When using a Type PRX/120 pilot with a Type PRX/125 pilot as a monitor, use the following settings:

- **Restrictor - completely tighten and then back out three full turns.**
- **Damper - back out until it stops.**

5. Install plate (key 29) and screw (key 31).

Type SA/2 Maintenance

1. Disconnect pilot supply filter regulator and remove it from the line.
2. Remove cap screws, washers and nuts (keys 2, 9 and 10) from body (key 7) and separate filter cover (key 11) and regulator cover (key 19) from the body (key 7). Separate loose components from the body such as the spring (key 1), washer (key 3), plate (key 4), filter net (key 8), felt (key 12), diaphragm (key 18), spring washer (key 20) and nut (key 21).

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3. Remove and inspect O-ring (key 13) for damage or wear and replace if necessary. Lightly lubricate the O-ring before placing it back in the filter cover (key 11).
4. Clean filter net (key 8). Replace felt (key 12).
5. Inspect diaphragm (key 18) for damage or wear and replace if necessary. Check the seating surface of the screw unit (key 17) for erosion, scratches, spurs or other damage and replace if necessary.
6. Unscrew and remove the regulator seat (key 5). Inspect O-ring (key 6) for damage or wear and replace if necessary. Lightly lubricate the O-ring and place it on the regulator seat.
7. Pull pad holder unit (key 15) out of the body (key 7). Inspect the seat for damage, replace if necessary.
8. Set the pad holder unit (key 15) on the spring (key 14) and insert the regulator seat (key 5). Tighten the regulator seat until it stops.
9. Lightly lubricate the outer and inner rims of the diaphragm (key 18). Place the diaphragm onto the screw unit (key 17) and slide the screw unit into the regulator seat (key 5). Place plate (key 4), washer (key 3) and spring washer (key 20) and screw nut (key 21) into the screw unit. Use care to avoid damage to parts when reassembling.
10. Set the spring (key 1) on top of the nut (key 21).
11. Align the regulator cover (key 19) over the body (key 7) with the sense port (V) opposite the pilot supply port (R).
12. Place the felt (key 12) and filter net (key 8), one on each side of the felt, on the filter cover (key 11).
13. Pick up the body (key 7) and place it on the filter cover (key 11) with the inlet port (M) aligned vertically with the sense port (V).
14. Insert cap screws (key 2). Place washers (key 9) and nuts (key 10) on the end of the cap screws. Tighten the nuts.

Parts Ordering

Each EZH or EZHSO Series regulator is assigned a serial number, which can be found on the nameplate. Refer to the serial number when contacting your local Sales Office for technical information or when ordering parts.

When ordering replacement parts, reference the key number of each needed part as found in the following parts list. Separate kit containing all recommended spare parts is available.

Parts List

EZH and EZHSO Series Main Valve (Figures 8 and 9)

Key	Description	Part Number
EZH Series		
Disk Parts Kits		
	NPS 1, 2 and 3 / DN 25, 50 and 80 (include keys 29, 30, 32, 33, 34 and 62)	
	NPS 4, 6, 8 and 12 X 6 / DN 100, 150, 200 and 300 X 150 (include keys 29, 30, 32, 33, 69, 71 and 75)	
	NPS 1 / DN 25	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH1X00N12
	Fluorocarbon (FKM)	REZH1X00F12
	Polyurethane (PU)	REZH1X00P12
	NPS 2 / DN 50	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH2X00N12
	Fluorocarbon (FKM)	REZH2X00F12
	Polyurethane (PU)	REZH2X00P12
	NPS 3 / DN 80	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH3X00N12
	Fluorocarbon (FKM)	REZH3X00F12
	Polyurethane (PU)	REZH3X00P12
	NPS 4 / DN 100	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH4X00N12
	Fluorocarbon (FKM)	REZH4X00F12
	Polyurethane (PU)	REZH4X00P12
	NPS 6, 8 and 12 X 6 / DN 150, 200 and 300 X 150 Bodies	
	Nitrile (NBR)	REZH6X00N12
	Fluorocarbon (FKM)	REZH6X00F12
	Polyurethane (PU)	REZH6X00P12
EZHSO Series		
Disk Parts Kits		
	NPS 1, 2 and 3 / DN 25, 50 and 80 (include keys 29, 30, 34, 62 and 154)	
	NPS 4 / DN 100 (include keys 29, 30, 69, 71, 75 and 154)	
	NPS 6, 8 and 12 x 6 / DN 150, 200 and 300 x 150 (include keys 29, 30, 32, 33, 69, 71 and 75)	
	NPS 1 / DN 25	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS1X0N12
	Fluorocarbon (FKM)	REZHS1X0F12
	Polyurethane (PU)	REZHS1X0P12
	NPS 2 / DN 50	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS2X0N12
	Fluorocarbon (FKM)	REZHS2X0F12
	Polyurethane (PU)	REZHS2X0P12
	NPS 3 / DN 80	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS3X0N12
	Fluorocarbon (FKM)	REZHS3X0F12
	Polyurethane (PU)	REZHS3X0P12
	NPS 4 / DN 100	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS4X0N12
	Fluorocarbon (FKM)	REZHS4X0F12
	Polyurethane (PU)	REZHS4X0P12
	NPS 6, 8 and 12 X 6 / DN 150, 200 and 300 X 150 Bodies	
	Nitrile (NBR)	REZH6X00N12
	Fluorocarbon (FKM)	REZH6X00F12
	Polyurethane (PU)	REZH6X00P12

EZH and EZHSO Series

Key	Description	Part Number	Key	Description	Part Number
	EZH Series		1	Body	See the following Table
	Full Repair Kits		2	Seat Ring, Stainless steel	
	NPS 1, 2 and 3 / DN 25, 50 and 80 (include keys 4, 7, 8, 9, 15, 17, 20, 28, 29, 30, 32, 33, 34, 62, 142B and 143)			NPS 1 / DN 25 Body For 100% Capacity	ERAA04303A0
	NPS 4 / DN 100 (include keys 7, 8, 9, 15, 17, 20, 29, 30, 32, 33, 34, 63, 64, 67, 69, 71, 75, 142B and 143)			For 80% Capacity	ERAA06540A0
	NPS 6, 8 and 12 X 6 / DN 150, 200 and 300 X 150 (include keys 7, 8, 9, 15, 17, 20, 29, 30, 32, 33, 34, 64, 69, 71, 75, 142, 143, 160 and 198)			For 50% Capacity	ERAA06541A0
	NPS 1 / DN 25			For 30% Capacity	ERAA06542A0
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH1X00N22	2	Seat Ring, Stainless steel (continued)	
	Fluorocarbon (FKM)	REZH1X00F22		NPS 2 / DN 50 Body	
	Polyurethane (PU)	REZH1X00P22		For 100% Capacity	ERAA04296A0
	NPS 2 / DN 50			For 80% Capacity	ERAA06553A0
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH2X00N22		For 50% Capacity	ERAA06576A0
	Fluorocarbon (FKM)	REZH2X00F22		For 30% Capacity	ERAA06577A0
	Polyurethane (PU)	REZH2X00P22		NPS 3 / DN 80 Body	
	NPS 3 / DN 80			For 100% Capacity	ERAA05563A0
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH3X00N22		For 80% Capacity	ERAA07459A0
	Fluorocarbon (FKM)	REZH3X00F22		For 50% Capacity	ERAA07456A0
	Polyurethane (PU)	REZH3X00P22		For 30% Capacity	ERAA07461A0
	NPS 4 / DN 100			NPS 4 / DN 100 Body	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZH4X00N22		For 100% Capacity	ERAA10213A0
	Fluorocarbon (FKM)	REZH4X00F22		For 80% Capacity	ERAA11449A0
	Polyurethane (PU)	REZH4X00P22		For 50% Capacity	ERAA11452A0
	NPS 6 and 12 X 6 / DN 150 and 300 X 150 Bodies			For 30% Capacity	ERAA11453A0
	Nitrile (NBR)	REZH6X00N22		NPS 6 / DN 150 Body	
	Fluorocarbon (FKM)	REZH6X00F22		For 100% Capacity	ERAA23465A1
	Polyurethane (PU)	REZH6X00P22		For 80% Capacity	ERAA02020A1
	NPS 8 / DN 200 Body			For 50% Capacity	ERAA02022A1
	Nitrile (NBR)	REZH8X00N22		For 30% Capacity	ERAA02023A1
	Fluorocarbon (FKM)	REZH8X00F22		NPS 12 X 6 and 8 / DN 300 X 150 and 200 Bodies	
	Polyurethane (PU)	REZH8X00P22		For 100% Capacity	ERAA23465A1
				For 50% Capacity	ERAA02020A1
				For 30% Capacity	ERAA02022A1
	EZHSO Series		3 ⁽¹⁾	Cage, Steel	
	Full Repair Kits			NPS 1 / DN 25 (standard)	GE31405X012
	NPS 1, 2 and 3 / DN 25, 50 and 80 (include keys 4, 7, 8, 9, 15, 17, 20, 28, 29, 30, 34, 62, 142B, 143, 153 and 154)			NPS 2 / DN 50	
	NPS 4 / DN 100 (include keys 7, 8, 9, 15, 17, 20, 29, 30, 34, 63, 64, 67, 69, 71, 75, 142B, 143, 153, 154, 157 and 158)			Standard	GE37679X012
	NPS 6, 8 and 12 X 6 / DN 150, 200 and 300 X 150 (include keys 7, 8, 9, 15, 17, 20, 29, 30, 32, 33, 34, 64, 69, 71, 75, 142, 143, 153, 157, 158, 160 and 198)			Whisper Trim™ Cage	GE37959X012
	NPS 1 / DN 25			NPS 3 / DN 80	
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS1X0N22		Standard	GE38018X012
	Fluorocarbon (FKM)	REZHS1X0F22		Whisper Trim Cage	GE38021X012
	Polyurethane (PU)	REZHS1X0P22		NPS 4 / DN 100	
	NPS 2 / DN 50			Standard	M0303260X12
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS2X0N22		Whisper Trim Cage	M0303520X12
	Fluorocarbon (FKM)	REZHS2X0F22		NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	
	Polyurethane (PU)	REZHS2X0P22		Standard	ERAA00860A0
	NPS 3 / DN 80			Whisper Trim Cage	ERAA24210A0
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS3X0N22	4*	Anti-Friction Ring (2 required), PTFE	
	Fluorocarbon (FKM)	REZHS3X0F22		NPS 1 / DN 25 Body	M0274090X12
	Polyurethane (PU)	REZHS3X0P22		NPS 2 / DN 50 Body	M0272760X12
	NPS 4 / DN 100			NPS 3 / DN 80 Body	M0272810X12
	Nitrile (NBR) and Fluorocarbon (FKM)	REZHS4X0N22	5	Actuator Lower Casing, Carbon steel	
	Fluorocarbon (FKM)	REZHS4X0F22		NPS 1 / DN 25 Body	M0296970X12
	Polyurethane (PU)	REZHS4X0P22		NPS 2 / DN 50 Body	M0295830X12
	NPS 6 and 12 X 6 / DN 150 and 300 X 150 Bodies			NPS 3 / DN 80 Body	GE44397X012
	Nitrile (NBR)	REZHS6X0N22		NPS 4 / DN 100 Body	M0300770X12
	Fluorocarbon (FKM)	REZHS6X0F22		NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	
	Polyurethane (PU)	REZHS6X0P22		Standard	ERAA09114A0
	NPS 8 / DN 200 Body			Whisper Trim Cage	
	Nitrile (NBR)	REZHS8X0N22	6	Cap Screws, Zinc-plated steel	
	Fluorocarbon (FKM)	REZHS8X0F22		NPS 1 / DN 25 Body (4 required)	M4691008X12
	Polyurethane (PU)	REZHS8X0P22		NPS 2 / DN 50 Body (8 required)	GE11386X012
				NPS 3 / DN 80 Body (4 required)	GE11387X022
				NPS 4 / DN 100 Body (8 required)	M4691020X42
				NPS 6 and 12 X 6 / DN 150 and 300 X 150 Bodies (12 required)	
				NPS 8 / DN 200 Body (8 required)	ERCA01349A1
					ERCA01350A1
	EZHSO Series (continued)		7*	O-ring	
	Full Repair Kits (continued)			NPS 1 / DN 25 Body	
	NPS 8 / DN 200 Body			Nitrile (NBR)	19B2838X012
	Nitrile (NBR)	REZHS8X0N22		Fluorocarbon (FKM)	19B2838X022
	Fluorocarbon (FKM)	REZHS8X0F22		NPS 2 / DN 50 Body	
	Polyurethane (PU)	REZHS8X0P22		Nitrile (NBR)	18B2124X012
				Fluorocarbon (FKM)	18B2124X022

*Recommended spare part

1. When retrofitting an EZH Series with pins with the new cage, it is also necessary to order the Seat Ring.

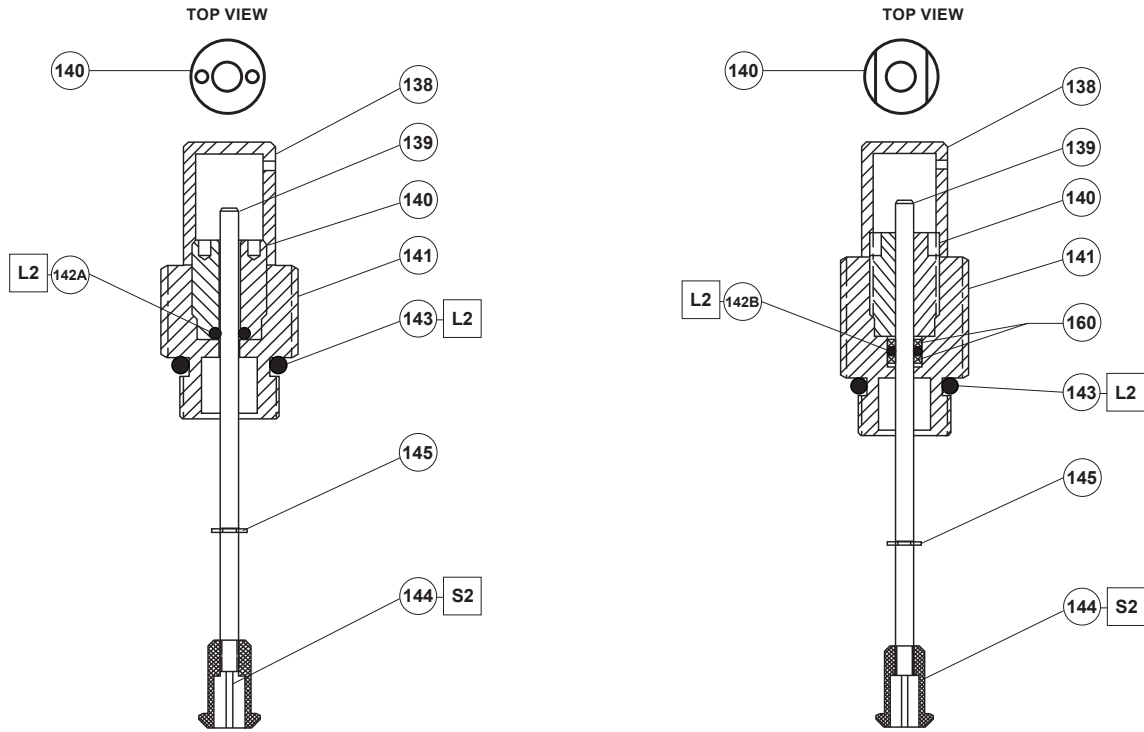
EZH and EZHSO Series

Key	Description	Part Number	Key	Description	Part Number
7*	O-ring (continued) NPS 3 / DN 80 Body Nitrile (NBR) Fluorocarbon (FKM) NPS 4 / DN 100 Body NPS 6 and 12 X 6 / DN 150 and 300 X 150 Bodies Nitrile (NBR) Fluorocarbon (FKM) NPS 8 / DN 200 Body Nitrile (NBR) Fluorocarbon (FKM)	18B8514X012 18B8514X022 M6020169X12 ERCA00970A0 ERCA00970A1 1P5585X0023 1P5585X0032	16	Socket Head Cap Screw, Zinc-plated steel NPS 1 / DN 25 Body (6 required) NPS 2 / DN 50 Body (6 required) EZH Series EZHSO Series NPS 3 / DN 80 Body (12 required) NPS 4 / DN 100 Body (8 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (16 required)	M5011005X12 M5011014X12 19B0829X012 M5011140X12 M5011157X12 M5011157X12
8*	Anti-Friction Rings (4 required), PTFE NPS 1 / DN 25 NPS 2 / DN 50 NPS 3 / DN 80 NPS 4 / DN 100 (8 required for EZH Series, 6 required for EZHSO Series) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (10 required for EZH Series, 8 required for EZHSO Series)	M0194530X12 M0194690X12 M0192170X12 M0194830X12 ERAA00645A0	17*	O-ring, Fluorocarbon (FKM) NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body (EZH and EZHSO Series) Nitrile (NBR) and Fluorocarbon (FKM) EZHSO Series only, Fluorocarbon (FKM) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies Nitrile (NBR) Fluorocarbon (FKM)	M6020120X12 M6020096X12 M6020127X12 M6020097X12 ERAA00263A0 ERCA00961A0 ERCA00961A1
9*	O-ring (2 required), Fluorocarbon (FKM) NPS 1 / DN 25 NPS 2 / DN 50 NPS 3 / DN 80 NPS 4 / DN 100 EZH Series (3 required) EZHSO Series (2 required) Nitrile (NBR) Fluorocarbon (FKM) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (4 required for EZH Series, 3 required for EZHSO Series) Nitrile (NBR) Fluorocarbon (FKM)	M6020019X12 M6020029X12 M6020036X12 M6020044X12 ERAA00262A0 M6020044X12	18	Inlet Plate, Carbon steel NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M0194440X12 M0194620X12 M0192080X12 M0300020X12 ERAA00363A0
10	Pipe Plug, NPS 1, 2 and 3 / DN 25, 50 and 80 (5 required) NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies (6 required)	1A767524662 1A767524662	19	Outlet Plate, Carbon steel NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M0194480X12 M0194660X12 M0192120X12 M0300030X12 ERAA00364A0
11	Actuator Upper Casing, Carbon steel NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M0297220X12 M0296950X12 GE44420X012 M0300760X12 ERAA00360A0	20*	Diaphragm, Nitrile (NBR) NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M0194450X12 M0194630X12 M0192090X12 M0194750X12 ERAA00648A0
13	Spring, Carbon steel EZH Series NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies ⁽¹⁾ EZHSO Series ⁽¹⁾	M0194590X12 M0191440X12 M0192240X12 ----- -----	21	Cap Screw, Zinc-plated steel NPS 1 / DN 25 Body (14 required for EZH Series, 16 required for EZHSO Series) NPS 2 / DN 50 Body (14 required for EZH Series, 16 required for EZHSO Series) NPS 3 / DN 80 Body (14 required for EZH Series, 16 required for EZHSO Series) NPS 4 / DN 100 Body (16 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (28 required)	1A361524052 1P1477X0012 GF05679X012 M4691022X12 M5007193X12
14	Sleeve, Steel EZH Series NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies EZHSO Series ⁽¹⁾	M0274230X12 M0272600X12 M0276310X12 ----- -----	22	Plain Washer, Steel NPS 1 / DN 25 Body (16 required) NPS 2 / DN 50 Body (16 required) NPS 3 / DN 80 Body (16 required) NPS 4 / DN 100 Body (16 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (28 required)	M5001007X12 M5001009X12 M5001012X12 M5001015X12 M5001015X12
15*	O-ring, Fluorocarbon (FKM) NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body EZH and EZHSO Series, Nitrile (NBR) and Fluorocarbon (FKM) EZHSO Series only, Nitrile (NBR) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies Nitrile (NBR) Fluorocarbon (FKM)	M6020021X12 M6020095X12 M6020073X12 M6020170X12 10A3588X022 ERCA00971A2 ERCA00971A1	23	Hex Nut, Zinc-plated carbon steel NPS 1 / DN 25 Body (16 required) NPS 2 / DN 50 Body (16 required) NPS 3 / DN 80 Body (16 required) NPS 4 / DN 100 Body (16 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (28 required)	1A341224122 1A343324122 ERCA01576A0 M4692005X12 M5002014X12
			24	Continuous Thread Stud Bolt, Zinc-Plated Steel NPS 1, 2 and 3 / DN 25, 50 and 80 Bodies only NPS 1 / DN 25 Body (4 required) NPS 2 / DN 50 Body (6 required) NPS 3 / DN 80 Body (6 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (12 required)	M4693002X12 GE00808X042 M4693003X22 ERCA01475A1

*Recommended spare part

1. Parts are not orderable. See Table 6 for sleeve assembly if it needs to be replaced.

EZH and EZHSO Series



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LEGACY TRAVEL INDICATOR DETAIL

IMPROVED TRAVEL INDICATOR DETAIL

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
 L2 = SILICONE-BASED OR PTFE-BASED GREASE
 S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS (HIGH STRENGTH)

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 7. EZH Series Travel Indicator Assembly

Key	Description	Part Number	Key	Description	Part Number
35	Bracket or Eyebolt (2 required), Steel NPS 1 / DN 25 Body - Bracket NPS 2 / DN 50 Body - Bracket NPS 3 / DN 80 Body - Eyebolt NPS 4 / DN 100 Body - Eyebolt NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies - Eyebolt	M0220960X12 M0278570X12 M5095001X12 M5095001X12 M5040006X12	63*	O-ring, Fluorocarbon (FKM), NPS 4 / DN 100 only	M6020172X12
36	Nameplate	-----	64*	O-ring NPS 4 / DN 25 Body (EZH and EZHSO Series), Nitrile (NBR) and Fluorocarbon (FKM) EZHSO Series only, Fluorocarbon (FKM)	M6020139X12 1D2673X0042
37	Drive Screw (3 required), Stainless steel	-----		NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies Nitrile (NBR) Fluorocarbon (FKM)	ERCA00966A2 ERCA00966A0
38	Travel Indicator Plug NPS 1, 2 and 3 / DN 25, 50 and 80 Bodies NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M0297680X12 M0303680X12 ERAA00990A0	66	Socket Head Set Screw, Zinc-plated steel NPS 4 / DN 100 Body Only (8 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (8 required)	M5021047X12 M5021047X12
39	Long Bolt (2 required), Zinc-plated steel EZH Series NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body	GE07221X012 M4691014X12 ERCA01574A0	67*	Crush Washer, Aluminum NPS 4 / DN 100 Body Only (8 required)	M4501738X12
43	Caution/Warning Label, Aluminum	-----	68	Captured Screw, Zinc-plated steel NPS 4 / DN 100 Body Only (8 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 (16 required)	M0300040X12 M0300040X12
44	Adjusting Screw Cap, Plastic	24B1301X012	69*	O-ring NPS 4 / DN 100 only, Fluorocarbon (FKM) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies Nitrile (NBR) Fluorocarbon (FKM)	M6020149X12 ERCA00967A0 ERCA00967A1
59	Flow Arrow, Stainless steel	-----	70	Cap, Carbon steel NPS 4 / DN 100 Body, EZH Series NPS 4 / DN 100 Body, EZHSO Series NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies, EZH Series NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies, EZHSO Series	M0299980X12 GE44707X012 ERAA11794A0 ERAA00362A0
60	Protective Cap (2 required), for EZH Series only, Plastic NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body	T13659T0092 T13659T0072 T13659T0102			
61	Sleeve Guide, Steel NPS 4 / DN 100 Body only NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M0300360X12 ERAA00850A0			
62*	O-ring NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body	M6020082X12 M6010110X12 M6020094X12			

*Recommended spare part

EZH and EZHSO Series

Key	Description	Part Number	Key	Description	Part Number
71*	O-ring, Fluorocarbon (FKM) Nitrile (NBR)	M6020175X12 M6020175X22	151	Stem Nut, Steel ⁽²⁾ EZHSO Series only NPS 1, 2, 3 and 4 / DN 25, 50, 80 and 100 Bodies (2 required)	M5002006X12
72	Locking Nut, Steel EZHSO Series NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies ⁽¹⁾	-----		NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (3 required)	GE49038X012
73	Upper Spring Seat, Carbon steel, EZHSO Series only NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies ⁽¹⁾	-----	152	Hex Nut, Zinc-plated steel NPS 2, 3 and 4 / DN 50, 80 and 100 ⁽²⁾ Bodies EZHSO Series NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M5036006X12 GE49038X012
74	Hex Socket Cap Screw, Zinc-plated steel NPS 4 / DN 100 Body only NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M5011135X12 M5011135X12	153*	O-ring (EZHSO Series only) ⁽²⁾ NPS 1 and 2 / DN 25 and 50 NPS 3 and 4 / DN 80 and 100 NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M6010246X12 T1230906382
75*	O-ring NPS 4 / DN 100 Bodies, Fluorocarbon (FKM) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies Nitrile (NBR) Fluorocarbon (FKM)	M6020117X12 ERCA00965A0 ERCA00965A1		Nitrile (NBR) Fluorocarbon (FKM)	ERAA24446A0 ERAA24446A1
77	Screw, Zinc-plated steel NPS 4 / DN 100 Body (8 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies (12 required)	M5009048X12 FA402451X12	154*	Hex Socket Cap Screw, Stainless steel EZHSO Series only (1 required) NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body ⁽²⁾ (6 required) Nitrile (NBR) or Fluorocarbon (FKM) Disk Polyurethane (PU) Disk	FA402505X12 M5011014X12 FA402036X12 FA402505X12 M5011131X12
82	Lower Spring Seat, EZHSO Series only, Carbon steel NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies only ⁽¹⁾	-----	155	Stem Nut NPS 1 / DN 25 Body EZHSO Series only ⁽²⁾	GE29864X012
83	Ball Bearing (2 required), Steel NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies only ⁽¹⁾	-----	156	Upper Spring Seat Adapter (EZHSO Series only), Steel ⁽¹⁾ NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies	-----
138	Travel Indicator Cover, Plastic NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies	M0194580X12 M0196770X12 M0194870X12 M0210910X12	157*	Anti-friction ring (EZHSO Series only), PTFE NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	GE44971X012 ERAA21913A0
139	Travel Indicator Stem, Stainless steel NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body ⁽²⁾ NPS 4 / DN 100 Body NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	ERSA01803A0 ERSA01801A0 ERSA01803A0 ERSA02571A0	158*	O-ring (EZHSO Series only) NPS 4 / DN 100 Body Nitrile (NBR) Fluorocarbon (FKM) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies Nitrile (NBR) Fluorocarbon (FKM)	ERAA00260A0 GE45201X012 ERCA00982A1 ERCA00982A0
140	Indicator Bushing, Brass	ERAA00912A0	160*	Back-up ring (2 required), PTFE	1N659106242
141	Travel Indicator Fitting, Brass NPS 1, 2 and 3 / DN 25, 50 and 80 Bodies NPS 4 / DN 100 NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	ERSA02569A0 ERSA01824A0 ERAA00962A0	192	Travel Indicator Scale	M0201990X12
142A*	O-ring Nitrile (NBR) Fluorocarbon (FKM)	M6010001X12 M6020066X12	193	Washer (EZHSO Series only) NPS 1, 2, 3 and 4 / DN 25, 50, 80 and 100 Bodies NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	FA405007X12 ERAA24183A0
142B*	O-ring Nitrile (NBR) Fluorocarbon (FKM)	1H2926X0032 1H2926X0022 M6020005X12	195	Pipe Plug (1 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	1A369224492
143*	O-ring, Fluorocarbon (FKM)	M6020005X12	196	Washer (24 required) NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	M5001011X12
144	Spring Collet, Carbon steel	M0192180X12	197	Seat Adaptor NPS 12 X 6 / DN 300 X 150 Body NPS 8 / DN 200 Body	ERAA23256A0 ERAA00887A0
145	Retaining Ring	M4500325X12	198*	O-ring NPS 12 X 6 / DN 300 X 150 Nitrile (NBR) Fluorocarbon (FKM) NPS 8 / DN 200 Nitrile (NBR) Fluorocarbon (FKM)	ERAA23247A0 ERAA23247A1 ERAA27282A1 ERAA27282A0
146	Protective Cap (EZHSO Series only), Plastic ⁽²⁾ NPS 1, 2, 3 and 4 / DN 25, 50, 80 and 100 Bodies NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200 Bodies	GE30222X012 ERAA10843A0			
147	Stem (EZHSO Series only), Steel ⁽²⁾ NPS 1 / DN 25 Body NPS 2 / DN 50 Body NPS 3 / DN 80 Body NPS 4 / DN 100 Body NPS 4, 6, 12 X 6 and 8 / DN 100, 150, 300 X 150 and 200 Bodies	GE29590X012 GE26223X012 GE44786X012 M0303340X12 ERAA23597A0			
148	Upper Spring Seat (EZHSO Series only), Steel ⁽¹⁾	-----			
149	Lower Spring Seat (EZHSO Series only), Steel ⁽¹⁾	-----			
150	Ring Guide (EZHSO Series only), Plastic ⁽¹⁾	-----			

*Recommended spare part

Note: For 3 in. EZHSO Series units shipped prior to 2010, the travel indicator stem part number is ERSA01802A0

1. Parts are not orderable. See Table 6 for sleeve assembly if it needs to be replaced.

2. Included also in sleeve subassembly.

EZH and EZHSO Series

Mounting Parts (Figures 10 through 12)

EZH Series

Key	Description	Part Number
47	Pipe Nipple (2 required)	1C488238982
48	Tube Elbow (6 required)	-----
49	Tube Connector (2 required)	-----
51	Pipe Cross	1L3719X0012
52	Tubing	-----
54	Pipe Nipple, NPS 4 / DN 100 for Working Monitor Pilots	1C210026232
159	Check Valve ⁽¹⁾	15A6011E182
207	Male Elbow ⁽¹⁾	ERAA45711A0
208	Bracket	-----

EZHSO Series

Key	Description	Part Number
47	Pipe Nipple (3 required)	1C488238982
48	Tube Elbow (5 required)	-----
49	Tube Connector	-----
50	Pipe Tee (2 required)	1B8606X0032
52	Tubing	-----
159	Check Valve ⁽¹⁾	15A6011E182
207	Male Elbow ⁽¹⁾	ERAA45711A0
208	Bracket	-----

PRX Series Pilots (Figure 13)

Key	Description	Part Number
	Parts Kits	
	Elastomer Parts Kits	
	Without Disk (include keys 4, 5, 14, 17, 18, 25 and 28)	
	Nitrile (NBR)	RPRX00X0N12
	Fluorocarbon (FKM)	RPRX00X0F12
	With Disk (includes keys 4, 5, 14, 17, 18, 22, 25 and 28)	
	Nitrile (NBR)	RPRX00X0N22
	Fluorocarbon (FKM)	RPRX00X0F22
1	Adjusting Screw, Stainless steel	M0253340X12
2	Locknut	M5036008X12
3	Cap, Steel	M0253350X12
4*	Upper Cover O-ring (1 required for Type PRX/120 or PRX/125, 2 required for Type PRX/120-AP or PRX/125-AP)	
	Nitrile (NBR)	M6010178X12
	Fluorocarbon (FKM)	M6020112X12
5*	O-ring	
	Nitrile (NBR)	M6010005X12
	Fluorocarbon (FKM)	M6020001X12
6	Upper Spring Seat, Stainless steel	M0253360X12
7	Spring	See Table 2
8	Upper Cover, Steel	M0298540X12
9	Lower Spring Seat, Stainless steel	M0253380X12
10	Machine Screw, Zinc-plated steel (12 required)	M5011018X12
11	Washer (14 required)	M5055001X12
12	Filter	M4500367X12
13	Upper Diaphragm Plate, Stainless steel (2 required)	M0253390X12
14*	Diaphragm	
	Nitrile (NBR)	GG05785X012
	Fluorocarbon (FKM)	GG05785X022
15	Lower Diaphragm Plate, Stainless steel	M0253410X12
16	Body, Steel	M0253310X12
17*	Orifice O-ring	
	Nitrile (NBR)	M6010003X12
	Fluorocarbon (FKM)	M6020126X12

PRX Series Pilots (Figure 13) (continued)

Key	Description	Part Number
18*	Lower Cover O-ring (2 required) Polyurethane (PU) Fluorocarbon (FKM)	M6010098X12 M6020132X12
19	Seat, Steel	M0253440X12
20	Nut, Steel	M5002004X12
21	Lower Cover, Steel	M0298600X12
22*	Disk Polyurethane (PU), standard Polyurethane (PU) Fluorocarbon (FKM)	ERAA11220A0 ERAA56644A0 M0279950X12
23	Seat, Steel	M0253430X12
24	Nameplate	-----
25*	Stem O-ring Nitrile (NBR) Fluorocarbon (FKM)	M6010223X12 M6020133X12
26	Upper Diaphragm Nut	M5028005X12
27	Damper Adjusting Screw with Hole, Stainless Steel	M0253480X12
28*	Restrictor/Damper O-ring (2 required)	M6020054X12
29	Damper/Restrictor Plate Types PRX/120 and PRX/120-AP Types PRX/125 and PRX/125-AP Types PRX/131 and PRX/131-AP	M0254400X12 M0257930X12 M0268080X12
30	Ring Nut (2 required)	M0253490X12
31	Nameplate Screw	M5061001X12
32	Restrictor Adjusting Screw with Hole	M0253480X12
33	Plug (Types PRX/125 and PRX/125-AP only)	1A767524662
34	Plug (Types PRX/125 and PRX/125-AP only), Brass	M0257920X12
35	Spring Barrel Extension for AP, Steel	M0274100X12

Type SA/2 Pilot Supply Filter Regulators (Figure 14)

Key	Description	Part Number
	Parts Kits	
	Elastomer Parts Kits	
	(include keys 6, 12, 13, 15 and 18)	
	Nitrile (NBR)	M2200250X12
	Fluorocarbon (FKM)	M2200739X12
1	Spring	M0192560X12
2	Socket Head Cap Screw (4 required)	M5058003X12
3	Washer	M0248490X12
4	Plate	M0174470X12
5	Regulator Seat	M0200830X12
6*	O-ring Nitrile (NBR) Fluorocarbon (FKM)	M6010013X12 M6020006X12
7	Body, Steel	M0297920X12
8	Filter Screen (2 required)	M0102200X12
9	Washer (4 required)	M5057002X12
10	Nut (4 required)	M5060005X12
11	Filter Case, Steel	M0174411X12
12*	Felt	M0102210X12
13*	O-ring Nitrile (NBR) Fluorocarbon (FKM)	M6010095X12 M6020069X12
14	Spring	M0105970X12
15*	Disk Holder Polyurethane (PU) Fluorocarbon (FKM)	M0233370X12 M0279850X12
16	Nameplate	-----
17	Pusher Post	M0200790X12
18*	Diaphragm, Nitrile (NBR)	M0174460X12
19	Regulator Case, Steel	M0239890X12
20	Spring Washer	M5001003X12
21	Nut	M5006012X12

*Recommended spare part

1. Optional on NPS 1 through 3 / DN 25 through 80 and Standard on NPS 4 / DN 100 and larger.

EZH and EZHSO Series

Key 1, EZH and EZHSO Series Main Valve Body Part Numbers

BODY SIZE		BODY MATERIAL	END CONNECTION STYLE	BODY STYLE	
NPS	DN			Standard or Tapped Inlet (Pilot Supply)	Tapped Inlet and Tapped Outlet
1	25	WCC Steel	NPT	GE11581X012	----- 14B5623X032 14B5623X042 14B5623X052 -----
			SWE	GE11440X012	
			CL150 RF	GE11583X012	
			CL300 RF	GE11607X012	
			CL600 RF	GE11608X012	
			SCH 40 BWE	GE11610X012	
			PN 16/40 RF	GE13625X012	
2	50	WCC Steel	NPT	GE10588X012	----- 14B5834X032 14B5834X042 14B5834X052 -----
			SWE	GE10682X012	
			CL150 RF	GE10676X012	
			CL300 RF	GE10678X012	
			CL600 RF	GE10679X012	
			SCH 40 BWE	GE10680X012	
			PN 16/40	GE12898X012 ⁽¹⁾	
3	80	WCC Steel	CL150 RF	GE10699X012	14B5835X032
			CL300 RF	GE10700X012	14B5835X042
			CL600 RF	GE10701X012	14B5835X052
			SCH 40 BWE	GE10702X012	-----
			PN 25/40	GE13594X012 ⁽¹⁾	
4 ⁽²⁾	100 ⁽²⁾	WCC Steel	CL150 RF	GE10835X012	14B5836X032
			CL300 RF	GE10839X012	14B5836X042
			CL600 RF	GE10842X012	14B5836X052
			SCH 40 BWE	GE10843X012	-----
6	150	WCC Steel	CL150 RF	GE11447X012	24B5837X032
			CL300 RF	GE11449X012	24B5837X042
			CL600 RF	GE11451X012	24B5837X052
			SCH 40 BWE	GE11452X012	24B5837X072
12 X 6	300 X 150	WCC Steel	CL150 RF	GE19095X012	-----
			CL300 RF	GE19096X012	-----
			CL600 RF	GE19097X012	-----
			SCH 40 BWE	GE19093X012	-----
8	200	LCC Steel	CL150 RF	-----	FA144718X12
			CL300 RF	-----	FA144717X12
			CL600 RF	-----	FA144716X12
			SCH 40 BWE	-----	GE00715X012

1. Not available for Standard body.
2. Not available for Tapped Inlet (Pilot Supply) body.

Table 5. EZH/EZHSO Series Travel Indicator Assemblies Part Numbers⁽¹⁾

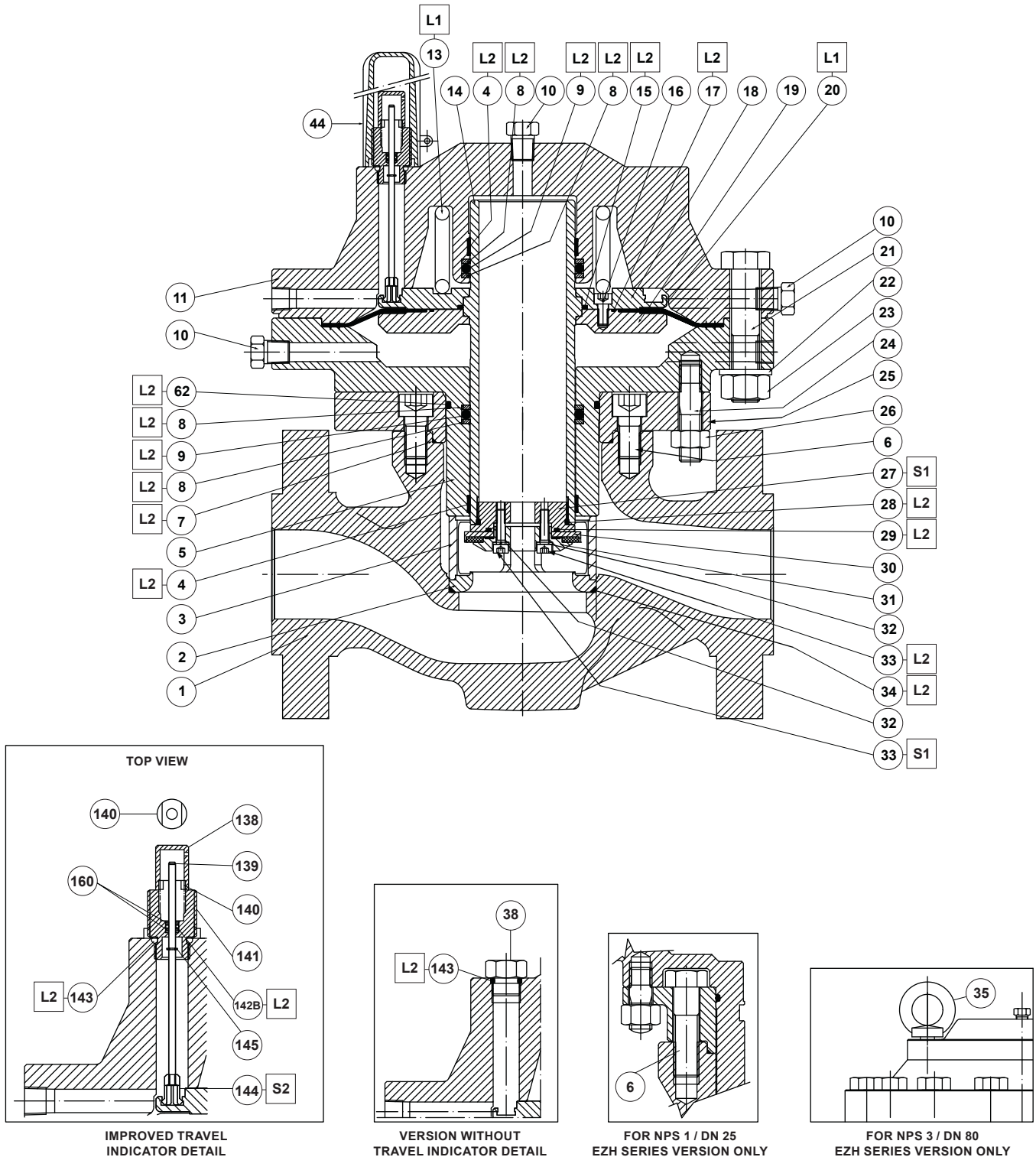
DESCRIPTION	MATERIAL	NPS 1 / DN 25	NPS 2 / DN 50	NPS 3 / DN 80	NPS 4 / DN 100	NPS 6, 8, 12 X 6 / DN 150, 200, 300 X 150
EZH and EZHSO Series	Nitrile (NBR)	ERSA01539A0	ERSA01546A0	ERSA01547A0	ERSA01549A0	ERAA30686A0

1. The assemblies include keys 138, 139, 140, 141, 142B, 143, 144, 145, 160 and 192.

Table 6. EZH/EZHSO Series Sleeve Assemblies Part Numbers

DESCRIPTION	NPS 1 / DN 25	NPS 2 / DN 50	NPS 3 / DN 80	NPS 4 / DN 100	NPS 6, 12 X 6 and 8 / DN 150, 300 X 150 and 200
EZHSO Series	ERCA02689A0	ERCA02690A0	ERCA02691A0	For Nitrile (NBR) and (Fluorocarbon (FKM) disk: M2201053X12 For Polyurethane (PU) disk: M2201053X32	ERAA03693A0
EZH Series	-----	-----	-----	M2201052X12	ERAA03692A0

EZH and EZHSO Series



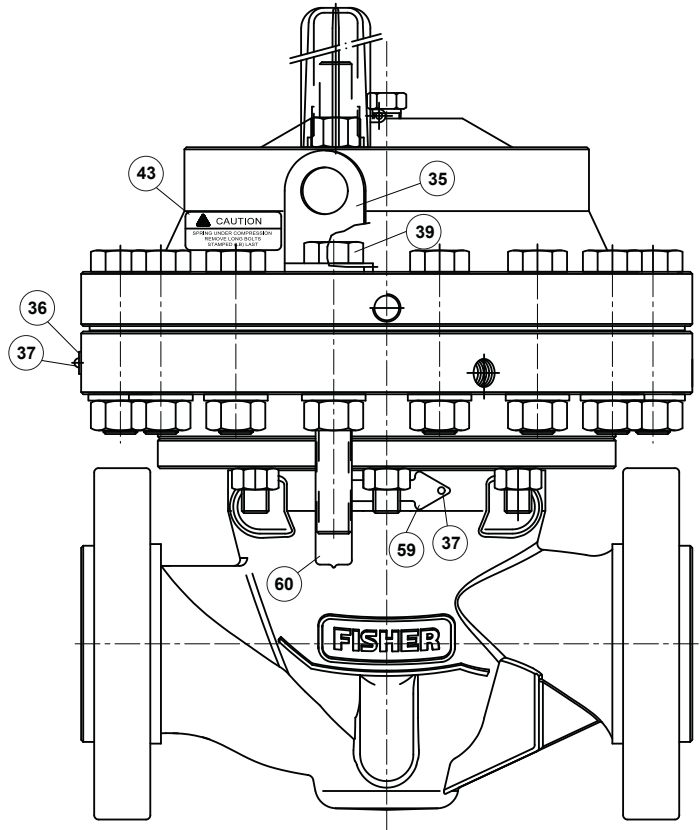
NPS 1 THROUGH 3 / DN 25 THROUGH 80

GD89918_H

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
 - L1 = LITHIUM HYDROXYSTEGRATE NLGI 2 GRADE GREASE
 - L2 = SILICONE-BASED OR PTFE-BASED GREASE
 - S1 = ANAEROBIC METHACRYLATE SEALANT FOR NUTS AND BOLTS (MEDIUM STRENGTH)
 - S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS (HIGH STRENGTH)

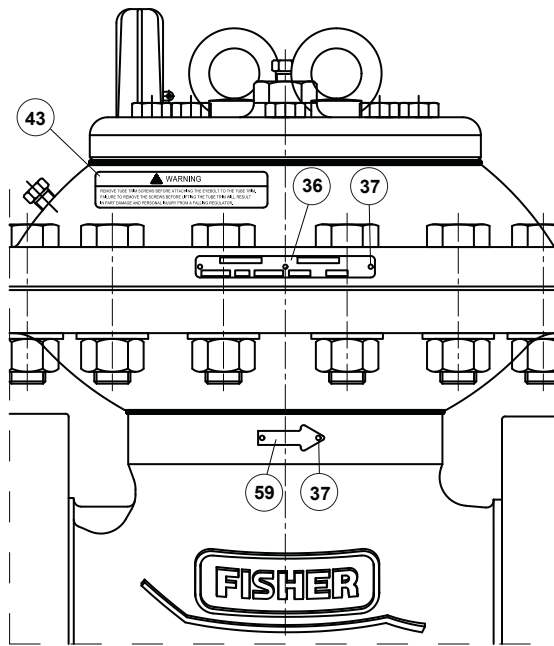
1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 8. EZH Series Main Valve Assembly



GD89918_J

NPS 1 THROUGH 3 / DN 25 THROUGH 80

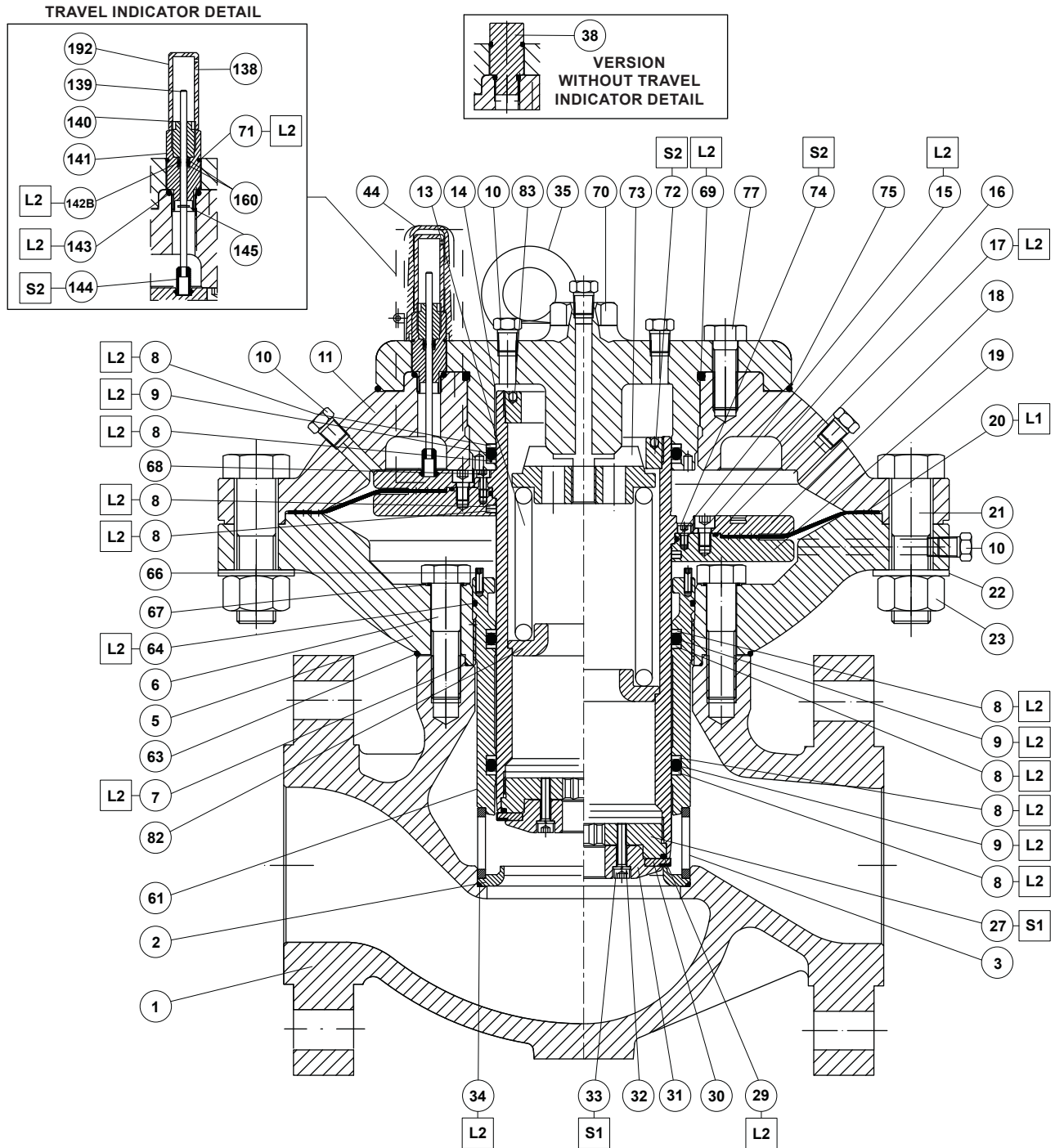


MLM1945_B

NPS 4 / DN 100

Figure 8. EZH Series Main Valve Assembly (continued)

EZH and EZHSO Series

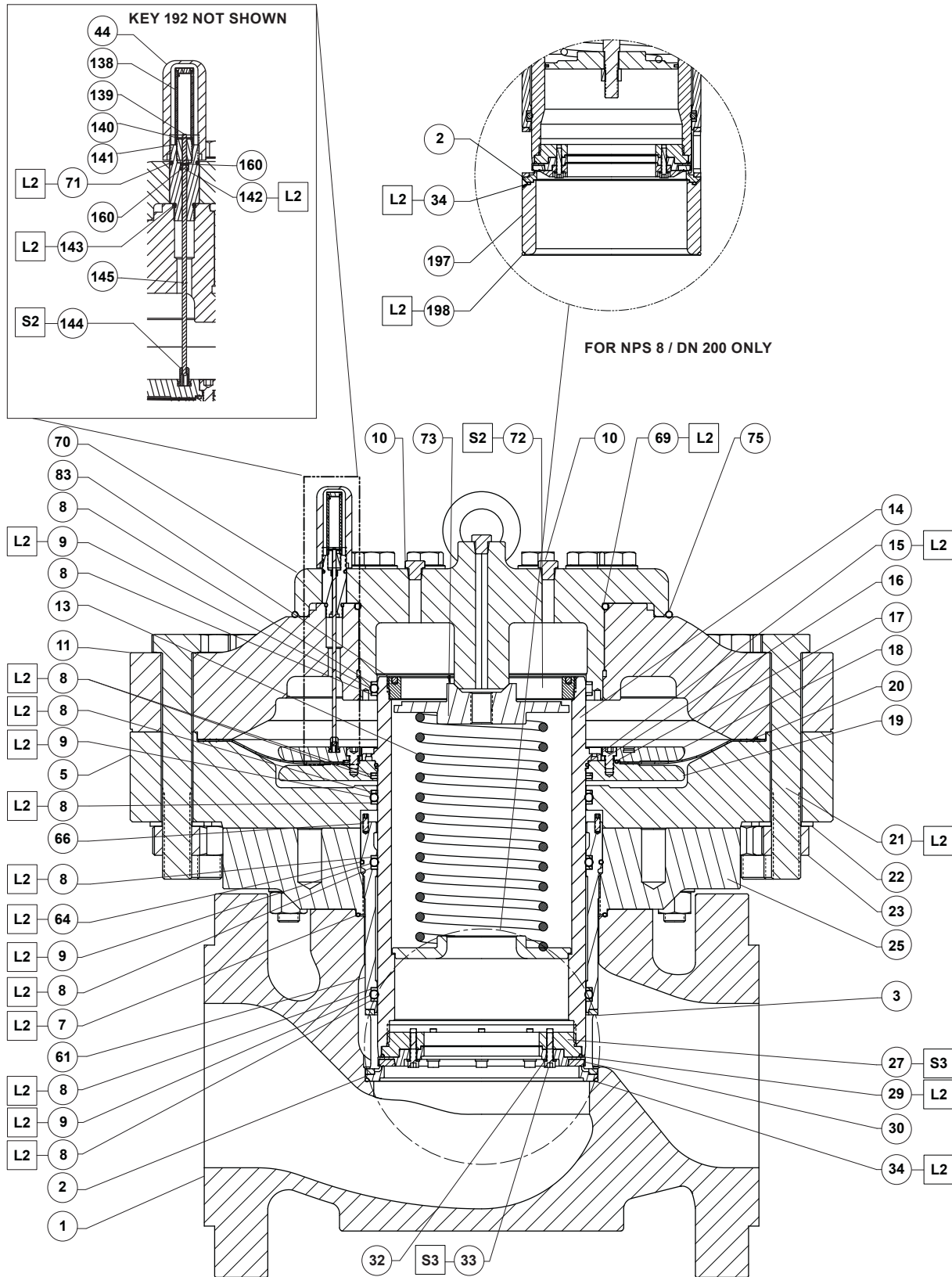


MLM1945_B

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
- L1 = LITHIUM HYDROXYSTEGRATE NLGI 2 GRADE GREASE
- L2 = SILICONE-BASED OR PTFE-BASED GREASE
- S1 = ANAEROBIC METHACRYLATE SEALANT FOR NUTS AND BOLTS (MEDIUM STRENGTH)
- S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS (HIGH STRENGTH)

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 8. EZH Series Main Valve Assembly (continued)



ERAA01010_AB

NPS 6, 8, 12 X 6 / DN 150, 200, 300 X 150

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
- L2 = SILICONE-BASED OR PTFE-BASED GREASE
- S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS (HIGH STRENGTH)
- S3 = GENERAL PURPOSE MEDIUM BOND STRENGTH THREADLOCKER

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 8. EZH Series Main Valve Assembly (continued)

EZH and EZHSO Series

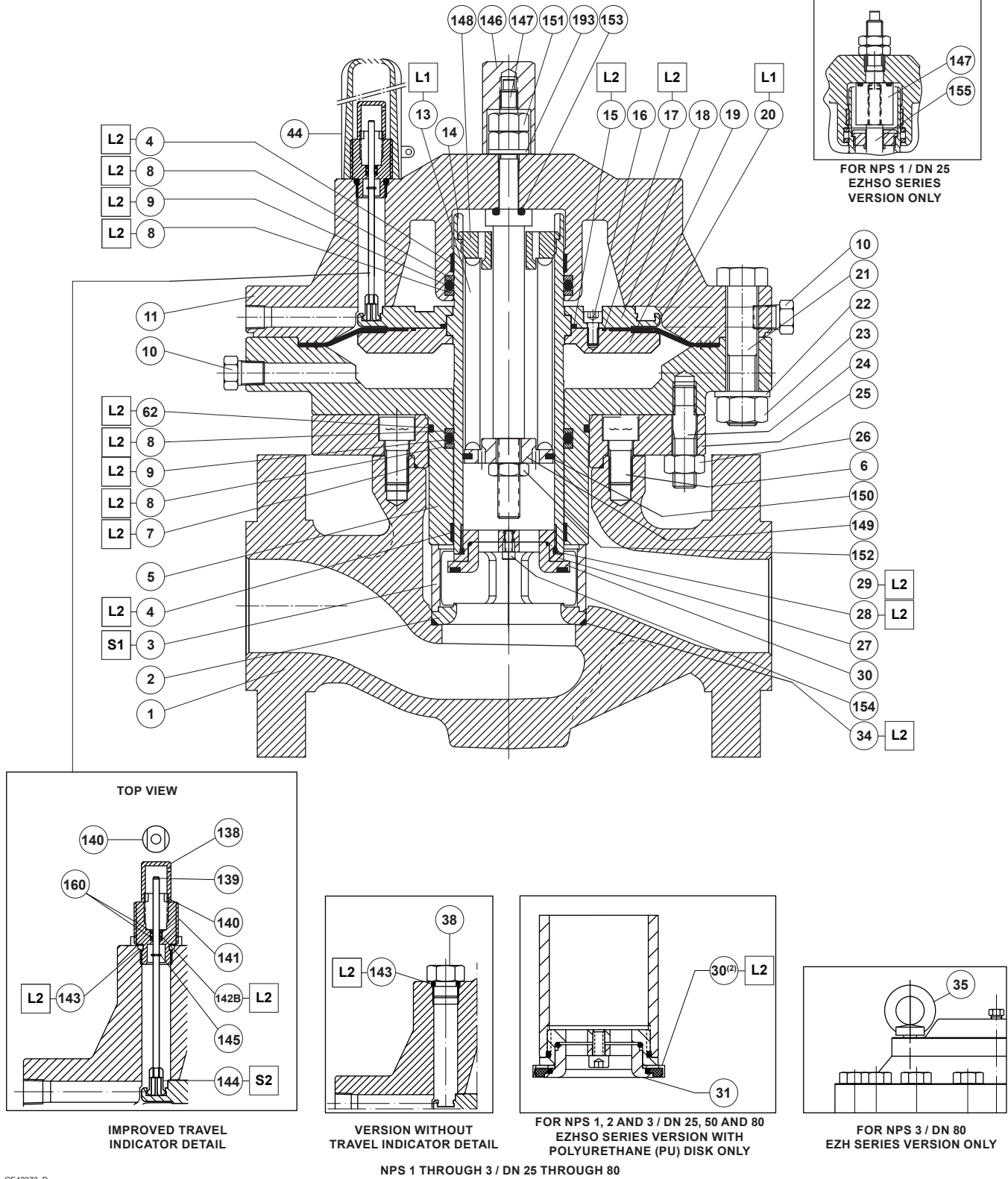
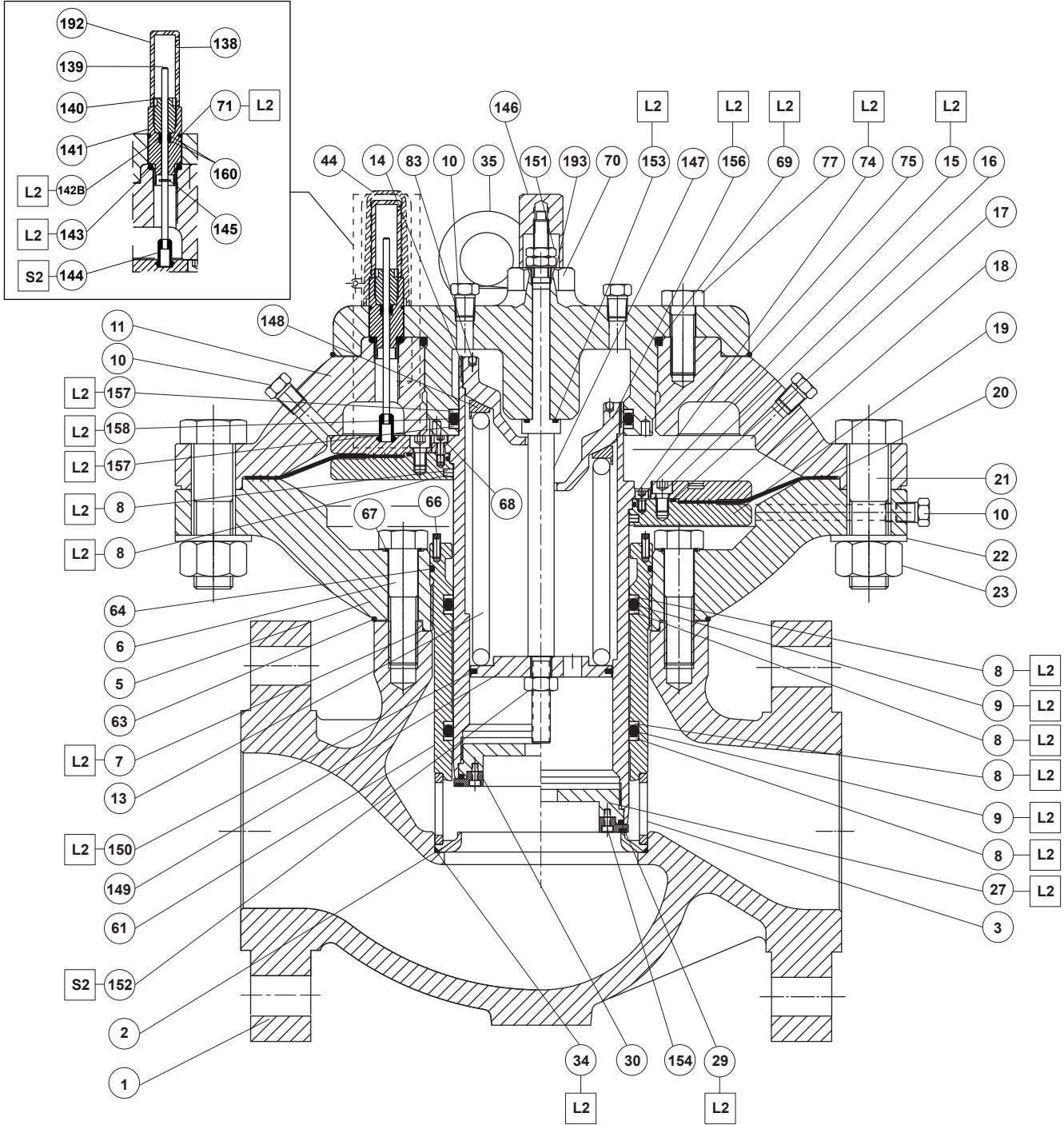


Figure 9. EZHSO Series Main Valve Assembly

TRAVEL INDICATOR DETAIL



NPS 4 / DN 100

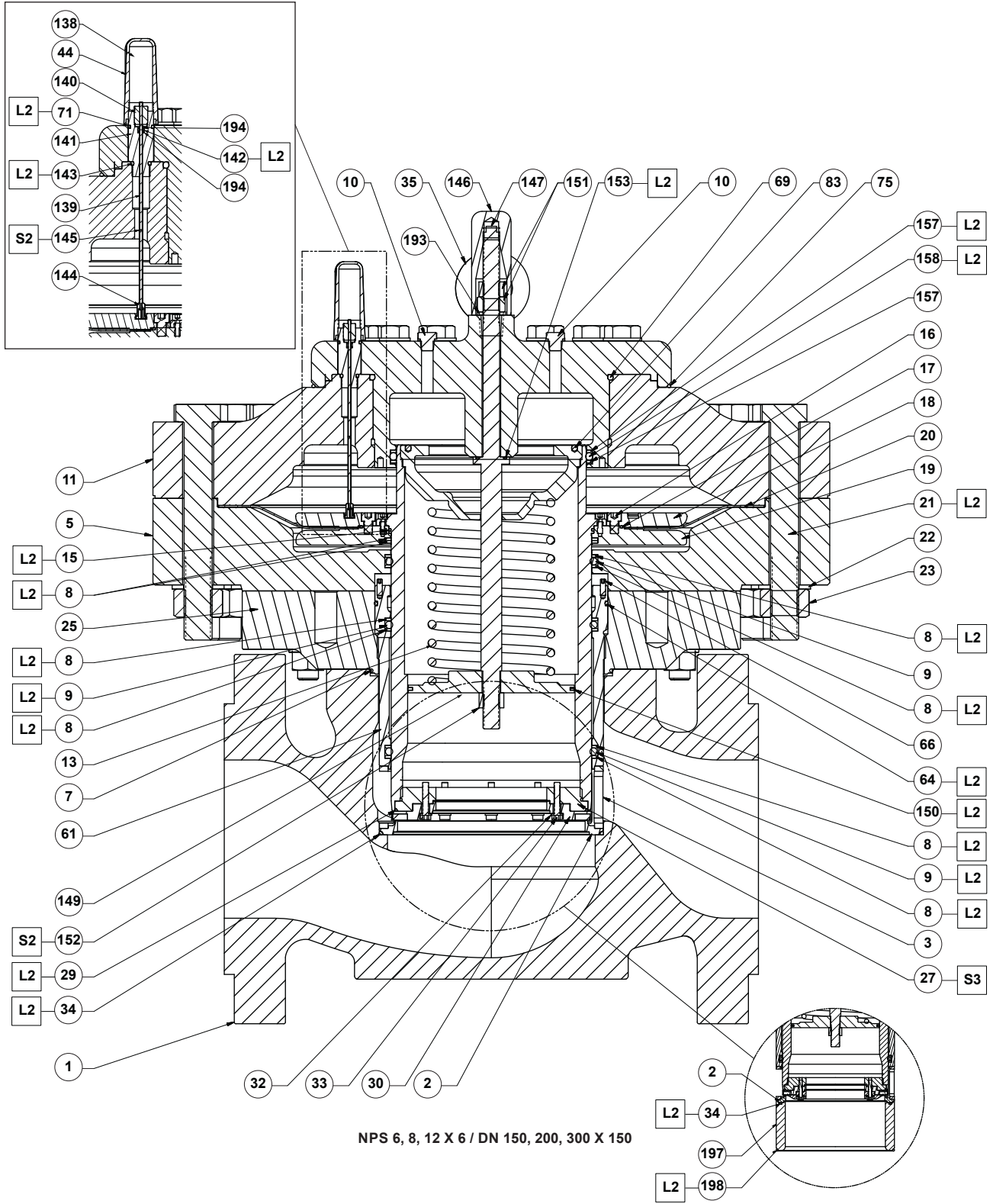
GE32477_D

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
 - L1 = LITHIUM HYDROXYSTEGRATE NLGI 2 GRADE GREASE
 - L2 = SILICONE-BASED OR PTFE-BASED GREASE
 - S1 = ANAEROBIC METHACRYLATE SEALANT FOR NUTS AND BOLTS (MEDIUM STRENGTH)
 - S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS (HIGH STRENGTH)

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 9. EZHSO Series Main Valve Assembly (continued)

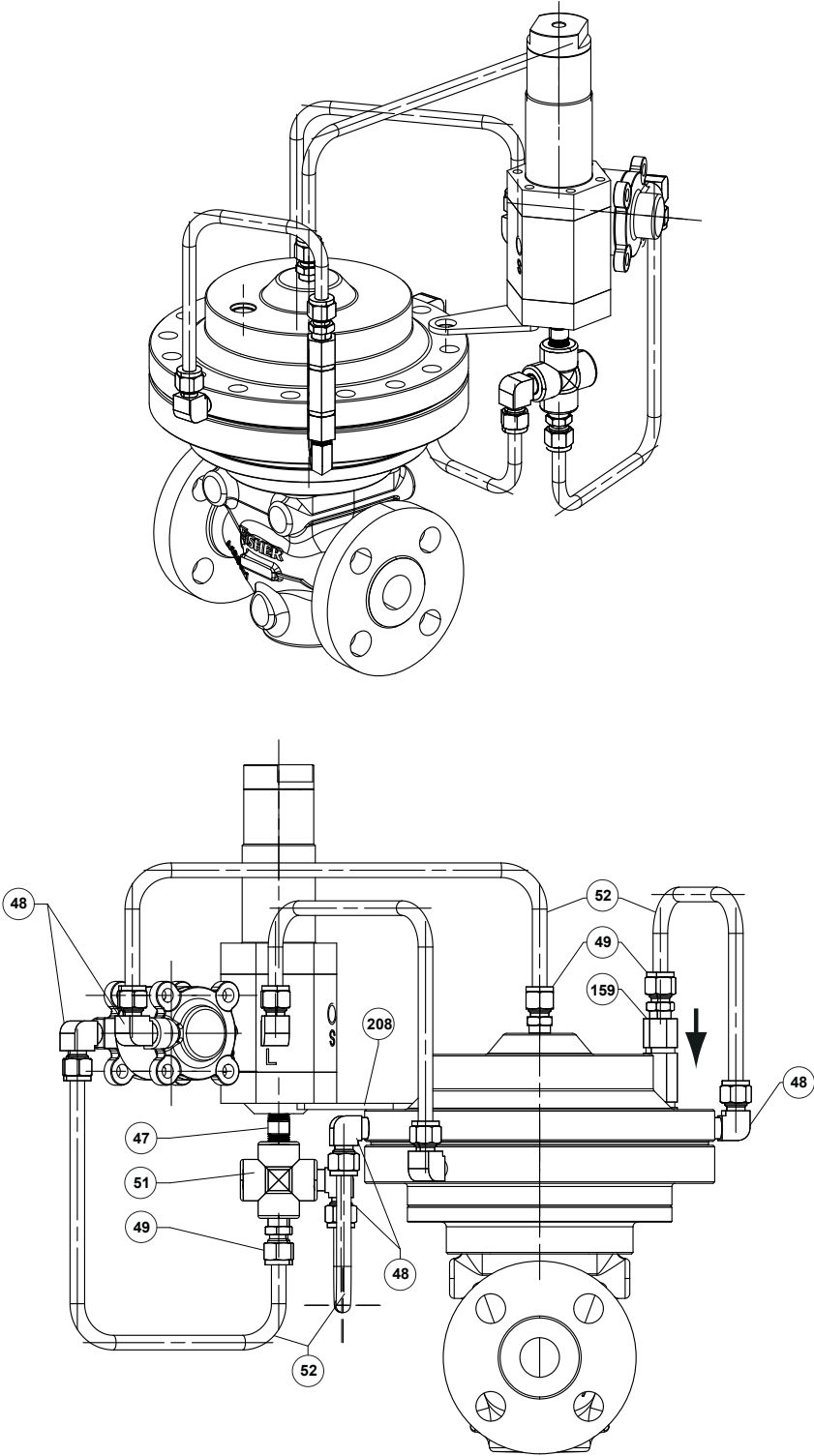
EZH and EZHSO Series



ERAA24194_02

- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
 - L2 = SILICONE-BASED OR PTFE-BASED GREASE
 - S2 = ANAEROBIC METHACRYLATE SEALANT FOR THREADS (HIGH STRENGTH)
1. Lubricant and sealant must be selected such that they meet the temperature requirements.

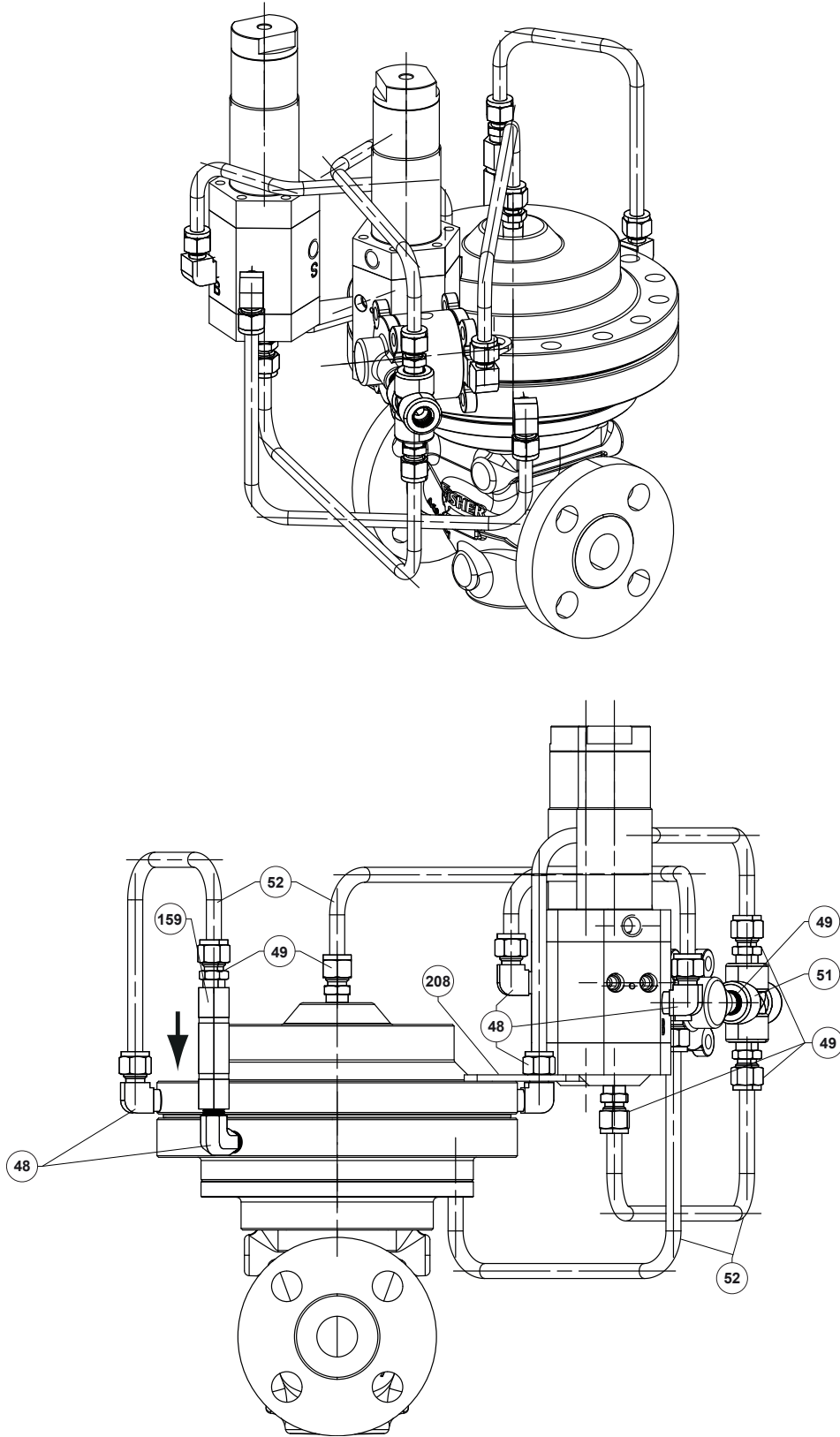
Figure 9. EZHSO Series Main Valve Assembly (continued)



GE01727_E

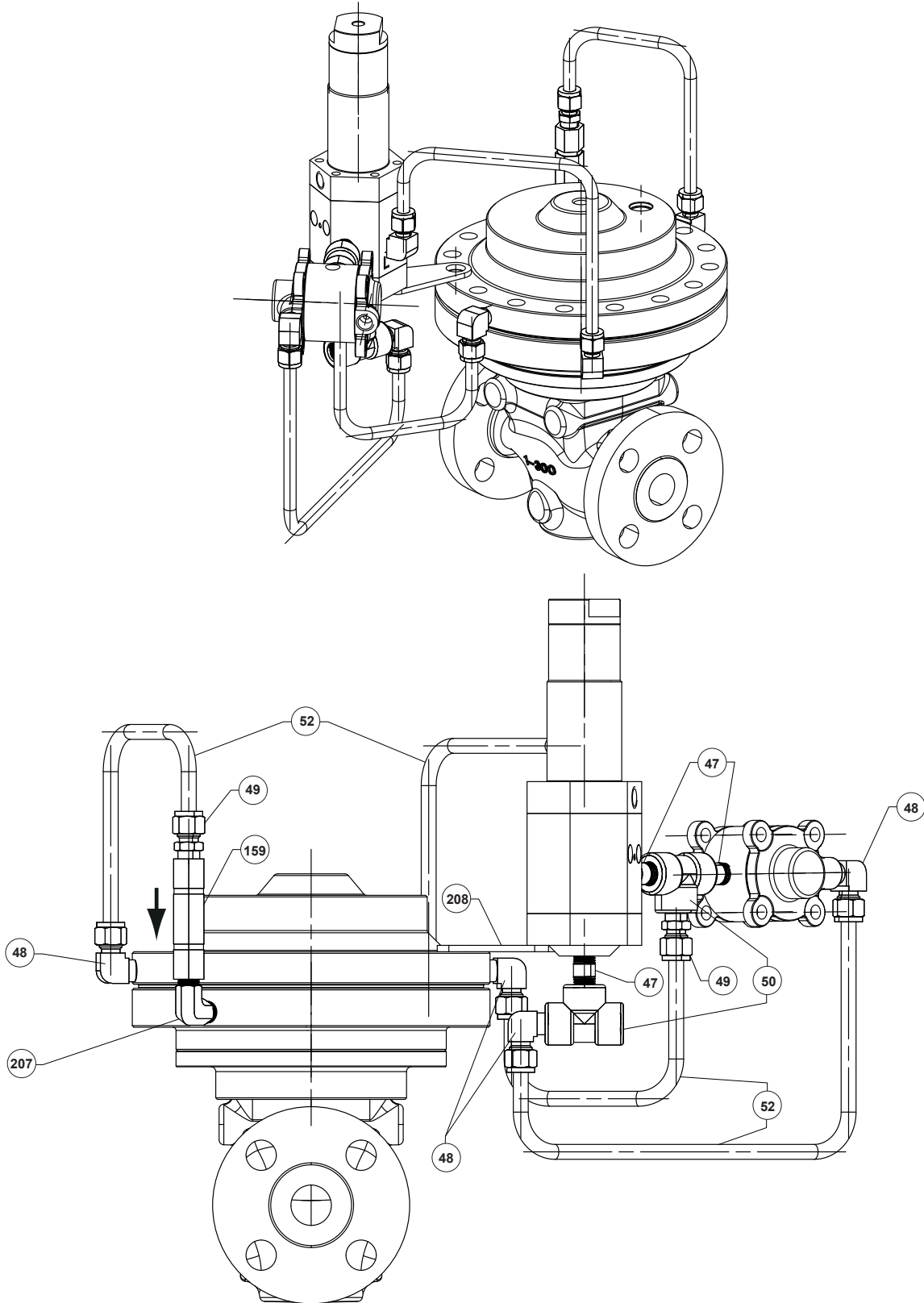
Figure 10. EZH Series Single Pilot Mounting Assembly

EZH and EZHSO Series



GE01790_D

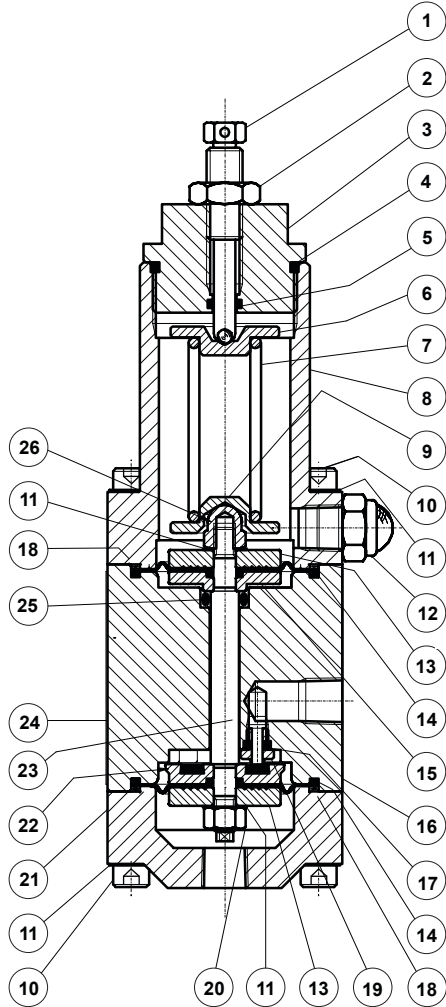
Figure 11. EZH Series Working Monitor Pilot Mounting Assembly



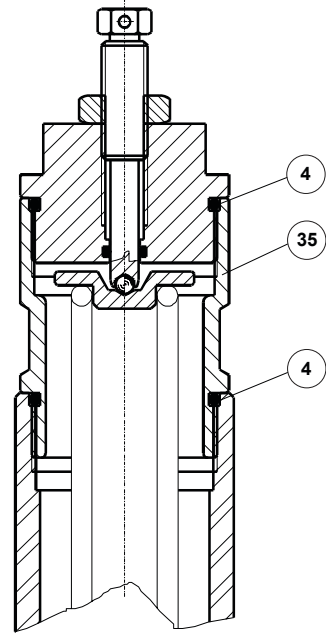
GG04807_B

Figure 12. EZHSO Series Single Pilot Mounting Assembly

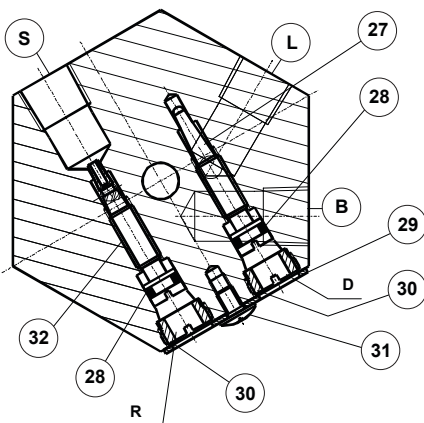
EZH and EZHSO Series



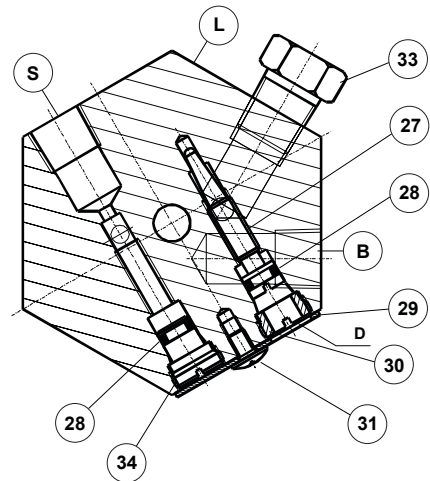
TYPE PRX/120 OR PRX/125



TYPE PRX/120-AP OR PRX/125-AP



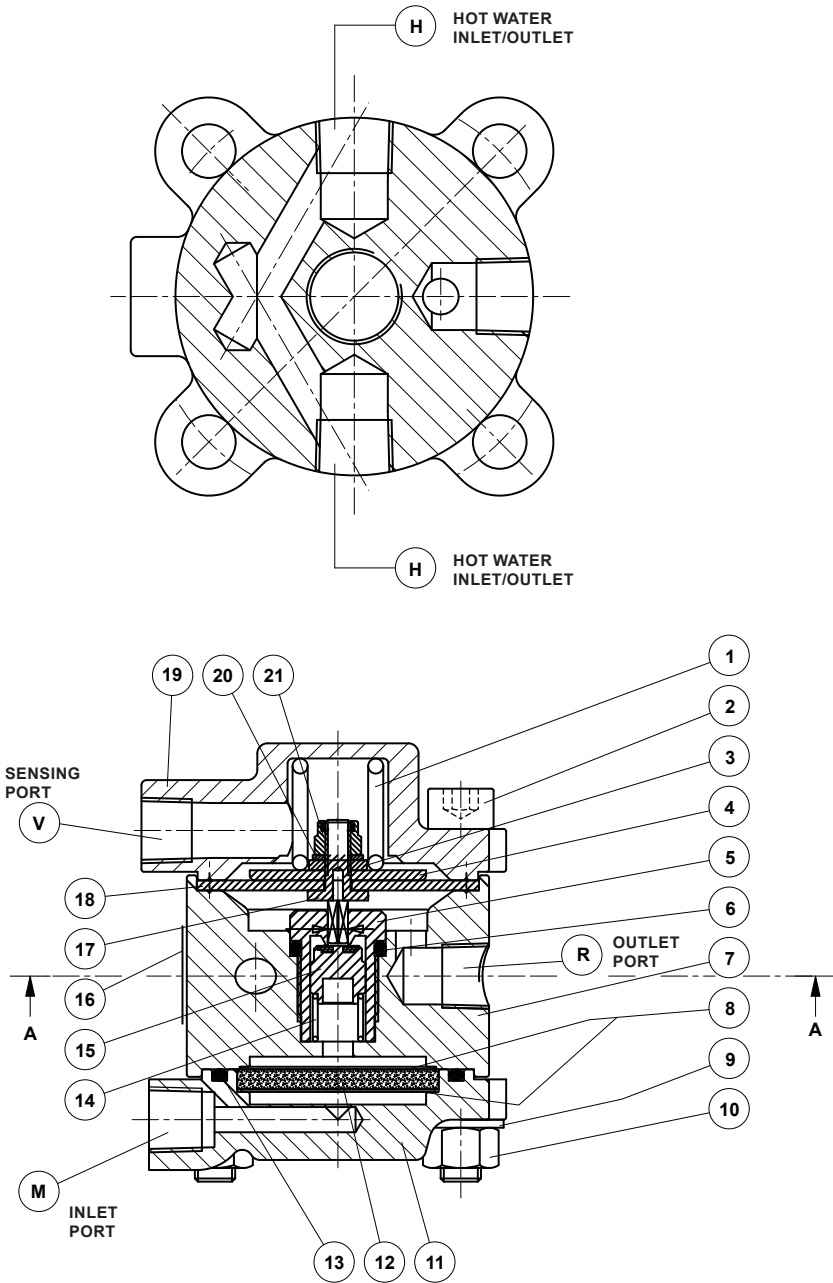
TYPE PRX/120 OR PRX/120-AP



TYPE PRX/125 OR PRX/125-AP

- S - BLEED PORT
- B - SUPPLY PORT
- L - LOADING PORT
- A - SENSING PORT
- D - DAMPER
- R - RESTRICTOR

Figure 13. PRX Series Pilot Assemblies



LM1162

Figure 14. Type SA/2 Pilot Supply Filter Assemblies

EZH and EZHSO Series

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