

May 2012

Y610A, Y611A, and Y612A Series Vacuum Service Equipment and Relief Valves

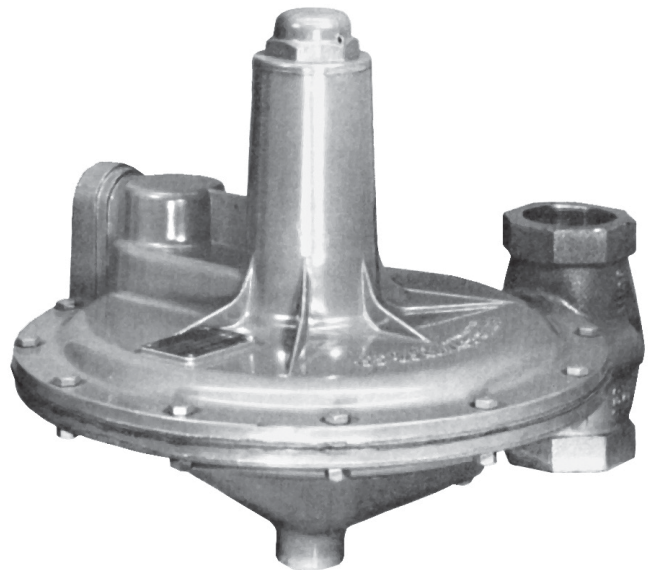


WARNING

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

Fisher® vacuum breakers or relief valves must be installed, operated and maintained in accordance with federal, state, and local codes, rules and regulations, and Emerson Process Management Regulator Technologies, Inc. instructions.

If a leak develops or if the outlet continually vents gas, service to the unit may be required. Failure to correct trouble could result in a hazardous condition. Only a qualified person must install or service the unit.



W1094_1

Figure 1. Type Y610A Vacuum Breaker

Introduction

Scope of the Manual

This manual describes and provides instructions and parts lists for Y610A, Y611A, and Y612A Series vacuum service equipment and relief valves. Instructions and parts lists for other equipment used with these regulators are found in separate manuals.

Product Description

The Y610A, Y611A, and Y612A Series devices are used in a wide variety of vacuum and relief service applications. The Y610A Series devices (Figure 1) are used as vacuum breakers, the Y611A Series devices are used as either vacuum breakers or relief valves, and the Y612A Series devices are used as vacuum regulators, and are described as follows:

Type Y610A—Direct-operated vacuum breaker with upward pointing 1 NPT vent connection, and internal registration requiring no downstream control line.

Type Y610AP—Same as Type Y610A except with blocked throat, diaphragm case assembly tapped 1/2 NPT for control line connection, and O-ring stem seal.

Type Y611A—Direct-operated relief valve with upward pointing 1 NPT vent connection, and internal registration requiring no downstream control line.

Type Y611AP—Direct-operated vacuum breaker with blocked throat, 1 NPT screened side vent, diaphragm case assembly tapped 1/2 NPT for control line connection, and O-ring stem seal.

Y610A, Y611A and Y612A Series

Specifications

The Specifications section gives some general Y610A, Y611A, and Y612A Series ratings and other specifications. Individual regulator data as it comes from the factory is stamped either on the closing cap or on a nameplate (Figure 2).

<p>Body Sizes (Inlet x Outlet) and End Connection Style⁽²⁾</p> <p>Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP: 1-1/2 or 2 NPT, or NPS 2 / DN 50 CL125 FF or CL250 RF flanged</p> <p>Pressure Information⁽¹⁾</p> <p>Type Y610A or Y610AP Vacuum Breaker: See Table 1</p> <p>Type Y611A or Y611AP Relief Valve: See Table 2</p> <p>Type Y612A or Y612AP Vacuum Regulator: See Table 3</p>	<p>Temperature Capabilities⁽¹⁾</p> <p>-20 to 150°F / -29 to 66°C</p> <p>Pressure Registration</p> <p>Type Y610A, Y611A, or Y612A: Internal</p> <p>Type Y610AP, Y611AP, or Y612AP: External</p> <p>Approximate Weights</p> <p>Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP</p> <p><i>With 1-1/2 NPT Body:</i> 25 pounds / 11 kg</p> <p><i>With NPS 2 / DN 50 Body:</i> 30 pounds / 14 kg</p>
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1. The pressure/temperature limits in this Instruction Manual and any applicable standard limitation should not be exceeded.
2. DIN (or other) end connections threaded to various national or international thread standards can usually be supplied; consult your local Sales Office.

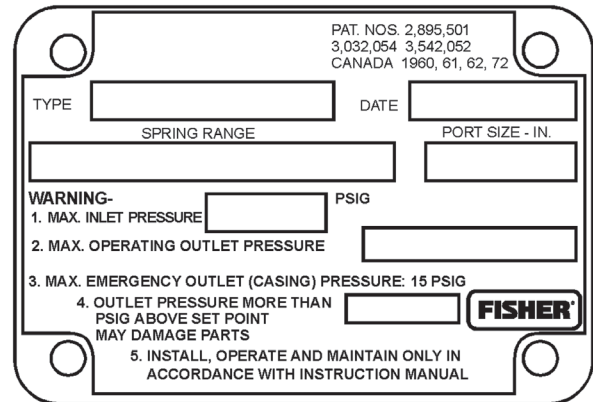
Type Y612A—Direct-operated vacuum regulator with upward pointing 1 NPT vent connection, and internal registration requiring no downstream control line.

Type Y612AP—Same as Type Y612A except with blocked throat, diaphragm case assembly tapped 1/2 NPT for control line connection, and O-ring stem seal.

Installation



Personal injury, property damage, equipment damage, or leakage due to escaping gas or bursting of pressure-containing parts may result if this equipment is overpressured or is installed where service conditions could exceed the limits given in Tables 1 through 3, 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 those limits.



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Figure 2. Nameplate

Additionally, physical damage to this equipment could cause personal injury or property damage due to escaping gas. To avoid such injury or damage, install the equipment in a safe and well ventilated location.

Equipment operation within ratings does not preclude the possibility of damage from debris in the lines or from external sources. This equipment should be inspected for damage periodically and after any overpressure condition.

Y610A, Y611A and Y612A Series

Table 1. Types Y610A and Y610AP Vacuum Breaker Pressure Information

TYPES	MAXIMUM ALLOWABLE INLET (BODY) PRESSURE		MAXIMUM EMERGENCY OUTLET (CASING) PRESSURE (POSITIVE)		SET PRESSURE RANGE (VACUUM)		MAXIMUM ALLOWABLE VACUUM		CONTROL SPRING COLOR CODE, PART NUMBER	CHANGE IN OUTLET (CONTROLLED) PRESSURE REQUIRED TO FULLY OPEN VACUUM BREAKER	
	psig	bar	psig	bar	With Spring Case Above Diaphragm	With Spring Case Below Diaphragm	psig	bar		psig	mbar
Y610A and Y610AP	13	0.90	15	1.0	1 to 3 inches w.c. / 2 to 7 mbar	0 to 2 inches w.c. / 0 to 5 mbar	5.1	0.35	Brown Stripe, 1D892527022	0.043	3
					1.5 to 5 inches w.c. / 4 to 12 mbar	0.50 to 4 inches w.c. / 1 to 10 mbar	5.2	0.36	Pink Stripe, 1D765427012	0.078	5
					3 to 8 inches w.c. / 7 to 20 mbar	2 to 7 inches w.c. / 5 to 17 mbar	5.3	0.37	Purple Stripe, 0B019727052	0.143	1
					8 to 16 inches w.c. / 20 to 40 mbar	7 to 15 inches w.c. / 17 to 37 mbar	5.6	0.39	Gray, 1B766627062	0.181	12
					16 to 32 inches w.c. / 40 to 80 mbar	15 to 31 inches w.c. / 37 to 77 mbar	6.1	0.42	Unpainted, 1B883327022	0.378	26
					0.25 to 3 psig / 17 to 207 mbar	0.25 to 3 psig / 17 to 207 mbar	8.0	0.55	Black, 1A630627022	1.944	134

Table 2. Types Y611A and Y611AP Relief Valve Pressure Information

TYPES	MAXIMUM ALLOWABLE INLET (CASING) PRESSURE ⁽¹⁾		MAXIMUM OPERATING INLET (RELIEF) PRESSURE TO PREVENT PART DAMAGE ⁽¹⁾		INLET RELIEF SET PRESSURE RANGE,		CONTROL SPRING COLOR CODE, PART NUMBER	BUILDUP OVER INLET PRESSURE REQUIRED TO FULLY OPEN RELIEF VALVE	
	psig	bar	psig	bar	With Spring Case Above Diaphragm	With Spring Case Below Diaphragm		psig	mbar
Y611A and Y611AP	15	1.0	5.1	0.35	3 to 4 inches w.c. / 7 to 10 mbar	2 to 3 inches w.c. / 5 to 7 mbar	Red, 1D892627022	0.089	6
			5.2	0.36	3.75 to 6 inches w.c. / 9 to 15 mbar	2.75 to 5 inches w.c. / 6.9 to 12 mbar	Red, 1D892727012	0.100	7
			5.3	0.37	5 to 8 inches w.c. / 12 to 20 mbar	4 to 7 inches w.c. / 10 to 17 mbar	Black, 1D892727012	0.124	9
			5.5	0.38	7 to 16 inches w.c. / 17 to 40 mbar	6 to 15 inches w.c. / 15 to 37 mbar	White Stripe, 1D893227032	0.216	15
			6	0.41	10 to 30 inches w.c. / 25 to 75 mbar	9 to 29 inches w.c. / 22 to 72 mbar	Green, 1D893327032	0.351	24
			6.5	0.45	0.75 to 1.5 psig / 52 to 103 mbar	0.75 to 1.5 psig / 52 to 103 mbar	Blue, 1H975827032	0.648	45
			7.5	0.52	1 to 2.5 psig / 69 to 172 mbar	1 to 2.5 psig / 69 to 172 mbar	Orange, 1H975927032	1.026	71

1. Including buildup.

Note

If this equipment is shipped mounted on another unit, install that unit according to the appropriate instruction manual.

1. Only personnel qualified through training and experience should install, operate, and maintain this equipment. For Y610A, Y611A, or Y612A Series equipment that is shipped separately, make sure that there is no damage to or foreign material in it. Also ensure that all tubing and piping have been blown free.

2. This equipment may be installed in any position as long as the flow through the body is in the direction indicated by the arrow cast on the body. If continuous operation is required during inspection or maintenance, install a three-valve bypass around the equipment.



This equipment may vent some gas to the atmosphere. In hazardous or flammable gas service, vented gas may accumulate and cause personal

Y610A, Y611A and Y612A Series

Table 3. Types Y612A and Y612AP Vacuum Regulator Pressure Information

MAXIMUM ALLOWABLE INLET (CASING) PRESSURE		MAXIMUM OPERATING INLET PRESSURE TO PREVENT PART DAMAGE		SET PRESSURE RANGE (VACUUM)		MAXIMUM ALLOWABLE VACUUM		CONTROL SPRING COLOR CODE, PART NUMBER	CHANGE IN OUTLET (CONTROLLED) PRESSURE REQUIRED TO FULLY OPEN VACUUM REGULATOR					
									5/8-inch / 16 mm Port Diameter		1-inch / 25 mm Port Diameter		1-3/16-inch / 30 mm Port Diameter	
psig	bar	psig	bar	With Spring Case Above Diaphragm	With Spring Case Below Diaphragm	psig	bar		psig	mbar	psig	mbar	psig	mbar
15	1.03	5.1	0.35	1 to 3 inches w.c. / 2.5 to 7 mbar	0 to 2 inches w.c. / 0 to 5 mbar	5.1	0.35	Brown Stripe, 1D892527022	0.089	6.1	0.053	3.6	0.076	5.2
		5.2	0.36	1.5 to 5 inches w.c. / 4 to 12 mbar	0.50 to 4 inches w.c. / 1.2 to 10 mbar	5.2	0.36	Pink Stripe, 1D765427012	0.124	8.6	0.074	5.1	0.106	7.3
		5.3	0.37	3 to 8 inches w.c. / 7 to 20 mbar	2 to 7 inches w.c. / 5 to 17 mbar	5.3	0.37	Purple Stripe, 0B019727052	0.189	13	0.112	7.7	0.161	11
		5.6	0.39	8 to 16 inches w.c. / 20 to 40 mbar	7 to 15 inches w.c. / 17 to 37 mbar	5.6	0.39	Gray, 1B766627062	0.227	16	0.134	9.3	0.193	13
		6.1	0.42	16 to 32 inches w.c. / 40 to 80 mbar	15 to 31 inches w.c. / 37 to 77 mbar	6.1	0.42	Unpainted, 1B883327022	0.405	28	0.240	17	0.345	24
		8.0	0.55	0.25 to 3 psig / 17 to 207 mbar	0.25 to 3 psig / 17 to 207 mbar	8.0	0.55	Black, 1A630627022	1.944	134	1.152	79	1.656	114

injury, death, or property damage due to fire or explosion. Vent equipment in hazardous gas service to a remote, safe location away from air intakes or any hazardous area. The vent line or stack opening must be protected against condensation or clogging.

- A Type Y610A or Y610AP vacuum breaker (Figure 3) is used in applications where an increase in vacuum must be limited. An increase in vacuum (decrease in absolute pressure) is transmitted to the lower side of the diaphragm, opening the disk assembly. This permits atmosphere, or an upstream vacuum that has higher absolute pressure than the downstream vacuum, to enter the system and restore the controlled vacuum to its original pressure setting. A Type Y610A direct-operated vacuum breaker is self-contained and requires no control line. A Type Y610AP vacuum breaker requires a control line from the 1/2 NPT tapping in the diaphragm case assembly (key 20, Figure 4) to a point downstream of the body (key 28, Figure 4).
- A Type Y611AP vacuum breaker (Figure 3) also is used in applications where an increase in vacuum must be limited. An increase in vacuum (decrease in absolute pressure) is transmitted to the upper side of the diaphragm, opening the disk assembly. This permits atmosphere, or an upstream vacuum that has higher absolute pressure than the downstream vacuum, to enter the system and restore the controlled vacuum to its original pressure setting. A Type Y611AP vacuum breaker requires a control line from the 1/2 NPT tapping in the spring case assembly (key 23, Figure 5) to a point downstream of the body (key 28, Figure 5).
- A Type Y611A relief valve (Figure 3) is used to maintain a constant inlet pressure with the outlet flowing to atmosphere or to any system whose pressure is lower than the pressure at the relief valve inlet. An increase in inlet pressure opens the disk assembly, relieving the excess pressure and restoring the inlet pressure to its original setting. A Type Y611A direct-operated relief valve is self-contained and requires no control line.
- A Type Y612A or Y612AP vacuum regulator is used to maintain a constant vacuum at the regulator inlet. A decrease in this vacuum (increase in absolute pressure) beyond this value registers underneath the diaphragm and opens the disk. This permits a downstream vacuum of lower absolute pressure than the upstream vacuum to restore the upstream vacuum to its original pressure setting. A Type Y612A (Figure 6) direct-operated vacuum regulator is self-contained and requires no control line. A Type Y612AP vacuum regulator requires a control line from the 1/2 NPT tapping in the diaphragm case assembly to a point upstream of the body.

Startup and Adjustment

All Y610A, Y611A, or Y612A Series equipment can be placed in operation by slowly introducing inlet vacuum or pressure. This equipment takes control when downstream vacuum or pressure is established.

This equipment is suitable for the pressure range stamped on the nameplate (key 48, Figure 4, 5, or 6), and listed in Tables 1 through 3. To adjust the pressure setting, remove the closing cap (key 3, Figure 4, 5, or 6), the adjusting screw clockwise to increase the pressure setting or counterclockwise to decrease the setting. Replace the cap after making this adjustment. If desired, the closing cap may be wired to the hole provided in the spring case to discourage tampering.

Shutdown

First close the nearest upstream shut-off valve and then close the nearest downstream shut-off valve to vent the equipment properly. Next, open the vent valve between the equipment and the downstream shut-off valve nearest to it. All pressure between these shut-off valves is released through the open vent valve.

Maintenance

Equipment parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends on the severity of service conditions and upon applicable codes and government regulations.



WARNING

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

Body Area

These procedures are for gaining access to the disk assembly, seat ring, and body gasket or diaphragm case O-ring. All pressure must be released from the diaphragm case before the following steps can be performed.

Type Y610A or Y610AP Vacuum Breaker

Key numbers are referenced in Figure 4.

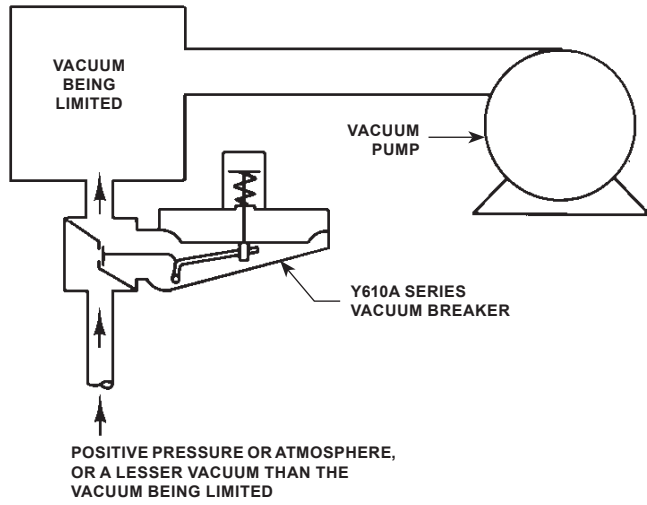
1. To inspect or replace the seat O-ring (key 39) or seat ring (key 27), loosen the diaphragm case cap screws (key 29), remove the union ring (key 20D), and separate the diaphragm case assembly (key 20) from the body (key 28).
2. Remove the diaphragm case O-ring (key 15) and inspect the body (key 28).
3. Inspect and replace the seat ring (key 27) if necessary. Lubricate the threads of the replacement seat ring with a good grade of pipe sealant and tighten using 29 to 37 foot-pounds / 39 to 50 N•m of torque.
4. If it is necessary to replace the seat O-ring (key 39), remove the disk assembly cap screw (key 44), seal washer (key 45), seat O-ring washer (key 32), and seat O-ring from the valve stem (key 13).
5. Install the seat O-ring (key 39), seat O-ring washer (key 32), and seal washer (key 45) onto the seat O-ring holder (key 31), and secure with the disk assembly cap screw (key 44).
6. If necessary, install a replacement diaphragm case O-ring (key 15) into the body (key 28).
7. Install the diaphragm case assembly (key 20) on the body (key 28) and secure with the union ring (key 20D) and diaphragm case cap screws (key 29).

Type Y611A or Y611AP Vacuum Breaker or Relief Valve or Type Y612A or Y612AP Vacuum Regulator

Types Y611A and Y611AP key numbers are referenced in Figure 5 and Types Y612A and Y612AP key numbers are referenced in Figure 6.

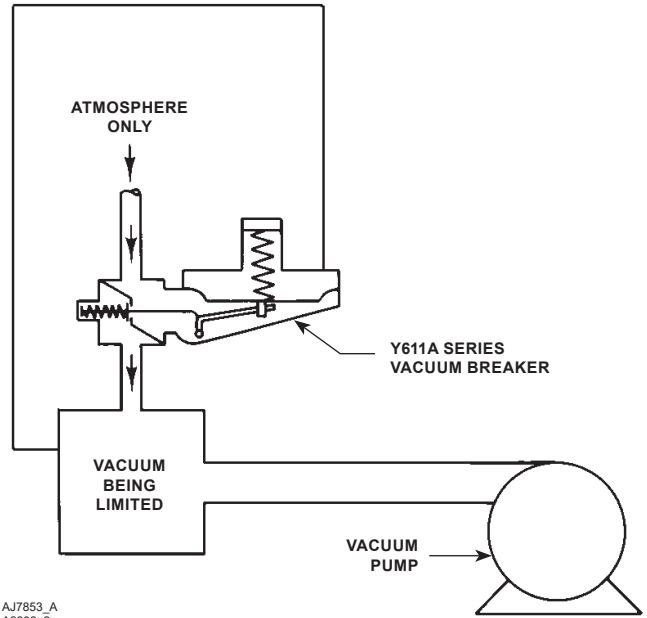
1. To inspect and replace the disk assembly (key 25), remove the body cap (key 38).
2. Unscrew the disk spacer (key 43) and remove the disk assembly (key 25), disk assembly gasket (key 26), and disk spring (key 41) from the valve stem (key 40).
3. To inspect and replace the seat ring (key 27), loosen the diaphragm case cap screws (key 29), remove the union ring (key 20D), and separate the diaphragm case assembly (key 20) from the body (key 28).
4. Remove the diaphragm case O-ring (key 15) and inspect the body (key 28).

Y610A, Y611A and Y612A Series



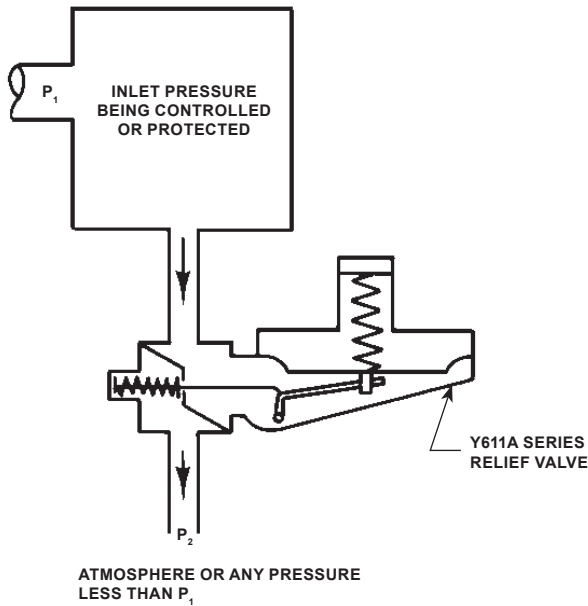
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Y610A SERIES VACUUM BREAKER



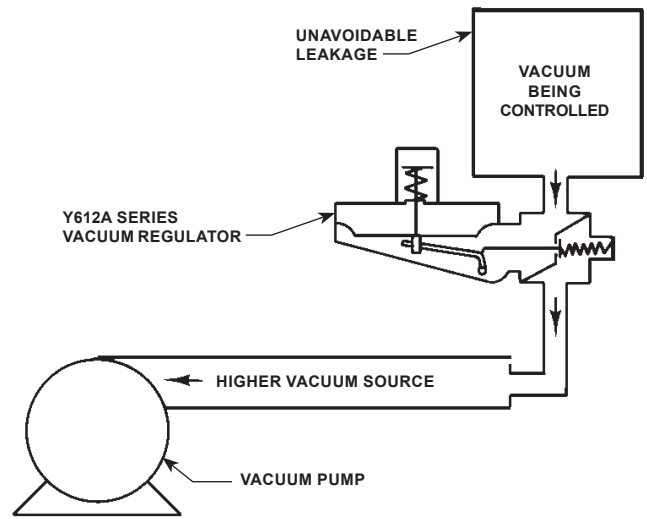
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Y611A SERIES VACUUM BREAKER



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Y611A SERIES RELIEF VALVE



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Y612A SERIES VACUUM REGULATOR

Figure 3. Installation Schematics

5. Inspect and replace the seat ring (key 27) if necessary. Lubricate the threads of the replacement seat ring with a good grade of pipe sealant and tighten using 29 to 37 foot-pounds / 39 to 50 N•m of torque.
6. If necessary, install a replacement diaphragm case O-ring (key 15) into the body (key 28).
7. Install the diaphragm case assembly (key 20) on the body (key 28) and secure with the union ring (key 20D) and diaphragm case cap screws (key 29).
8. Install the disk spring (key 41), disk assembly gasket (key 26), and disk assembly (key 25) on the disk stem (key 40) and attach using the disk spacer (key 43).
9. Use a good quality thread sealer when replacing the body cap (key 38) assembly.
6. Grease the replacement stem seal O-ring (key 46) with a good grade of elastomer lubricant and install on the valve stem (key 13). Install the valve stem by pushing it into the stem adaptor (key 60) and perform Type Y610A or Y610AP body area maintenance procedure steps 5 and 6 if necessary.
7. Install the lever assembly (key 9) into the valve stem (key 13) and secure the lever assembly (key 9) with the lever pin (key 10) and machine screws (key 11).
8. Install the small diaphragm plate gasket (key 7), diaphragm plate (key 24), and diaphragm (key 5) on the pusher post (key 8) and attach with the diaphragm nut (key 37). Tighten using 30 to 45 foot-pounds / 41 to 61 N•m of torque.
9. Install the pusher post (key 8) plus attached diaphragm parts onto the lever assembly (key 9).
10. Install the spring case assembly (key 23) and control spring (key 1) on the diaphragm case assembly (key 20) so that the vent assembly (key 65, not shown) is correctly oriented, and secure them with the spring case cap screws (key 21) and hex nuts (key 22) to finger tightness only.

Diaphragm and Spring Case Area

These procedures are for gaining access to the control spring, diaphragm assembly, valve stem, and stem O-ring. All pressure must be released from the diaphragm case before these steps can be performed.

Type Y610A or Y610AP Vacuum Breaker

Key numbers are referenced in Figure 4.

1. Remove the closing cap (key 3) and turn the adjusting nut (key 18) counterclockwise until all compression is removed from the control spring (key 1).
2. Remove the spring case cap screws (key 21) and hex nuts (key 22) and lift off the spring case assembly (key 23). If the only further maintenance is to change the control spring (key 1), skip to step 10.
3. Remove the diaphragm (key 5) and attached parts by tilting it so that the pusher post (key 8) slips off the lever assembly (key 9). To separate the diaphragm (key 5) from the attached parts, unscrew the diaphragm nut (key 37). If the only further maintenance is to replace the diaphragm parts or change the control spring (key 1), skip to step 8.
4. To replace the lever assembly (key 9), remove the machine screws (key 11) and lever pin (key 10).
5. To replace the valve stem (key 13) or stem seal O-ring (key 46) perform Type Y610A or Y610AP body area maintenance procedure step 4 and pull the valve stem out of the stem adaptor (key 60).
11. Turn the adjusting nut (key 18) clockwise until there is enough control spring (key 1) force to provide proper slack to the diaphragm (key 5) and attached parts. Using a crisscross pattern, finish tightening the spring case cap screws (key 21) and hex nuts (key 22) to 55 to 75 inch-pounds / 6.2 to 8.5 N•m of torque. Then finish turning the adjusting nut (key 18) to the desired set pressure setting.
12. Install a replacement closing cap gasket (key 35) if necessary, and then install the closing cap (key 3).

Type Y611A or Y611AP Vacuum Breaker or Relief Valve

Key numbers are referenced in Figure 5.

1. Remove the closing cap (key 3) and turn the adjusting screw (key 2) counterclockwise until all compression is removed from the control spring (key 1).
2. Remove the spring case cap screws (key 21) and hex nuts (key 22) and lift off the spring case assembly (key 23). If the only further maintenance is to change the control spring (key 1), skip to step 10.

Y610A, Y611A and Y612A Series

3. Remove the diaphragm (key 5) and attached parts by tilting it so that the pusher post (key 8) slips off the lever assembly (key 9). To separate the diaphragm (key 5) from the attached parts, unscrew the diaphragm plate cap screw (key 64). If the only further maintenance is to replace the diaphragm parts or change the control spring (key 1), skip to step 8.
4. To replace the lever assembly (key 9), remove the machine screws (key 11) and lever pin (key 10).
5. To replace the valve stem (key 13) or stem seal O-ring (key 46) pull the valve stem out of the stem adaptor (key 60).
6. Grease the replacement stem seal O-ring (key 46) with a good grade of elastomer lubricant and install on the valve stem (key 13). Install the valve stem by pushing it into the stem adaptor (key 60).
7. Install the lever assembly (key 9) into the valve stem (key 13) and secure the lever assembly (key 9) with the lever pin (key 10) and machine screws (key 11).
8. Install the small diaphragm plate gasket (key 7), diaphragm plate (key 24), and diaphragm (key 5) on the pusher post (key 8) and attach with the diaphragm plate cap screw (key 64). Tighten using 30 to 45 foot-pounds / 41 to 61 N•m of torque.
9. Install the pusher post (key 8) plus attached diaphragm parts onto the lever assembly (key 9).
10. Install the spring case assembly (key 23) and control spring (key 1) on the diaphragm case assembly (key 20) so that the vent assembly (key 65, not shown) is correctly oriented, and secure them with the spring case cap screws (key 21) and hex nuts (key 22) to finger tightness only.
11. Turn the adjusting screw (key 2) clockwise until there is enough control spring (key 1) force to provide proper slack to the diaphragm (key 5) and attached parts. Using a crisscross pattern, finish tightening the spring case cap screws (key 21) and hex nuts (key 22) to 55 to 75 inch-pounds / 6.2 to 8.5 N•m of torque. Then finish turning the adjusting screw (key 2) to the desired set pressure setting.
12. Install a replacement closing cap gasket (key 35) if necessary, and then install the closing cap (key 3).

Type Y612A or Y612AP Vacuum Regulator

Key numbers are referenced in Figure 6.

1. Remove the closing cap (key 3) and turn the adjusting nut (key 18) counterclockwise until all compression is removed from the control spring (key 1).
2. Remove the spring case cap screws (key 21) and hex nuts (key 22) and lift off the spring case assembly (key 23). If the only further maintenance is to change the control spring (key 1), skip to step 10.
3. Remove the diaphragm (key 5) and attached parts by tilting it so that the pusher post (key 8) slips off the lever assembly (key 9). To separate the diaphragm (key 5) from the attached parts, unscrew the diaphragm nut (key 37). If the only further maintenance is to replace the diaphragm parts or change the control spring (key 1), skip to step 8.
4. To replace the lever assembly (key 9), remove the machine screws (key 11) and lever pin (key 10).
5. To replace the valve stem (key 13) or stem seal O-ring (key 46) pull the valve stem out of the stem adaptor (key 60).
6. Grease the replacement stem seal O-ring (key 46) with a good grade of elastomer lubricant and install on the valve stem (key 13). Install the valve stem by pushing it into the stem adaptor (key 60).
7. Install the lever assembly (key 9) into the valve stem (key 13) and secure the lever assembly (key 9) with the lever pin (key 10) and machine screws (key 11).
8. Install the small diaphragm plate gasket (key 7), diaphragm plate (key 24), and diaphragm (key 5) on the pusher post (key 8) and attach with the diaphragm nut (key 37). Tighten using 30 to 45 foot-pounds / 41 to 61 N•m of torque.
9. Install the pusher post (key 8) plus attached diaphragm parts onto the lever assembly (key 9).
10. Install the spring case assembly (key 23) and control spring (key 1) on the diaphragm case assembly (key 20) so that the vent assembly (key 65, not shown) is correctly oriented, and secure them with the spring case cap screws (key 21) and hex nuts (key 22) to finger tightness only.

Y610A, Y611A and Y612A Series

11. Turn the adjusting nut (key 18) clockwise until there is enough control spring (key 1) force to provide proper slack to the diaphragm (key 5) and attached parts. Using a crisscross pattern, finish tightening the spring case cap screws (key 21) and hex nuts (key 22) to 55 to 75 inch-pounds / 6.2 to 8.5 N•m of torque. Then finish turning the adjusting nut (key 18) to the desired set pressure setting.
12. Install a replacement closing cap gasket (key 35) if necessary, and then install the closing cap (key 3).

Parts Ordering

When corresponding with the local Sales Office about this regulator, include the type number and all other pertinent information stamped on the closing cap (key 3) or nameplate (key 48). Specify the eleven-character part number when ordering new parts from the following parts list.

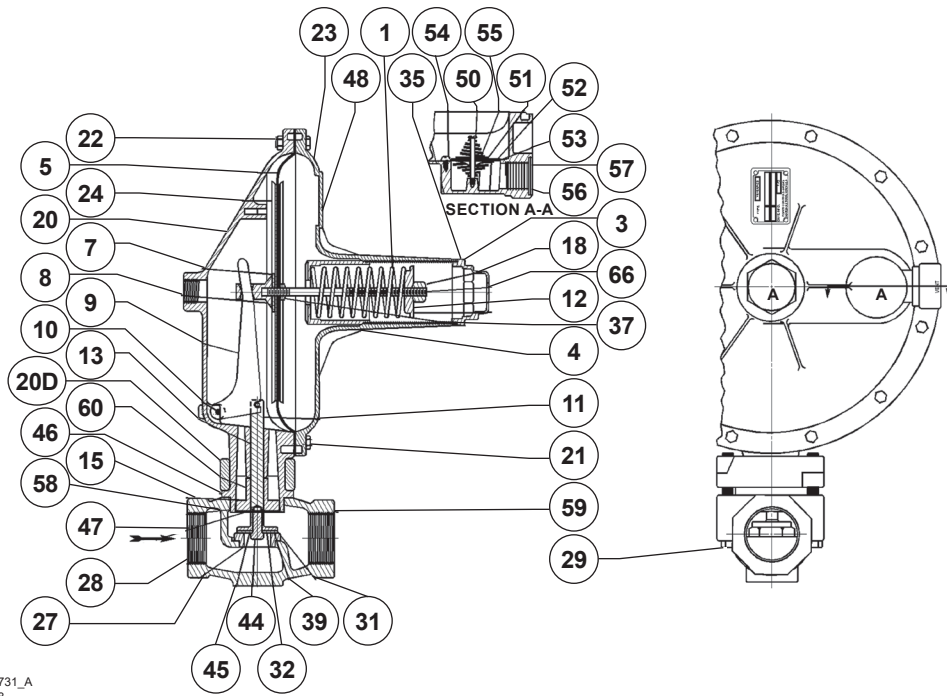
Parts List (Figures 4 through 6)

Key	Description	Part Number
1	Control Spring, Steel	See following table
2	Adjusting Screw Type Y611A or Y611AP, For aluminum	1L928608012
3	Closing Cap Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1L928308012
4	Control Spring Seat Type Y610A, Y610AP, Y612A, or Y612AP, Cast iron	1U226019012
5*	Diaphragm, Aluminum Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1K649602052
7*	Small Diaphragm Plate Gasket Type Y610A, Y610AP, Y611A, or Y611AP, Aluminum	1L143403022
8	Pusher Post Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1L143311992
9	Lever Assembly, Plated steel Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1H974028992
10	Lever Pin Stainless steel	1H972935032
11	Machine Screw (2 required) Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP, Plated steel	1B420428982
12	Control Spring Seat Steel	See following table
13	Stem Assembly Type Y610A, Aluminum Type Y610AP, Aluminum Type Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1H9748000A2 1L1426000A2 1L2212000A2
15*	Diaphragm Case O-ring, Nitrile (NBR)	1F358106992
18	Adjusting Nut (for Type Y610A, Y610AP, Y612A, or Y612AP only), Brass	1A201914012

Key	Description	Part Number
20	Diaphragm Case Assembly Type Y610A, Y611A, or Y612A, Aluminum Type Y610AP, Y611AP, or Y612AP, Aluminum	1H9751X0012 1H9751X0022
21	Spring Case Cap Screw, Plated steel Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP (12 required)	1B136324052
22	Hex Nut, Cadmium Plated steel Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP (12 required)	1A309324122
23	Spring Case Assembly Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP, Aluminum	4L142308032
24	Diaphragm Plate	See following table
25*	Disk Assembly (not used with Type Y610A or Y610AP) Type Y611A, Y611AP, Y612A, or Y612AP, Aluminum disk holder and Nitrile (NBR) disk	1H9739000A2
26*	Disk Assembly Gasket (for Type Y611A, Y611AP, Y612A, or Y612AP only), Composition	1F826804022
27*	Seat Ring Type Y610A or Y610AP, Aluminum 3/4-inch / 19 mm, port diameter 1-3/8-inch / 30 mm, port diameter Type Y611A or Y611AP, Aluminum 1-3/8-inch / 30 mm, port diameter Type Y612A or Y612AP, Aluminum 5/8-inch / 16 mm, port diameter 1-inch / 25 mm, port diameter 1-3/8-inch / 30 mm, port diameter	1H979509022 1L220809022 1H980809022 1H980509022 1H980709022 1H980809022
28	Body Type Y610A or Y610AP Cast iron 1-1/2 NPT 2 NPT NPS 2 / DN 50, CL125 FF flanged Steel 1-1/2 NPT 2 NPT Type Y611A, Y611AP, Y612A, or Y612AP Cast iron 1-1/2 NPT 2 NPT NPS 2 / DN 50, CL125A FF flanged Steel 1-1/2 NPT 2 NPT	1J190319012 1H974919012 2K184219012 1K787922012 1K791222012 1J190519012 1H974319012 1K184319012 1K788022012 1K792222012
29	Diaphragm Case Cap Screw (for Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP only), Plated steel (2 required)	1H974724052
31	Seat O-ring Holder (for Type Y610A or Y610AP only), Aluminum	1L154909012
32	Seat O-ring Washer (for Type Y610A or Y610AP only), Aluminum	1V5121X0012
35*	Closing Cap Gasket, Neoprene (CR) Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1N446206992
37	Diaphragm Nut (for Type Y610A, Y610AP, Y612A, or Y612AP only), Aluminum	1A499724122
38	Body Cap Assembly Type Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1R236109022
39*	Seat O-ring (for Type Y610A or Y610AP only), Nitrile (NBR)	1F269206992
40	Valve Stem Type Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1H973509082
41	Back Disk Spring Type Y611A, Y611AP, Y612A, or Y612AP	1L303837022
43	Disk Spacer Type Y611A, Y611AP, Y612A, or Y612AP, Aluminum	1H973609012

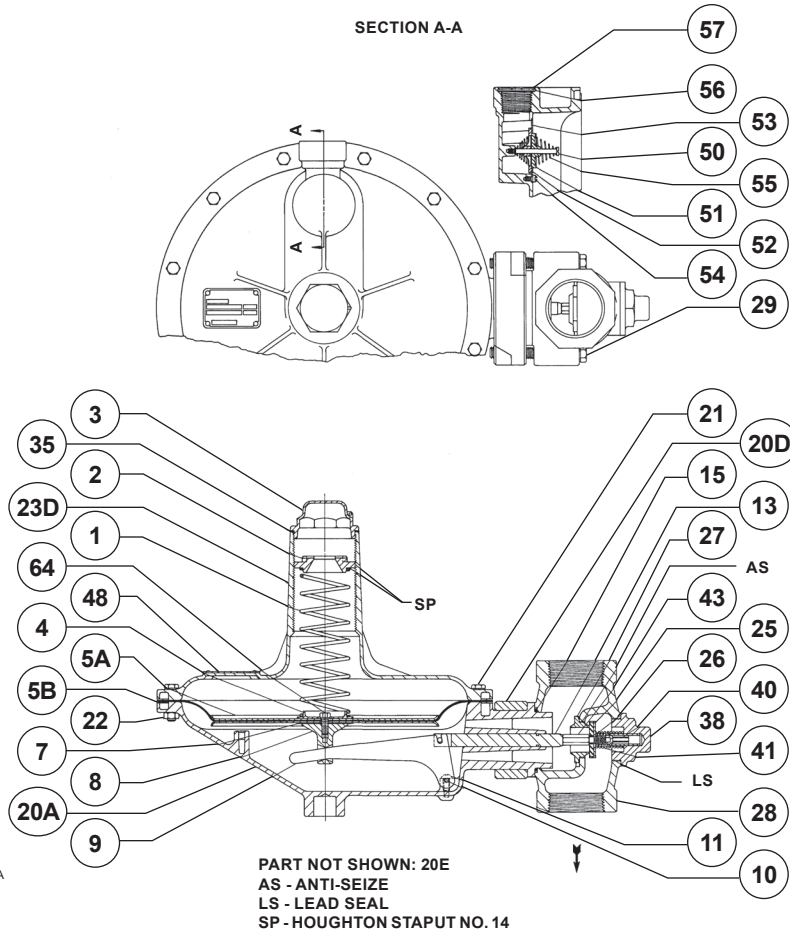
*Recommended Spare Part

Y610A, Y611A and Y612A Series



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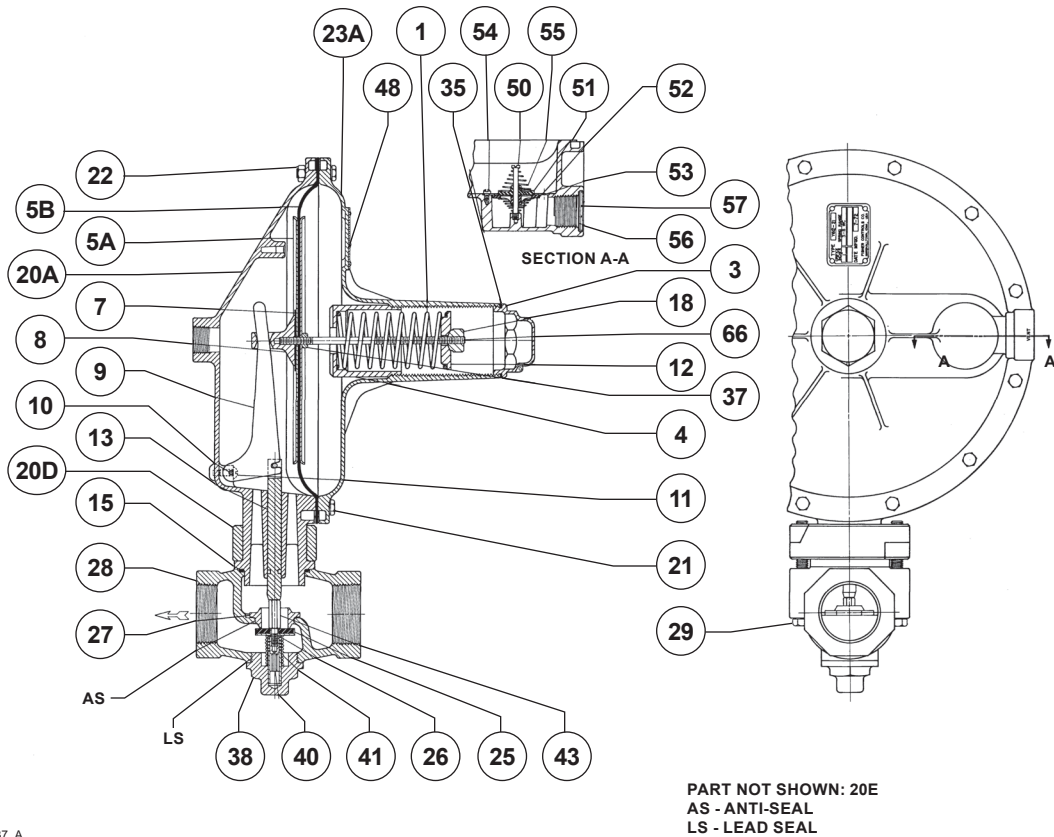
Figure 4. Type Y610AP Vacuum Breaker



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Figure 5. Type Y611A Relief Valve Assembly

Y610A, Y611A and Y612A Series



51A1737_A

Figure 6. Type Y612A Vacuum Regulator

- Key 1 Control Spring, Steel
- Key 12 Control Spring Seat, Steel
- Key 24 Diaphragm Plate, Steel
- Key 64 Diaphragm Plate Cap Screw, Plated steel

TYPES	KEY 1 ⁽¹⁾		KEY 12	KEY 24		KEY 64
	Color Code	Part Number	Part Number	Part Number	Quantity Required	Part Number
Y610A and Y610AP	Brown Stripe	1D892527022	1A869524092	0B006628982	2	-----
	Pink Stripe	1D765427012	1A869524092	0B006628982	2	-----
	Purple Stripe	0B019727052	1A869524092	0B006628982	2	-----
	Gray	1B766627062	1A869524092	0B006628982	2	-----
	Unpainted	1B883327022	1A626424092	0B006628982	2	-----
	Black	1A630627022	1A626424092	1A347825022	2	-----
Y611A and Y611AP	Red	1D892627022	-----	0B006628982	2	1C473224052
	Red	1D892627022	-----	0B006628982	2	1C473224052
	Black Stripe	1D892727012	-----	0B006628982	2	1C473224052
	White Stripe	1D893227032	-----	0B006628982	2	1C473224052
	Green	1D893327032	-----	0B006628982	2	1C473224052
	Blue	1H975827032	-----	1A347825022	2	1A667824052
	Orange	1H975927032	-----	1A347825022	2	1A667824052
Y612A and Y612AP	Brown Stripe	1D892527022	1A869524092	0B006628982	2	-----
	Pink Stripe	1D765427012	1A869524092	0B006628982	2	-----
	Purple Stripe	0B019727052	1A869524092	0B006628982	2	-----
	Gray	1B766627062	1A869524092	0B006628982	2	-----
	Unpainted	1B883327022	1A626424092	0B006628982	2	-----
	Black	1A630627022	1A626424092	1A347825022	2	-----

1. See Tables 1 through 3 for spring ranges.

Y610A, Y611A and Y612A Series

Parts List (Figures 4 through 6) (continued)

Key	Description	Part Number	Key	Description	Part Number
44	Cap Screw (for Type Y610A or Y610AP only), Aluminum	1E760324052	55	Spring (2 required) Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1H976837022
45	Dyna-Seal Washer (for Type Y610A or Y610AP only), Aluminum	1F990428982	56	Screen Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1E564843122
46*	Stem Seal O-ring (for Type Y610AP, Y611AP, or Y612AP only), Nitrile (NBR)	1E216306992	57	Snap Ring Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1E564937022
50	Flapper Stem Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1H976335022	58	Retaining Ring Type Y610AP, Y611AP, or Y612AP	1L142838992
51	Lower Flapper Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1H976406992	59	O-Ring Type Y610AP, Y611AP, or Y612AP	1L142906992
52	Upper Flapper Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1H976506992	60	Stem Adaptor Type Y610AP, Y611AP, or Y612AP	1L143109012
53	Flapper Seat (for Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP only), Stainless steel	T13609T0012	64	Diaphragm Plate Cap Screw, Plated steel	See table on page 11
54	Self Tapping Screw (3 required) Type Y610A, Y610AP, Y611A, Y611AP, Y612A, or Y612AP	1H976728982	65	Type Y602-1 Vent Assembly, Spring Case Up Spring Case Down	Type Y602-11 Type Y602-2
			66	Stem Type Y610A, Y610AP, Y612A, or Y612AP	1A626314012

*Recommended Spare Part

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