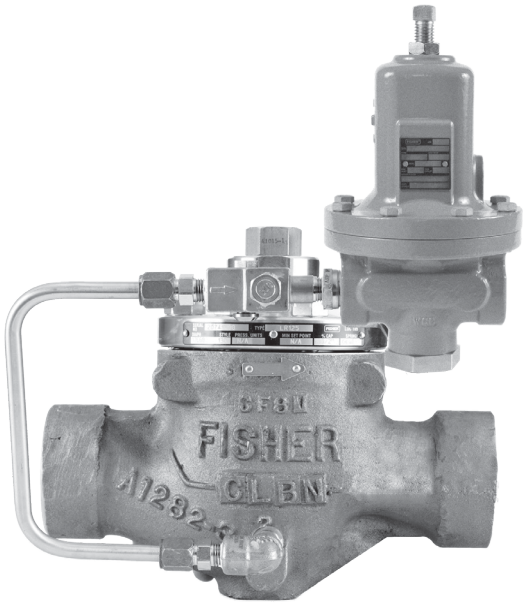
Type LR125 Pressure Reducing Liquid Regulator



TYPE LR125 REGULATOR

TYPE MR95H/MR95HP PILOT

Figure 1. *Type LR125 Pressure Reducing Liquid Regulator and Type MR95H/MR95HP Pilot*

WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in bursting of the equipment and/or chemical contamination 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 discharges process fluid 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 qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified personnel may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Only a qualified person must install or service the regulator.

The Type LR125 is designed for liquid service. Do not operate the regulator in applications where temperatures are below the process fluid's freezing point or above its boiling point which are dependent on the process fluid and the application pressures.

Specifications

Specifications for the Type LR125 regulator are shown below. Other information for the main valve appears on the nameplate. The control spring range for the pilot is marked on the nameplate of Type MR95H/MR95HP pilot.

Main Valve Body Sizes, End Connection Styles and Structural Design Ratings(1)
See Table 1

Maximum Inlet Pressures(1)

Type LR125 Main Valve: See Table 1

Type MR95H/MR95HP Pilot: See Table 2

Type 112 Restrictor: 1500 psig / 103 bar

Outlet (Control) Pressure Ranges
See Table 3

Main Valve Plug Travel

1 in. / DN 25: 0.37 in. / 9.4 mm

2 in. / DN 50: 0.68 in. / 17 mm

3 in. / DN 80: 0.98 in. / 25 mm

4 in. / DN 100: 1.19 in. / 30 mm

Main Valve Minimum Differential Pressures(1)
See Table 6

Main Valve Internal Inlet Strainer Sizes

1 in. / DN 25:
12 Mesh (0.0661 in. / 1.68 mm)(2)

2, 3 and 4 in. / DN 50, 80 and 100:
10 Mesh (0.0787 in. / 2 mm)(2)

Temperature Capabilities(1)
See Table 4

Pressure Registration
1/2 NPT External

Spring Case Vent
Type Y602-12

Construction Materials

Type LR125 Main Valve
Body: WCC Steel, CF8M or CF3M Stainless steel
Bonnet: LF2 Steel or 316/316L Stainless steel

Type LR125 Main Valve (continued)
Bonnet Bushing: Stainless steel
Cage: Stainless steel
Spring: Stainless steel
Top Plug: Stainless steel
Bottom Plug: Stainless steel
Internal Inlet Strainer: Stainless steel
Diaphragm: Nitrile (NBR) or Fluorocarbon (FKM)
O-rings: Nitrile (NBR) or Fluorocarbon (FKM)
Flanged Locknut: Stainless steel
Backup Rings: Polytetrafluoroethylene (PTFE)
Upper Spring Seat: Stainless steel
Indicator Protector and Cover: Plastic
Indicator Stem: Stainless steel
Indicator Fitting: Stainless steel
Travel Indicator Plug: Stainless steel

Type MR95H/MR95HP Pilot
Body: WCC Steel or CF8M Stainless steel
Spring Case: WCC Steel or CF8M Stainless steel
Orifice: Stainless steel
Diaphragm: Neoprene (CR) or Fluorocarbon (FKM)
Disk: Nitrile (NBR) or Fluorocarbon (FKM)

Mounting Parts
Pilot Mounting Pipe Nipple: Plated steel or Stainless steel
Pipe Fittings: Plated steel or Stainless steel
Tubing: Stainless steel

Type 112 Restrictor
Body: 15-5 Stainless steel
Groove Valve: Stainless steel
Retainer: Stainless steel
Pipe Plug: Stainless steel
O-rings: Nitrile (NBR) or Fluorocarbon (FKM)

Options
- Pre-piped Pilot Supply
- Travel Indicator

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.
2. Nominal sieve opening

Introduction

Scope of the Manual

This instruction manual provides installation, startup, adjustment, maintenance and parts ordering information for Type LR125 pressure reducing regulator, 1/2 NPT Type MR95H/MR95HP pilot and Type 112 restrictor.

Product Description

The Type LR125 pilot-operated, pressure reducing regulator is used for liquid applications and include a Type 112 restrictor and a 1/2 NPT Type MR95H/MR95HP pilot.

Table 1. *Type LR125 Main Valve Body Sizes, End Connection Styles, Structural Design Ratings and Maximum Operating Inlet Pressures*[1]

MAIN VALVE BODY SIZES		MAIN VALVE BODY MATERIAL	END CONNECTION STYLES[2]	STRUCTURAL DESIGN RATING[3]		MAXIMUM OPERATING INLET PRESSURE[3]	
In.	DN			psig	bar	psig	bar
1, 2, 3 and 4	25, 50, 80 and 100	WCC Steel	NPT or SWE (1 and 2 in. only)	1500	103	600	41.4
			CL150 RF	290	20.0	290	20.0
			CL300 RF	750	51.7	600	41.4
			CL600 RF	1500	103		
			PN 16/25/40 RF[4]	580	40.0		
		CF8M Stainless Steel	NPT (1 and 2 in. only)	1440	99.2	550	37.9
			CL150 RF	275	19.0	275	19.0
			CL300 RF	720	49.6	550	37.9
			CL600 RF	1440	99.2		
			PN 16/25/40 RF[4]	580	40.0		

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.
2. Ratings and end connections for other than ASME standard can usually be provided. Contact your local Sales Office for assistance.
3. Maximum cold working pressure (CWP) per ASME B16.34 or product bulletin limit, whichever is lowest. Temperature may decrease these maximum pressures.
4. Not available for 4 in. / DN 100 body size.

Pilot Type Description

Type MR95H — Pressure reducing pilot for 15 to 150 psig / 1.0 to 10.3 bar outlet pressures. Designed to handle inlet pressures up to 300 psig / 20.7 bar.

Type MR95HP — Pressure reducing pilot for 15 to 400 psig / 1.0 to 27.6 bar outlet pressures. Designed to handle inlet pressures up to 600 psig / 41.4 bar.

Principle of Operation

As long as the outlet (control) pressure is above the outlet pressure setting, the pilot valve plug or disk remains closed (Figure 2). Force from the main spring, in addition to inlet pressure bleeding through the restrictor, provide downward loading pressure to keep the main valve diaphragm and plug assembly tightly shutoff.

When the outlet pressure decreases below the pilot outlet pressure setting, the pilot plug or disk assembly opens. Loading pressure bleeds downstream through the pilot faster than it can be replaced through the supply line. This reduces loading pressure on top of the main valve diaphragm and plug assembly and lets the unbalanced force between inlet and loading pressure overcome the main spring force to open the Type LR125 diaphragm and plug assembly.

As the outlet pressure rises toward the outlet pressure setting, it compresses the pilot diaphragm against the pilot control spring and lets the pilot valve plug or disk close. Loading pressure begins building on the Type LR125 diaphragm and plug assembly. The loading pressure, along with force from the main spring, pushes the diaphragm and plug assembly onto the tapered-edge seat, producing tight shutoff.

Type LR125 Installation

WARNING

Personal injury, equipment damage or leakage due to escaping process fluid or bursting of pressure-containing parts may result if this regulator is overpressured or is installed where service conditions could exceed the limits given in Specifications section or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the regulator could break the pilot off the main valve, causing personal injury and property damage due to escaping process fluid. To avoid such injury and damage, install the regulator in a safe location.

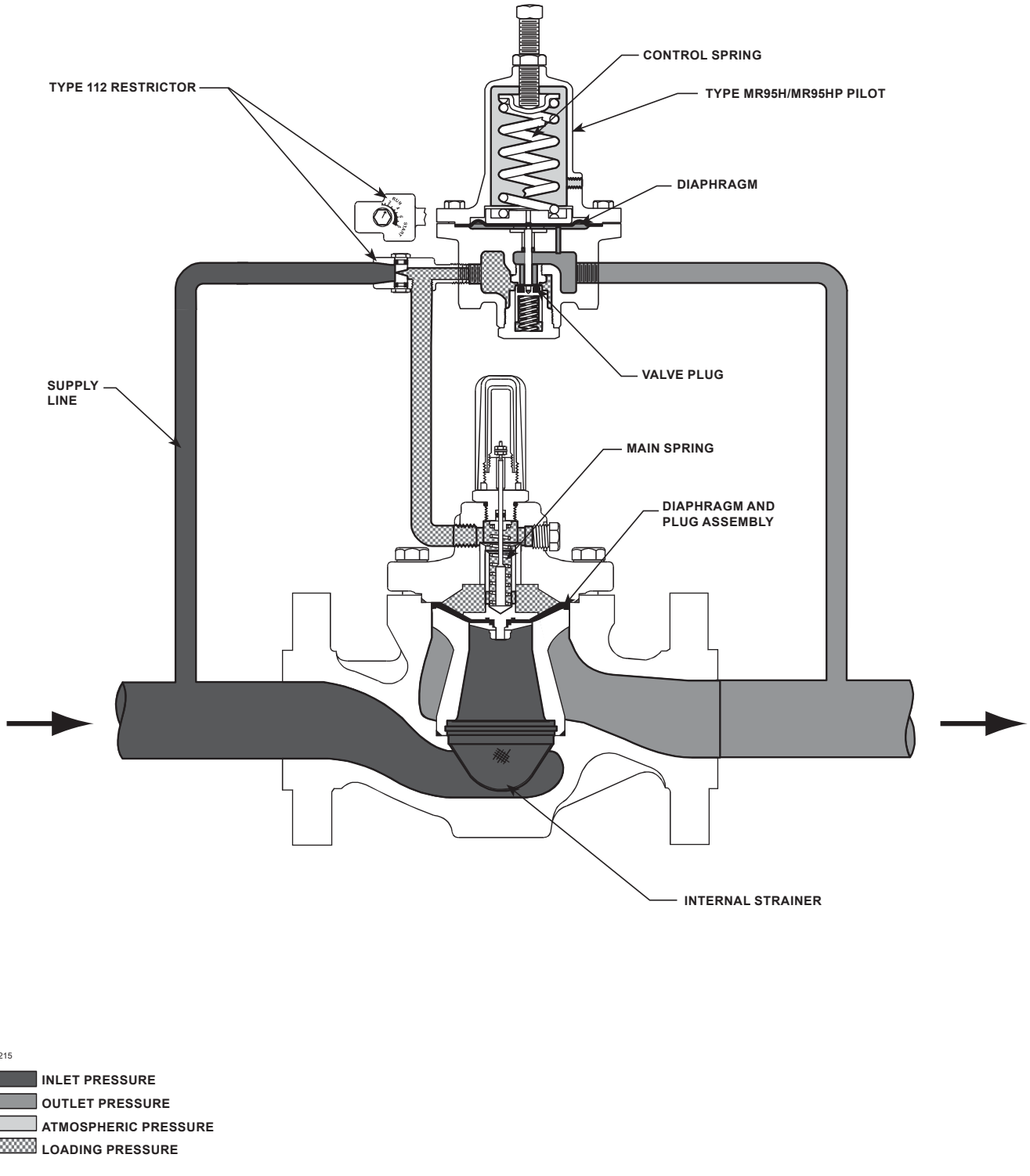


Figure 2. *Type LR125 Operational Schematic*

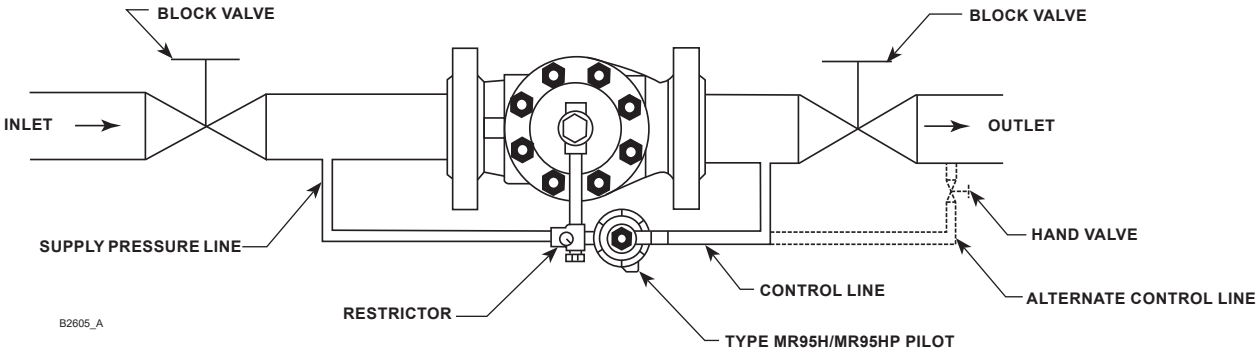


Figure 3. *Typical Type LR125 Installation Schematic*

Table 2. *Pilot Maximum Operating Pressures*[2]

PILOT	BODY SIZE	BODY AND SPRING CASE MATERIAL	MAXIMUM INLET PRESSURE	MAXIMUM OUTLET PRESSURE
Type MR95H	1/2 NPT	Steel Stainless steel	300 psig / 20.7 bar 300 psig / 20.7 bar	300 psig / 20.7 bar 300 psig / 20.7 bar
Type MR95HP	1/2 NPT	Steel Stainless steel	600 psig / 41.4 bar 600 psig / 41.4 bar	600 psig / 41.4 bar 550 psig / 37.9 bar
1. The pressure/temperature limits in this Installation Manual, and any applicable standard or code limitation should not be exceeded. 2. Temperature and/or the body end connection may decrease these maximum pressures.				

WARNING

Liquid pressure control systems should be designed using engineering practices to eliminate quick control starting or stopping of the flow stream, which can produce water hammer.

The robust design of the Type LR125 allows this regulator to be installed indoors or outdoors. This regulator is designed to withstand the elements. The powder paint coating protects against minor impacts, abrasions and corrosion. When installed outdoors, the Type LR125 does not require protective housing. However, the Type MR95H/MR95HP pilot should be oriented so that the pilot spring case vent is pointed down. Otherwise, make sure the vent is protected so that rain, moisture, insects or any debris will not accumulate inside or block the vent assembly.

When installed indoors, no remote venting is required except on the pilot spring case. Refer to Step 5 of the following procedure for the correct venting practices.

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.

Note

The Type LR125 internal inlet strainer is intended to prevent occasional large particles from entering the main valve. If the flowing media contains continuous particles, upstream filtration is recommended before the main valve and in the pilot supply piping. See the Specifications section for the corresponding mesh size of the internal inlet strainer.

2. A Type LR125 regulator may be installed in any orientation, as long as flow through the regulator matches the direction of the arrow on the main valve body and the pilot vent is pointed down. However, for easier maintenance, install the regulator with the bonnet up.

CAUTION

Provide adequate support to the bonnet when disassembling Type LR125 pressure reducing regulator installed in a vertical installation or other application where the bonnet is not oriented upward. Without adequate support, the bonnet may fall and cause physical injury when the cap screws are loosened.

Table 3. *Outlet (Control) Pressure Ranges*

PILOT	OUTLET PRESSURE RANGE		SPRING WIRE DIAMETER		SPRING FREE LENGTH		SPRING PART NUMBER AND COLOR
	psig	bar	In.	mm	In.	mm	
Type MR95H	15 to 30 25 to 75 70 to 150	1.0 to 2.1 1.7 to 5.2 4.8 to 10.3	0.207 0.234 0.283	5.26 5.94 7.19	2.50 2.60 2.44	63.5 65.9 62.0	ERCA04288A0, Yellow ERAA01910A0, Green ERAA01911A0, Red
Type MR95HP	15 to 100 80 to 400	1.0 to 6.9 5.5 to 27.6	0.281 0.375	7.14 9.53	2.50 2.60	63.5 63.5	ERCA04294A0, Unpainted ERCA04293A0, Unpainted

Table 4. *Diaphragm Material Selection Information*

CRITERIA	DIAPHRAGM MATERIAL		
	17E68 Nitrile (NBR) (Standard)	17E97 Nitrile (NBR)	17E88 Fluorocarbon (FKM)
Liquid Temperature	-20 to 150°F / -29 to 66°C	0 to 150°F / -18 to 66°C	0 to 250°F / -18 to 121°C(1)(2)
General Applications	Best for low pressure differential service or cold temperature applications	Best for abrasive or erosive service applications	Best for high temperature applications
Heavy Particle Erosion	Fair	Excellent	Good

1. Fluorocarbon (FKM) is limited to 200°F / 93°C in hot water.
2. For differential pressures above 400 psig / 28 bar diaphragm temperature is limited to 150°F / 66°C.

Table 5. *Main Valve Maximum Pressure Ratings, Diaphragm Selection Information and Main Spring Selection(1)*

BODY SIZE		DIAPHRAGM MATERIAL	MAXIMUM OPERATING INLET PRESSURE(4)		MAXIMUM OPERATING DIFFERENTIAL PRESSURE(3)(4)		MAXIMUM EMERGENCY INLET AND DIFFERENTIAL PRESSURE		MAIN SPRING COLOR
In.	DN		psig	bar	psig	bar	psid	bar d	
1	25	17E68 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Black and Yellow
		17E97 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Black and Yellow
			600	41.4	600	41.4	600	41.4	Black and White(2)
		17E88 Fluorocarbon (FKM)	300	20.7	300	20.7	300	20.7	Black and Yellow
			600	41.4	500	34	600	41.4	Black and White(2)
2	50	17E68 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Green and White
		17E97 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Green and White
			600	41.4	600	41.4	600	41.4	Red(2)
		17E88 Fluorocarbon (FKM)	300	20.7	300	20.7	300	20.7	Green and White
			600	41.4	500	34	600	41.4	Red(2)
3	80	17E68 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Light Blue and White
		17E97 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Light Blue and White
			600	41.4	600	41.4	600	41.4	Black and White(2)
		17E88 Fluorocarbon (FKM)	300	20.7	300	20.7	300	20.7	Light Blue and White
			600	41.4	500	34	600	41.4	Black and White(2)
4	100	17E68 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Green and White
		17E97 Nitrile (NBR)	300	20.7	300	20.7	300	20.7	Green and White
			600	41.4	600	41.4	600	41.4	Red and White(2)
		17E88 Fluorocarbon (FKM)	300	20.7	300	20.7	300	20.7	Green and White
			600	41.4	500	34	600	41.4	Red and White(2)

1. See Table 1 for main valve structural design ratings and Table 2 for pilot ratings.
2. The black and white, red and red and white springs are only recommended for applications where the maximum inlet pressure can exceed 300 psig / 20.7 bar.
3. Maximum differential pressures may be lower for applications where cavitation may be present.
4. These are recommendations that provide the best regulator performance for a typical application. Please contact your local Sales Office for further information if a deviation from the standard recommendations are required.

Table 6. *Main Valve Minimum Differential Pressures(1)*

MAIN VALVE BODY SIZE		MAIN SPRING PART NUMBER AND COLOR	DIAPHRAGM MATERIAL	MINIMUM DIFFERENTIAL, PERCENT OF CAPACITY			
				For 90% Capacity		For 100% Capacity	
In..	DN			psid	bar d	psid	bar d
1	25	GE12727X022, Black and Yellow	17E68 and 17E88	30	2.1	30	2.1
			17E97	35	2.5	35	2.5
		19B2401X022, Black and White	17E88 and 17E97	43	3.0	43	3.0
2	50	18B2126X022, Green and White	17E68 and 17E88	18	1.2	19	1.3
			17E97	24	1.7	24	1.7
		18B5955X012, Red	17E88 and 17E97	29	2.0	31	2.1
3	80	19B0781X022, Light Blue and White	17E68 and 17E88	21	1.5	28	1.9
			17E97	23	1.6	23	1.6
		19B0782X022, Black and White	17E88 and 17E97	32	2.2	38	2.6
4	100	18B8501X022, Green and White	17E68 and 17E88	16	1.1	30	2.1
			17E97	16	1.1	34	2.3
		18B8502X022, Red and White	17E88 and 17E97	21	1.5	40	2.8

1. See Table 1 for structural design ratings and Table 2 for pilot rating.

3. The standard pilot mounting position is as shown in Figure 1. Other mounting positions are available.
4. Apply a good grade of pipe compound to the external pipeline threads for a threaded body, or use suitable line gaskets for a flanged body. Use approved piping procedures when installing the regulator.

CAUTION

A regulator may leak toxic chemical to the environment. In toxic or hazardous liquid service, leaked chemical may accumulate and cause personal injury, death or property damage due to escaping fluid.

To prevent such injury or damage, provide piping or tubing to vent the hazardous liquid to a remote, safe location away from air intakes or any hazard-prone location. The exhaust piping must be designed and installed to guard against excessive flow restriction. Protect the vent line or stack opening against condensation or clogging.

5. If system operation during maintenance is required, install isolating and vent valves as needed.
6. A clogged pilot spring case vent may cause the regulator to function improperly. To prevent plugging (and to keep the spring case from collecting moisture, corrosive chemicals or other foreign material) point the vent down, orient it to the lowest possible point on the spring case or otherwise protect it. Protect the vent assembly from icing, moisture or debris that may cause blockage, as required. Inspect the vent regularly to make sure it has not been plugged. To remotely vent a spring case, remove the vent and install obstruction-free tubing or piping into the 1/4 NPT vent tapping. Provide protection on a remote vent by installing a screened vent cap onto the remote end of the vent pipe.
7. As shown in Figure 3, run a supply pressure line from the upstream pipeline to the restrictor inlet (use 3/8 NPT outer diameter tubing or larger). Install a filter or strainer upstream of the restrictor, if needed, to keep the supply source from clogging the restrictor or pilot. Inspect and clean this filter regularly to make sure it has not been plugged which can prevent proper regulator operation.
8. Install a downstream pressure control line with a minimum size of 1/2 in. / 13 mm (as shown in Figure 3) to the pilot control line or outlet connection. Connect the other end of the control line at a minimum of 8 to 10 pipe diameters downstream of the regulator in a straight run of pipe. Do not place a control line connection in a turbulent area, such as in or directly downstream of a swage or elbow. Significant restrictions in the control line can prevent proper pressure registration. When using a hand valve, it should be a full flow valve, such as a full port ball valve.
9. Good piping practices usually require swaging up to larger downstream piping to obtain reasonable downstream fluid velocity.

Startup and Adjustment

Note

Tables 1 and 2 show the maximum inlet pressures for specific constructions. Use pressure gauges to monitor inlet pressure, outlet pressure and any intermediate pressure during startup.

Startup

1. Make sure all block and vent valves are closed.
2. Back out the pilot adjusting screw.
3. Set the restrictor to the “4” position.
4. **SLOWLY OPEN** the valves in the following order:
   a. Pilot supply and control line valve(s), if used
   b. Inlet block valve
   c. Outlet block valve
5. Set the pilot to the desired outlet (control) pressure according to the pilot adjustment procedure.

Pilot Adjustment

The factory setting of the regulator can be varied within the pressure range stamped on the nameplate. To change the outlet pressure, loosen the jam nut (key 17, Figure 15) and turn the adjusting screw (key 15) clockwise to increase outlet pressure or counterclockwise to decrease it. Monitor the outlet pressure with a test gauge during the adjustment. Tighten the locknut to maintain the desired setting.

All regulator springs can be backed off to provide zero outlet. Recommended outlet pressure ranges available and color codes of the respective springs are shown in Table 3.

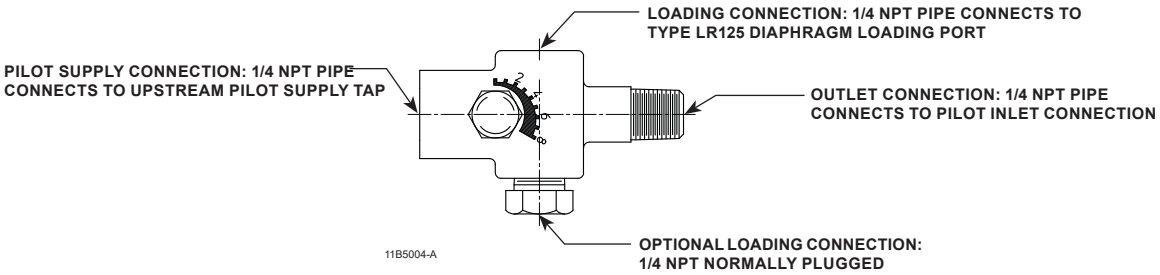
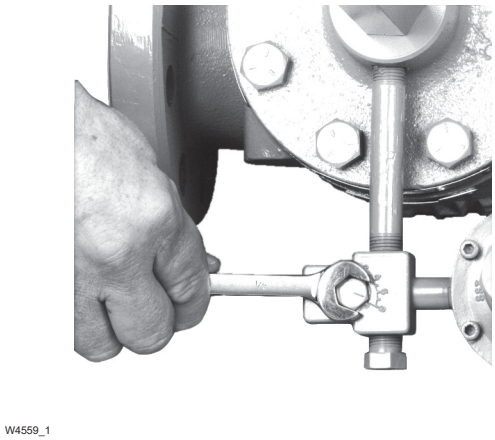


Figure 4. *Type 112 Restrictor*



	TYPE 112 RESTRICTOR SETTING			
REGULATOR PERFORMANCE	*2*	*4*	*6*	*8*
Accuracy				
Hysteresis				
Stability				
Speed of Response (Demand Decrease)				
Speed of Response (Demand Increase)				

Increased Performance Decreased Performance

RESTRICTOR ADJUSTMENT GUIDE

Figure 5. *Restrictor Adjustment*

Type 112 Restrictor Adjustment (Figure 5)

The Type 112 restrictor controls the regulator's accuracy and speed of response. A restrictor setting of 4 is recommended to optimize accuracy, speed of response and stability. However, the restrictor can be used to fine tune the regulator for maximum performance by decreasing the restrictor setting for tighter control (increased opening speed, decreased closing speed); or increasing the restrictor setting for maximum stability (decreased opening speed, increased closing speed). A lower setting also provides a narrower proportional band for better accuracy. The "8" position has the largest flow, is most stable and easiest for startup, however, using the "8" position is not necessary. The "0" setting has the smallest (minimum) flow passage; at no point of rotation will the Type 112 restrictor be completely shut off. After initial adjustment, the restrictor does not need to be adjusted for maintenance or startup.

Note

Mineral, dirt and sediments may gradually deposit and build up inside the spaces of the restrictor. This may cause the unit response to get slower and unit performance to decrease. If clogging of the restrictor is suspected, immediately check and clean the restrictor. Regular inspection of the restrictor is recommended to ensure optimum performance. Refer to the Type 112 Restrictor Maintenance section.

Likewise, debris in the process fluid may clog the restrictor. Install strainer upstream of the regulator to prevent debris from clogging the restrictor. Regular inspection, maintenance and cleaning of the strainer is recommended to ensure optimum performance.

Recommended Type 112 Restrictor Setting Guide (Figure 5)

This guide can be used to adjust performance according to application conditions. The recommended initial setting is 4.

Shutdown

WARNING

If pilot supply pressure is shut down first, the downstream system may be subjected to full inlet pressure.

1. If the pilot setting must be disturbed, be sure to keep some tension on the spring. This will prevent trapping inlet pressure during blow down.
2. Close the valves shown in Figure 3, 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

Regulator parts are subject to normal wear and must be inspected periodically and replaced as necessary. Due to the care Emerson takes in meeting all manufacturing requirements (heat treating, dimensional tolerances, etc.), use only replacement parts manufactured or furnished by Emerson. Also, when lubrication is required, use a good quality lubricant and lightly coat the recommended part. The frequency of inspection and parts replacement depends upon the severity of service conditions, applicable codes and government regulations and company inspection procedures. Table 8 lists possible regulator issues and solutions for them.

Type LR125 Main Valve Trim Parts

Instructions are given for complete disassembly and assembly. The main valve may remain in the pipeline during maintenance procedures. Key numbers are referenced in Figures 10 through 14.

WARNING

Avoid personal injury or damage to property from sudden release of pressure or uncontrolled process fluid. Before starting to disassemble, carefully release all pressures according to the Shutdown procedure. Use gauges to monitor inlet and outlet pressures while releasing these pressures.

Disassembly

Disassembly of Type LR125:

1. Shutdown, isolate and depressurize the main valve and pilot according to the shutdown procedure.
2. Remove the cap screws (key 3). Lift up and remove the bonnet (key 2) from the body (key 1).

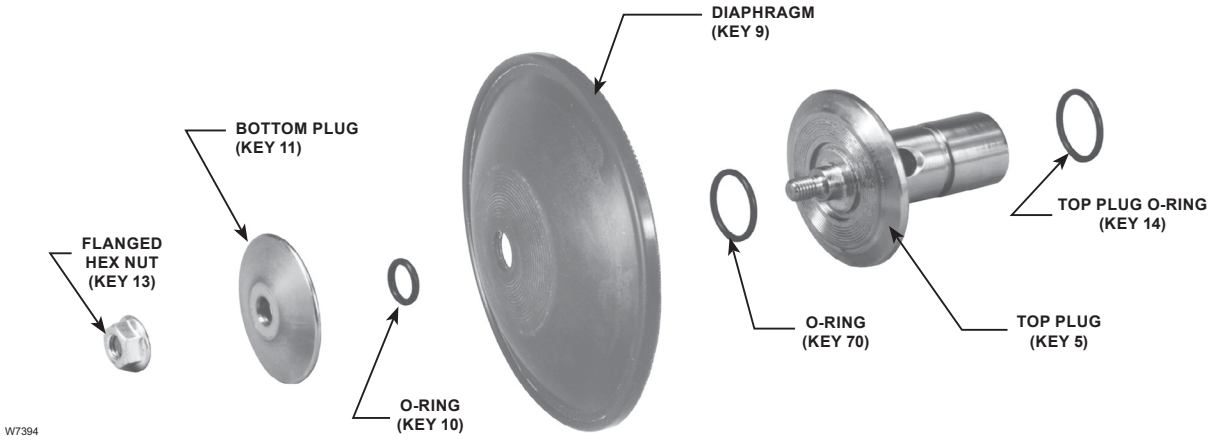


Figure 6. *Diaphragm and Plug Assembly Components*

CAUTION

Provide adequate support to the bonnet when disassembling Type LR125 regulator installed in a vertical installation or other application where the bonnet is not oriented upward. Without adequate support, the bonnet may fall and cause physical injury when the cap screws are loosened.

3. Remove the diaphragm (key 9) and plug (key 11) assembly and bonnet O-ring (key 28).
4. Pull out the cage (key 7), O-ring (key 8) and inlet strainer (key 23).
5. Clean parts and replace if necessary.

Assembly

1. Install the inlet strainer (key 23) into the body (key 1).

Note

When installing in a vertical orientation, apply lubricant to the bottom of the inlet strainer (key 23) to help hold parts in place while installing cage.

2. Lightly lubricate and install the cage O-ring (key 8).
3. Apply lubricant lightly to all O-rings or the mating part before installing them.
4. Install the cage (key 7) and lightly lubricate and install the bonnet O-ring (key 28).
5. Lubricate the top and bottom of the outer edge (bead area) of the diaphragm (key 9) and place diaphragm and plug (key 11) assembly on the cage (key 7).
6. Lubricate the top plug O-ring (key 14).
7. If travel indicator was removed, lightly lubricate the travel indicator assembly threads (key 19) and screw it into the bonnet (key 2). See Travel Indicator Assembly Maintenance for maintenance.
8. Install the bonnet (key 2) in proper orientation.
9. Lubricate cap screws (key 3) and secure the bonnet (key 2), using an even crisscross pattern. It may be necessary to push down on bonnet to start cap screws. Tighten cap screws to proper torque (see Table 9).

Diaphragm and Plug Assembly Maintenance

The diaphragm and plug assembly can be replaced as a single unit (a diaphragm cartridge) or individual components within the assembly can be replaced. When replacing individual components, inspect each component for damage and wear and replace parts as needed. See Figure 9 and Table 7 for the Diaphragm Markings and Diaphragm Imprint Codes. Key numbers for the following assembly and disassembly procedure are referenced in Figures 6 and 12.

1. Place a screwdriver or similar tool through the hole in the top plug (key 5).
2. Remove the flanged hex nut (key 13) from the bottom plug (key 11). This loosens the entire assembly.

Note

On 1 in. / DN 25 body remove the socket head screw (key 129) and lock washer (key 130) from the bottom plug.

3. Remove the bottom plug (key 11) and the bottom plug O-ring (key 10).

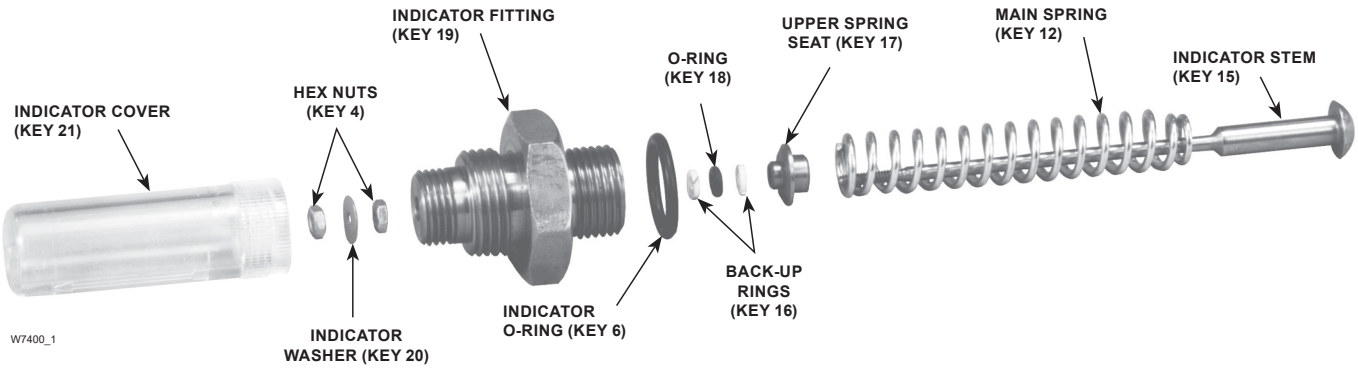


Figure 7. *Travel Indicator Parts*

4. Remove the diaphragm (key 9).
5. Remove the top plug O-rings (keys 14 and 70).
6. Check all components for damage or wear and replace as necessary.
7. When reassembling, be sure to lubricate all O-rings before installing and add a thread locking compound to the threads of the top plug.
8. Reassemble in the reverse order. Hold the top plug (key 5). Place the parts on the top plug in the following order:
   - O-ring (key 14)
   - O-ring (key 70)
   - Diaphragm (key 9)
   - O-ring (key 10)
   - Bottom Plug (key 11)
   - Flanged Hex Nut (key 13) [On 1 in. / DN 25 body, lock washer (key 130) then socket head screw (key 129)]
9. Tighten flanged hex nut (key 13) to proper torque (see Table 9).
10. Completely reassemble the unit according to the assembly procedures provided on page 9.

Travel Indicator Assembly Maintenance

Travel indicator assembly key numbers are referenced in Figures 7, 10 and 14. The indicator assembly can be removed and installed without removing the bonnet (key 2) from the body (key 1). Travel indicator maintenance is performed for two reasons:

a. When damaged or worn parts need replacing.

b. When travel indicator is removed and replaced with a travel indicator plug assembly.

WARNING

Avoid personal injury or damage to property from sudden release of pressure or uncontrolled process fluid. Before starting to disassemble, carefully release all pressures according to the shutdown procedure. Use gauges to monitor inlet, loading and outlet pressures while releasing these pressures.

1. Remove the indicator protector (key 22, Figure 10) and indicator cover (key 21).
2. Remove the first hex nut (key 4) and the indicator washer (key 20).
3. Unscrew but do not completely remove the second hex nut (key 4) on the top of the indicator stem (key 15).
4. Use a wrench to remove indicator fitting (key 19).
5. Lift out travel indicator assembly. If replacing travel indicator with travel indicator plug, skip to step 9.
6. Compress the main spring (key 12). Remove the second hex nut (key 4). Parts will separate easily when the hex nut is removed.
7. Slide the indicator stem (key 15) out of the indicator fitting (key 19). The main spring (key 12) and upper spring seat (key 17) will disengage.
8. If necessary, use the indicator stem (key 15) to pry the back-up rings (key 16) and O-ring (key 18) out of the indicator fitting (key 19).
9. Check the indicator fitting O-ring (key 6). Lubricate and replace if necessary.
10. To replace travel indicator parts, lubricate all O-rings, back-up rings and threads. To reassemble, hold the indicator stem (key 15) and place the parts on the stem in the following order (see Figure 7).

- Main Spring (key 12), small end first
- Upper Spring Seat (key 17), make sure to place the large end toward the spring
- First Back-up Ring (key 16)
- O-ring (key 18)
- Second Back-up Ring (key 16)
- Indicator Fitting (key 19), the back-up rings (key 16) and O-ring (key 18) should slide into the indicator fitting and the small end of the upper spring seat (key 17) should slide into the indicator fitting.
- First Hex Nut (key 4)
- Indicator Washer (key 20)
- Second Hex Nut (key 4)

11. Install the indicator fitting (key 19) into the bonnet (key 2, Figure 10), tighten to the proper torque (see Table 9). To set the travel indicator, hold the indicator cover (key 21) next to the indicator fitting (key 19). Screw the hex nuts (key 4) and the indicator washer (key 20) down on the indicator stem (key 15) until the washer is even with the lowest marking on the indicator cover. Lightly lubricate the indicator cover threads and install. Replace the indicator protector (key 22). To replace the travel indicator with the non-travel indicator option, place the main spring (key 12) into the bonnet. Install the indicator plug (key 19, Figure 14) and tighten to proper torque (see Table 9).

Type MR95H/MR95HP Pilot Maintenance

WARNING

To avoid personal injury, property damage or equipment damage caused by sudden release of pressure or uncontrolled process fluid, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure from the regulator.

Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Emerson should be used for repairing Fisher™ regulators.

Due to normal wear that may occur, parts must be periodically inspected and replaced as necessary. The frequency of inspection depends on the severity of service conditions or the requirement of local, state and federal rules and regulations. This section includes instructions for disassembly and replacement of parts. All key numbers refer to Figure 15.

1. Unscrew the valve plug guide (key 5) from the body (key 1). The valve plug spring (key 26) and the valve plug (key 4) will normally come out of the body along with the valve plug guide.
2. Inspect the seating surface of the valve plug (key 4), make sure that the elastomer or polished metal surface of the valve plug is not damaged. Replace if damage is noted.
3. Inspect the seating edge of the orifice (key 3). If damage is noted, unscrew the orifice from the body (key 1). Reference Table 10 for proper torque values. If no further maintenance is required, reassemble the regulator in the reverse of the above steps. When installing the valve plug guide (key 5) coat the threads and sealing surface with sealant to ensure an adequate metal-to-metal seal. Reference Table 10 for proper torque values.
4. If diaphragm damage is suspected, or to inspect the diaphragm or other internal parts, loosen the jam nut (key 17) and turn the adjusting screw (key 15) to remove all spring compression.
5. Remove the diaphragm case cap screws (key 16) and lift off the spring case (key 2). Remove the upper spring seat (key 9) and regulator spring (key 11). Remove the lower spring seat (key 8).
6. Remove the diaphragm (key 12) and examine for damage. Replace if damage is noted.
7. Unscrew and remove the stem guide bushing (key 7).
8. With diaphragm (key 12) removed, check to be sure the pressure registration hole is completely open and free of obstructions.
9. Reassemble in the reverse of the above procedures. Lubricate the upper spring seat (key 9) and the exposed threads of the adjusting screw (key 15) with anti-seize lubricant.
10. Before tightening cap screws (key 16) be sure to install the adjusting screw, if completely removed, and turn it clockwise to ensure proper slack in the diaphragm (key 12). This allows proper positioning of the diaphragm to permit full travel of the valve plug (key 4). Torque diaphragm cap screws per Table 10. Complete reassembly procedures and turn the adjusting screw (key 15) to produce the desired outlet pressure. Tighten the jam nut (key 17) to maintain the desired setting.

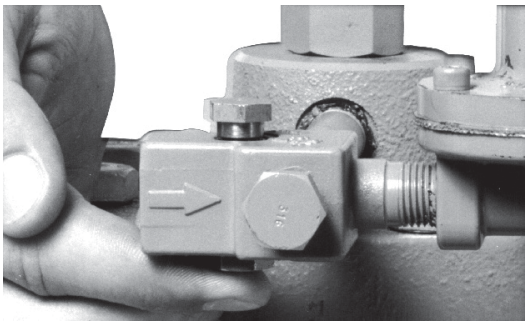


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Figure 8. *Pushing Groove Valve Up With Retainer*

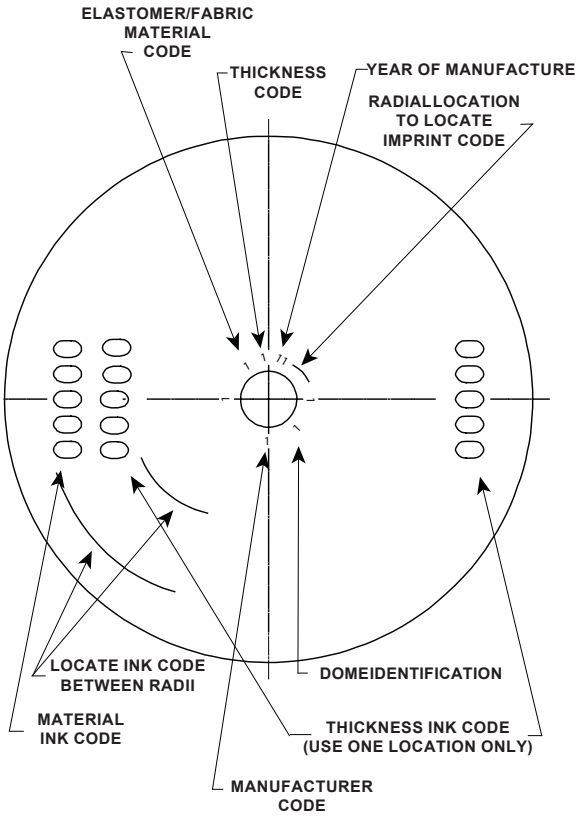


Figure 9. *Diaphragm Markings*

Table 7. *Diaphragm Imprint Codes*

THICKNESS		MATERIAL		DIAPHRAGM MATERIAL
Imprint	Ink Code	Imprint	Ink Code	
2	130	2	17E68	17E68 - Nitrile (NBR) (Low minimum differential)
		4	17E88	17E88 - Fluorocarbon (FKM) (High temperature capability)
		5	17E97	17E97 - Nitrile (NBR) (High erosion resistance)

Table 8. *Troubleshooting Guide*

ISSUE	POSSIBLE SOLUTION
Outlet pressure suddenly rises above setpoint and approaches inlet pressure	• If travel indicator is in UP position, check restrictor and pilot supply filter for plugging. • If travel indicator is in DOWN position, check main valve for debris or diaphragm damage.
Outlet pressure normal at low flow but falls below setpoint at high flow	• Check main valve inlet strainer for plugging. • Check inlet pressure at high flow condition. • Check sizing calculations to be sure main valve body is large enough for load. • Check for undersized or restricted control line (use the minimum size given in step 6 of Type LR125 Installation section). • Adjust restrictor to a lower setting.
Outlet pressure cycles	• Adjust restrictor to a higher setting. • Check control line placement. Make sure it is not located in a turbulent area. • Make sure there is not a restriction in the control line, such as a needle valve.
Fluid leaks from pilot spring case	• Replace pilot diaphragm assembly.
Fluid leaks from travel indicator	• Replace indicator stem O-ring, if indicator is not desired, convert to a non-travel indicator assembly.
Outlet pressure approaches inlet pressure when no flow is desired	• Check main valve O-rings for damage or improper installation. • Check cage and diaphragm surfaces for erosion or trapped debris. • Check pilot valve plug and seat for seating surface damage or debris. • Check pilot for trapped debris.
Regulator will not open	• Check for clogged control line. • Make sure control line is installed and open. • Check for damage to the main valve diaphragm. • On new installations, make sure the control line and pilot supply are properly connected.
Regulator will not close	• Make sure the pilot supply is properly connected. • Check restrictor for clogging. • Check the main valve diaphragm for damage. • Check for a broken control line.
High lock-up pressure with slow shutdown	• Check for debris on main valve or pilot seat.
High lock-up pressure with fast shutdown	• Adjust restrictor to a higher setting.
Note: If you were unable to solve your problem using this troubleshooting guide, contact your local Sales Office.	

Table 9. *Type LR125 Torque Values*

BODY SIZE, In. / DN	CAP SCREWS (KEY 3) OR HEX NUTS (KEY 47)	FLANGED HEX NUT (KEY 13) OR SOCKET HEAD SCREW (KEY 129, 1 IN. / DN 25 ONLY)	INDICATOR FITTING OR INDICATOR PLUG (KEY 19)
	Ft-lbs / N•m		
1 / 25	75 to 95 / 102 to 129	4 to 6 / 5.5 to 8	90 to 160 / 122 to 217
2 / 50	55 to 70 / 75 to 95	10 to 14 / 14 to 19	90 to 160 / 122 to 217
3 / 80	100 to 130 / 136 to 176	32 to 40 / 44 to 54	200 to 300 / 271 to 407
4 / 100	160 to 210 / 217 to 285	32 to 40 / 44 to 54	200 to 300 / 271 to 407

Table 10. *Type MR95H/MR95HP Pilot Torque Values*

BODY SIZE, In. / DN	SPRING CASE BOLTS (KEY 16)	ORIFICE (KEY 3)	VALVE PLUG GUIDE (KEY 5)
	Ft-lbs / N•m		
1/2 / 15	10 to 13 / 14 to 18	34 to 38 / 46 to 51	75 to 90 / 102 to 122

Table 11. *Type LR125 Main Valve Body Part Numbers (Key 1, Figure 10)*

BODY SIZES, In. / DN	BODY MATERIAL	END CONNECTION STYLE	PART NUMBER
1 / 25	WCC Steel	NPT	GE11581X012
		SWE	GE11440X012
		CL150 RF	GE11583X012
		CL300 RF	GE11607X012
		CL600 RF	GE11608X012
		PN 16/25/40 RF	GE13625X012
	CF8M Stainless Steel	NPT	GE11581X022
		CL150 RF	GE11583X022
		CL300 RF	GE11607X022
		CL600 RF	GE11608X022
		PN 16/25/40 RF	GE13625X022
	CF3M Stainless Steel	CL150 RF	GE11583X032
2 / 50	WCC Steel	NPT	GE10588X012
		SWE	GE10682X012
		CL150 RF	GE10676X012
		CL300 RF	GE10678X012
		CL600 RF	GE10679X012
		PN 16/25/40 RF	GE12898X012
	CF8M Stainless Steel	NPT	GE10588X022
		CL150 RF	GE10676X022
		CL300 RF	GE10678X022
		CL600 RF	GE10679X022
		PN 16/25/40 RF	GE12898X022
	CF3M Stainless Steel	CL150 RF	GE10676X042
3 / 80	WCC Steel	CL150 RF	GE10699X012
		CL300 RF	GE10700X012
		CL600 RF	GE10701X012
		PN 16/25/40 RF	GE13594X012
	CF8M Stainless Steel	CL150 RF	GE10699X022
		CL300 RF	GE10700X022
		CL600 RF	GE10701X022
		PN 16/25/40 RF	GE13594X022
4 / 100	WCC Steel	CL150 RF	GE10835X012
		CL300 RF	GE10839X012
		CL600 RF	GE10842X012
	CF8M Stainless Steel	CL150 RF	GE10835X022
		CL300 RF	GE10839X022
		CL600 RF	GE10842X022

Type 112 Restrictor Maintenance

WARNING

Avoid personal injury or damage to property from sudden release of pressure or uncontrolled process fluid. Before starting to disassemble, carefully release all pressures according to the shutdown procedure. Use gauges to monitor inlet, loading and outlet pressures while releasing these pressures.

Note

Accumulated dirt, mineral deposit, clogged debris or sediment buildup inside the restrictor may cause the unit response to get slower and unit performance to decrease. If any of these is suspected, immediately inspect and clean the restrictor.

Perform the following procedure if O-rings are leaking or if there is a need to inspect and remove accumulated dirt, mineral deposit, clogged debris or sediment buildup inside the restrictor. Key numbers are referenced in Figure 16.

1. Unscrew the groove valve (key 22) and retainer (key 23) just enough to loosen them, but do not completely separate.
2. As shown in Figure 8, push on the retainer (key 23) to push the groove valve (key 22) out of the body (key 21), then complete disassembly.
3. Inspect the gaps and small spaces inside the restrictor. Check and remove any debris, accumulated dirt, mineral deposit or sediment buildup that clogs the restrictor.
4. Replace the groove valve O-rings (key 24) if necessary, being sure to lightly apply lubricant to the replacement O-rings before installing them in the groove valve and retainer.
5. Install the groove valve (key 22) into the same side of the body where the scale appears. Install the retainer into the opposite side of the body, and tighten until both are secure.
6. When all maintenance is complete, refer to the Startup and Adjustment section to put the regulator back into operation.

Parts Ordering

When corresponding with your local Sales Office about this equipment, reference the equipment serial number or FS number found on a nameplate attached to the bonnet. 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

Type LR125 Main Valve (Figures 10 to 14)

Key	Description	Part Number
	Parts Kits	
	Diaphragm Cartridge and O-rings (Included are keys 5, 6, 8, 9, 10, 11, 13, 14, 16, 18, 28, 70, 129 and 130)	
	1 in. / DN 25	
	17E68 Nitrile (NBR)	RLR1258N182
	17E97 Nitrile (NBR)	RLR1258N172
	17E88 Fluorocarbon (FKM)	RLR1258F182
	2 in. / DN 50	
	17E68 Nitrile (NBR)	RLR1258N282
	17E97 Nitrile (NBR)	RLR1258N272
	17E88 Fluorocarbon (FKM)	RLR1258F282
	3 in. / DN 80	
	17E68 Nitrile (NBR)	RLR1258N382
	17E97 Nitrile (NBR)	RLR1258N372
	17E88 Fluorocarbon (FKM)	RLR1258F382
	4 in. / DN 100	
	17E68 Nitrile (NBR)	RLR1258N482
	17E97 Nitrile (NBR)	RLR1258N472
	17E88 Fluorocarbon (FKM)	RLR1258F482
1	Valve Body	See Table 11
2	Bonnet Assembly	
	1 in. / DN 25 body	
	Steel	39B2403X022
	Stainless steel	ERAA00892A1
	2 in. / DN 50 body	
	Steel	38B2122X022
	Stainless steel	ERAA00893A1
	3 in. / DN 80 body	
	Steel	38B5963X022
	Stainless steel	ERAA00894A1
	4 in. / DN 100 body	
	Steel	38B2133X022
	Stainless steel	ERAA00895A1
3	Cap Screw (For Steel Bonnet)	
	1 in. / DN 25 body (4 required)	1R281124052
	2 in. / DN 50 body (8 required)	1A453324052
	3 in. / DN 80 body (8 required)	1A454124052
	4 in. / DN 100 body (8 required)	1A440224052
4	Hex Nut (For bodies with travel indicator, 2 required)	
	1 and 2 in. / DN 25 and 50 bodies, Zinc-plated Carbon steel	1H322228982
	3 and 4 in. / DN 80 and 100 bodies, Stainless steel	1L286338992
5	Top Plug, Stainless steel	
	1 in. / DN 25 body	29B2404X012
	2 in. / DN 50 body	28B2130X012
	3 in. / DN 80 body	28B8511X012
	4 in. / DN 100 body	28B5964X012

- continued -

*Recommended spare part.

Type LR125 Main Valve (Figures 10 to 14) (continued)

Key	Description	Part Number
6*	O-ring	
	1 and 2 in. / DN 25 and 50 bodies	
	Nitrile (NBR)	18B3438X012
	Fluorocarbon (FKM)	1N430306382
	3 and 4 in. / DN 80 and 100 bodies	
	Nitrile (NBR)	10A8931X012
	Fluorocarbon (FKM)	10A8931X052
7	Cage	
	1 in. / DN 25 body	39B2413X012
	2 in. / DN 50 body	37B9748X012
	3 in. / DN 80 body	48B5961X012
	4 in. / DN 100 body	48B2135X012
8*	Cage O-ring	
	1 in. / DN 25 body	
	Nitrile (NBR)	14A5713X012
	Fluorocarbon (FKM)	13A2351X012
	2 in. / DN 50 body	
	Nitrile (NBR)	10B4428X012
	Fluorocarbon (FKM)	10B4428X022
	3 in. / DN 80 body	
	Nitrile (NBR)	10B4366X012
	Fluorocarbon (FKM)	10B4366X022
	4 in. / DN 100 body	
	Nitrile (NBR)	10B4373X012
	Fluorocarbon (FKM)	10B4373X022
9*	Diaphragm	
	1 in. / DN 25 body	
	17E68 Nitrile (NBR), low differential	30C1009X012
	17E97 Nitrile (NBR), high erosion	GE11960X012
	17E88 Fluorocarbon (FKM), high temperature	39B2397X022
	2 in. / DN 50 body	
	17E68 Nitrile (NBR), low differential	29B1909X012
	17E97 Nitrile (NBR), high erosion	28B2123X052
	17E88 Fluorocarbon (FKM), high temperature	29B2715X012
	3 in. / DN 80 body	
	17E68 Nitrile (NBR), low differential	38B9886X012
	17E97 Nitrile (NBR), high erosion	39B2726X012
	17E88 Fluorocarbon (FKM), high temperature	38B8512X022
	4 in. / DN 100 body	
	17E68 Nitrile (NBR), low differential	38B8509X012
	17E97 Nitrile (NBR), high erosion	39B3996X012
	17E88 Fluorocarbon (FKM), high temperature	39B1154X012
10*	O-ring	
	1 and 2 in. / DN 25 and 50 bodies	
	Nitrile (NBR)	1E216306992
	Fluorocarbon (FKM)	1L949306382
	3 and 4 in. / DN 80 and 100 bodies	
	Nitrile (NBR)	1J4888X0052
	Fluorocarbon (FKM)	1J4888X0032
11	Bottom Plug, Stainless steel	
	1 in. / DN 25 body	19B2407X012
	2 in. / DN 50 body	18B2127X012
	3 in. / DN 80 body	18B8513X012
	4 in. / DN 100 body	18B5966X012
12	Main Valve Spring, Stainless steel	
	1 in. / DN 25 body, Black and Yellow	GE12727X022
	2 in. / DN 50 body, Green and White	18B2126X022
	3 in. / DN 80 body, Light Blue and White	19B0781X022
	4 in. / DN 100 body, Green and White	18B8501X022
13	Flanged Hex Nut, Stainless steel	
	2 in. / DN 50 body	ERAA00905A0
	3 and 4 in. / DN 80 and 100 bodies	GG01972X012
14*	Top Plug O-ring	
	1 and 2 in. / DN 25 and 50 bodies	
	Nitrile (NBR)	13A1584X052
	Fluorocarbon (FKM)	13A1584X022
	3 and 4 in. / DN 80 and 100 bodies	
	Nitrile (NBR)	10A3803X062
	Fluorocarbon (FKM)	10A3803X032
15	Stem, Stainless steel (For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	T14185T0012
	3 and 4 in. / DN 80 and 100 bodies	T21074T0012
16*	Back-up Ring, PTFE	
	(For bodies with travel indicator, 2 required)	
	1 and 2 in. / DN 25 and 50 bodies	1N659106242
	3 and 4 in. / DN 80 and 100 bodies	1J418806992
17	Upper Spring Seat, Stainless steel	
	(For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	18B2129X012
	3 and 4 in. / DN 80 and 100 bodies	18B5968X012
18*	O-ring (For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	
	Nitrile (NBR)	1H2926X0032
	Fluorocarbon (FKM)	1H2926X0022
	3 and 4 in. / DN 80 and 100 bodies	
	Nitrile (NBR)	1D191706992
	Fluorocarbon (FKM)	1N423906382
19	Indicator Fitting, Stainless steel	
	(For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	28B2128X012
	3 and 4 in. / DN 80 and 100 bodies	28B5969X012
19	Travel Indicator Plug, Stainless steel	
	(For bodies without travel indicator)	
	1 in. / DN 25 body	19B2409X012
	2 in. / DN 50 body	GE17585X012
	3 and 4 in. / DN 80 and 100 bodies	28B5970X012
20	Indicator Washer (For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	18B2138X012
	3 and 4 in. / DN 80 and 100 bodies	18B8503X012
21	Indicator Cover, Plastic	
	(For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	T14188T0012
	3 and 4 in. / DN 80 and 100 bodies	19B2270X012
22	Indicator Protector, Plastic	
	(For bodies with travel indicator)	
	1 and 2 in. / DN 25 and 50 bodies	24B1301X012
	3 and 4 in. / DN 80 and 100 bodies	29B2269X012
23	Inlet Strainer, Stainless steel	
	1 in. / DN 25 body	20B8004X012
	2 in. / DN 50 body	10B4409X012
	3 in. / DN 80 body	20B4367X012
	4 in. / DN 100 body	20B4374X012
24	Nameplate	- - - - - - - - - - -
25	Flow Arrow	- - - - - - - - - - -
26	Drive Screw, Stainless steel	
	1 in. / DN 25 body (4 required)	1A368228982
	2, 3 and 4 in. / DN 50, 80 and 100 (5 required)	1A368228982
28*	O-ring	
	1 in. / DN 25 body	
	Nitrile (NBR)	19B2838X012
	Fluorocarbon (FKM)	19B2838X022
	2 in. / DN 50 body	
	Nitrile (NBR)	18B2124X012
	Fluorocarbon (FKM)	18B2124X022
	3 in. / DN 80 body	
	Nitrile (NBR)	18B8514X012
	Fluorocarbon (FKM)	18B8514X022
	4 in. / DN 100 body	
	Nitrile (NBR)	18B2140X012
	Fluorocarbon (FKM)	18B2140X022

- continued -

*Recommended spare part.

Type LR125 Main Valve (Figures 10 to 14) (continued)

Key	Description	Part Number
29	Pipe Nipple	
	Steel	- - - - - - - - - - -
	Stainless steel	- - - - - - - - - - -
44	Vent (Type Y602-12)	27A5516X012
45	Bushing	
	Steel	- - - - - - - - - - -
	Stainless steel	- - - - - - - - - - -
47	Hex Nut (not shown)	
	For Stainless steel Bonnet, Stainless steel	
	1 in. / DN 25 body (4 required)	1C330635252
	2 in. / DN 50 body (8 required)	1A377235252
	3 in. / DN 80 body (8 required)	1A376035252
	4 in. / DN 100 body (8 required)	1A352035252
	For Steel Bonnet, Steel	
	1 in. / DN 25 body (4 required)	1C3306X0832
	2 in. / DN 50 body (8 required)	1A3772X0892
	3 in. / DN 80 body (8 required)	1A3760X0832
	4 in. / DN 100 body (8 required)	1A3520X0922
63	Pipe Plug, Steel/Stainless steel	
	Standard Piping (3 required)	- - - - - - - - - - -
	Pre-piped Pilot Supply (2 required)	- - - - - - - - - - -
70*	O-ring	
	1 and 2 in. / DN 25 and 50 bodies	
	Nitrile (NBR)	13A1584X052
	Fluorocarbon (FKM)	13A1584X022
	3 and 4 in. / DN 80 and 100 bodies	
	Nitrile (NBR)	10A3803X062
	Fluorocarbon (FKM)	10A3803X032
129	Socket Head Screw, Stainless steel	
	For 1 in. / DN 25 body only	1D6170X0012
130	Lock Washer, Stainless steel	
	For 1 in. / DN 25 body only	1A3291X0012
136	Stud (not shown)	
	For Stainless steel bonnet, Stainless steel	
	1 in. / DN 25 body (4 required)	1R284835222
	2 in. / DN 50 body (8 required)	1K242935222
	3 in. / DN 80 body (8 required)	1A378135222
	4 in. / DN 100 body (8 required)	1R369035222
	For Steel Bonnet, Steel	
	1 In. / DN 25 body (4 required)	1R2848X0752
	2 In. / DN 50 body (8 required)	1K2429X0782
	3 In. / DN 80 body (8 required)	1A3781X0562
	4 In. / DN 100 body (8 required)	1R3690X0592

Type MR95H/MR95HP Pilot (Figure 15)

Key	Description	Part Number
	Parts Kit (Included are keys 3, 4, 10 and 12)	
	Neoprene (CR) diaphragm and Nitrile (NBR)/Brass Disk	RMR95HX0052
	Neoprene (CR) diaphragm and Nitrile (NBR)/416 Stainless Steel Disk	RMR95HX0062
1	Regulator Body, 1/2 NPT	
	WCC Steel	GF04837X022
	Stainless steel	GF04837X052
2	Spring Case, 1/4 Tapped Vent	
	WCC Steel	ERAA01886A0
	Stainless steel	ERAA01886A1
3*	Orifice, Stainless steel	GF05327X022
4*	Valve Plug Assembly	
	Nitrile (NBR) Seat	
	Type MR95H	ERCA00635A4
	Type MR95HP	ERAA01905A0
	Fluorocarbon (FKM) Seat	
	Type MR95H	ERCA00635B0
	Type MR95HP	ERAA01905A3
5	Valve Plug Guide, Stainless steel	GF05519X022

*Recommended spare part.

Type MR95H/MR95HP Pilot (Figure 15) (continued)

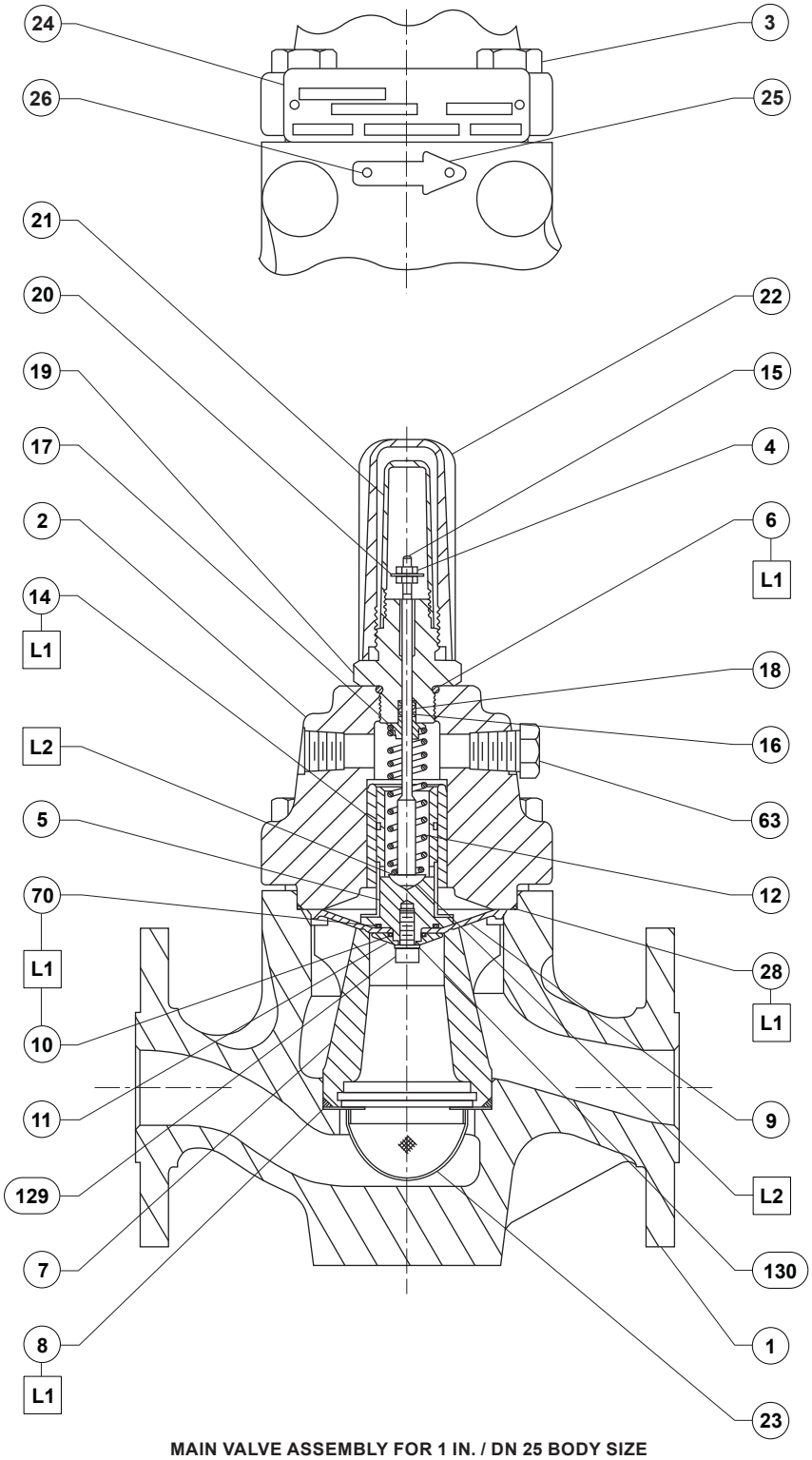
Key	Description	Part Number
6	Stem Assembly, Stainless steel	ERAA01904A0
7	Stem Guide Bushing, Stainless steel	ERCA03694A0
8	Lower Spring Seat, Stainless steel	
	Type MR95H	1E3954X0042
	Type MR95HP	ERCA00436A1
9	Upper Spring Seat	
	Type MR95H	
	Zinc-plated carbon steel	ERCA00823A0
	Stainless steel	ERCA00823A1
	Type MR95HP	
	Steel	ERCA00382A0
	Stainless steel	ERCA00382A1
11	Regulator Spring	
	15 to 30 psig / 1.0 to 2.1 bar, Yellow	ERCA04288A0
	25 to 75 psig / 1.7 to 5.2 bar, Green	ERAA01910A0
	70 to 150 psig / 4.8 to 10.3 bar, Red	ERAA01911A0
	15 to 100 psig / 1.0 to 6.9 bar, Unpainted	ERCA04294A0
	80 to 400 psig / 5.5 to 27.6 bar, Unpainted	ERCA04293A0
12*	Diaphragm	
	Neoprene (CR)	ERCA00507A0
	Fluorocarbon (FKM) (2 required)	ERCA00507A1
13	Nameplate (not shown)	- - - - - - - - - - -
15	Adjusting Screw	
	Zinc-plated Carbon steel (standard)	GF05553X012
	Stainless steel	GF05553X022
16	Cap Screw (8 required)	
	Type MR95H	
	Zinc-plated steel (standard)	ERCA00100A0
	Stainless steel	ERCA00100A1
	Type MR95HP	
	Steel	ERCA00100A2
	Stainless steel	ERCA00100A3
17	Jam Nut	
	Zinc-plated steel (standard)	ERCA00380A0
	Stainless steel	ERCA00380A1
18	Nameplate Drive Screw (4 required)	
	Stainless steel (not shown)	ERAA01884A0
26	Inner Valve Spring, Stainless steel	ERCA04282A0
63	Bottom Plug Seal	
	Nitrile (NBR)	ERCA03016A0
	Fluorocarbon (FKM)	ERCA03016A1

Type 112 Restrictor (Figure 16)

Key	Description	Part Number
14	Pipe Plug, Stainless steel	1A767535072
21	Restrictor Body, Stainless steel	20B4429X012
22	Groove Valve, Stainless steel	20B4403X012
23	Valve Retainer, Stainless steel	10B4402X012
24*	Groove Valve O-ring (2 required),	
	Nitrile (NBR)	1C853806992
	Fluorocarbon (FKM)	1C8538X0052

Pre-piped Pilot Supply (Figure 18)

Key	Description	Part Number
59	Nipple	- - - - - - - - - - -
	Steel	- - - - - - - - - - -
	Stainless steel	- - - - - - - - - - -
60	Pipe Elbow	
	Steel	- - - - - - - - - - -
	Stainless steel	- - - - - - - - - - -
61	Tube Connector (2 required)	
	Steel	- - - - - - - - - - -
	Stainless steel	- - - - - - - - - - -
62	Tubing, Stainless steel	- - - - - - - - - - -

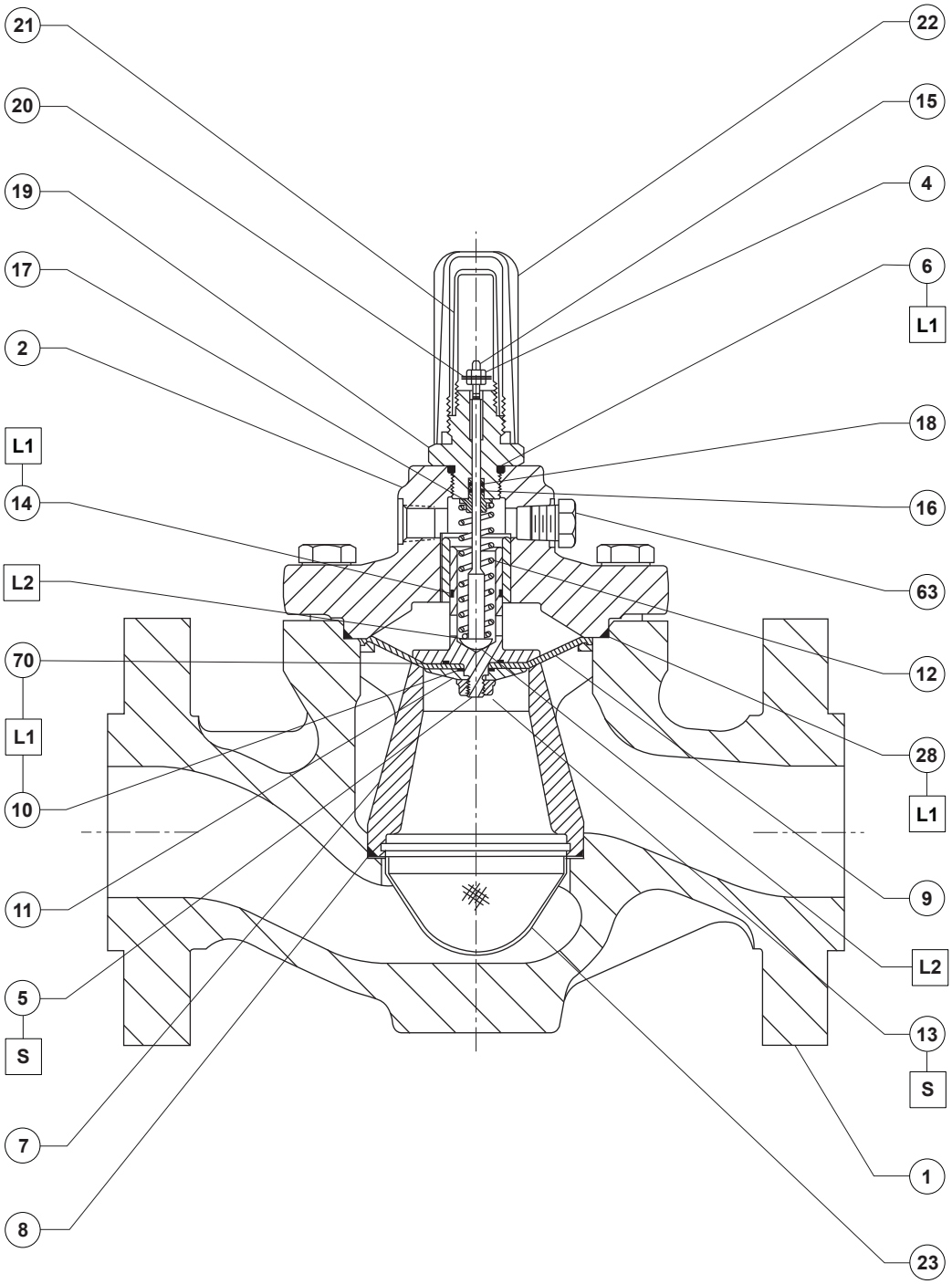


MAIN VALVE ASSEMBLY FOR 1 IN. / DN 25 BODY SIZE

☐ **APPLY LUBRICANT(1):**
L1 = LITHIUM POLYMER TYPE LUBRICANT (MULTI-PURPOSE GREASE)
L2 = ANTI-SEIZE LUBRICANT

1. Lubricants must be selected such that they meet the temperature requirements.

Figure 10. *Type LR125 Main Valve*



MAIN VALVE ASSEMBLY FOR 2, 3 AND 4 IN. / DN 50, 80 AND 100 BODY SIZES

☐ **APPLY LUBRICANT / SEALANT[1]:**
L1 = LITHIUM POLYMER TYPE LUBRICANT (MULTI-PURPOSE GREASE)
L2 = ANTI-SEIZE LUBRICANT
S = MEDIUM STRENGTH THREADLOCKER

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

Figure 10. *Type LR125 Main Valve (continued)*

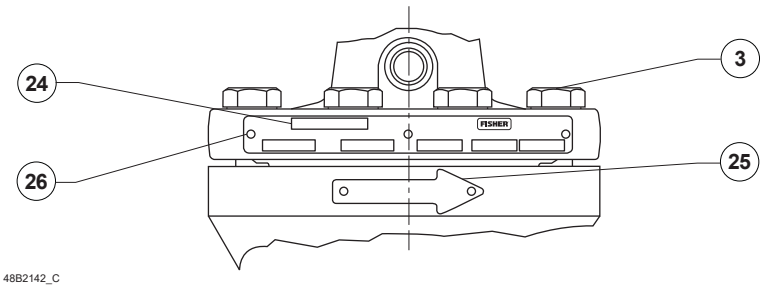


Figure 11. *Type LR125 Nameplate and Flow Arrow*

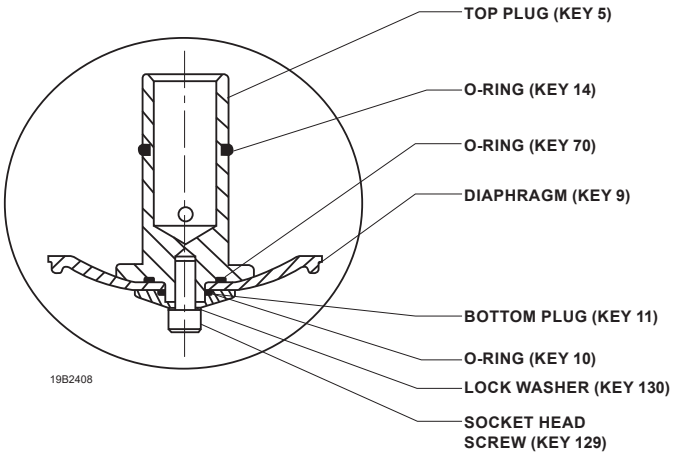


Figure 12. *Type LR125 1 in. / DN 25 Diaphragm Assembly*

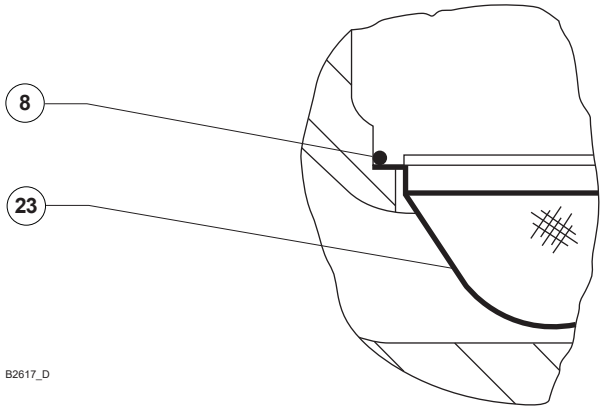
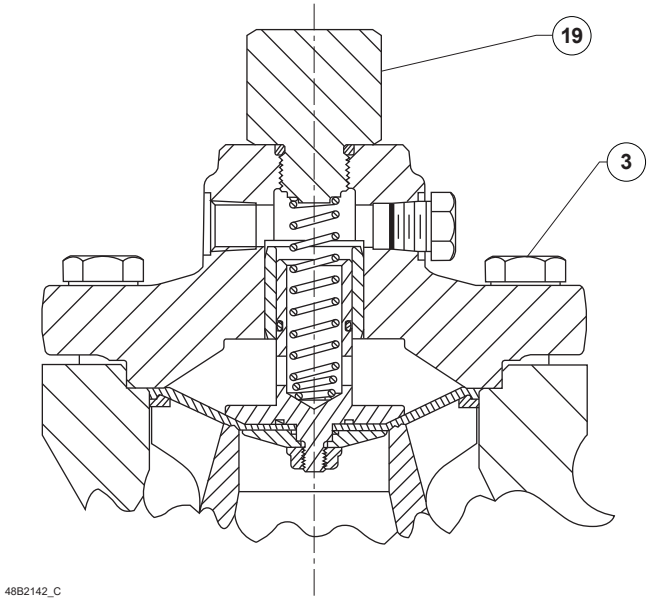
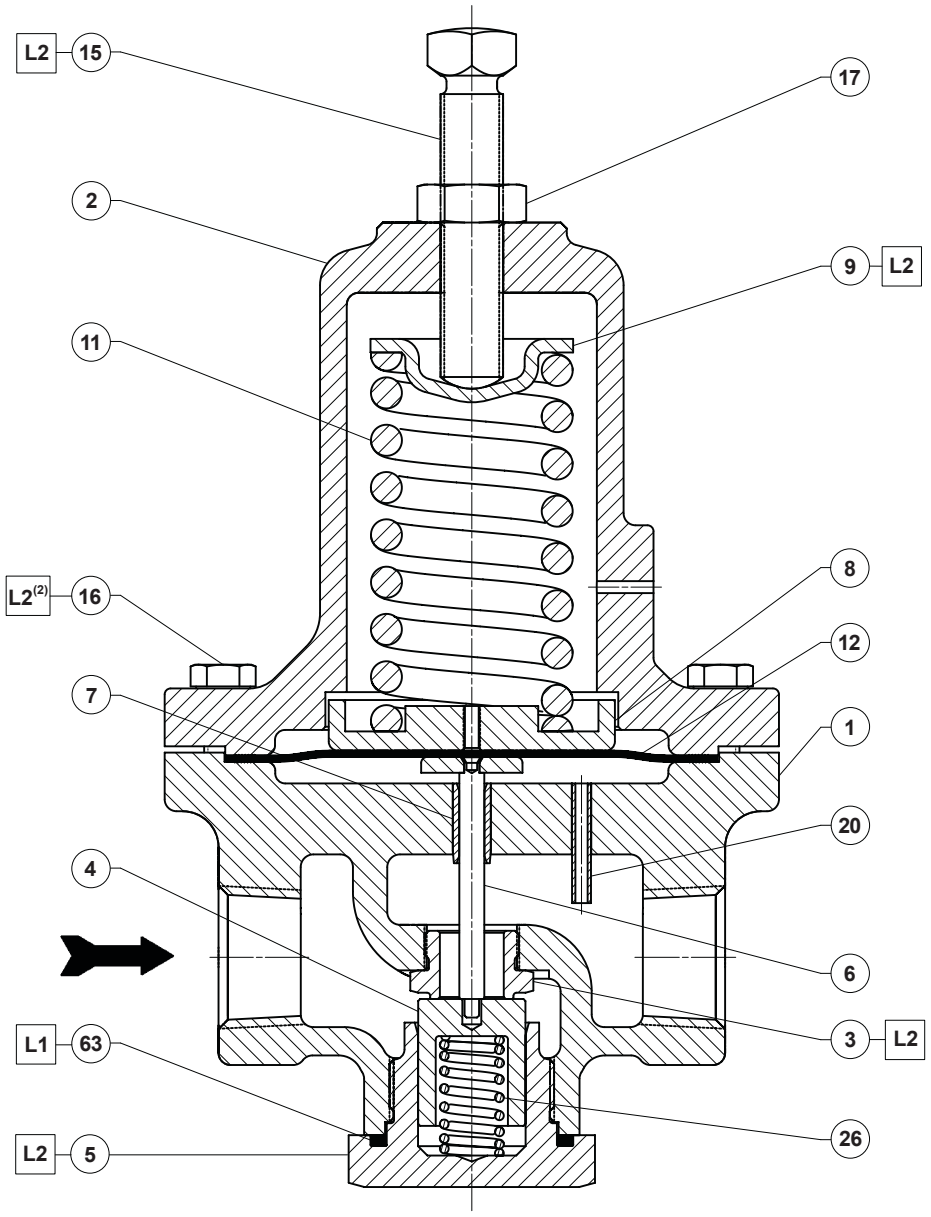


Figure 13. *Type LR125 Cage O-ring Placement*



2, 3 AND 4 IN. / DN 50, 80 AND 100 BODY SIZES

Figure 14. *Type LR125 Travel Indicator Plug Option*

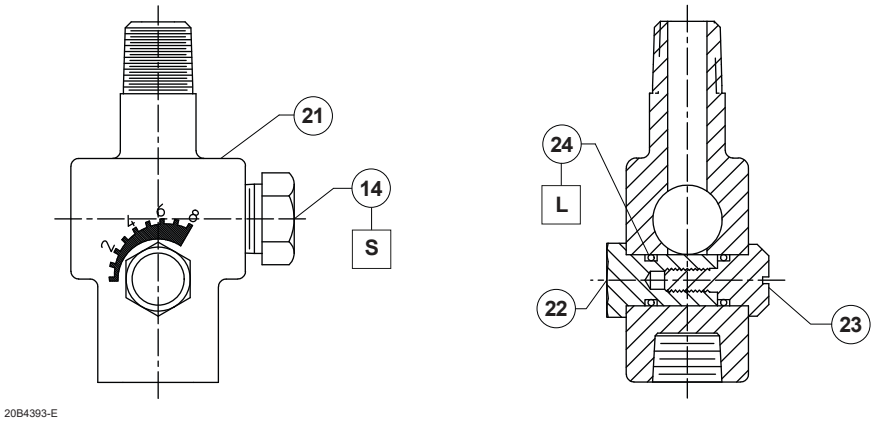


GF04914

☐ **APPLY LUBRICANT / SEALANT(1):**
L1 = GENERAL PURPOSE PTFE OR LITHIUM GREASE
L2 = ANTI-SEIZE COMPOUND

1. Lubricant and sealant must be selected such that they meet the temperature requirements.
2. Apply L2 (anti-seize compound) on key 16 for Stainless steel bolts.

Figure 15. *Type MR95H/MR95HP Pilot Assembly*



☐ **APPLY LUBRICANT / SEALANT(1):**
S = THREAD SEALANT
L = ANTI-SEIZE LUBRICANT

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

Figure 16. *Type 112 Restrictor*

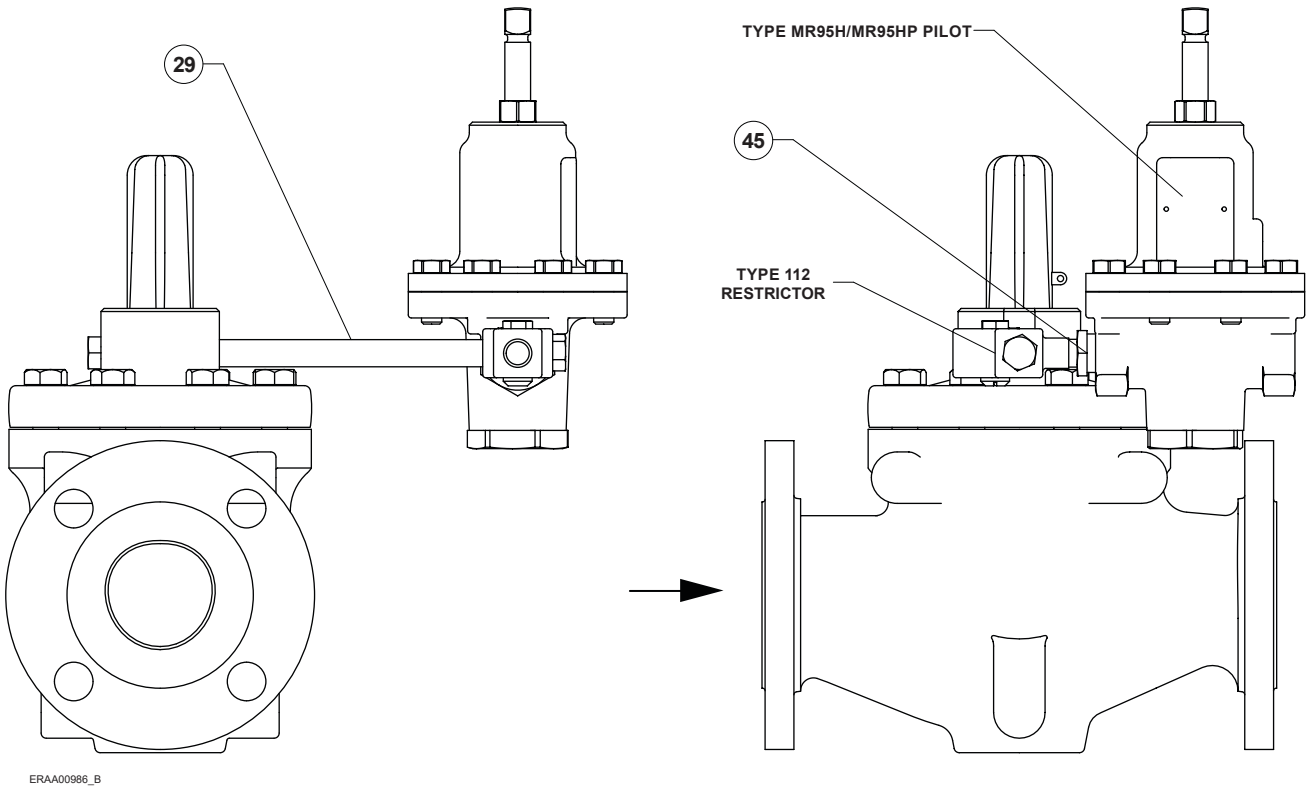


Figure 17. *Standard Type LR125 with Type MR95H/MR95HP Pilot and Type 112 Restrictor*

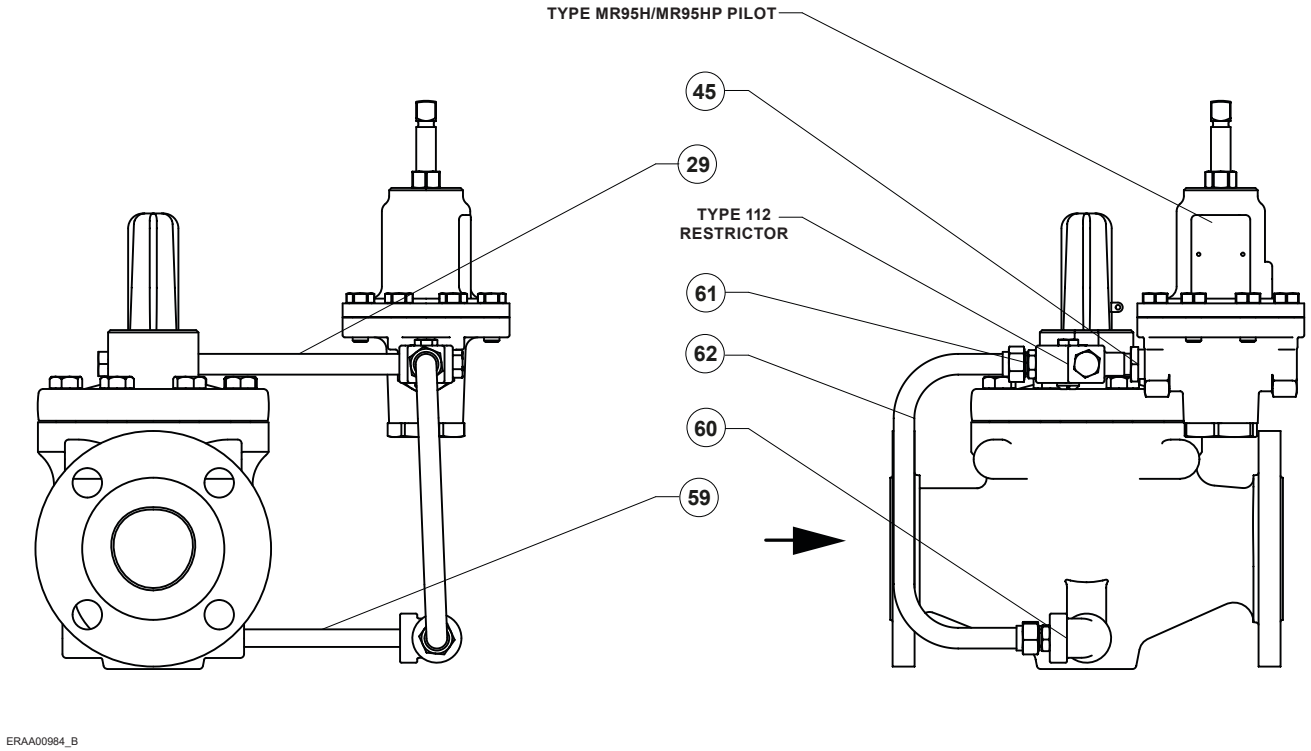


Figure 18. *Type LR125 with Type MR95H/MR95HP Pilot and Type 112 Restrictor with Pre-Piped Pilot Supply*

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