OPERATIONS & MAINTENANCE

M A N U A L

Reduced Pressure

Backflow Prevention Assemblies

Models
825Y, 825YA, 845
825, 825D,
825YD, and 826YD

FEBCO®
BACKFLOW PREVENTION

Warranty

All products manufactured and sold by CMB Industries, Inc. carry with them the following warranty: CMB Industries, Inc. warrants to the original purchaser (who is the end user) all products manufactured by it will be free from defects in workmanship and material for a period of one (1) year from the date of original shipment.

CMB Industries, Inc. also warrants that all internal components of 1/2" through 2" Model 850/860 and 1/2" through 1" Model 766 products, will be free from defects in workmanship and material for a period of five (5) years from the date of original shipment and also that the body only of the 1/2" through 1 1/4" Model 765 will be subject to a lifetime warranty against damage by freezing.

This warranty is applicable provided such products are used under normal conditions within the recognized pressure, flow and temperature limits and are given normal service and care. CMB INDUSTRIES, INC. MAKES NO OTHER REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IN FACT OR IN LAW, AND EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. In the event of a defect in material or workmanship of a product covered by this warranty, CMB Industries, Inc. shall, at its sole option, repair or replace such defective product. CMB Industries, Inc. shall not be liable for any labor required to repair or replace any product covered by this warranty. This warranty is void with respect to any such product which is altered or tampered with by anyone without prior consent of CMB Industries, Inc. CMB Industries, Inc. shall not be liable under any circumstances for damages caused by accident, misuse or abuse of the product or for failure to follow the installation, maintenance or operating instructions. IN NO EVENT SHALL CMB INDUSTRIES BE LIABLE FOR INCIDENTAL, INDIRECT, PERSONAL INJURY, PROPERTY OR PUNITIVE DAMAGES.

To make a claim under this warranty, the buyer must notify the factory in writing within ten (10) days of discovery of any claimed defects or workmanship, and if authorized by the factory, shall return the product in the same condition as when received by the buyer, transportation prepaid, to the factory or to such other location as directed by the factory. If said returned product is found by the factory to be defective in workmanship or materials, it shall be repaired or replaced without charge, pursuant to the terms of this warranty. This warranty excludes component parts or appurtenances not manufactured by CMB Industries, Inc. Any claims with respect to such equipment must be made to the manufacturer thereof in accordance with the terms of the warranty, if any, given by such manufacturer, or pursuant to such warranties as may exist by law. The physical or chemical properties of CMB Industries, Inc. products represent typical, average values obtained in accordance with test methods and are subject to normal manufacturing variations. This information is supplied as a technical service and is subject to change without notice.

How to order repair parts

1) Locate item number and kit number in this maintenance manual.
2) Verify the size of the valve the parts are to be used on.
3) Provide full model number. On large assemblies (2 1/2" - 10"), the model number is located on the name plate. On small assemblies (3/4" - 2"), the model number is cast on the body.
4) Identify the "type" code on 2 1/2" - 10" size valves (Ductile Iron bodies use Type D or YD code on name plate).
5) Give part number. Provide new part number if appropriate.
6) A serial number (located on the I.D. plate) will assist in ordering the proper kits.
7) Some parts are sold only in kit form.

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Feature and Operating Procedures

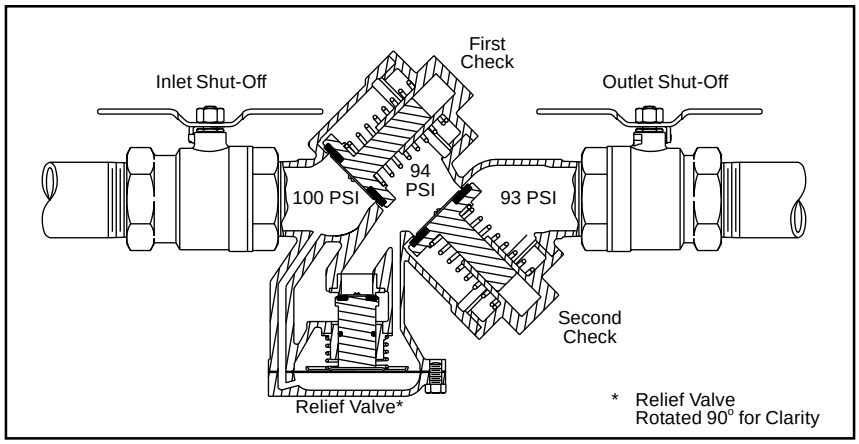
Reduced Pressure Backflow Preventer

FEBCO manufactures several models of Reduced Pressure Backflow preventers. The Model 825Y, 845 and 825YA are available in sizes ¾" - 2". The FEBCO Model 825 sizes 2½" - 10" were manufactured with cast iron. The FEBCO Model 825 Type D and 825 Type YD sizes 2½" - 10" are manufactured with standard body material of ductile iron.

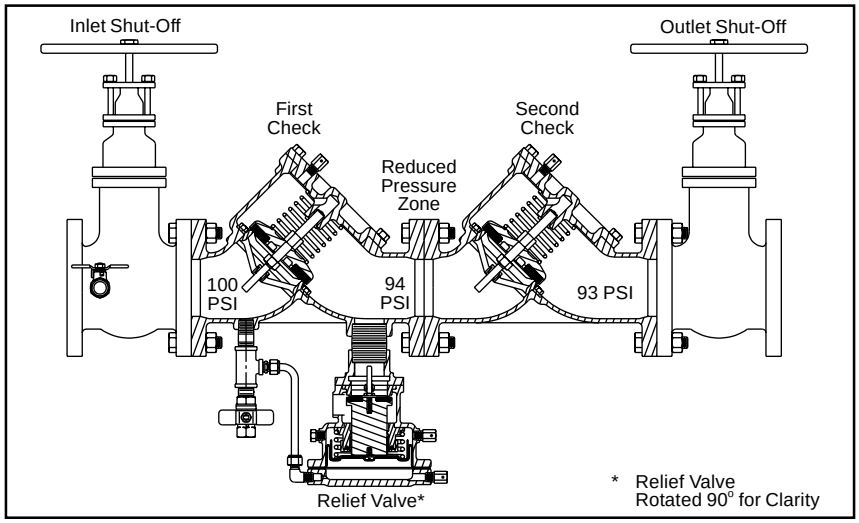
The FEBCO Reduced Pressure Backflow preventer assembly consists of two independently operating, spring loaded check valves with a pressure differential relief valve located between the two checks. The pressure drop across the first check valve is approximately 6.0 PSID with no flow. The relief valve consists of a hydraulically balanced diaphragm with the high pressure side hydraulically connected to the upstream side of the first check. The low pressure side is hydraulically connected to the reduced pressure zone, thus the relief valve remains closed during normal operation. The low pressure side of the diaphragm is spring loaded to force the relief valve open when the pressure drop across the first check (and across the diaphragm) reduces to approximately 2.5 PSID. A complete assembly includes two shut-off valves and four test cocks.

Example sectional views below show typical components and flow passages with corresponding pressure readings (no flow conditions) at the various locations within the assembly.

Model 825Y/845
(¾" - 2")
Figure No. 1



Model 825YD
(2½" - 10")
Figure No. 2



Installation Guidelines

Proper installation of the assembly is essential to the protection of the water supply. The following are important characteristics of a proper installation.

1. The assembly should be Installed in a horizontal position with a minimum clearance of 12" between the relief valve discharge port and floor or grade, and a minimum of 18" horizontal clearance around the unit for access and ease of testing and maintenance of the relief valve.
2. Approval agencies do not recommend installation of a Reduced Pressure Assembly in a pit. Flooding of the pit can result in cross connection contamination. If local codes permit installation of a Reduced Pressure Assembly in a pit, adequate drainage must be provided to prevent the pit from flooding under maximum discharge conditions.
3. Placement of the assembly should be planned where water discharged from the relief port will not be objectionable or cause damage to property and/or equipment.
4. To be approved by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC), the assembly must be purchased and installed with resilient seated shut-offs to insure bubble tight closure for more consistent results during testing. CAUTION: Open and close resilient seated shut-offs slowly to prevent water hammer damage to the system and assembly.
5. Since the FEBCO Reduced Pressure Assembly is designed to be serviced while in line, the unit need not be removed from the line during servicing.
6. Insure the supply water pressure does not exceed the manufacturer's maximum water pressure rating of the assembly to avoid damage to the system or the assembly caused by system pressure. In addition, protection must be provided against thermal water expansion, extreme backpressure and/or water hammer.
7. Most field problems occur because dirt or debris present in the system at the time of installation becomes trapped in the first check seating area resulting in continuous discharge from the relief valve in a static or backflow condition. **THE SYSTEM SHOULD BE FLUSHED BEFORE THE ASSEMBLY IS INSTALLED.** However, to effectively flush the system after the assembly has been installed, remove the internal components of both checks and open the inlet shut-off to allow water to flow for a sufficient time to flush debris from the line and assembly. If debris In the water system continues to cause fouling, a strainer can be installed upstream of the assembly.

Typical Installations

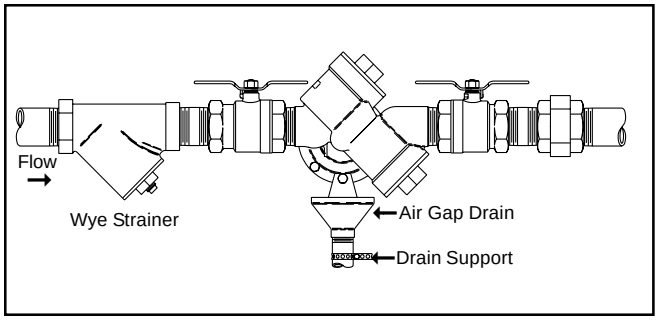


Figure No. 3

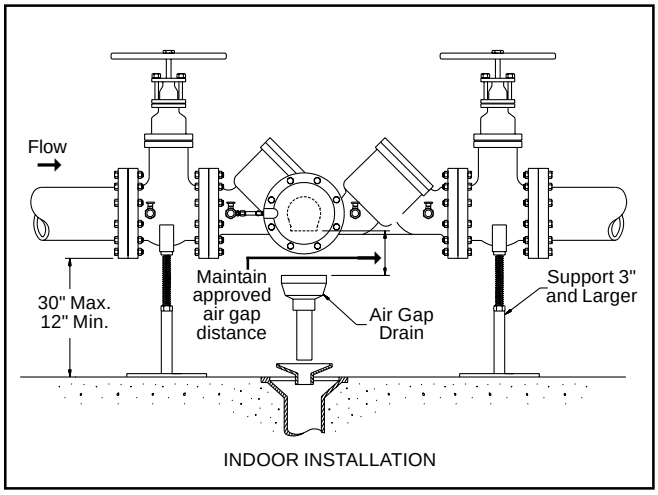


Figure No. 4

Freeze Protection Procedure

The reduced pressure backflow prevention assembly is subject to damage if the internal water is allowed to freeze. It is suggested that all assemblies be installed with resilient seated shut-offs so that a drip tight closure can be achieved to prevent refilling of the assembly after the freeze protection procedure is performed. The unit must be protected from freezing by a heated enclosure, draining, insulation using heat tape, or other suitable means. However, the unit must always be accessible for testing and maintenance. If the system will be shut down during freezing weather, use the following procedure to drain internal passages.

The Model 825YA can be removed from the line as a winterizing procedure. See Figure 5 for proper ball valve procedure.

Model 825Y/845 (¾" - 2") Reduced Pressure Zone and Relief Valve Freeze Protection

1. Slowly close the main shut-off valve upstream of the assembly, which provides water to the system.
2. Drain system water upstream of the first check by means other than through the assembly.

Check Valve Draining Procedure

3a. First check (zone) Open #2 and #3 test cocks. All water between the first and second check valves will drain through the relief valve port.

3b. Second check (downstream)—Remove the second check cap, spring and disc holder. All water downstream of the second check (that is higher than the outlet shut-off valve) will drain through the body.

Relief Valve Draining Procedure

4a. If device is equipped with optional drain plugs, remove plugs in the relief valve cover and body. Open #2 and #3 test cocks. All water will drain through plug holes.

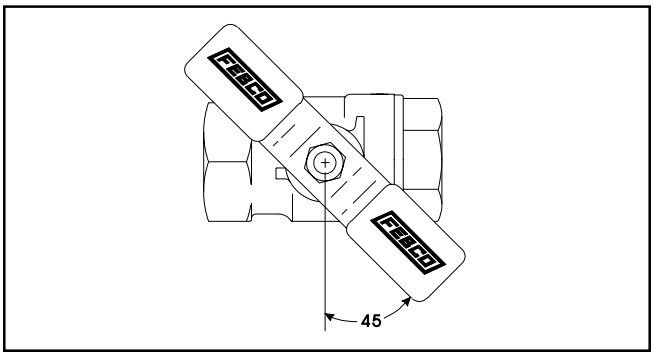
4b. For standard models (not equipped with optional drain plugs) loosen the relief valve cover and allow water to drain from both sides of the diaphragm.

Ball Valve Shut-Off Draining Procedure

5a. If the assembly has been installed with ball valve shut-off valves, they must also be properly drained to prevent freeze damage. After draining procedure has been completed on the backflow prevention assembly, position all ball valve shut-offs and test cocks in a half open/half closed (45 degree) position. (see Figure 5)

5b. Open the ball valve approximately 45 degrees while draining the pipeline and assembly to allow water between the ball and valve body to drain. Leave the ball valve in this position for the winter to prevent freeze damage.

Figure No. 5



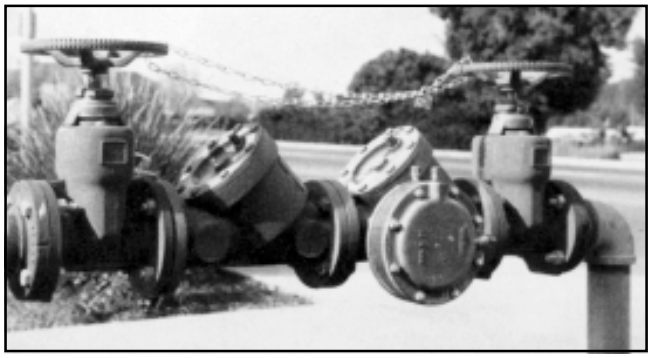
5c. The ball valves must be fully closed before the system is repressurized. **OPEN AND CLOSE BALL VALVES SLOWLY TO PREVENT DAMAGE TO THE SYSTEM CAUSED BY WATER HAMMER.**

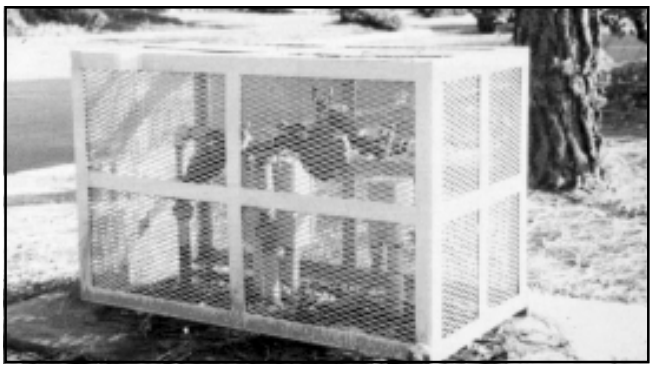
Model 825, 825D and 825YD (2½" - 10") Reduced Pressure Zone and Relief Valve Freeze Protection

1. Slowly close supply valve within freeze protected area, open air bleed valves on No. #1 check valve and relief valve (3 places), and open No. #2 and #3 test cocks. Water within the zone will be drained to the lowest point of the relief valve discharge port (relief valve seat). A minor amount of water will remain in the bottom of the valve body, but this is not sufficient to cause freezing damage.
2. With this procedure, about one-half of the relief valve will be drained. To drain the relief valve on Models 825 and 825D, loosen the relief valve cover bolts and allow the relief valve to drain. Retighten bolts before repressurizing system. To drain relief valve on Models 825YD, open the two air bleeds (one on the body, the other on the cover), then remove drain plugs. Replace drain plugs before repressurizing system.
3. The system design must provide a means for draining upstream of the #1 check valve and downstream of the #2 check valve. Test cocks #1, #2, and #4 and the air bleed valve on #2 check valve may be opened to allow air to enter to assist in draining. Depending on system design, these sections should be able to be drained to the pipe centerline.
4. Position the assembly shut-off valves and test cocks in the half open/half closed position to allow complete draining of the assembly shut-off valve bodies and test cocks.
5. Some units contain a drain plug in the bottom of the second check body. Open test cocks and remove plug to drain.

Vandalism Protection Procedure

1. If the unit is installed where vandalism may be a problem, the assembly should be protected and secured. On ¾" – 2" units the handles of shut-off valves can be removed to discourage tampering. On 2½" – 10" units a chain can be looped between shut-offs and locked in position to prevent tampering with shut-off valves. Test cock handles can also be removed. On backflow prevention assemblies installed in conjunction with fire sprinkler systems, an alarm can be placed on the OS&Y shut-off valves that will sound if unauthorized closure should occur.
2. A protective cage can be installed over the unit to discourage vandals. If a cage is used, it should be installed so that adequate clearance is available for maintenance and testing or it should be completely removable. Also allow for any discharge from the relief valve to fully drain from the protective cage.
3. Some units include screw driver adjusted test cocks for vandal resistance.

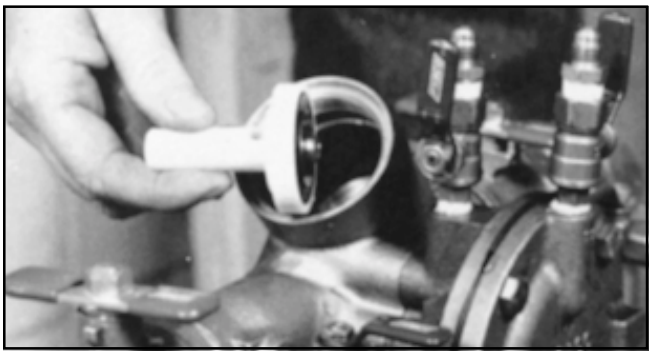




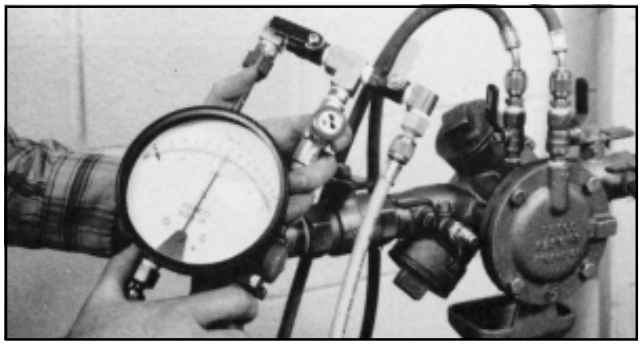
General Service Procedures

General Service Instructions applicable to all models and sizes.

1. FEBCO backflow prevention assemblies can be serviced with commonly available tools and are designed for ease of maintenance. The assemblies are designed to be serviced in line, so the unit should not need to be removed from the line during servicing.



2. The most common cause of check fouling and relief valve discharge is dirt and debris in the seating areas. The line should be flushed clean of debris before installation of the assembly. To flush the line after installation of the assembly, slowly close the inlet shut-off valve, remove the covers and internal assemblies of both check valves and open the inlet shut-off valve to allow sufficient flow of water through the assembly to clear all sand, debris, etc. from the line. If debris in the water continues to cause fouling, a strainer may be installed upstream of the assembly.
3. Rinse all parts with clean water before reassembly.
4. Do not use any petroleum based oil, grease, solvent or pipe dope on any parts unless instructed to do so. Use only water resistant lubricants that comply with FDA requirements for use in potable water systems .
5. Carefully inspect diaphragms, seals and seating surfaces for damage or debris. If the check valve seat disc has been severely cut at the seat ring diameter, the assembly has been subjected to extremely high and repeated back pressure. Either thermal water expansion or water hammer are the most likely causes. If back pressure persists, consider installation of a pressure relief valve downstream of the assembly.
6. Use caution to avoid damaging any guiding surfaces while handling parts. Do not force parts together. The o-ring seals used in FEBCO assemblies require only a small tightening force to insure a positive seal.
7. Test unit after servicing to insure proper operation.



8. Refer to applicable parts list and figures for visual aid information

Figure No. 6

Suggested Tool Kits

Model 825Y/845 (¾" - 2")

- 1 Crescent wrench (10")
- 1 Medium Phillips screwdriver
- 1 Medium straight blade screw driver
- Allen head wrench (3/16"& 1/4" size)
- 1 Thin blade knife or reamer
- 1 Socket (1/2" and 9/16" size)
- Differential pressure test kit
- FDA approved lubricant
- Needle nose pliers

Model 825, 825D and 825YD (2½" - 10")

- 1 Crescent wrench (12")
- 1 Medium Phillips screw driver
- 1 Medium straight blade screw driver
- 1 Set of drive sockets (3/8" or 1/2")
- 1 Spring removal tool (see page 32)
- 1 Torque wrench
- Differential pressure test kit
- FDA approved lubricant

Trouble Shooting Procedure

With Differential Pressure Gauge

SYMPTOM NO. 1:
Check Differential Across No. 1 Check Valve

READING	PROBLEM
2 to 3 PSID	Leak in No. 1 or No. 2 check valve
6 to 8 PSID and steady	Malfunctioning pressure relief valve
2 to 7 PSID fluctuating	Inlet pressure fluctuating

With Differential Pressure Gauge

SYMPTOM NO. 2:
Check Differential Across No. 1 Check Valve

READING	PROBLEM
2 to 3 PSID	Leak in No. 1 or No. 2 check valve
6 to 8 PSID and steady	Malfunctioning pressure relief valve

Without Differential Pressure Gauge

SYMPTOM NO. 1 and NO. 2:
A) Close Gate Valve No. 2

RESULT	PROBLEM
If discharge stops	Leak in No. 2 check valve
If discharge does not stop	Go to "B"

B) Open No. 4 testcock to produce a flow greater than differential relief valve discharge

RESULT	PROBLEM
If discharge stops	Leak in No. 1 check valve
If discharge does not stop	Malfunctioning pressure relief valve

Trouble Shooting Guide

SYMPTOM	CAUSE	
1. Continuous discharge from relief valve during NO-FLOW condition (discharge stops with water flow). With this symptom, the pressure drop across the No. 1 check valve would be 2 to 3 PSID. If a flow of water (more than the discharge) is created through the valve, the pressure drop should increase to approximately 7 PSID.	a. Debris fouling No. 1 check valve.	a. Inspect and clean.
	b. Outlet pressure higher than inlet pressure and debris fouling No. 2 check valve.	b. Inspect and clean.
	c. Disc holder/stem not moving freely in guide(s).	c. Inspect for dirt or other foreign material.
	d. Damaged seat or seat disc.	d. Inspect and replace. Seat disc can be reversed.
	e. Leakage at o-ring on the seat ring or disc holder/ stem (825, 825D, 825YD).	e. Inspect and replace o-ring.
	f. Leakage under seat disc due to dirt or damage disc holder or disc.	f. Inspect and replace or repair.
	g. Leakage through diaphragm due to stretched holes or cut (825Y, 845 & 825YD)	g. Inspect and replace diaphragm.
2. Intermittent discharge from relief valve during NO-FLOW condition. With this symptom, the pressure drop across the No. 1 check valve would be varying from about 2 to 7 PSID.	a. Inlet line pressure variations causing relief valve to discharge.	a. Eliminate or reduce pressure variations.
	b. Pressure surges (water hammer) causing relief valve to discharge as pressure wave passes through "ZONE".	b. Eliminate or reduce pressure surges.
3. Continuous discharge from relief valve during FLOW and NO-FLOW conditions. With this symptom, the pressure drop across the No. 1 check valve would be 7 PSID or more at all times.	a. Seat disc dislodged from cavity in the main stem (this can be caused by pressure surges during initial filling of system lines).	a. Reposition disc in main stem cavity. Repressurize system slowly.
	b. Debris fouling the relief valve seat.	b. Inspect and clean.
	c. Debris fouling the relief valve seat passage.	c. Inspect and clean.
	d. Dirt or scaling jamming main stem or spring button.	d. Inspect and clean or replace.
	e. Leakage at main stem or o-ring/diaphragm.	e. Inspect and clean or replace o-ring and/or main stem.
	f. Jammed main stem due to excessive torque on center bolt (825 and 825D.	f. Do not exceed 15 inch-pound torque on main stem center bolt.

Trouble Shooting Guide (Continued)

SYMPTOM	CAUSE	SOLUTION
4. Relief valve does not open above 2.0 PSID during field testing.	a. Outlet gate valve not closed completely.	a. Check for debris blocking gate.
	b. Plugged low pressure hydraulic passage (from "ZONE" to inner diaphragm.	b. Inspect and clean.
	c. Improper alignment of internal parts during reassembly (causing high resistance to movement).	c. Disassemble and center the button, spring and main stem.
	d. Jammed main stem due to excessive torque on center bolt (825 and 825D only).	d. Do not exceed 15 inch-pound torque on main stem center bolt.
5. First check pressure drop is low (less than 5 PSID) during field testing.	a. Debris fouling first check seat.	a. Inspect and clean.
	b. Debris fouling second check seat with backpressure.	b. Inspect and clean.
	c. Inlet pressure variations causing inaccurate gauge reading.	c. Eliminate pressure variations.
	d. Disc holder not perpendicular to stem (therefore, disc not parallel to seat ring) (825, 825D and 825YD).	d. Inspect and reassemble if required. NOTE: SPRING MUST BE REMOVED WHEN TIGHTENING DISC HOLDER TO STEM.
	e. Damaged seat or seat disc.	e. Inspect and replace as required.
	f. Worn guide, bushings or stem.	f. Inspect and replace as required.
	g. Guide not properly seated in cover (825, 825D and 825YD only).	g. Inspect and reassemble.
6. Discharge from drain hole in relief valve spacer (825 and 825D only).	a. Leakage under diaphragm retaining screw (8 places)	a. Apply thin layer of sealant around each thread, insert on bottom and reassemble.
	b. Leakage under diaphragm at main stem diameter.	b. Apply thin layer of sealant on button at the main stem diameter. DO NOT EXCEED 15 INCH POUNDS when tightening center bolt.
	c. Hole in diaphragm.	c. Replace diaphragm with fabric side towards the button.
7. Second check fails to hold back pressure during field testing.	a. Outlet gate valve not closed completely.	a. Check for debris blocking gate.
	b. Debris fouling second check seat.	b. Inspect and clean.
	c. Disc holder/stem not moving freely in guide(s).	c. Inspect for dirt or other foreign material.
	d. Disc holder not perpendicular to stem (therefore, disc not parallel to seat ring) (825, 825D & 825YD).	d. Inspect and reassemble if required. NOTE: SPRING MUST BE REMOVED WHEN TIGHTENING DISC HOLDER TO STEM.
	e. Damaged seat or seat disc.	e. Inspect and replace as required.
	f. Worn guide, bushings or stem.	f. Inspect and replace as required.
	g. Guide not properly seated in cover (825, 825D & 825YD only).	g. Inspect and reassemble.

NOTE: If check valve seat disc has been severely cut at the seat ring diameter, the assembly is being subject to extremely high and repeated back pressure. Either thermal water expansion or water hammer are the most likely causes.

Field Testing Procedures

Purpose of Test

To test the operation of the DIFFERENTIAL PRESSURE RELIEF VALVE and CHECK VALVE.

Equipment Required for Test

Differential Pressure Gauge test kit. Equal to the RPTK1 (shown on page 12).

Test Differential Relief Valve

The Differential relief valve must operate to keep the zone between the two check valves at least 2 PSI less than the supply pressure.

1. Slowly close the outlet shut-off on the discharge side of the backflow preventer.
2. Open air bleeds and test cocks until all air from the check valves is released.
3. Connect the “high” side of the differential pressure gauge to test cock #2 and the “low” side to test cock #3.
4. Open test cock #2 and test cock #3 and bleed all air from the hose and gauge.
5. Slowly open the bypass valve needle #1 until the differential gauge needle starts to drop. Hold the bypass in this position and observe the reading on the gauge at the moment the first discharge is noted from the relief valve. The differential pressure at the time the relief valve opens must be no lower than 2 PSI.
6. Close the bypass needle valve.

Test Check Valve 1

The check valve must be at least 3 PSI more than the relief valve opening pressure.

1. Open test cock #4 to flow a small amount of water through the unit to restore normal pressures.
2. Observe the differential gauge with bypass valve #1 closed and test cock #2 and #3 open. The gauge should remain at a reading of at least 3 PSI above the relief valve. If it drops below this, the check valve is leaking and must be serviced.

Test Check Valve 2

The check valve must be tight against reverse flow under all pressure differentials.

1. Connect the “high” side of the differential pressure gauge to test cock #4 (3rd hose).
2. Open test cock #4. With bypass needle valve #1 closed and bypass valve #2 open, observe gauge reading. The differential pressure should not drop to the relief valve opening point.

Restore Operation

1. Restore all valves and test cocks to their original positions. Open and close resilient seated shut-offs slowly to prevent damage to the system and assembly.

Figure No. 7

FEBCO Model 825Y/845 (3/4" - 2")
Reduced Pressure Assembly

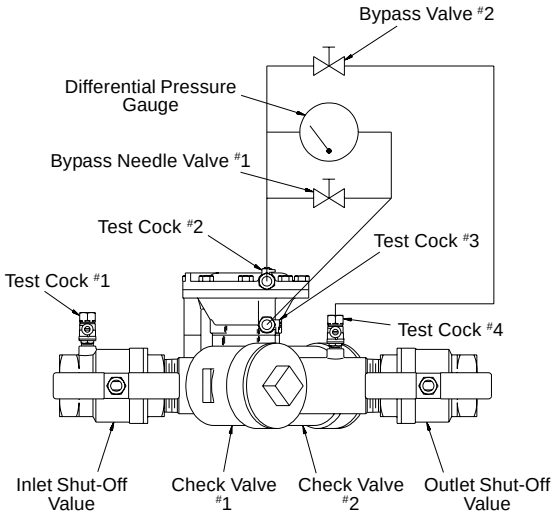
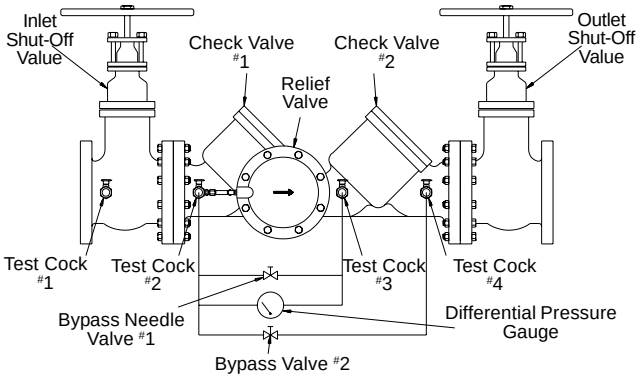


Figure No. 8

FEBCO Model 825YD (2 1/2" - 10")
Reduced Pressure Assembly



Field Testing Procedures (Continued)

Test for the 826YD

This device Is tested with the same procedure as the Model 825YD. However, the bypass 825Y $^{3}/_{4}$" valve must be isolated from the mainline valve using the $^{3}/_{4}$" ball valves during the test and tested separately.

Proper Bypass Operations

Flow 3 GPM through the bypass by opening the mainline test cock #4. Use the flow meter for this measurement (1 gallon flow in a 20 second time period). After the flow rate has been set, collect the discharge flow in a container for 20 seconds. The volume of water collected should be one gallon.

Restore Operation

After testing restore all valves to their original positions.

Note: This is a suggested typical test method. Check with your local code for approved test procedures in your area.

Testing with the FEBCO Test Kit

The FEBCO Test Kit includes gauge, complete with hoses, fittings, adapters and laminated instructions in a compact plastic case. The FEBCO Test Kit includes a differential pressure gauge used to test all approved Reduced Pressure Assemblies including the FEBCO Models 825Y, 845, 825YA, 825YD Reduced Pressure Assemblies and the 826YD Reduced Pressure Detector Check.

Figure No. 9

FEBCO Model 826YD ($2^{1}/_{2}$" - 10")
Reduced Pressure Assembly

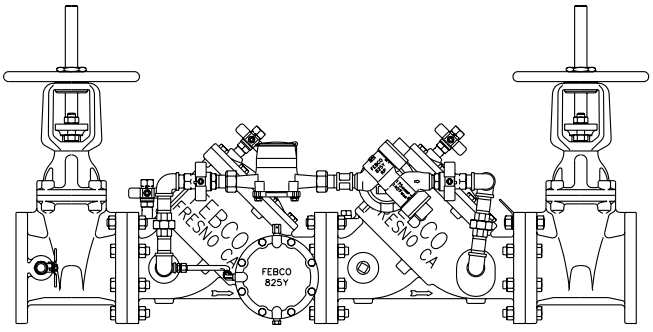
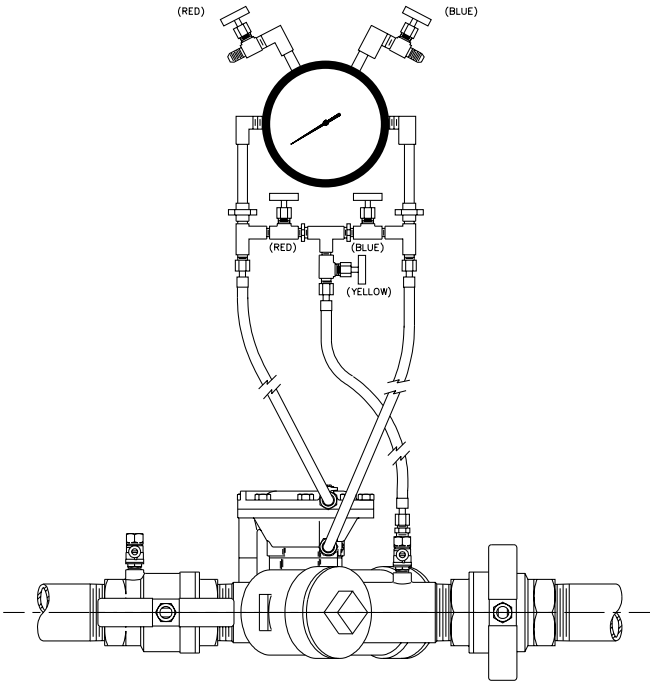


Figure No. 10



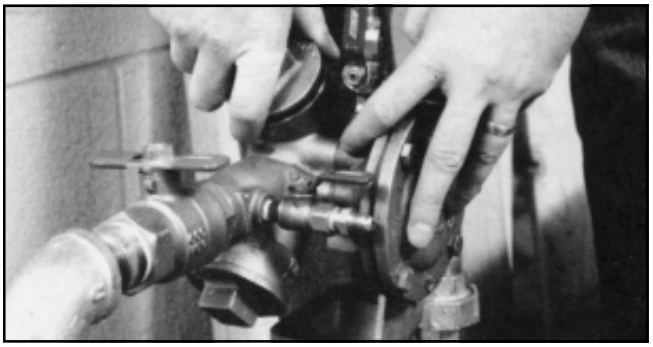
Service Procedure 825Y, 825YA and 845 (3/4" - 2")

1. Check Valve Inspection/Repair Model 825Y, 845 (3/4" - 2") (See Figure No. 11)

a. Close inlet and outlet shut-off valves. Bleed residual pressure by opening first the #4 test cock, then the #3 and #2 test cocks. See Fig. No. 7 for test cock locations

b. Unscrew Cap using appropriate size wrench.

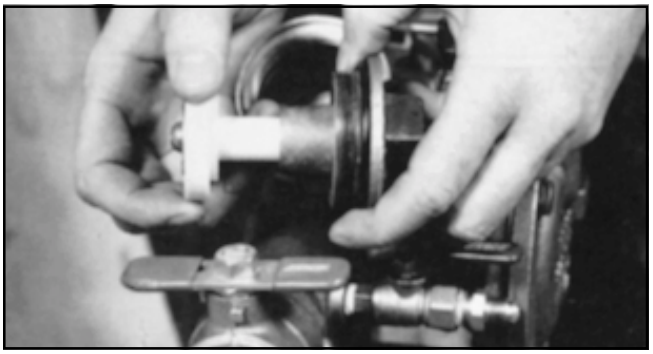
CAUTION: Cap is spring loaded. First check spring force on 3/4" to 1 1/2" is 10 lb. First check spring force on 1 1/2" to 2" is 28 lb. Retain cap with appropriate amount of hand force to avoid injury. Second check spring force is approximately 1/4 of the first check spring.



c. Remove the spring and disc holder assembly

d. Inspect guiding bore of the cap and poppet stem for any buildup of calcium or other mineral deposits. If this condition exists, it may be removed with the careful use of an appropriate size reamer or a thin blade knife. 3/4" - 1 1/4" cap — 5/8" (.6250) reamer 1 1/2" - 2" cap — 7/8" (.8750) reamer.

e. Check disc holder and stem movement in the guide to insure they move freely. Debris can inhibit proper movement.



2. Check Valve Seat Replacement Model 825Y, 845 (3/4"- 2") (See Figure No. 11)

a. Hold disc holder assembly in one hand and remove screw and disc washer.

CAUTION: The use of pliers or other tools may damage the guiding surfaces and require unnecessary replacement. Do not scratch or mark sealing or guiding surfaces.

b. Inspect seat disc for wear or cuts remove old seat disc and install new, or turn used disc over if new seat disc is not available.

NOTE: The seat discs are symmetrical. It is usually possible to turn the disc over and obtain an effective seal.

c. If the seat disc has been severely cut along the seat ring diameter, the assembly is being subjected to extremely high back pressure from thermal water expansion, water hammer or other causes of excessive water pressure. Seat discs damaged in such a manner should be replaced and not turned over to be reused.

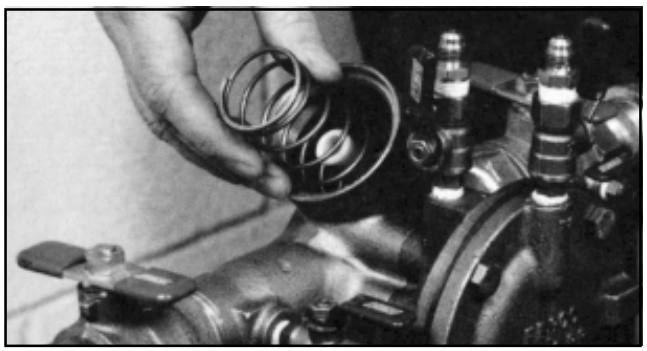
3. Check Valve Reassembly Model 825Y, 845 (3/4" - 2") (See Figure No. 11)

a. Position the disc in the cleaned holder and retain with disc washer and screw. CAUTION: DO NOT OVER-TIGHTEN SCREW, SECURE WITH APPROXI-MATELY 12 INCH-LBS.

b. Position the spring around the centering ring of the disc holder and reinsert the disc holder assembly into the check body.

NOTE: Insure the heavy check spring is installed in the No. 1 check valve or the valve will not operate properly and a continuous discharge may occur.

Service Procedure 825Y, 825YA and 845 (3/4" - 2") (Cont.)



c. Apply a thin coating of FDA approved lubricant on the o-ring in the cap and thread cap onto the check valve body using the appropriate sized wrench.

d. Close the #4, #3, and #2 test cocks and slowly open first the inlet and then outlet shut-off valves and return the assembly to service. See Figure No. 7 for test cock locations.

e. Test the assembly to insure it is operating properly.

4. Relief Valve Inspection/Repair Model 825Y, 845 (3/4" - 2") (See Figure No. 11)

a. Slowly close the inlet and outlet shut-off valves and bleed off the residual pressure by opening first test cocks #4, then #3 and #2. See Figure No. 7 for test cock locations.

b. Remove capscrews, diaphragm cover, diaphragm and port bushing of relief valve.

c. Remove the integral relief valve assembly by pulling straight out of the body to remove the internal assembly.

d. Remove the disc washer and seat disc by un-threading the screw.

e. To remove spring and/or main stem from the guide, keep unit compressed and remove the screw (item 18) located in the center of the button. Push the main stem through the guide and remove the o-ring from the main stem. Inspect and clean or replace o-ring and seat disc as required. Clean all parts thoroughly with clean water before reassembly.

5. Relief Valve Seat Removal Model 825Y, 845 (3/4" - 2")

Standard only on units manufactured after October of 1988 with serial numbers higher than listed below. See Figure No. 11 for exploded view of this relief valve.

Serial #'s of new Model 825Y with replaceable valve seat ring:

3/4" Serial No. S6528 and above

1" Serial No. S6163 and above

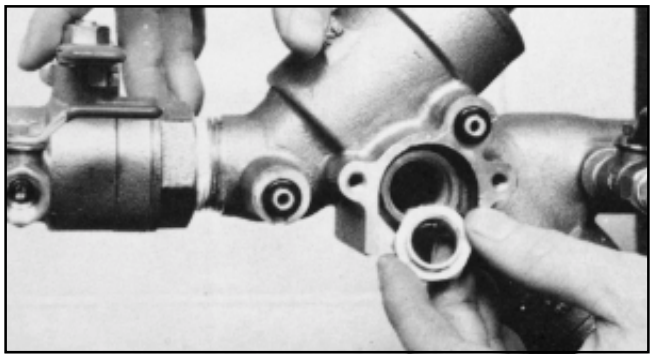
1 1/2" Serial No. S5710 and above

2" Serial No. S5089 and above

a. While relief valve is disassembled, remove the two Allen head socket capscrews using the appropriate sized Allen head wrench. (3/16" Allen head wrench for 3/4" and 1" assemblies, and 1/4" Allen head wrench for 1 1/2" and 2" assemblies.)

b. Pull the relief valve body from the main valve body. Pull the discharge shield from the seat ring.

c. Remove seat ring with the appropriate sized socket or needle nose pliers. Use care to avoid damage to the seat edge. Replaceable relief valve seat is standard only on units manufactured after October of 1988.



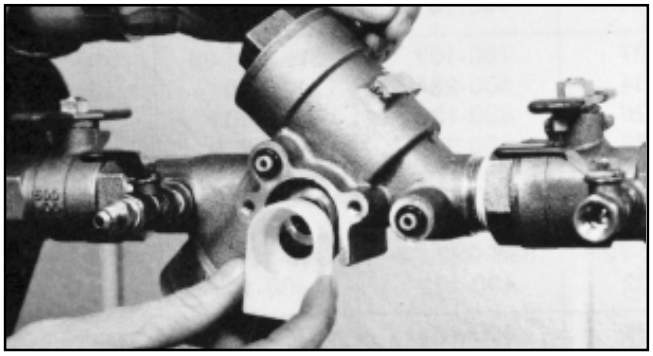
Service Procedure 825Y, 825YA and 845 (¾" - 2") (Cont.)

d. Inspect seat ring, o-rings, bushings, and gasket seals for damage. Rinse all parts with clean water before reassembly.

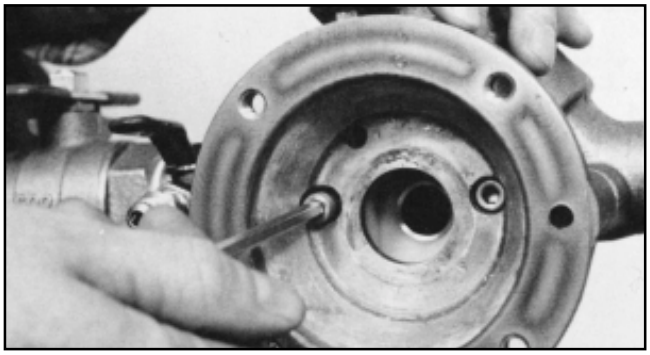
6. Relief Valve Reassembly Model 825Y, 845 (3/4" - 2") (See Figure No. 11)

a. Lubricate the seat ring o-ring with FDA approved lubricant and thread seat ring into the valve body until seated. Do not over tighten. (Replaceable relief valve seat ring standard on units manufactured after October of 1988.)

b. Position the discharge shield over the seat ring diameter and, taking care not to damage the two flow passages, reinstall o-rings and guide bushings.

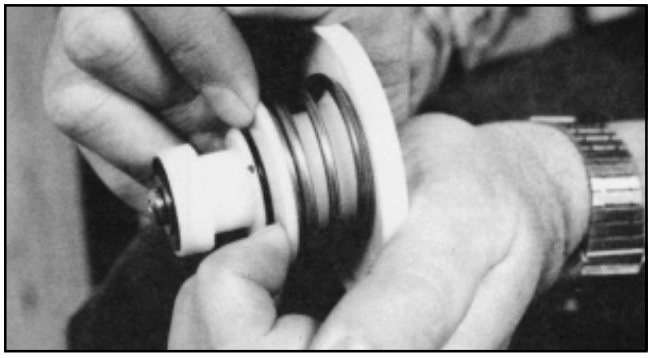


c. Carefully place the relief valve body over the bushing and tighten the two capscrews to retain the relief valve body to the main valve body. New capscrew sealing washers should be installed to avoid leakage.



d. Lubricate the o-rings and main stem using FDA approved lubricant. Place the main stem and spring into the guide and replace the flat head screw located at the center button.

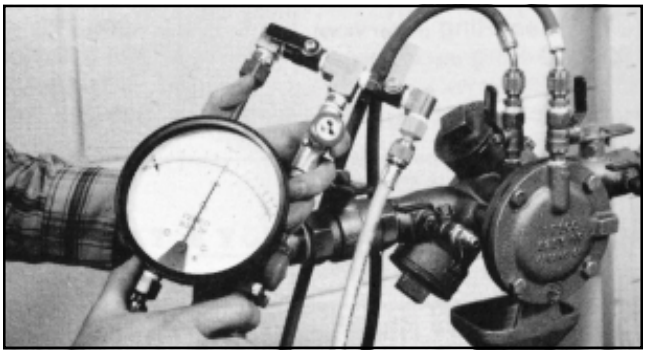
e. Place the disc washer and seat disc in position and retain with machine screw. Depress the diaphragm button to insure it is free moving.



f. Place the relief valve module into the relief valve body and mount the diaphragm. Be careful to position the diaphragm over the port bushing. Replace the relief valve cover and tighten the capscrews.

g. After completing reassembly by, slowly open the inlet shut-off valve. Then bleed air from each chamber and from the relief valve cover by opening test cocks #4, #3, and #2. See Figure No. 7 for test cock locations. Slowly open outlet shut-off valve and return the valve to service.

h. Test the assembly to insure it is operating properly.



Model 825Y, 845 and YA (¾" - 2") Parts

Check Valve Body: Model 825Y, 845, 825YA

Item	Description	Qty*	¾	1	1¼	1½	2
3	Bushing	3	500-290	500-290	500-290	500-290	500-290
4	O-Ring	2	398-202-72	398-202-72	398-202-72	398-202-72	398-202-72
5	Gasket	2	340-078	340-078	340-078	340-079	340-079
6	Capscrew**	2	515-513-05	515-513-05	515-513-05	515-514-06	515-514-06
7	Cap**	2	101-134	101-134	101-134	101-135	101-135
8	O-Ring	2	398-226-72	398-226-72	398-226-72	398-235-72	398-235-72
9	Disc Holder	2	500-270	500-270	500-270	500-278	500-278
10	Seat Disc	2	400-099	400-099	400-099	400-103	400-103
11	Washer	2	300-084	300-084	300-084	300-108	300-108
12	Screw	2	516-543-03	516-543-03	516-543-03	516-543-03	516-543-03
13	Spring (Inlet)	1	630-125	630-125	630-125	630-137	630-137
14	Spring (Outlet)	1	630-115	630-115	630-115	630-118	630-118
15	Bolt**	4	511-514-06	511-514-06	511-514-06	—	—
15	Bolt**	8	—	—	—	511-515-07	511-515-07
16	Cover**	1	101-029	101-029	101-046	101-035	101-035
17	Diaphragm**	1	400-101	400-101	400-101	400-104	400-104
18	Screw**	1	700-107	700-107	700-107	519-513-03	519-513-03
19	Button	1	500-284	500-284	500-284	300-107	300-107
20	Spring	1	630-126	630-126	630-126	630-138	630-138
21	Mainstem	1	500-273	500-273	500-273	500-280	500-280
22	O-Ring	1	398-113-72	398-113-72	398-113-72	398-120-72	398-120-72
23	Guide	1	500-277	500-277	500-277	500-281	500-281
24	O-Ring	1	398-022-72	398-022-72	398-022-72	398-127-72	398-127-72
25	Seat Disc	1	400-102	400-102	400-102	400-105	400-105
26	Washer	1	300-104	300-104	300-104	300-105	300-105
27	Screw	1	700-137	700-137	700-137	519-513-03	519-513-03
101	Seat Ring (RV)	1	200-779	200-779	—	200-780	200-780
102	O-Ring (RV)	1	398-019-72	398-019-72	—	398-026-72	398-026-72
103	Elbow (YA only)	2	101-194	101-194	—	101-189	101-190
104	O-Ring (YA only)	2	398-223-72	398-223-72	—	398-230-72	398-230-72

* Quantity required per valve. Some sizes require different quantities

** 825Y and 825YA only. 845 uses different part numbers not shown. Refer to 845 assemblies/kits on page 17.

Shut-offs: Model 825Y, 845, 825YA

Item No.	Description	Qty.*	¾	1	1¼	1½	2
29	Ball Valve (Inlet)	1	781-053	781-054	781-055	781-056	781-057
29.1	Ball Valve (Outlet)	1	781-048	781-049	781-050	781-051	781-052
30	Testcock	4	781-074	781-074	781-075	781-075	781-075

* Quantity required per valve.

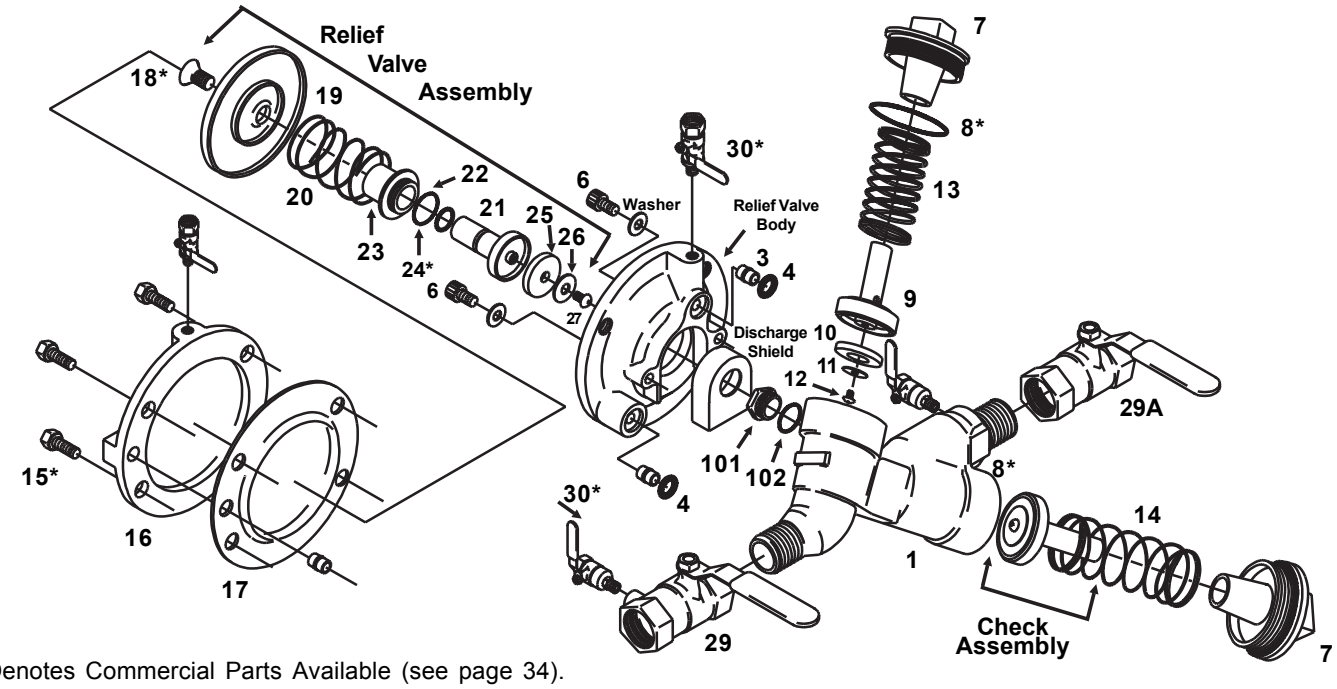
Model 825Y, 825YR and YA (3/4" - 2") Parts (Cont.)

Assemblies / Kits: Model 825Y & YA

DESCRIPTION	QTY.*	SIZE ¾"	SIZE 1"	SIZE 1¼"	SIZE 1½"	SIZE 2"
Check Valve Rubber Kit (2 ea. 8, 10)	1 Kit	905-042	905-042	905-042	905-053	905-053
Relief Valve Rubber (1 ea. 17, 22, 24, 25)	1 Kit	905-043	905-043	905-043	905-054	905-054
Check Valve Assembly (1 ea. 8, 9, 10, 11, 12)	2 Assy.	905-044	905-044	905-044	905-055	905-055
Relief Valve Assembly (1 ea. 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27)	1 Assy.	905-045	905-045	905-045	905-056	905-056
RV Seat Ring Kit (101, 102)	1 Kit	905-113	905-113	-----	905-114	905-114
Complete Rubber Parts Kit (3, 4, 5, 8, 10, 17, 22, 24, 25, 102)	1 Kit	905-111	905-111	905-111	905-112	905-112
825YR Seat Ring Repair Kit (35, 36)	1 Kit	905-280	905-280	-----	905-281	905-281

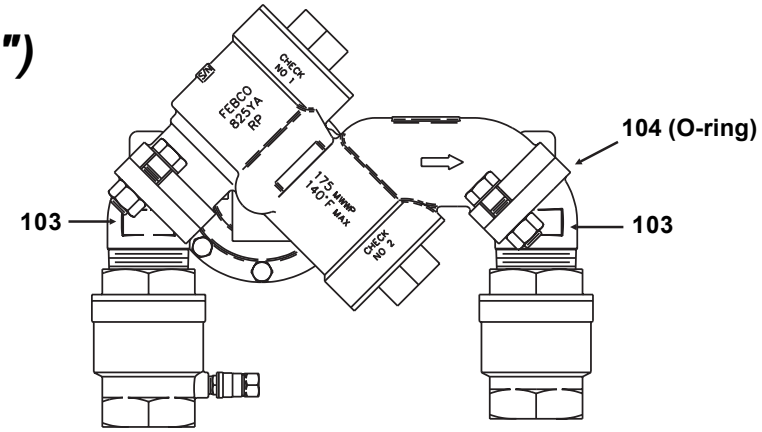
* Quantity required per valve.

Model 825Y (3/4" -2")
Figure No. 11



* Denotes Commercial Parts Available (see page 34).
Unit is shown with ball valve shut-offs.
Some parts are sold in kits only. Consult Parts Price List for specifics.

Model 825YA (3/4" -2")
Figure No. 12



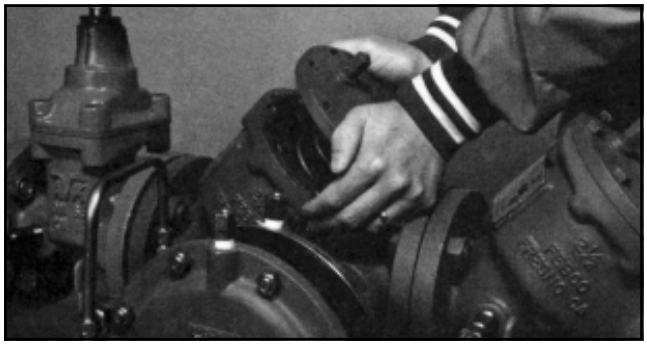
Service Procedures 825, 825D, 825YD and 826YD (2½" - 3")

1. Check Valve Disassembly Models 825, 825D and 825YD (Sizes 2½" - 3') (See Figure No. 13)

a. Slowly close outlet shut-off valve and inlet shut-off valve. Bleed residual pressure by opening #4, #3 and #2 test cocks. See Figure No. 8 for test cock location.

b. Remove cover bolts uniformly while holding cover in place. Remove cover.

CAUTION: Spring is retained in body by cover.



c. Lift check assembly from body being careful not to damage internal epoxy coating.

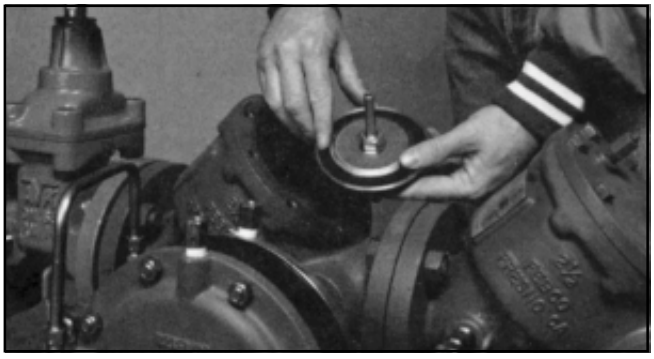
d. If necessary, un-thread bushing (item 4A) from cover.

2. Check Assembly Repair Models 825 825D and 825YD (Sizes 2½" - 3") (See Figures No. 13 & 14)

a. Un-thread nut on stem and remove disc washer and seat disc.

b. Inspect seat disc for wear or damage. Replace with new seat disc or turn used disc over if new disc is not available.

NOTE: The discs are symmetrical. It is usually possible to turn the disc over and obtain an effective seal.



c. If the seat disc has been severely cut along the seat disc ring diameter, the assembly is being subjected to extremely high back pressure from thermal water expansion, water hammer, or other causes of excessive water pressure. A disc damaged in such a manner should be replaced and not turned over to be reused.

3a. Valve Seat Removal (Sizes 2½"-3") Threaded-in Seat Ring Type Models Model 825 (See Figure No. 13)

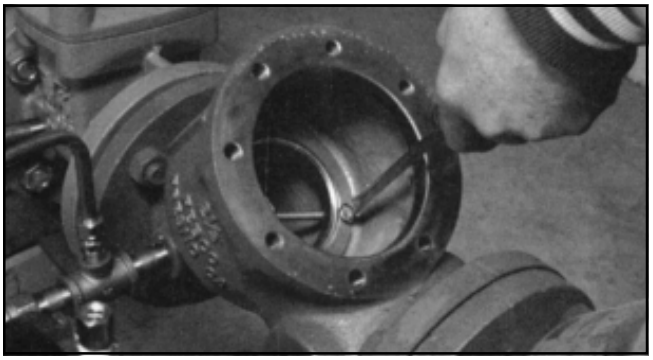
1. Remove seat ring by un-threading in counterclockwise direction being careful not to damage the internal epoxy coating in valve. A tool to aid in this process is described in Figure No. 21 on page 32.

2. Remove bushing and bushing nut (item 2A & 2B).

3. Remove o-ring.

3b. Valve Seat Removal (Sizes 2½" - 3") Bolted in Seat Ring Type Models 825D & 825YD (See Figure No. 16)

1. Remove the three capscrews and washers retaining the seat ring.



Service Procedures 825, 825D, 825YD and 826YD (2½" - 3") (Cont.)

2. Pull the seat ring from the valve body being careful not to damage the internal epoxy coating of valve.
3. If necessary, un-thread the bushing (Item 2A) from the seat ring.
4. Remove the o-ring.

4a. Valve Seat Reassembly (Sizes 2½" - 3') Threaded-in Seat Ring Type Models Model 825 (See Figure No. 13)

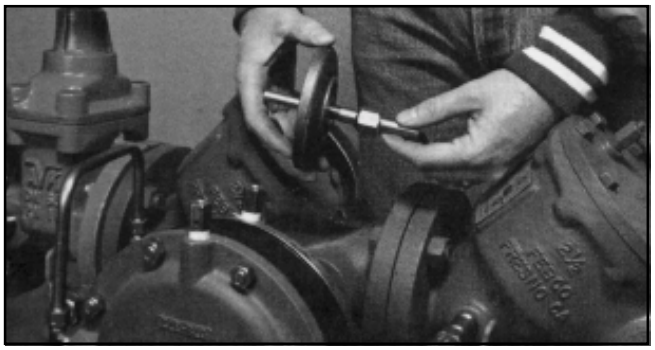
1. Lubricate o-ring with FDA approved lubricant and replace on seat ring.
2. Reinsert bushing into seat ring center.
3. Thread seat ring into valve body in clockwise direction being careful not to damage the internal epoxy coating of valve.

4b. Valve Seat Reassembly (Sizes 2½"-3") Bolted-in Seat Ring Type Models Model 825D & 825YD (See Figure No. 13)

1. Lubricate o-ring with FDA approved lubricant and replace in seat ring.
2. Thread bushing into seat ring.
3. Place the seat ring carefully into body and retain with three capscrews and washers being careful not to damage the internal epoxy coating of valve.

5. Check Valve Reassembly (Sizes 2½"-3") (See Figures No. 13 & 14)

a. Position the disc in the cleaned holder and retain with disc washer. Insert stem into disc holder, replace the nut on stem and tighten.



NOTE: On older Model 825 valves, the disc holder is sealed to the stem with a sealant. If the seal is broken, the stem and holder must be cleaned and new sealant applied. Newer valves, Models 825D and 825YD, use an o-ring so a sealant is not required.

b. Thread bushing into cover.

c. Carefully place stem of check assembly into seat ring bushing. Replace spring centering diameter on the disc washer. **NOTE: Be sure the heavier spring (6 PSI) is placed in first check and lighter spring (2 PSI) is placed in second check or the unit will not operate properly and discharge from the relief valve could occur.** The wire diameter is visibly thicker on the heavier spring and thinner on the lighter spring. Care should be taken to avoid damaging internal epoxy coating of valve.

d. Place cover on check body securing spring and stem into cover.

e. Bolt cover onto check body while holding cover in place with appropriate hand force. Spring will be retained in body by cover.

f. Slowly open inlet shut-off valve. Bleed air from valve by opening first the #4 test cock, then the #3, #2 and #1 test cocks and air bleeds on all covers. See Figure No. 8 for test cock locations.

g. Slowly open outlet shut-off valve and return the valve to service.

h. Test the assembly to insure it is operating properly.

Service Procedures 825, 825D, and 825YD (4"-10")

1. **Check Valve Disassembly (Sizes 4" - 10") (See Figures No. 13 & 14)**

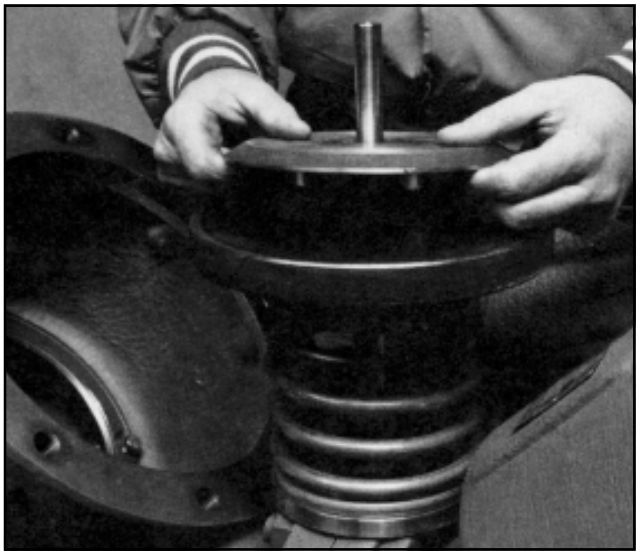
   a. Slowly close outlet gate valve then slowly close inlet gate valve. Bleed residual pressure by opening first the #4 test cock, then #3, and #2 test cocks. See Figure No. 8 for test cock locations.

   b. Remove cover bolts and cover. Unscrew bolts uniformly to avoid binding of the cover. The spring will push the cover approximately 1/2 inch off the top of the valve body.

2. **Seat Disc Removal (Sizes 4" - 10')**

   CAUTION: The newer model 825 cast iron units have threaded disc holders with four (4) cast lugs, (6 lugs on 10" assemblies), 1/2" high located on back side, outside the spring diameter. If the Model 825 you are servicing does not have these lugs, SPRING TENSION MUST BE RELEASED BY USING THE SPRING REMOVAL TOOL BEFORE FURTHER DISASSEMBLY. DO NOT ATTEMPT TO REMOVE SPRING TENSION ON OLDER MODEL 825's WITHOUT THE USE OF THIS TOOL. SEE SPRING REMOVAL INSTRUCTIONS. Newer Models 825, 825D and 825YD assemblies have the disc holder threaded on the stem. Therefore, the seat disc can be removed without releasing spring tension on these newer models.

   a. Un-thread retaining nut from stem and remove disc washer and seat disc.



   b. Inspect seat disc for wear or damage. Replace with new seat disc or turn used disc over if new disc is not available.

   NOTE: The discs are symmetrical. It is usually possible to turn the disc over and obtain an effective seal.

   c. If the seat disc has been severely cut along the seat disc ring diameter, the assembly is being subjected to extremely high back pressure from thermal water expansion, water hammer, or other causes of excessive water pressure. A seat disc damaged in this manner should be replaced and not turned over for reuse.

   d. Remove disc holder from stem.

   NOTE: On older Model 825 valves, the disc holder is sealed to the stem with a sealant. If the seal is broken, the stem and holder must be cleaned and new sealant applied. Newer valves, Models 825D and 825YD use an o-ring so a sealant is not required.

3. **Spring Removal (Sizes 4" - 10") (See Figures No. 13 & 14)**

   CAUTION: TO AVOID POSSIBLE INJURY, DO NOT ATTEMPT TO REMOVE SPRING TENSION WITHOUT THE USE OF THE SPRING REMOVAL TOOL SHOWN IN FIGURE NO. 20 ON PAGE 32. ON OLDER MODEL 825 VALVES, IT IS NECESSARY TO REMOVE THE SPRING BEFORE THE RUBBER SEAT DISC CAN BE REMOVED.

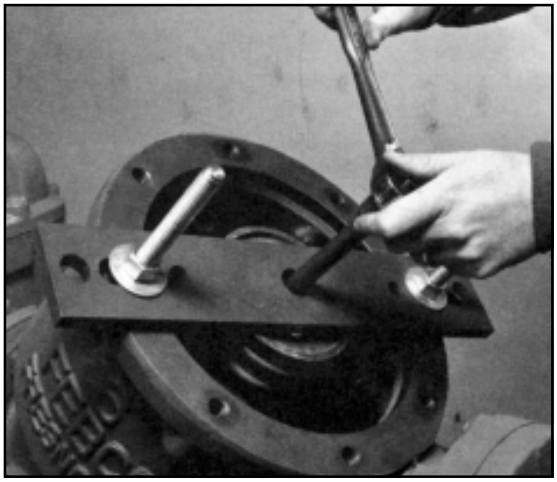
   a. Leave check assembly in body.

   b. Install long studs in body 180 degrees apart.

Service Procedures 825, 825D, and 825YD (4"-10") (Cont.)

c. Place spring removal tool over stud and retain with nuts. (See Figure No. 20 for dimensions.)

d. Un-thread capscrew (Item 7A using $^{9}/_{16}$" hex socket.



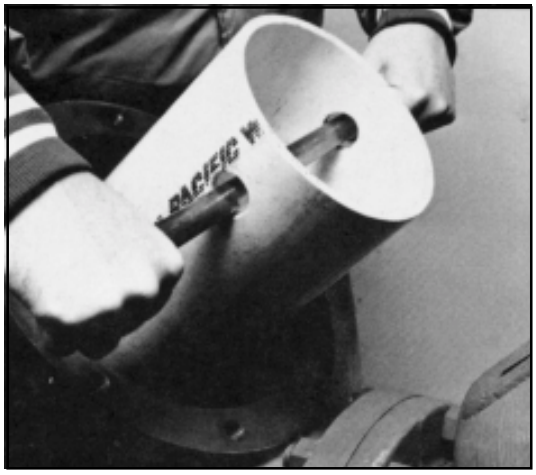
e. Release spring tension by un-threading nuts on long studs. Use alternating turns to keep tool parallel to valve body.

f. Remove spring guide and stem assembly.

g. Remove guide bushing by un-threading.

4a. Valve Seat Removal (Sizes 4" - 10") Threaded-in Seat Ring Type Model 825 (See Figure No. 13)

1. Remove check valve as described above.
2. Remove seat ring by un-threading in the counterclockwise direction. For ease of removal, Figure No. 21 on page 32 defines a simple tool for this purpose.



3. Remove bushing and bushing nut if used (bushing and nut is used on older Model 825).
4. Remove o-ring.

4b. Valve Seat Removal (Sizes 4" - 10") Bolted in Seat Ring Type Model 825D and 825YD (See Figure No. 14)

1. Remove check valve as described above.
2. Remove the three capscrews and washers retaining the seat ring.
3. Pull the seat ring from the valve body.
4. Un-thread the bushing (Item 2A) from the seat ring.
5. Remove the o-ring.

5a. Valve Seat Reassembly (Sizes 4"- 10") Threaded-in Seat Ring Type Models Model 825 (See Figure No. 13)

1. Lubricate o-ring with FDA approved lubricant. Reposition the o-ring in the seat ring groove.
2. Replace the bushing and bushing nut (if used) in the seat ring (the bushing and nut is used on older Model 825).
3. Thread the seat ring into the seating area in a clockwise direction. Be careful not to damage internal epoxy coated surfaces.

5b. Valve Seat Reassembly (Sizes 4"- 10") Bolted-in Seat Ring Type Models Model 825D and 825YD (See Figure No. 14)

1. Lubricate o-ring with FDA approved lubricant. Reposition the o-ring in the seat ring groove.
2. Thread the bushing into the seat ring.
3. Place the seat ring carefully into the valve body and retain with three capscrews and washers being careful not to damage the internal expoxy coated surfaces.

6. Check Valve Reassembly Models 825, 825D, and 825YD

a. Use reverse procedure for assembly.

b. Make sure the o-ring is properly placed in the groove. Do not force the cover into the body.

c. Do not damage epoxy coated surfaces.

d. Test unit to insure proper operation.

Model 825 and 825D (2½" - 10") Parts

Check Valve Body: Model 825 and 825D

Item No.	Description	Qty*	2½	3	4	6	8	10
2	Seat Ring	2	780-273	780-274	780-275	780-276	780-277	780-278
2.1	Bushing	2	780-280	780-280	780-281	780-281	780-282	780-282
3	Guide	2	—	—	190-001	190-002	190-003	190-004
4	Cover	2	780-306	780-307	780-308	780-309	780-310	780-311
4.1	Cover Bushing	2	780-312	780-312	780-313	780-313	780-313	780-313
5	Disc Holder	2	190-013	190-014	190-005	190-006	190-007	190-008
6	Disc Washer	2	190-016	190-017	190-009	190-010	190-011	190-012
7	Stem	2	780-332	780-333	780-334	780-335	780-336	780-337
7.1	Screw	2	—	—	511-515-08	511-515-08	511-515-08	511-515-08
7.2	Washer	2	—	—	780-338	780-338	780-338	780-338
9	Outlet Spring	1	780-341	780-342	780-343	780-344	780-345	780-346
10	Inlet Spring	1	780-349	780-350	780-351	780-352	780-353	780-354
11	Seat Disc	2	780-357	780-358	780-359	780-360	780-361	780-362
12	O-Ring	2	398-238-72	398-246-72	398-254-72	398-264-72	398-273-72	780-095
13	Capscrew	16-24	511-516-08	511-516-08	511-17-08	511-519-12	511-520-12	511-520-14
14	O-Ring	2	398-244-72	398-252-72	398-263-72	398-272-72	398-451-72	740-102
15	Locknut	2	521-547-00	521-547-00	521-550-00	521-550-00	521-551-00	521-551-00
16	Gasket	3	780-365	780-366	780-367	780-368	780-369	780-370
17	Bolt	12-36	511-519-18	511-519-20	511-019-22	511-020-26	511-020-28	511-021-30
17.1	Nut	12-36	521-019-00	521-019-00	521-019-00	521-020-00	521-020-00	521-021-00
40	Plug Cock	4	781-047	781-047	781-047	781-048	781-048	781-048
41	Nipple	4	571-181-44	571-181-44	571-181-44	571-181-55	571-181-55	571-181-55
50	Air Bleed	4	9594A110	9594A110	9594A110	9594A110	9594A110	9594A110
51	O-Ring	2	398-014-72	398-014-72	398-116-72	398-116-72	398-118-72	398-118-72
121	RV Assembly	1	902-440L	902-440L	902-446L	902-446L	902-446L	902-446L

* Quantity required per valve. Some sizes require different quantities

Shut-offs: Model 825 and 825D

Item No.	Description	2½	3	4	6	8	10
42	Resilient Sealed NRS (Inlet)	781-005	781-006	781-007	781-008	781-009	781-010
42	Resilient Sealed OS&Y (Inlet)	781-891	781-893	781-895	781-897	781-899	781-901
42.1	Resilient Sealed NRS (Outlet)	781-011	781-012	781-013	781-014	781-015	781-016
42.1	Resilient Sealed OS&Y (Outlet)	781-005	781-890	781-892	781-894	781-896	781-900

Model 825 (2-1/2" - 10") Parts (Cont.)

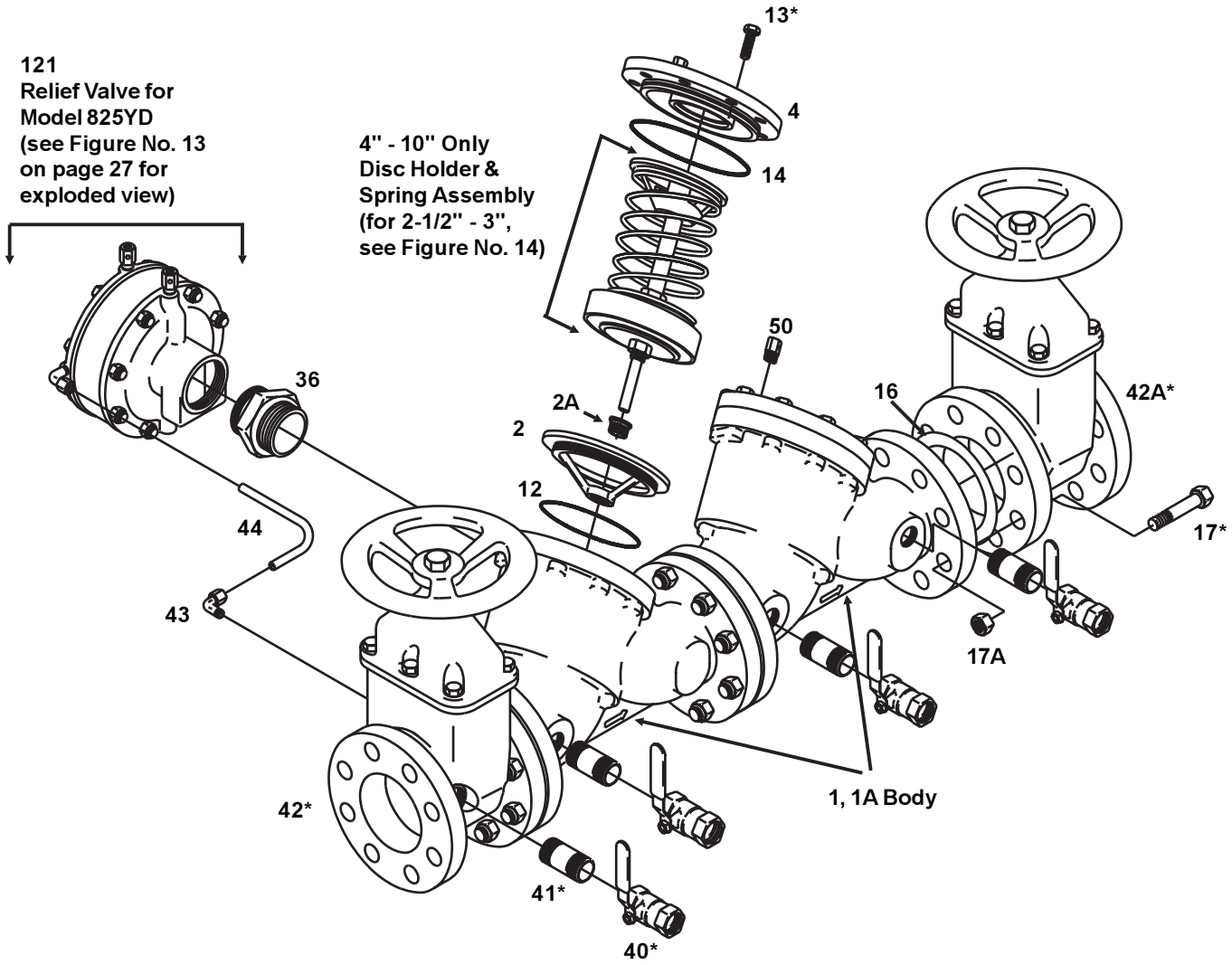
Assemblies / Kits: Model 825

DESCRIPTION	SIZE 2½"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 8"	SIZE 10"
**Relief Valve Assembly (121) (825)	905-526	905-100	905-101	905-101	905-522	905-522
(825D)	905-100	905-100	905-100	905-101	905-522	905-522
Spring Assembly #1 Check (3, 4A, 5, 6, 7, 7A, 10, 11, 15, 51)	905-085	905-087	902-466	902-468	902-470	902-472
Spring Assembly #2 Check (3, 4, 5, 6, 7, 7A, 7B, 9, 10, 11, 15, 51)	905-086	905-088	902-467	905-469	902-471	902-473
Seat Ring Kit (2, 2A, 12)	902-386	902-385	902-384	902-383	902-382	902-381
Rubber Parts, CI & DI Boddies (11, 14, 51)	905-059	905-060	905-061	905-062	905-063	905-064
Relief Valve Kit (Rubber Parts) (26, 27, 32, 39, 49, - 2 ea.)	905-066	905-066	905-067	905-067	905-067	905-067
LG Mounting Kit (16, 17, 17A, 40, 41, Both Ends)	905-036	905-037	905-038	905-039	905-040	905-041

** 825YD Relief valve is used for replacement. See Figure 18 on page 28 for details.

* Quantity required per valve.

Model 825 (2-1/2" - 10") Cast Iron Body Figure No. 13



* Denotes Commercial Parts Available (see page 33 and 34).
Some parts are sold in kits only. Consult Parts Price List for specifics.

Model 825 YD (2½" - 10") Parts

Check Valve Body: Model 825YD

Item No.	Description	Qty*	2½	3	4	6	8	10
2	Seat Ring	1	101-145	101-144	101-136	101-137	101-138	101-139
2.1	Bushing	1	500-291	500-291	500-292	500-292	780-282	780-282
2.3	Washer	6	360-079	360-079	360-095	360-078	360-078	360-078
2.4	Capscrew	6	519-513-04	519-513-04	511-514-06	511-514-06	511-514-06	511-514-06
3	Guide	2	-		190-001	190-002	190-003	190-004
4	Cover	2	902-497	902-498	902-499	902-500	902-501	902-502
4.1	Cover Bushing	2	780-312	780-312	780-313	780-313	780-313	780-313
5	Disc Holder	2	190-013	190-014	199-005	190-006	190-007	190-008
6	Disc Washer	2	190-016	190-017	190-009	190-010	190-011	190-012
7	Stem	2	780-332	780-333	780-334	780-335	780-336	780-337
7.1	Screw	2	—	—	511-515-08	511-515-08	511-515-08	511-515-08
7.2	Washer	2	—	—	780-338	780-338	780-338	780-338
9	Outlet Spring	1	780-341	780-342	780-343	780-344	780-345	780-346
10	Inlet Spring	1	780-349	780-350	780-351	780-352	780-353	780-354
11	Seat Disc	2	780-357	780-358	780-359	780-360	780-361	780362
12	O-Ring (Seat Ring)	2	398-237-72	398-242-72	398-253-72	398-263-72	398-272-72	398-274-72
13	Capscrew	16	511-516-08	511-516-08	511-517-10	511-519-12	511-520-12	511-520-14
14	O-Ring (Cover)	2	398-346-72	398-354-72	398-365-72	398-374-72	398-379-72	398-381-72
15	Locknut	2	521-547-00	521-547-00	521-550-00	521-550-00	521-551-00	521-551-00
16	Gasket	1	780-365	780-366	780-367	780-368	780-369	780-370
17	Bolt	4-12	511-019-18	511-019-20	511-019-22	511-020-26	511-020-28	511-021-30
17.1	Nut	4-12	521-019-00	521-019-00	521-019-00	521-020-00	521-020-00	—
17.2	Stud	2-4	—	—	521-019-00	513-020-32	513-020-32	—
40	Ball Valve	3	781-047	781-047	781-047	781-048	781-048	781-048
41	Nipple	1	571-181-46	571-181-46	571-181-46	571-181-56	571-181-56	571-181-56
41.1	Nipple	2	571-181-43	571-181-43	571-181-43	571-181-53	571-181-53	571-181-53
41.2	Nipple	1	571-181-45	571-181-45	571-181-45	—	—	—
43	Tube Fitting Elbow	1	—	—	571-231-23	571-231-23	571-231-23	—
51	O-ring	2	398-014-72	398-014-72	398-116-72	398-116-72	398-118-72	398-118-72
104	Pipe Plug	1-3	578-171-40	578-171-40	578-17140	578-171-40	578-171-40	—
105	Pipe Plug	1-2	—	—	—	578-171-50	578-171-50	578-171-50
108	Tube Fitting	1	571-231-43	571-231-43	—	—	—	—
109	Bushing	1	—	—	571-161-52	571-161-52	571-161-52	571-161-52

* Quantity required per valve. Some sizes require different quantities

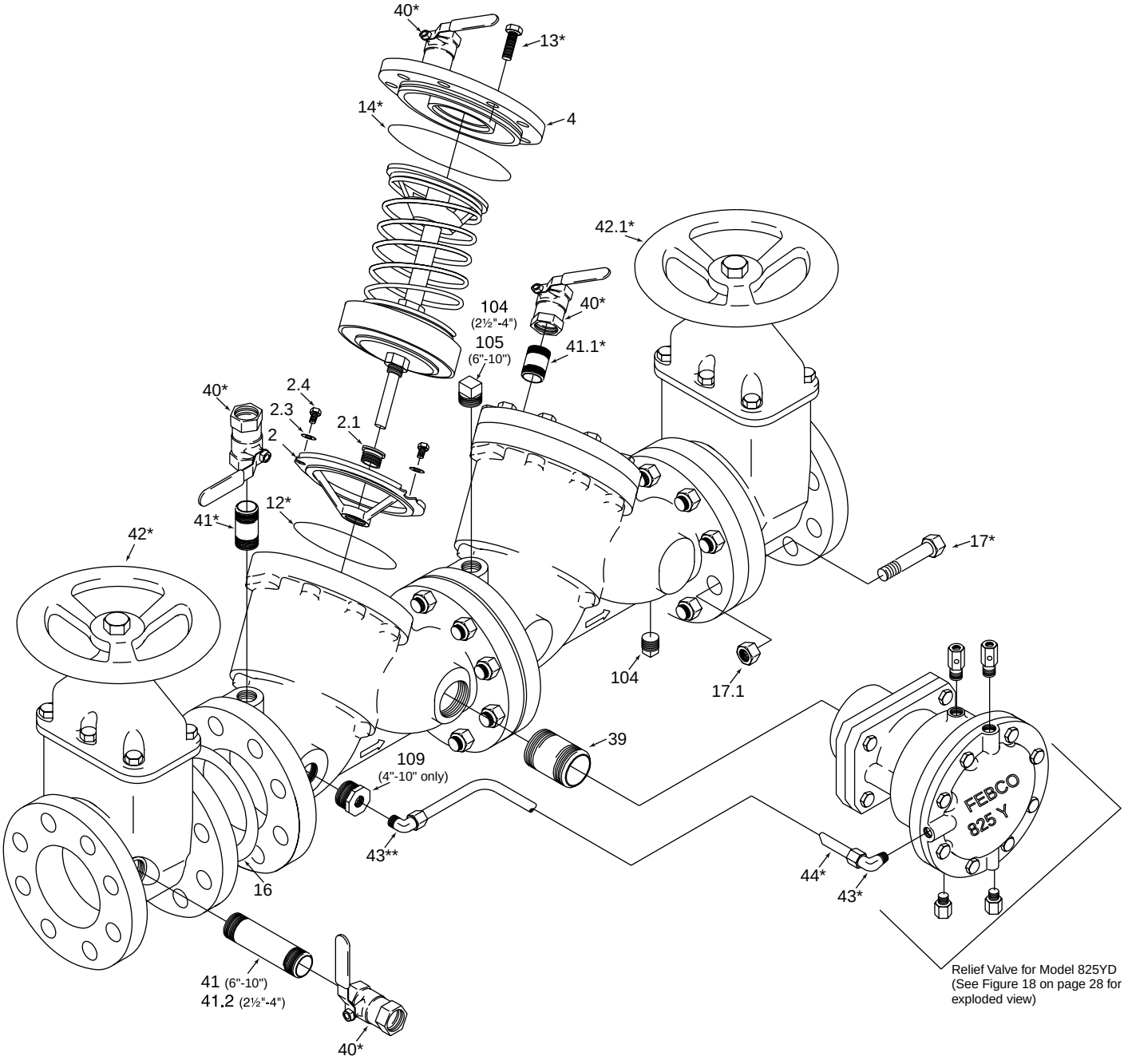
(See page 26 for assemblies and parts kits)

Shut-offs: Model 825YD

Item No.	Description	2½	3	4	6	8	10
42	Resilient Sealed NRS (Inlet)	781-005	781-006	781-007	781-008	781-009	781-010
42	Resilient Sealed OS&Y (Inlet)	781-891	781-893	781-895	781-897	781-899	781-901
42.1	Resilient Sealed NRS (Outlet)	781-011	781-012	781-013	781-014	781-015	781-016
42.1	Resilient Sealed OS&Y (Outlet)	781-005	781-890	781-892	781-894	781-896	781-900

(Parts list continued on page 26)

Model 825YD (2½" - 10")
Figure No. 14



*Commercial Parts Available (see page 33 and 34)
** 2½" - 3" use item #108 (3/8" tube x 1/2" NPT straight pipe)

Some parts are sold in kits only. Consult parts price list for specifics.

Model 825 Type D and YD (2-1/2" - 10") Parts

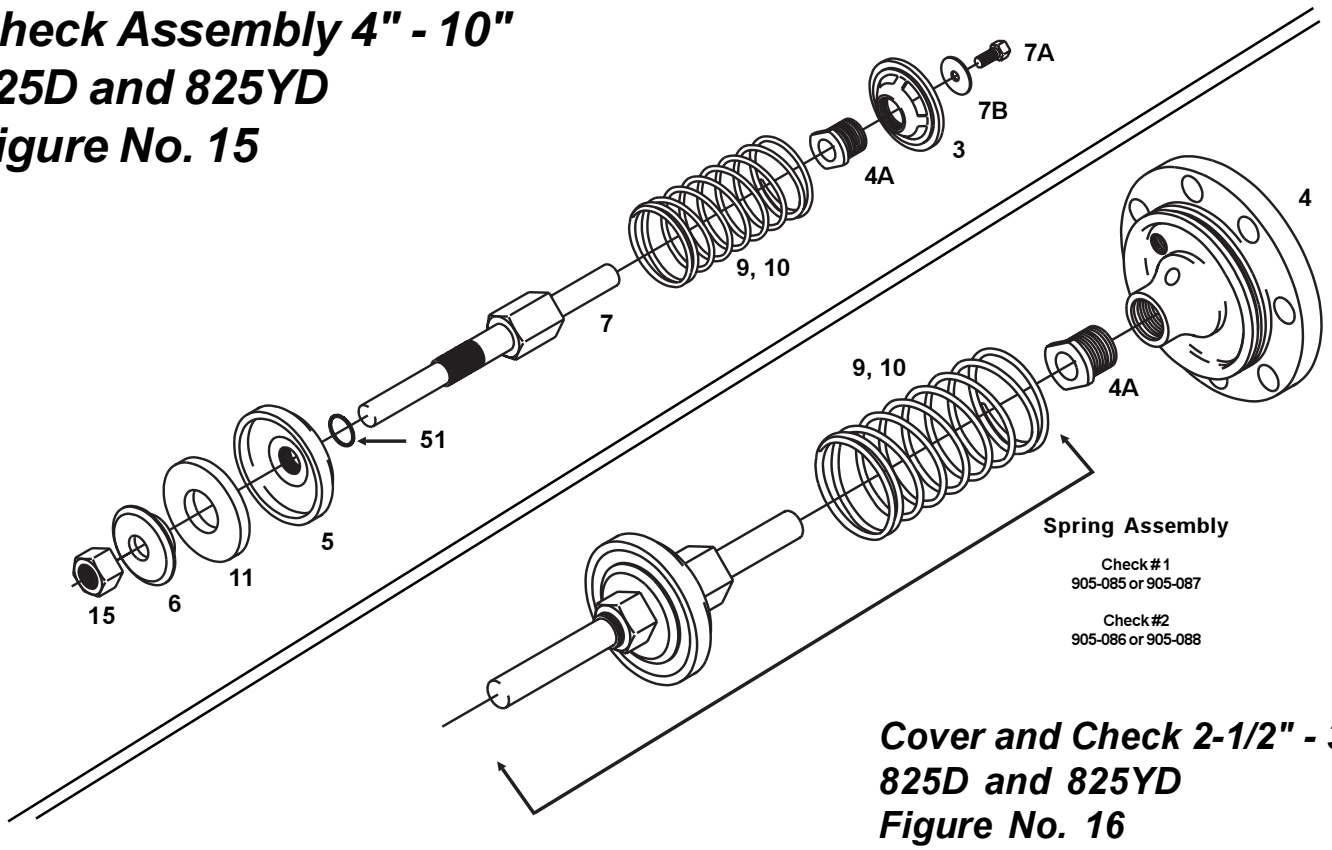
Assemblies / Kits: Model 825D

DESCRIPTION	SIZE 2½"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 8"	SIZE 10"
Spring Assembly #1 Check (3, 4A, 5, 6, 7, 7A, 7B, 10, 11, 15, 51)	905-085	905-087	902-466	902-468	902-470	902-472
Spring Assembly #2 Check (3, 4A, 5, 6, 7, 7A, 7B, 9, 10, 11, 15, 51)	905-086	905-088	902-467	905-469	902-471	905-473
Rubber Parts, CI & DI Bodies (11, 14, 51)	905-059	905-060	905-061	905-062	905-063	905-064
Relief Valve Kit (Type D Only)	902-440	902-440	902-440	902-446	902-446	902-446
Relief Valve Kit (26, 27, 32, 39, 49 -2 ea.) - Rubber Parts	905-066	905-066	905-066	905-067	905-067	905-067
LG Mounting Kit (16, 17, 17A, 17B, 40, 41, Both Ends)	905-036	905-037	905-038	905-039	905-040	905-041

Assemblies / Kits: Model 825YD

DESCRIPTION	SIZE 2½"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 8"	SIZE 10"
Spring Assembly #1 Check (3, 4A, 5, 6, 7, 7A, 7B, 10, 11, 15, 51)	905-085	905-087	902-466	902-468	902-470	902-472
Spring Assembly #2 Check (3, 4A, 5, 6, 7, 7A, 7B, 9, 10, 11, 15, 51)	905-086	905-088	902-467	905-469	902-471	905-473
Seat Ring Kit (2, 2A, 2C, 2D, 12)	902-386YD	902-385YD	902-384YD	902-383YD	902-382YD	902-381YD
Rubber Parts, CI & DI Boddies (11, 14, 51)	905-059	905-060	905-061	905-062	905-063	905-064
Large Mounting Kit (16, 17, 17A, 17B, 40, 41, Both Ends)	905-036	905-037	905-038	905-039	905-040	905-041
Relief Valve Assy (Type YD Only) (21 - 50)	905-100	905-100	905-100	905-101	905-101	905-101
Relief Valve Kit - Rubber (26, 27, 27A, 31A, 32)	905-102	905-102	905-102	905-102	905-102	905-102
Relief Valve Seat Ring Kit (22A, 22B, 36, 36A, 36B)	905-103	905-103	905-103	905-103	905-103	905-103
Internal Modular Assembly - Relief Valve Kit	905-104	905-104	905-104	905-104	905-104	905-104

Check Assembly 4" - 10" 825D and 825YD Figure No. 15



Cover and Check 2-1/2" - 3" 825D and 825YD Figure No. 16

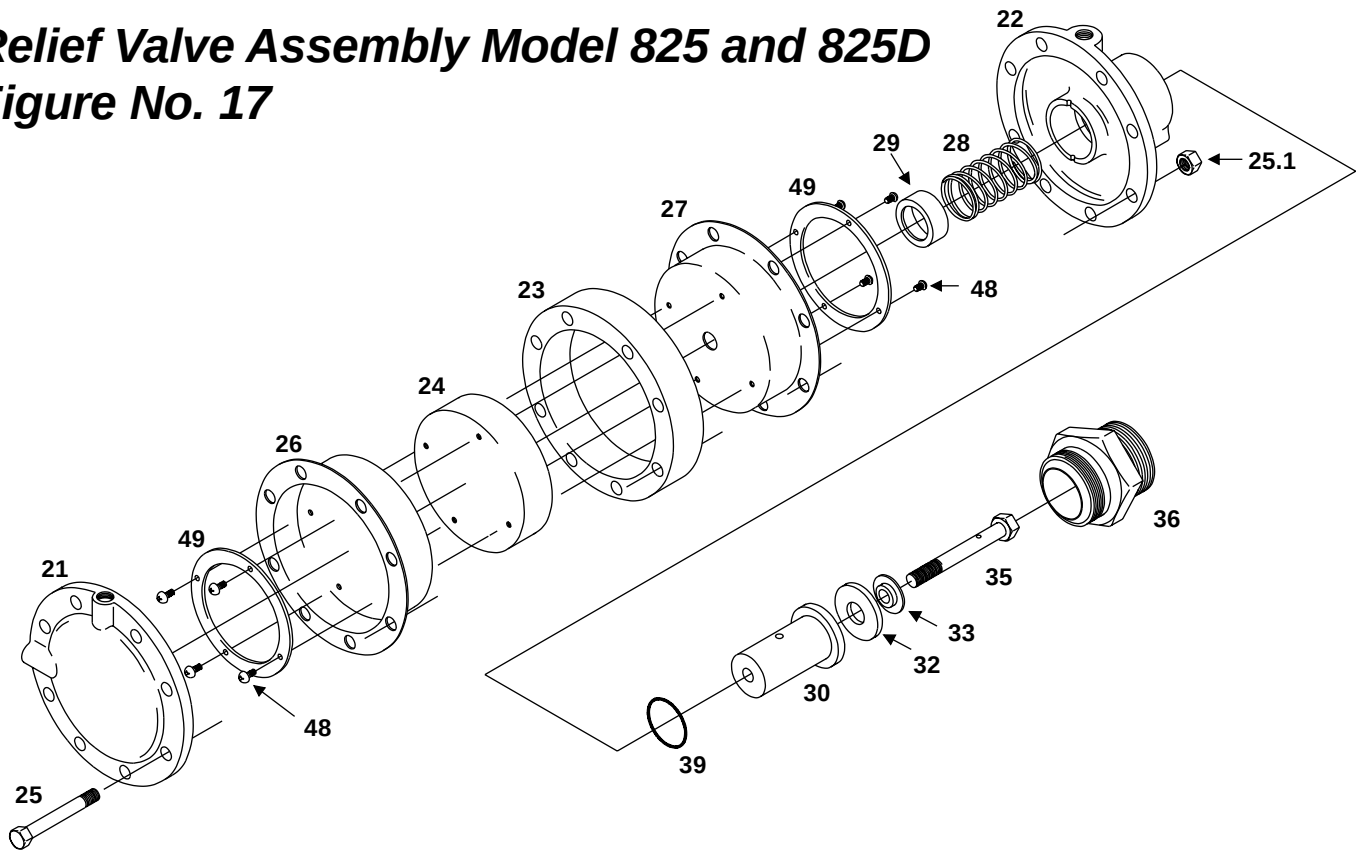
Model 825 and 825D (2½" - 10") Parts

Relief Valve Body: Model 825 and 825D

Item No.	Description	Qty*	2½	3	4	6	8	10
21	Diaphragm Cover	1	780-372	780-372	780-372	780-372	780-372	780-372
23	Diaphragm Spacer	1	780-377	780-377	780-377	780-377	780-377	780-377
24	Diaphragm Button	1	780-379	780-379	780-379	780-379	780-379	780-379
25	Bolt	8	511-515-22	511-515-22	511-515-22	511-515-22	511-515-22	511-515-22
25.1	Nut	8	521-515-00	521-515-00	521-515-00	521-515-00	521-515-00	521-515-00
26	Diaphragm	1	780-381	780-381	780-381	780-381	780-381	780-381
27	Diaphragm	1	780-383	780-383	780-383	780-383	780-383	780-383
28	Spring	1	780-385	780-385	780-386	780-386	780-386	780-386
29	Spring Button	1	780-388	780-388	780-389	780-389	780-389	780-389
30	Main Stem	1	780-391	780-391	780-392	780-392	780-392	780-392
32	Seat Disc (825)	1	780-394	780-394	780-395	780-395	780-395	780-395
32	Seat Disc (825D)	1	780-394	780-394	780-394	780-395	780-395	780-395
33	Disc Washer	1	780-397	780-397	780-398	780-398	780-398	780-398
35	Orifice Bolt	1	780-399	780-399	780-399	780-399	780-399	780-399
36	Seat Ring (825)	1	780-402	780-403	780-404	780-404	780-405	780-405
36	Seat Ring (825D)	1	780-403	780-403	780-403	780-404	780-405	780-405
39	O-Ring	1	398-222-72	398-222-72	398-330-72	398-330-72	398-330-72	398-330-72
48	Capscrew	8	700-137	700-137	700-137	700-137	700-137	700-137
49	Diaphragm Washer	2	780-415	780-415	780-415	780-415	780-415	780-415

* Quantity required per valve. Some sizes require different quantities

Relief Valve Assembly Model 825 and 825D Figure No. 17

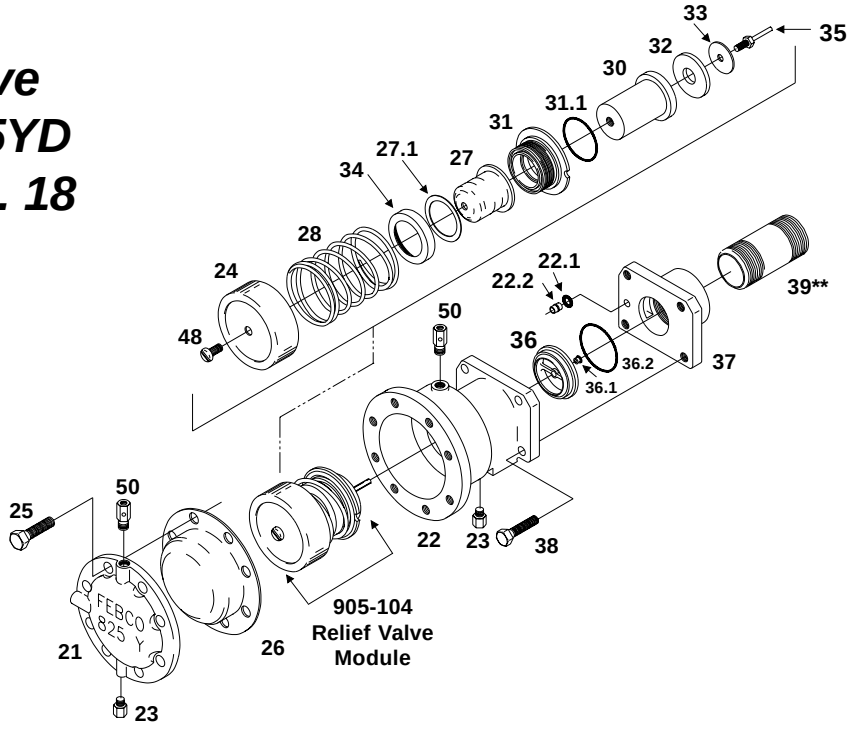


Model 825 Type YD (2½" - 10") Parts

Relief Valve Body: Model 825YD

Item No.	Description	Qty	2½	3	4	6	8	10
21	Cover-RV	1	101-113	101-113	101-113	101-113	101-113	101-113
22	Body-RV	1	101-112	101-112	101-112	101-112	101-112	101-112
22.1	O-Ring	1	398-202-72	398-202-72	398-202-72	398-202-72	398-202-72	398-202-72
22.2	Bushing	1	500-290	500-290	500-290	500-290	500-290	500-290
24	Diaphragm Button	1	300-118	300-118	300-118	300-118	300-118	300-118
25	Capscrew	8	511-515-08	511-515-08	511-515-08	511-515-08	511-515-08	511-515-08
26	Diaphragm - Outer	1	400-108	400-108	400-108	400-108	400-108	400-108
27	Diaphragm - Inner	1	400-109	400-109	400-109	400-109	400-109	400-109
27.1	Slip Ring	1	340-103	340-103	340-103	340-103	340-103	340-103
28	Spring	1	630-128	630-128	630-128	630-128	630-128	630-128
30	Main Stem	1	500-298	500-298	500-298	500-298	500-298	500-298
31	Upper Guide	1	101-114	101-114	101-114	101-114	101-114	101-114
31.1	O-Ring	1	398-145-72	398-145-72	398-145-72	398-145-72	398-145-72	398-145-72
32	Seat Disc	1	780-395	780-395	780-395	780-395	780-395	780-395
33	Disc Washer	1	300-119	300-119	300-119	300-119	300-119	300-119
34	Retainer	1	101-116	101-116	101-116	101-116	101-116	101-116
35	Lower Guide	1	240-102	240-102	240-102	240-102	240-102	240-102
36	Seat Ring	1	101-115	101-115	101-115	101-115	101-115	101-115
36.1	Bushing	1	500-299	500-299	500-299	500-299	500-299	500-299
36.2	O-Ring	1	398-229-72	398-229-72	398-229-72	398-229-72	398-229-72	398-229-72
37	Mountain Plate	1	101-143	101-143	101-143	101-142	101-142	101-142
38	Capscrew	1	511-514-07	511-514-07	511-514-07	511-514-07	511-514-07	511-514-07
39	Nipple	1	573-181-81	573-181-81	573-181-81	573-181-81	573-181-81	573-181-81
48	Capscrew	4	519-513-04	519-513-04	519-513-04	519-513-04	519-513-04	519-513-04
50	Air Bleed	1	959-4A1-10	959-4A1-10	959-4A1-10	959-4A1-10	959-4A1-10	959-4A1-10

Relief Valve Model 825YD Figure No. 18



Model 826 Type YD (2½" - 10") Parts

Relief Valve With ByPass: Model 826YD

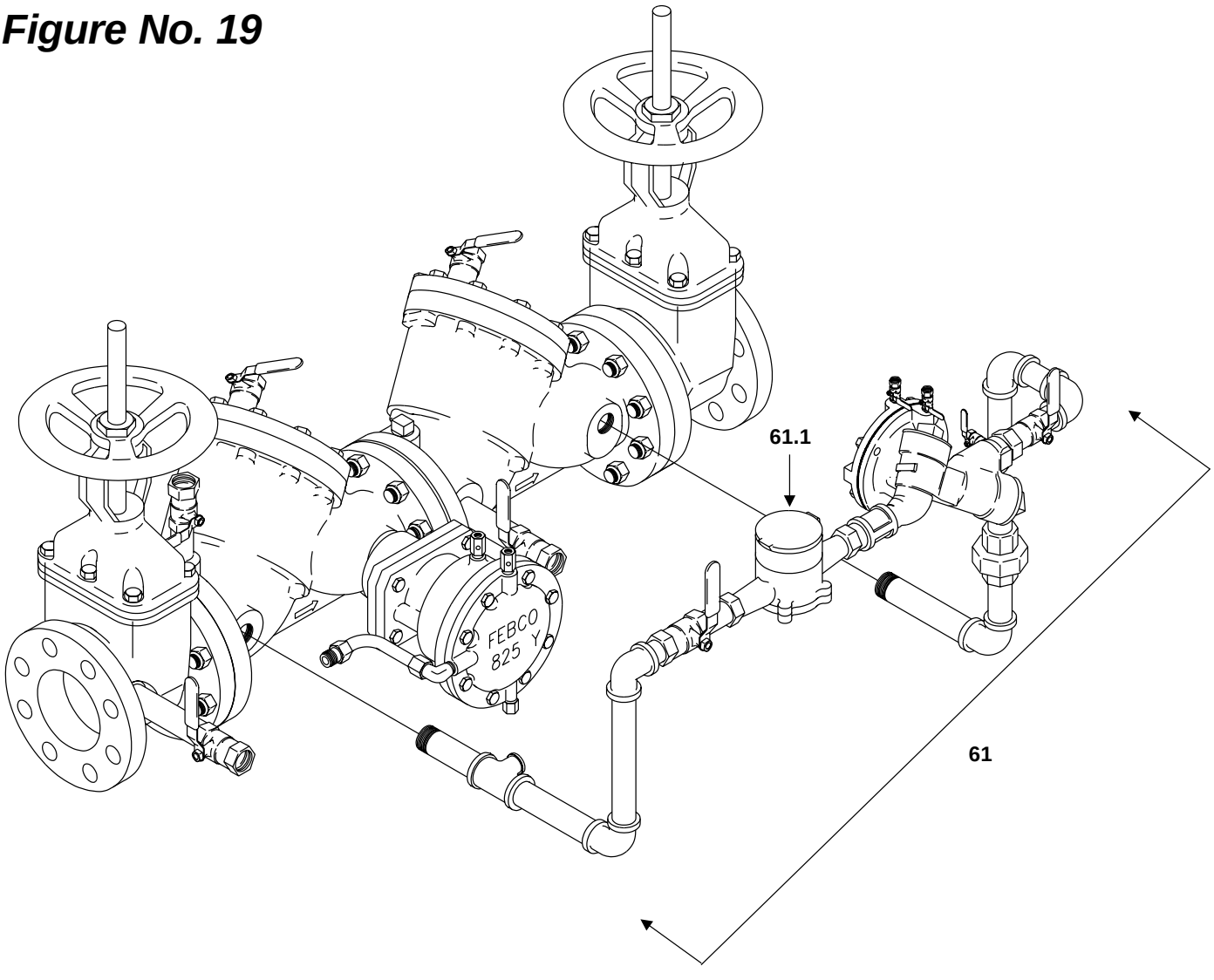
Item No.	Description	2½	3	4	6	8	10
9	1st Check Spring	780-349	780-350	630-142	630-143	630-144	630-145
9	2nd Check Spring	630-140	630-141	780-778	780-779	780-780	780-781
42	Resilient Wedge OS&Y Gate Valve	780-891	780-893	780-895	780-897	780-899	780-901
61	ByPass Kit	905-127	905-127	905-127	905-127	905-127	905-127
61.1	Meter (Std.-Gal.)	780-666	780-666	780-666	780-666	780-666	780-666

The following information, combined with the information in this Manual, gives you all the necessary technical information for the 826YD.

For information on Installation, Servicing, Field Testing and Trouble Shooting, please refer to those section in this Maintenance Manual.

The items listed above are used **only** on the Model 826YD and are not interchangeable with the Model 825YD.

Model 826YD
Figure No. 19



Service Procedures
Relief Valve 825, 825D, and 825YD (2½" - 10")

1a. Relief Valve Disassembly Non-Modular Type Relief Valve Models 825 & 825D (See Figures No. 13 & 16)

1. Remove copper tubing from relief valve body.
2. Un-thread the relief valve completely from the check valve body, leaving the seat ring in the check valve body. NOTE: If the seat ring is removed with the relief valve, the seat ring must be un-threaded from the relief valve diaphragm plate, being careful not to damage the seat ring threads and seating surface.
3. Remove cover bolts and nuts, diaphragm cover and spacer from the relief valve assembly.
4. Turn the relief valve upside down, un-thread screw (Item 35) using a 9/16 hex socket, and remove diaphragm assembly, spring button and spring.
5. Un-thread screw (Item 48) and remove diaphragm washer and diaphragm from diaphragm button.
6. Push main stem out of bottom of relief valve body.

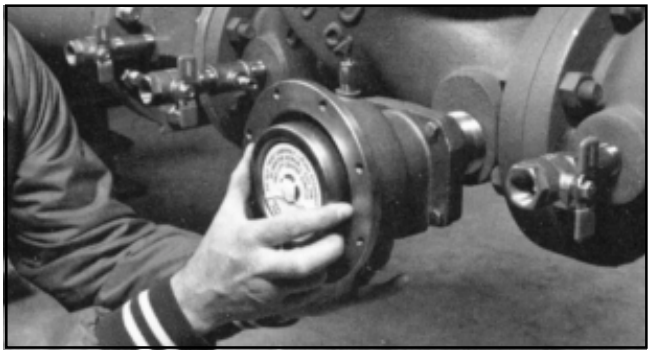
7. Remove o-ring from body.

2a. Relief Valve Reassembly Non-Modular Type Relief Valve Model 825 and 825D (See Figure No. 17)

1. Assemble washer, outer diaphragm, spacer, diaphragm button, inner diaphragm and washer by securing with capscrews to form diaphragm assembly. When installing diaphragms, make sure side of diaphragm marked “button side” (fabric side) is toward diaphragm button and that diaphragm is not pinched.
2. Lubricate main stem o-ring with FDA approved lubricant. Place seat disc on main stem and place disc washer on seat disc.
3. Slide main stem bolt through main stem assembly and place inside relief valve body cavity with main stem bolt protruding.
4. Position spring over bolt and fit diaphragm assembly over spring. Compress diaphragm assembly into spring until main stem bolt threads into diaphragm assembly. Secure using a torque wrench. DO NOT TIGHTEN MAIN STEM BOLT BEYOND 15 INCH-LBS. OR DISTORTION OF THE MAIN STEM (ITEM 30) WILL OCCUR.
5. Thread seat ring into main valve body and thread relief valve into seat ring.
6. Reconnect copper tubing to relief valve.
7. Slowly open inlet shut-off valve and bleed air by opening first test cock #4, then test cocks #3, and #2 and all air bleeds.
8. Slowly open outlet shut-off valve and return the valve to service.
9. Test the assembly to insure it is operating properly.

3a. Relief Valve Seat Disc Replacement Modular Type Relief Valve Model 825YD (See Figure No. 18)

1. Disconnect sensing tubing. Remove relief valve cover (Item 21) by loosening cover bolts (Item 25) and remove the outer diaphragm (Item 26).
2. Grasp the relief valve button (Item 24) with one hand. Insert fingers into the rectangular relief valve port on the bottom of the relief valve and apply force to the seat disc. Pull the relief valve module straight out from the body. DO NOT TWIST.
3. Place the relief valve module on a flat surface. Holding the main stem with one hand, loosen and remove the lower guide (Item 35) and disc washer (Item 33). Remove the rubber seat disc (Item 32) and turn over or replace as required. Inspect all parts and clean using clean water. Refer to section 5a on replacing relief valve diaphragms if this procedure is necessary.



4. Replace the disc washer and lower guide and tighten. Lubricate the o-ring (item 31a), with FDA approved lubricant. Insert the relief valve module into relief valve body, using your fingers to help guide the lower guide into the bushing (item 36a) on the relief valve seat ring. Push the module straight in. DO NOT TWIST.
5. If the relief valve module does not have a center label piece covering the screw (item 48), inspect the screw for burrs. If a burr is visible, remove or cover burr with a piece of flexible tape. This will protect the surface of the diaphragm.
6. Replace the diaphragm, placing the fabric side against the button. Work the rolled edge into the space between the module and the body making sure it is not pinched or buckled.
7. Replace the cover, tighten the cover bolts, and reconnect the sensing tubing. Return to service and test the assembly to insure proper operation.

Service Procedures
Relief Valve 825, 825D, and 825YD (2½" - 10") (Cont.)

4a. Relief Valve Seat Ring Replacement Modular Type Relief Valve Model 825YD (See Figures No. 14 & 18)

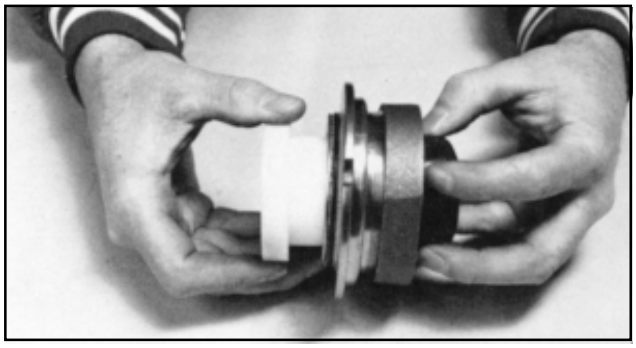
1. Disconnect sensing tubing. Loosen and remove the four mounting bolts (Item 38) from the adapter. Remove the relief valve.
2. Pull the seat ring (Item 36) out from the relief valve body and inspect for damage. Replace as required.
3. Reposition the relief valve to the adapter insuring the o-ring (item 36b) is properly positioned. Tighten the mounting bolts.
4. Reconnect the sensing tubing. Return to service and test the assembly to insure proper operation.

5a. Relief Valve Inner Diaphragm Replacement / Modular Type Relief Valve Model 825YD (See Figure No. 18)

1. Disconnect the sensing tubing. Remove the cover (Item 21) by loosening and removing cover bolts (Item 25).
2. Remove the outer diaphragm (Item 26). Grasp the relief valve button (Item 24) with one hand. Insert your fingers into the rectangular relief valve port on the bottom of the relief valve and apply force to the seat disc. Pull the relief valve module straight out **DO NOT TWIST**.
3. Remove the lower guide (item 35) and disc washer (item 33). Place the relief valve module upside down on a clean

flat surface. Remove the center label piece protecting the screw head and save this piece for reassembly. With one hand apply force sufficient to hold the button against the main stem. Keep the spring (item 28) compressed (spring is approximately 35 lbs.) while unscrewing the pan head screw (item 48). Remove the screw and relieve the spring tension. Remove the button and spring.

4. Remove the main stem and un-thread the retainer (item 34) from the upper guide (Item 32). Remove the slip ring (item 27a) and inner diaphragm (item 27). Inspect, clean and replace parts as required.
5. To reassemble, position the bead on the inner diaphragm into the groove of the upper guide. Place the slip ring over the diaphragm. Lubricate the retainer threads using an FDA approved lubricant and thread the retainer onto the upper guide. Tighten to 60 inch-lbs. of torque.
6. Insert the main stem into the diaphragm and “roll” the diaphragm into position by grasping the end of the diaphragm and main stem with one hand and push the upper guide towards your other hand.
7. Test to make sure diaphragm is positioned properly by sliding the upper guide back and forth through the full travel. It must move freely and easily.



8. Once the inner diaphragm has been rolled, force the end of the main stem snug against the end of the inner diaphragm. The screw hole in the end of the main stem should be visible.
9. Replace the spring and button and tighten the screw while holding the button in place.
10. Make sure the screw (item 48) is free of burrs that may cut the outer diaphragm. Reposition the center label piece, that you have saved during disassembly, over the screw head.
11. Replace the disc washer and lower guide insuring that the seat disc is clean and in position. Lubricate the upper guide o-ring (item 31a) using an FDA approved lubricant, to ease installation. DO NOT USE LUBRICANT ON ANY OTHER PART.
12. Position the relief valve module back into the body using your finger to help guide the lower guide into the relief valve seat ring bushing. Push the module straight in. **DO NOT TWIST.**
13. Replace the outer diaphragm, placing the fabric side against the button. Work the rolled edge into the space between the module and the body, makings sure it is not pinched or buckled.
14. Replace the cover, tighten the cover bolts, and reconnect the sensing tubing. Return the valve to service and test to insure proper operation.

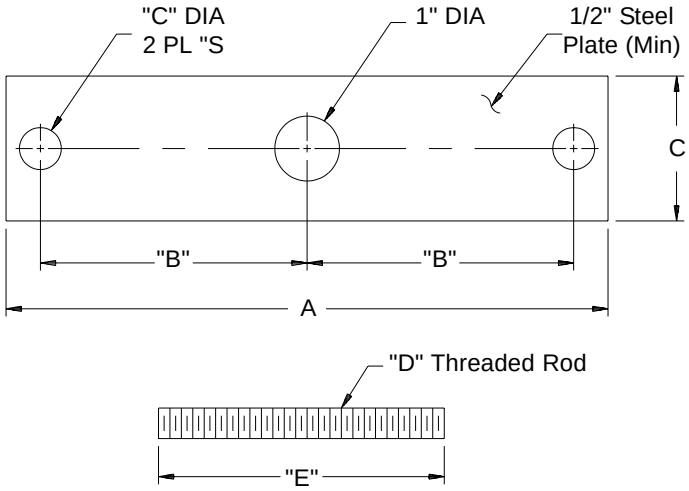
Spring Removal Tool Figure No. 20

Dimensions (Inches)					
Valve Size	A	B	C	D	E
4"	9 1/2	4 1/4	5/8	1/2 -13	5 1/2
6"	12 1/2	5 5/8	3/4	5/8 -11	5 1/2
8"	14 1/4	6 3/8	7/8	3/4 -10	7
10"	16 1/2	7 1/2	7/8	3/4 -10	7

NOTE: This information is provided to expedite servicing of FEBCO products. One tool may be fabricated for use on all required sizes by drilling all holes at appropriate dimensions in a single steel plate of maximum required length. See page 20 for instructions on use

To order a FEBCO spring removal tool order part number 905-121

CAUTION: To avoid possible injury during use, do not fabricate tool from lesser strength material or to smaller dimensions than the minimums shown.

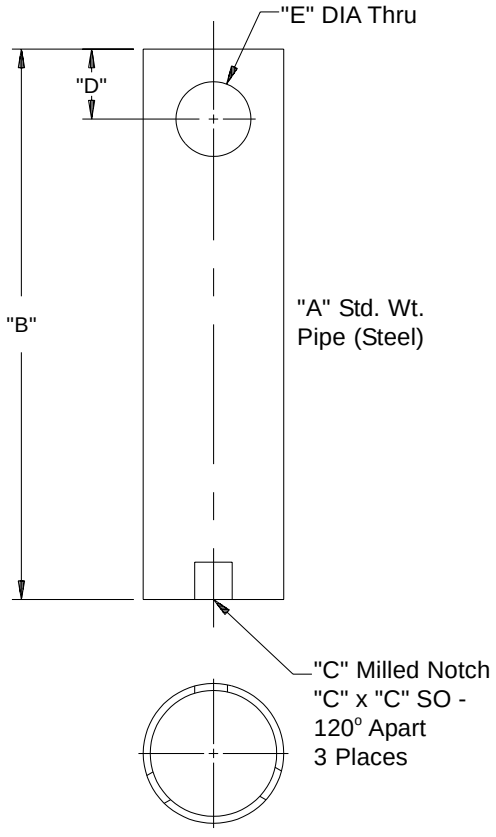


Seat Ring Tool Figure No. 21

For Model 825 Only.

Dimensions (Inches)					
Valve Size	A	B	C	D	E
1 1/2"	1 1/2	6	3/8	3/4	3/4
2"	1 1/2	6	3/8	3/4	3/4
2 1/2"	2 1/2	8	1/2	1	1
3"	3	8	1/2	1	1
4"	4	9	1/2	1	1
6"	6	10	5/8	1	1
8"	8	12	5/8	1	1
10"	8	12	5/8	1	1

NOTE: This information is provided to expedite servicing of FEBCO products. See page 21 for instructions on use



Commercial Parts for Refief Valve - Model 825 & 825 D (1-1/2” - 10”)

Item No.	DESC.	Material	SIZE 1-1/2”	SIZE 2”	SIZE 2-1/2”	SIZE 3”	SIZE 4”	SIZE 6”	SIZE 8”	SIZE 10”
25/ 25A	Bolt & Nut	ST STL	3/8-16 x 2 1/2 (8)	3/8-16 x 2 1/2 (8)	3/8-16 x 2 3/4 (8)	3/8-16 x 2 3/4 (8)	3/8-16 x 2 3/4 (8)	3/8-16 x 2 3/4 (8)	3/8-16 x 2 3/4 (8)	3/8-16 x 2 3/4 (8)
39	O-ring	BUNA-N	568-214 1 x 1 1/4 x 1/8	568-222 1 1/2 x 1 3/4 x 1/8	568-222 1 1/2 x 1 3/4 x 1/8	568-222 1 1/2 x 1 3/4 x 1/8	568-330 2 1/8 x 2 1/2 x 3/16	568-330 2 1/8 x 2 1/2 x 3/16	568-330 2 1/8 x 2 1/8 x 3/16	568-330 2 1/8 x 2 1/2 x 3/16
48	Cap Screw	ST STL	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)	10-32 x 1/2 Socket Head (8)

Commercial Parts for Main Valve - Model 825 (1-1/2” - 10”)

Item No.	DESC.	Material	SIZE 1-1/2”	SIZE 2”	SIZE 2-1/2”	SIZE 3”	SIZE 4”	SIZE 6”	SIZE 8”	SIZE 10”
2B	Bushing Nut	ST STL	7/16-20 Hex (2)	9/16-18 Hex (2)	9/16-18 Hex* (2)	9/16-18 Hex* (2)	7/8-14 Jam* (2)	7/8-14 Jam* (2)		
7A	Screw	ST STL					3/8-16 x 1 (2)	3/8-16 x 1 (2)	3/8-16 x 1 (2)	3/8-16 x 1 (2)
12	O-ring	BUNA-N	568-228 2 1/4 x 2 1/2 x 1/8 (2)	568-231 2 5/8 x 2 7/8 x 1/8 (2)	568-238 3 1/2 x 3 3/4 x 1/8 (2)	568-246 4 1/2 x 4 3/4 x 1/8 (2)	568-254 5 1/2 x 5 3/4 x 1/8 (2)	568-264 7 1/2 x 7 3/4 x 1/8 (2)	568-273 9 3/4 x 10 x 1/8 (2)	10 5/16 x 10 9/16 x 1/8 (2)
13	Cap-Screw	ST STL	1/2-13 x 1 1/4 (8)	3/8-16 x 7/8 (12)	7/16-14 x 1 (16)	7/16-14 x 1 (16)	1/2-13 x 1 1/4 (16)	5/8-11 x 1 1/2 (16)	3/4-10 x 1 1/2 (16)	3/4-10 x 1 3/4 (24)
14	O-ring	BUNA-N	568-234 3 x 3 1/4 x 1/8 (2)	568-240 3 3/4 x 4 x 1/8 (2)	568-244 4 1/4 x 4 1/2 x 1/8 (2)	568-252 5 1/4 x 5 1/2 x 1/8 (2)	568-263 7 1/4 x 7 1/2 x 1/8 (2)	568-272 9 1/2 x 9 3/4 x 1/8 (2)	568-451 11 x 11 1/2 x 1/4 (2)	12 3/4 x 13 x 1/8 (2)
15	Lock-Nut	ST STL	3/8-24 (15)	1/2-20 (15)	1/2-20 (15)	1/2-20 (15)	3/4-16 (15)	3/4-16 (15)	7/8-14 (15)	7/8-14 (15)
17	Bolt & Nut	STEEL	1/2-13 x 1 3/4 (12)	5/8-11 x 2 (12)	5/8-11 x 2 1/4 (12)	5/8-11 x 2 1/2 (12)	5/8-11 x 2 3/4 (24)	3/4-10 x 3 (24)	3/4-10 x 3 1/4 (24)	7/8-9 x 3 1/2 (36)
40	Test Cocks	BRASS	1/4” IPS (4)	1/4” IPS (4)	1/2” IPS (4)	1/2” IPS (4)	1/2” IPS (4)	3/4” IPS (4)	3/4” IPS (4)	3/4” IPS (4)
51	O-ring	BUNA-N			568-014 1/2 x 5/8 x 1/16	568-014 1/2 x 5/8 x 1/16	568-116 3/4 x 15/16 x 3/32	568-116 3/4 x 15/16 x 3/32	568-118 7/8 x 1 1/16 x 3/32	568-118 7/8 x 1 1/16 x 3/32

These parts are commercially available through most hardware distributors or retailers. Gate valves, testcocks, flange gaskets, etc., are also commercially available, but not listed.

* Denotes parts only used on valves manufactured prior to 1981.

Commercial Parts for Main Valve - Model 825Y, 845 (3/4” - 2”)

Item No.	DESC.	Material	SIZE 3/4”	SIZE 1”	SIZE 1-1/4”	SIZE 1-1/2”	SIZE 2”
4	O-ring	BUNA-N	568-202	568-202	568-202	568-202	568-202
6	Cap Screw	ST STL	1/4-20 x 5/8 Allen Head	1/4-20 x 5/8 Allen Head	1/4-20 x 5/8 Allen Head	15/16-18 x 3/4 Allen Head	15/16-18 x 3/4 Allen Head
8	O-ring	BUNA-N	568-226	568-226	568-226	568-235	568-235
12	Screw	ST STL	1/4-28 x 3/8 Pan Head	1/4-28 x 3/8 Pan Head	1/4-28 x 3/8 Pan Head	1/4-28 x 3/8 Pan Head	1/4-28 x 3/8 Pan Head
15	Bolt	ST STL	5/16-18 x 3/4 Hex Head	5/16-18 x 3/4 Hex Head	5/16-18 x 3/4 Hex Head	3/8-16 x 7/8 Hex Head	3/8-16 x 7/8 Hex Head
18	Screw	ST STL	1/4-20 x 3/8 80º Flat Head	1/4-20 x 3/8 80º Flat Head	1/4-20 x 3/8 80º Flat Head	1/4-20 x 3/8 80º Flat Head	1/4-20 x 3/8 80º Flat Head
22	O-ring	BUNA-N	568-113	568-113	568-113	568-120	568-120
24	O-ring	BUNA-N	568-022	568-022	568-022	568-127	568-127
27	Screw	ST STL	10-32 x 3/8 Round Head	10-32 x 3/8 Round Head	10-32 x 3/8 Round Head	1/4-20 x 1/2 Round Head	1/4-20 x 1/2 Round Head
28	Plug	BRASS	1/8” IPS	1/8” IPS	1/8” IPS	1/4” IPS	1/4” IPS
29	Gate Valve (w side tap)	BRONZE BRONZE	3/4” NPT 1/8” IPS Side Tap	1” NPT 1/8” IPS Side Tap	1 1/4” NPT 1/4” IPS Side Tap	1 1/2” NPT 1/4” IPS Side Tap	2” NPT 1/4” IPS Side Tap
30	Test Cock	BRONZE	1/8” IPS	1/8” IPS	1/4” IPS	1/4” IPS	1/4” IPS
102	O-ring	BUNA-N	568-019	568-019		568-026	568-026

These parts are commercially available through most hardware distributors or retailers. Gate valves, testcocks, flange gaskets, etc., are also commercially available, but not listed.

* Denotes parts only used on valves manu factured prior to 1981.

Commercial Parts for Relief Valve - Model 825YD (2-1/2” - 10”)

Item No.	DESC.	Material	SIZE 2-1/2”	SIZE 3”	SIZE 4”	SIZE 6”	SIZE 8”	SIZE 10”
22A	O-ring	BUNA-N	568-202 1/4 x 1/2 x 1/8	568-202 1/4 x 1/2 x 1/8	568-202 1/4 x 1/2 x 1/8	568-202 1/4 x 1/2 x 1/8	568-202 1/4 x 1/2 x 1/8	568-202 1/4 x 1/2 x 1/8
25	Cap Screw	ST STL	3/8-16 x 1 (8)	3/8-16 x 1 (8)	3/8-16 x 1 (8)	3/8-16 x 1 (8)	3/8-16 x 1 (8)	3/8-16 x 1 (8)
31A	O-ring	BUNA-N	568-145 2 9/16 x 2 3/4 x 3/32	568-145 2 9/16 x 2 3/4 x 3/32	568-145 2 9/16 x 2 3/4 x 3/32	568-145 2 9/16 x 2 3/4 x 3/32	568-145 2 9/16 x 2 3/4 x 3/32	568-145 2 9/16 x 2 3/4 x 3/32
36B	O-ring	BUNA-N	568-229 2 3/8 x 2 5/8 x 1/8	568-229 2 3/8 x 2 5/8 x 1/8	568-229 2 3/8 x 2 5/8 x 1/8	568-229 2 3/8 x 2 5/8 x 1/8	568-229 2 3/8 x 2 5/8 x 1/8	568-229 2 3/8 x 2 5/8 x 1/8
38	Cap Screw	ST STL	5/16-18 x 7/8 Hex (4)	5/16-18 x 7/8 Hex (4)	5/16-18 x 7/8 Hex (4)	5/16-18 x 7/8 Hex (4)	5/16-18 x 7/8 Hex (4)	5/16-18 x 7/8 Hex (4)
39	Pipe Nipple	ST STL	1 1/2” IPS x Close	1 1/2” IPS x Close	1 1/2” IPS x Close	2” IPS x Close	2” IPS x Close	2” IPS x Close
48	Cap Screw	ST STL	1/4-20 x 1/2 Pan Head	1/4-20 x 1/2 Pan Head	1/4-20 x 1/2 Pan Head	1/4-20 x 1/2 Pan Head	1/4-20 x 1/2 Pan Head	1/4-20 x 1/2 Pan Head

Commercial Parts for Main Valve - Model 825D & 825YD (2-1/2" - 10")

Item No.	DESC.	Material	SIZE 2-1/2"	SIZE 3"	SIZE 4"	SIZE 6"	SIZE 8"	SIZE 10"
2D	Screw	ST STL	1/4-20 x 1/2 (6)	1/4-20 x 1/2 (6)	5/16-18 x 3/4 (6)	5/16-18 x 3/4 (6)	5/16-18 x 3/4 (6)	5/16-18 x 3/4 (6)
7A	Screw	ST STL			3/8-16 x 1 (2)	3/8-16 x 1 (2)	3/8-16 x 1 (2)	3/8-16 x 1 (2)
12	O-ring	BUNA-N	568-237 3 3/8 x 3 5/8 x 1/8 (2)	568-242 4 x 4 1/4 x 1/8 (2)	568-253 5 3/8 x 5 5/8 x 1/8 (2)	568-263 7 1/4 x 7 1/2 x 1/8 (2)	568-272 9 1/2 x 9 3/4 x 1/8 (2)	568-274 10 10 1/4 x 1/8 (2)
13	Cap-Screw	ST STL	7/16-14 x 1 (16)	7/16-14 x 1 (16)	1/2-13 x 1 1/4 (16)	5/8-11 x 1 1/2 (16)	3/4-10 x 1 1/2 (16)	3/4-10 x 1 3/4 (16)
14	O-ring	BUNA-N	568-346 4 1/8 x 4 1/2 x 3/16 (2)	568-354 5 1/8 x 5 1/2 x 3/16 (2)	568-365 7 x 7 3/8 x 3/16 (2)	568-374 9 1/4 x 9 5/8 x 3/16 (2)	568-379 11 x 11 3/8 x 3/16 (2)	568-381 12 x 12 3/8 x 3/16 (2)
15	Lock-Nut	ST STL	1/2-20 (15)	1/2-20 (15)	3/4-16 (15)	3/4-16 (15)	7/8-14 (15)	7/8-14 (15)
17	Bolt & Nut	STEEL	5/8-11 x 2 1/4 (12)	5/8-11 x 2 1/2 (12)	5/8-11 x 2 3/4 (24)	3/4-10 x 3 (24)	3/4-10 x 3 1/4 (24)	7/8-9 x 3 1/2 (36)
40	Test Cocks	BRASS	1/2" IPS (4)	1/2" IPS (4)	1/2" IPS (4)	3/4" IPS (4)	3/4" IPS (4)	3/4" IPS (4)
41	Nipple		571-181-44 Size (3)	571-181-44 Size (3)	571-181-44 Size (3)	571-181-55 Size (3)	571-181-55 Size (3)	781-181-55 Size (3)
41A	Nipple		571-181-43 Size (2)	781-181-43 Size (2)	781-181-43 Size (2)	571-181-53 Size (2)	781-181-53 Size (2)	781-181-53 Size (2)
41B	Tee		571-131-42 Size	781-131-42 Size	781-131-42 Size	571-131-52 Size	781-131-52 Size	781-131-52 Size
43	Tube Fit. 90º		571-231-23 Size	571-231-23 Size	571-231-23 Size	571-231-23 Size	571-231-23 Size	571-231-23 Size
43A	Tube Fit.		571-211-23 Size	571-211-23 Size	571-211-23 Size	571-211-23 Size	571-211-23 Size	571-211-23 Size
51	O-ring	BUNA-N	568-014 1/2 x 5/8 x 1/16 (2)	568-014 1/2 x 5/8 x 1/16 (2)	568-116 5/8 x 3/4 x 1/16 (2)	568-116 5/8 x 3/4 x 1/16 (2)	568-118 3/4 x 7/8 x 1/16 (2)	568-118 3/4 x 7/8 x 1/16 (2)

These parts are commercially available through most hardware distributors or retailers. Gate valves, testcocks, flange gaskets, etc., are also commercially available, but not listed.

* Denotes parts only used on valves manufactured prior to 1981.

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