



Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals



Figure 1 DF2410 Control Valve (fail close configuration)

Dyna-Flo DF2410 Fail Closed Operation, Parts and Instruction Manual

Table of Contents

Introduction	2	Assembly	8
Specifications	3	Plug / Stem Assembly	8
Unpacking	4	Bonnet Sub-assembly	8
Installation	4	Seat Ring Installation	9
Spring Adjustment	5	Bonnet Insatallation	9
Maximum Shut-off Pressure Drops	6	Actuator Assembly	9
Maintenance	7	Packing Diagram	10
Disassembly	7	Plug / Stem Diagram	11
Seat Ring Removal	7	Valve Cross Section	12
Valve Stem Removal	7	Parts List, Materials & Key Numbers	13
Packing Removal	7		
Plug / Stem Disassembly	7		
Actuator Casing Disassembly	8		



Model
DF2410 FAIL CLOSED Control Valve
Operation, Parts and Instruction Manuals

!NOTICE!

These instructions are meant to be used in conjunction with the Dyna-Flo DF2410 Technical (Sales) Bulletin. If you do not have the Technical Bulletin, contact Dyna-Flo immediately, or visit www.dynaflo.com

It is the intention of this document to provide users with an accurate guide for safe installation and maintenance of Model DF2410 fail closed control valve. Revisions and updates are available at above mentioned website.

Introduction

The Model DF2410 Control Valve is a rugged globe style control valve intended for demanding applications in process control. It is suitable for a wide range of applications, especially high pressure and severe service. The compact design makes installation and maintenance more convenient than traditional valve and actuator assemblies while still offering the same functionality. The Model DF2410 is designed to accept instrumentation requiring valve stem linkages making it an excellent control valve.

General

The following instructions are to be thoroughly reviewed and understood prior to installing, operating or performing maintenance on this equipment. Work on this equipment should be done by experienced personnel. Throughout the manual, safety and caution notes appear and must be strictly followed, to prevent serious injury or equipment malfunction.

Scope

The valve configuration and construction materials were selected to meet particular pressure, pressure drop, temperature, and process fluid conditions. Some body and trim material combinations are limited in their pressure and temperature ranges. Do not apply any other conditions to the valve without first contacting your Dyna-Flo sales office.

This manual is written to be a practical and useful guide to successfully using the Dyna-Flo DF2410 fail closed control valve for many years.

! CAUTION !

To avoid personal injury or installation damage as a result of the sudden release of process pressure or the breaking of parts, do not install the valve assembly where service conditions could exceed the limits stated in this manual or on the equipment nameplates. Use government codes, accepted industry standards and good piping practices to select pressure-relieving equipment for protection of your installation. It is also important to wear the proper protective equipment when performing any installation or maintenance activity.



Model
DF2410 FAIL CLOSED Control Valve
Operation, Parts and Instruction Manuals

Specifications

Port Diameters

1/4", 3/8", 1/2", 3/4", 1" and 1-1/4"
See Table 1 of Sales Bulletin.

Sizes and Connection Styles

Size: 1 & 2 inch
Rating: ASME 150 / 300 / 600 / 900 / 1500
Connections: RF / RTJ / NPT
See Table 1 of Sales Bulletin for details and Port Diameters.

Maximum Inlet Temperatures and Pressures

Flanged valves consistent with ASME Class rating as per ASME B16.34, unless limited by either material pressure or temperature limitations.

Maximum Pressure Drops

See Tables 1 & 2, Page 6.

Standard Shut-off Classifications

Class IV Shut-off
In accordance with ASME / FCI 70.2

Dimensions

Fail Closed Valve Configuration Dimensions
See Figure 4 of Sales Bulletin

Flow Characteristics

Equal Percentage

Flow Direction

Flow Up

Valve Plug Travel

3/4 inch (19 mm)

Approximate Valve Body and Actuator Weights

See Table 1 of Sales Bulletin

Body Style

Globe body style

Materials

See Parts List, Page 13 for typical construction materials.

Material Temperature Capabilities

Body Assembly

-46 to 149°C (-50 to 300°F)

Actuator Assembly

-40 to 82°C (-40 to 180°F)

Valve Cross Section

See Figures 5 & 7.

Packing Type

The Standard packing is Double PTFE V-ring Live-loaded low emission.

Actuator Configurations

Fail Closed

Actuator Pressure Connections

1/4 inch Female NPT

Maximum Actuator Casing Pressure

50 Psig (345 kPag)

Effective Actuator Diaphragm Area

69 inches² (452 cm²)

Valve Sizing Coefficients

See Table 2 & 3 of Sales Bulletin.



Model
DF2410 FAIL CLOSED Control Valve
Operation, Parts and Instruction Manuals

Unpacking Valve from Shipping Container

Check the packing list against materials received, while unpacking the valve. The Packing List describes the valve and accessories in each shipping container.

If rigging is to be used for placement of valve it is recommended that two casing cap screws (Key 31) are removed and replaced with an approved $\frac{3}{4}$ " eye bolt. See Figure 2.

! WARNING !

The following maintenance procedures require removing the control valve from service. To avoid personnel injury, only qualified technicians should perform the following procedures. Always ensure the control valve is fully released of pressure or process fluid before starting maintenance.

Installation

! WARNING !

Before loosening or tightening the hammer nut (Key 12) spring tension must be removed. Follow Step 1 under Disassembly, failure to do so may result in damage to the valve seat.

Flow

- 1 Install the valve with flow through the valve in the direction shown by the flow arrow on the valve body. The valve body is normally installed directly beneath the actuator in the verticle position.

Before installing the valve, clean dirt, welding chips, scale or other foreign material from the line. Look for signs of gasket leakage through the line flanges. Make repairs, if required.

! WARNING !

Keep hands, hair and clothing away from all moving parts when operating the valve! Serious injury can result from failure to do so!

- 2 When possible, stroke the valve and check for smooth operation through the full-stroke. Unsteady valve stem movement could be an indication of an internal problem.

Air Piping

The actuators are designed to accept 1/4" NPT connection. Use 3/8" OD tubing (or equivalent) for all air lines. All connections must be free of leaks.

! CAUTION !

Do not exceed supply pressure indicated on serial plate located on the upper casing of the actuator.



Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Spring Adjustment

In a Fail Closed DF2410 the spring force controls the maximum shut in pressure. Adjusting the initial spring setting (the pressure required to lift the plug off the seat), will change the maximum shut-off pressure drop capabilities of the valve. Refer to Table 1 & 2 for information on these values. Turning the spring adjustment screw (Key 37) clockwise will increase the initial spring setting.

! NOTE !

Initial Spring Setting is to be done after the valve and actuator have been assembled together.

1 To properly verify initial spring setting 2 pieces of information are required:

- 1 Type of Spring (LIGHT or HEAVY)
- 2 Actuator Input Signal

This information is available on the actuator casing sticker (Key 40) (Figure 3).

- 2 Connect a supply line with a gauge to the actuator.
- 3 If you have replaced the diaphragm (Key 27) or have disassembled the actuator apply maximum casing pressure to the actuator to verify seal integrity is good. Use a soapy solution to check for any air leaks from the lower casing and the diaphragm. On a new assembly this will have been done at the factory and will not be required.
- 4 Using a 1-1/8" wrench loosen the lock nut (Key 36) on top of the upper casing assembly (Key 22).
- 5 Slowly apply supply pressure to the actuator checking for the first sign of valve stem (Key 5) movement. Movement should occur at the specified Initial Spring Setting (See Table 1 & 2). If the valve stem movement occurs before or after the Initial Spring Setting pressure, turn the adjustment screw (Key 37) clockwise (to increase) or counterclockwise (to decrease) using a 3/4" wrench until movement of the stem occurs at the specified Initial Spring Setting.
- 6 If not already installed, attach the travel indicator (Key 38) and adjust it to the appropriate position.



Figure 2 Rigging Setup

DF2410 CONTROL VALVE			
CAUTION!		WARNING	
MAXIMUM ACTUATOR CASING PRESSURE 50 PSI		TO AVOID PERSONAL INJURY REMOVE SPRING PRECOMPRESSION BEFORE DISASSEMBLING	
INSTALLED SPRING		LIGHT RATE <input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
		HEAVY RATE <input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
INITIAL SPRING SETTING			
	OPERATING RANGE	SPRING TO CLOSE	SPRING TO OPEN
LIGHT	3-15 PSI	10.0 PSI	6.0 PSI
	0-18 PSI	11.0 PSI*	3.5 PSI*
	0-20 PSI		
HEAVY	6-30 PSI	14.0 PSI	10.0 PSI
	0-30 PSI	12.5 PSI	4.0 PSI*
	0-33 PSI	15.5 PSI*	
	0-35 PSI	17.0 PSI	
	0-50 PSI		
* FACTORY SETTING			



Figure 3 Actuator Casing Sticker (Key 40)



Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Table 1

**Maximum Shut-off Pressure Drops³ for a Fail Closed DF2410
 When used with common instrumentation¹**

Actuator Input Signal	0 to 18 Psig (0 to 124 kPag)	0 to 20 Psig (0 to 138 kPag)	0 to 30 Psig (0 to 207 kPag)	0 to 33 Psig (0 to 228 kPag)	0 to 35 Psig (0 to 241 kPag)	0 to 50 Psig (0 to 345 kPag)
Spring	Light Spring		Heavy Spring			
Initial Spring Setting	11.0 Psig (75.8 kPag)	11.0 Psig (75.8 kPag)	12.5 Psig (86.2 kPag)	15.5 Psig (107 kPag)	17.0 Psig (117 kPag)	17.0 Psig (117 kPag)
Port Diameter inch (mm)	Maximum Pressure Drop Psi (kPa)					
1/4 (6.40)	3,750 (25,855) ²	3,750 (25,855) ²	3,750 (25,855)	3,750 (25,855)	3,750 (25,855)	3,750 (25,855)
3/8 (9.50)	3,750 (25,855) ²	3,750 (25,855) ²	3,750 (25,855)	3,750 (25,855)	3,750 (25,855)	3,750 (25,855)
1/2 (12.7)	2,765 (19,064)	2,765 (19,064)	3,180 (21,925)	3,750 (25,855)	3,750 (25,855)	3,750 (25,855)
3/4 (19.1)	1,160 (7,998)	1,160 (7,998)	1,340 (9,239)	1,785 (12,307)	2,080 (14,341)	2,080 (14,341)
1 (25.4)	610 (4,206)	610 (4,206)	715 (4,930)	965 (6,653)	1,130 (7,791)	1,130 (7,791)
1-1/4 (31.8)	365 (2,517)	365 (2,517)	430 (2,965)	590 (4,068)	700 (4,826)	700 (4,826)

- Notes:**
- 1 - When using an instrument such as a positioner or controller with a 3-15 Psi (21-105 kPa) input signal use the 0 to 20 Psig column (Light Spring).
 - 2 - For applications where downstream pressure exceeds 2,845 Psig (19, 616 kPag), 2,845 Psig should be used as the Maximum Shut-off Pressure.
 - 3 - Do not exceed the Pressure Temperature Limitations as per ASME B16.34.

Table 2

**Maximum Shut-off Pressure Drops³ for a Fail Closed DF2410
 When used with restricted output range instrumentation¹**

Actuator Input Signal	3 to 15 Psig (20.7 to 103 kPag)	6 to 30 Psig (41 to 207 kPag)
Initial Spring Setting	10 Psig (69 kPag) (Light Spring)	14 Psig (97 kPag) (Heavy Duty Spring)
Port Diameter inch (mm)	Maximum Pressure Drop Psi (kPa)	Maximum Pressure Drop Psi (kPa)
1/4 (6.40)	3,750 (25,855) ⁴	3,750 (25,855) ²
3/8 (9.50)	2,205 (15,203) ⁴	3,045 (20,995) ²
1/2 (12.7)	1,160 (7,998)	1,635 (11,273)
3/4 (19.1)	445 (3,068)	655 (4,516)
1 (25.4)	210 (1,448)	330 (2,275)
1-1/4 (31.8)	110 (758)	185 (1,276)

- Notes:**
- 1 - example: for a Electro-Pneumatic Transducer calibrated for 6 to 30 Psig (41 to 207 kPag).
 - 2 - For valve use where downstream pressure exceeds 1,715 Psig (11,825 kPag), 1,715 Psig should be used as the Maximum Shut-off Pressure.
 - 3 - Do not exceed the Pressure Temperature Limitations as per ASME B16.34.
 - 4 - For valve use where downstream pressure exceeds 740 Psig (kPag), 740 Psig should be used as the Maximum Shut-off Pressure.



Model **DF2410 FAIL CLOSED** Control Valve Operation, Parts and Instruction Manuals

Maintenance

Only "Certified Technicians" should be disassembling and inspecting these valves and actuators.

Disassembly

! NOTE !

Be sure that the valve body is being held securely in-line or in a clamping device.

! WARNING !

Before loosening or tightening the hammer nut (Key 12) spring tension must be removed. Follow Step 1 under Disassembly, failure to do so may result in damage to the valve seat.

- 1 Disconnect or bypass loading tubing from diaphragm casing. Loosen lock nut (Key 36). Turn adjustment screw (Key 37) counter clockwise until it can be turned by hand or completely remove it from the upper casing (Key 22).
- 2 Using a hammer, tap the hammer nut in a counterclockwise direction to loosen, then use an adjustable wrench to continue loosening. Check that the bonnet is loose before completely disengaging the hammer nut from the body (Key 1). If the bonnet is loose, completely disengage the hammer nut from the body. If the bonnet is still tight, leave the hammer nut engaged and tap the bonnet to loosen. This assures that if process pressure is present the bonnet is still retained by the hammer nut.

Seat Ring Removal

- 1 Remove the bonnet o-ring (Key 16) if it was not already removed with bonnet (Key 2) removal. Replace o-ring.
- 2 Using a 1-13/16" socket, remove the valve seat ring (Key 3) from the valve body (Key 1). Inspect the seat for galling, scratches, corrosion and thread damage. Replace seat if necessary.
- 3 Using a mechanic's "pick set" or small flat head screwdriver, carefully remove the seat ring gasket (Key 15) from the valve body. Be careful not to scratch the seat surface.
- 4 Once the seat and gasket are removed from the body, thoroughly inspect the inside of the valve body for scratches, erosion, and damage. Replace body if necessary.

Valve Stem Removal

! NOTE !

If stem removal is required due to design change from DF2400 to DF2410 refer to the DF2410 Stem Errata Sheet for specific instructions. A stem will be supplied by Dyna-Flo for this upgrade. Instructions on removal and replacement of the stem (Key 5) are the same for all Fail Closed DF2400's or DF2410's.

- 1 Use a chisel to loosen the retainer lock nut (Key 7) and loosen the packing retainer (Key 6) using a 1-3/4" wrench until the valve stem slides freely.
- 2 Slide the plug (Key 4) and stem (Key 5) out of the bonnet by pulling the plug end away from the bonnet. The travel indicator should slide off of the valve stem during this process and may be re-used if necessary.
- 3 Inspect the plug and stem for thread damage, scratches or galling. Replace or polish if necessary (See Plug / Stem Disassembly).

Packing Removal

- 1 With Step 1 and 2 of Valve Stem Removal completed, remove the packing retainer (Key 6) and retainer lock nut (Key 7) from the bonnet. Inspect both parts for damage and replace if necessary.
- 2 Remove the disc springs (Key 8), packing follower (Key 9), packing sets (Key 11), and packing spacer (Key 10). Inspect the entire packing box and removed content for damage, corrosion, deformation and replace if necessary.
- 3 Using a standard mechanic's "pick set" or a small flat head screwdriver, remove the stem bushing (Key 19) and stem o-ring (Key 17) being careful not to damage the bonnet walls. Inspect and replace o-ring if necessary.

Plug / Stem Disassembly

- 1 Holding the stem (Key 5) securely in a manner that will not scratch or damage it, take a mechanic's "pick set" or small flat head screw driver and carefully pull the pin retainer ring (Key 14) along with the pin (Key 13) out of the ring groove and pin hole (See Figure 6). Inspect and replace parts if necessary.



Model **DF2410 FAIL CLOSED** Control Valve Operation, Parts and Instruction Manuals

Plug / Stem Disassembly (Continued)

- 2 Once the pin has been removed turn the valve plug (Key 4) counterclockwise and remove it from the valve stem (Key 5), inspect parts for damage and replace if necessary.

Actuator Casing Disassembly

- 1 Complete Step 1 of Disassembly (Page 7).
- 2 Remove the 16 cap screws (Key 31) from the actuator casings (Key 21 & 22) using two 9/16" wrenches or an impact wrench with a 9/16" socket.
- 3 Remove the upper casing assembly (Key 22) from the lower casing (Key 21). Next remove the upper spring seat (Key 35) and the actuator spring (Key 34).
- 4 Using a 3/4" wrench remove the upper stem nut (Key 25) and then remove the lock washer (Key 33), spring retainer (Key 32), lower spring seat (Key 29), and diaphragm plate (Key 28). Inspect all parts for damage and corrosion, replace if necessary.
- 5 Remove the diaphragm (Key 27) being careful not to damage the diaphragm on the threads of the valve stem (Key 5). Inspect the diaphragm for tears and damage, replace if necessary.
- 6 Remove the actuator o-ring (Key 18) and the diaphragm washer (Key 26). Using a 3/4" wrench remove the lower stem nut (Key 24). Replace o-ring if necessary.
- 7 Using a 9/16" wrench or socket (socket preferred) remove the 4 bonnet cap screws (Key 23) without damaging the valve stem (Key 5).
- 8 Remove the lower diaphragm casing (Key 21) and using a pick set or screw driver carefully remove the casing o-ring (Key 20). Inspect both for damage, replace o-ring if necessary.

Assembly

Plug / Stem Assembly (Reference Figure 6)

- 1 Lubricate the pin retainer ring (Key 14) with white grease and slide it over the threaded end of the valve plug (Key 4) until the ring sits half way between the top of the plug and the ring groove.
- 2 Thread in the valve stem (Key 5) until the end of the stem is just visible through the pin hole in the ring groove of the plug. The pin (Key 13) should be able to rest against the valve stem and not fall completely into the pin hole.
- 3 Slide the retainer ring (Key 14) towards the pin groove until it slips completely into the groove. At this point the retainer ring should rest on the pin (Key 13) but should not be in the ring groove on the pin.
- 4 Continue to thread the valve stem into the valve plug until the pin snaps into the pin groove on the valve stem. The retainer ring should now be inside the ring groove of the pin.

Bonnet Sub-assembly (Reference Figure 5)

- 1 With the bonnet (Key 2) sitting actuator side up, lubricate the stem o-ring (Key 17) with fluorinated grease and install into the stem bore on top of the bonnet.
- 2 Install the stem bushing (Key 19) into the stem bore over top of the stem o-ring. Be sure that the stem bushing clips properly into place (this should occur when the top of the bushing comes into contact with the top of the bonnet).
- 3 Lubricate the first set of packing rings (Key 11) with fluorinated grease and install them into the bonnet (See Figure 5). Next install the packing spacer (Key 10) so that it makes contact with the first set of packing rings. Lubricate and install the second set of packing rings so that they make contact with the packing spacer.
- 4 Install the packing follower (Key 9) with the keeper lips facing away from the packing rings as shown in Figure 5.
- 5 Refer to Figure 5 and install the disc springs (Key 8) as illustrated.



Model
DF2410 FAIL CLOSED Control Valve
Operation, Parts and Instruction Manuals

Bonnet Sub-assembly

(Continued)

- 6 Coat the threads of the packing retainer (Key 6) with nickel based anti-seize compound and thread the retainer lock nut (Key 7) onto the packing retainer leaving enough thread exposed to allow the lock nut to avoid contact with the bonnet once the packing retainer is installed.
- 7 Thread the packing retainer into the bonnet (Key 2) until the packing retainer makes contact with the disc springs. **DO NOT TIGHTEN COMPLETELY.**
- 8 Insert the plug / stem assembly stem threads first up through the packing retainer and through the entire bonnet assembly. The stem hole should now be visible through the bonnet window.
- 9 Using a 1-3/4" wrench tighten the packing retainer until the disc springs are fully compressed. This should take less than 75 ft-lb of torque. Loosen the packing retainer (Key 6) one quarter of a turn in the counter clockwise direction. The packing rings are now loaded with 75% compression of the disc springs.
- 10 Tighten the retainer lock nut (Key 7) until it is snug to the bottom surface of the bonnet.

Seat Ring Installation

- 1 Clean and inspect the inside of the valve body (Key 1), make sure there is no debris or damage. Coat both sides of the seat ring gasket (Key 15) with nickel based anti-seize compound. Place the seat ring gasket inside the body, use a small flat head screwdriver to help carefully align the gasket to be concentric with the bore.
- 2 Apply the nickel based anti-seize compound to the threads of the seat ring (Key 3). Carefully place the seat ring inside the body (hex head up) and thread the seat ring into the body. Using a 1-13/16" socket, torque the seat ring to:
 - 1 Inch Valve - 500 ft-lb. (678 N•m)
 - 2 Inch Valve - 515 ft-lb. (698 N•m)

! NOTE !

Any significant resistance to seat ring installation should be investigated. Dry threads could prevent proper seating of the seat ring against the gasket, allowing leakage.

Bonnet Installation (Reference Figure 7)

! NOTE !

If actuator is still attached to bonnet, assure the actuators spring force has been removed as outlined in Step 1 under Disassembly (Page 7).

- 1 With the valve body (Key 1) held securely in a clamping device, lubricate the threads of the valve body with nickel based anti-seize compound.
- 2 Lubricate the bonnet o-ring (Key 16) with fluorinated grease and slide it over the plug end of the bonnet assembly until it makes contact with the step in the bonnet. See Figure 7.
- 3 Insert the bonnet assembly into the body as shown in Figure 7. Note the orientation of the supply connection on the lower casing and the 4 bolts that fasten the lower casing shown in Figure 7.
- 4 If the actuator was removed from the bonnet, slide the hammer nut (Key 12) over the bonnet. Using an adjustable wrench, tighten firmly then tap with a hammer.

Actuator Assembly (Reference Figure 7)

! NOTE !

If assembling the actuator after the bonnet has been installed in the body.

- 1 With the bonnet secured, lubricate the casing o-ring (Key 20) with fluorinated grease and install it into the o-ring groove on top of the bonnet.
- 2 Place the lower diaphragm casing (Key 21) over the valve stem so that it rests on the casing o-ring (Key 20). Orientate the NPT connection of the casing so that it is parallel with the valve body (Key 1).



Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Actuator Assembly
 (Continued)

- 3 Lubricate the threads of the 4 bonnet cap screws (Key 23) with nickel based anti-seize compound and thread them through the lower casing holes and into the bonnet (Key 2). Using a 9/16" socket, torque the cap screws to 36 ft-lb. (49 N•m).
- 4 Install the lower stem nut (Key 24) onto the threads of the valve stem (Key 5) to the end of the stem threads.
- 5 Slide the diaphragm washer (Key 26) over the stem and onto the lower stem nut ensuring that the machined cup on the washer is facing up.
- 6 Lubricate the actuator o-ring (Key 18) with fluorinated grease and slide it over the stem and into the machined cup on top of the diaphragm washer.
- 7 Install the diaphragm (Key 27) making sure to align the diaphragm holes with the holes of the lower casing (Key 21). Install the diaphragm plate (Key 28), lower spring seat (Key 29), spring retainer (Key 32), lock washer (Key 33), and upper stem nut (Key 25) as shown in Figure 7.
- 8 Using two 3/4" wrenches, apply one wrench to the lower stem nut (lift diaphragm to access) and the other wrench to the upper stem nut.

! NOTE !

To avoid having the diaphragm (Key 27) turn while tightening the upper and lower stem nuts, it may be necessary to insert a few casing cap screws (Key 31) through the holes of the diaphragm and casing.

- 9 Tighten the upper stem nut until the lock washer (Key 33) flattens out.
- 10 Seat the spring (Key 34) onto the spring retainer (Key 32) and into the lower spring seat (Key 29).
- 11 Install the upper spring seat (Key 35) onto the spring as shown in Figure 7.
- 12 Install the upper casing assembly (Key 22) making sure that the NPT connection and casing holes are in alignment with the holes of the lower casing (Key 21).

- 13 Install the 16 casing cap screws (Key 31) and partially thread the casing nuts (Key 30) onto the cap screws. Using two 9/16" wrenches or wrench and socket, completely tighten the cap screws and nuts. Try to keep the upper casing assembly level during this process.
- 14 Thread the lock nut (Key 36) onto the adjustment screw (Key 37) and then thread the adjustment screw into the upper casing assembly.
- 15 Install the vent cap (Key 39) into the top NPT connection on the upper casing assembly.
- 16 Refer to Spring Adjustment on Page 5.

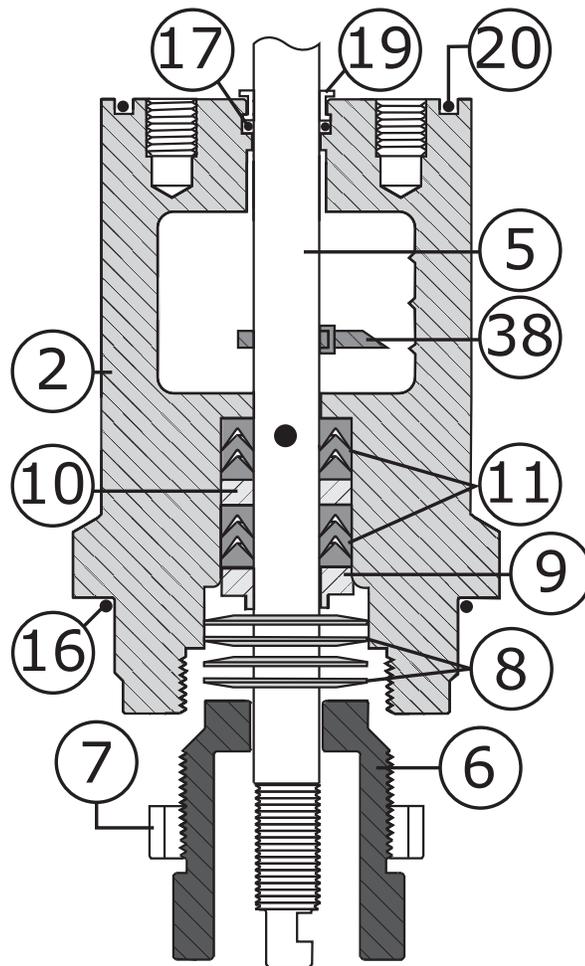


Figure 5 Packing Arrangement



Model
DF2410 FAIL CLOSED Control Valve
Operation, Parts and Instruction Manuals

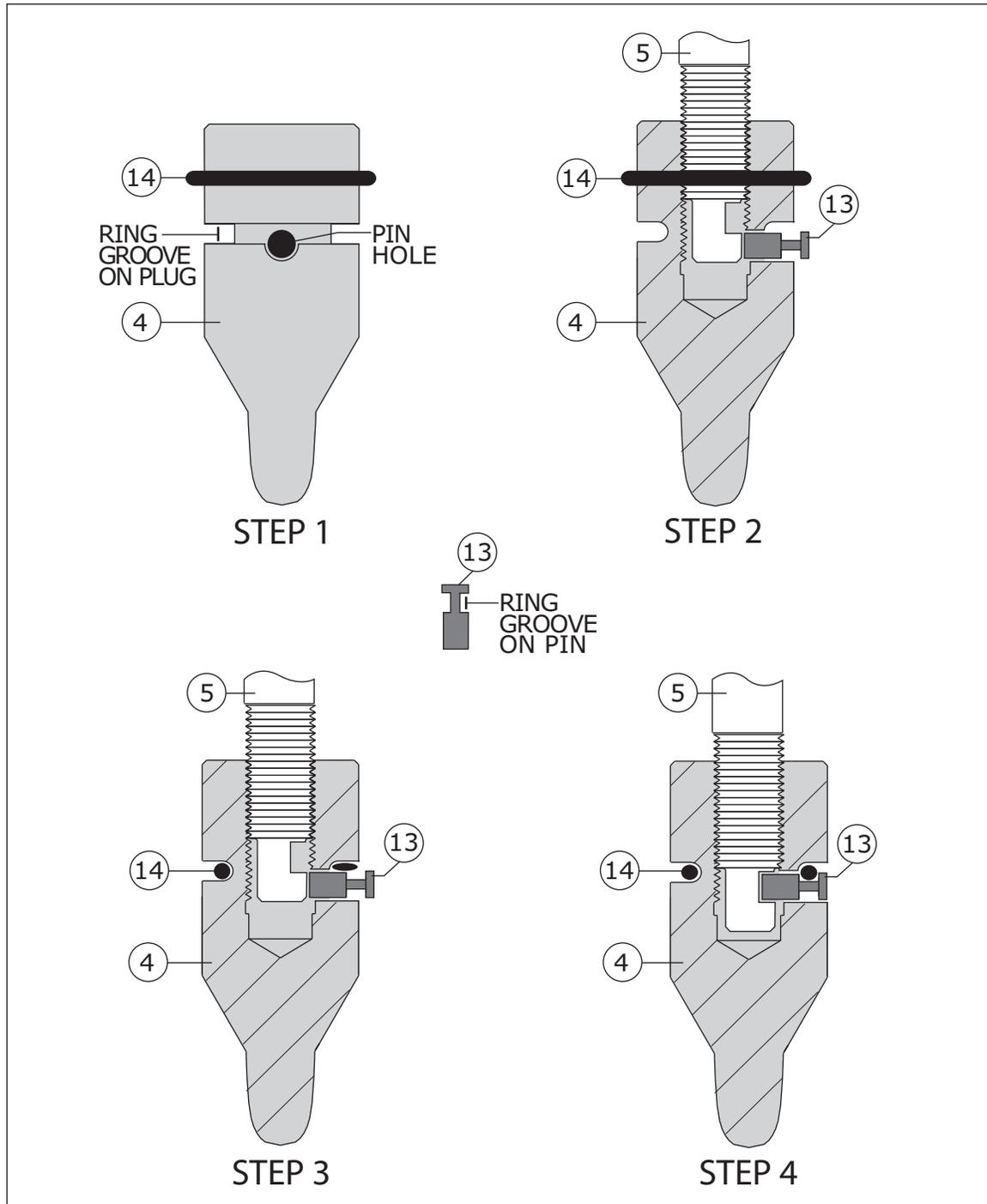
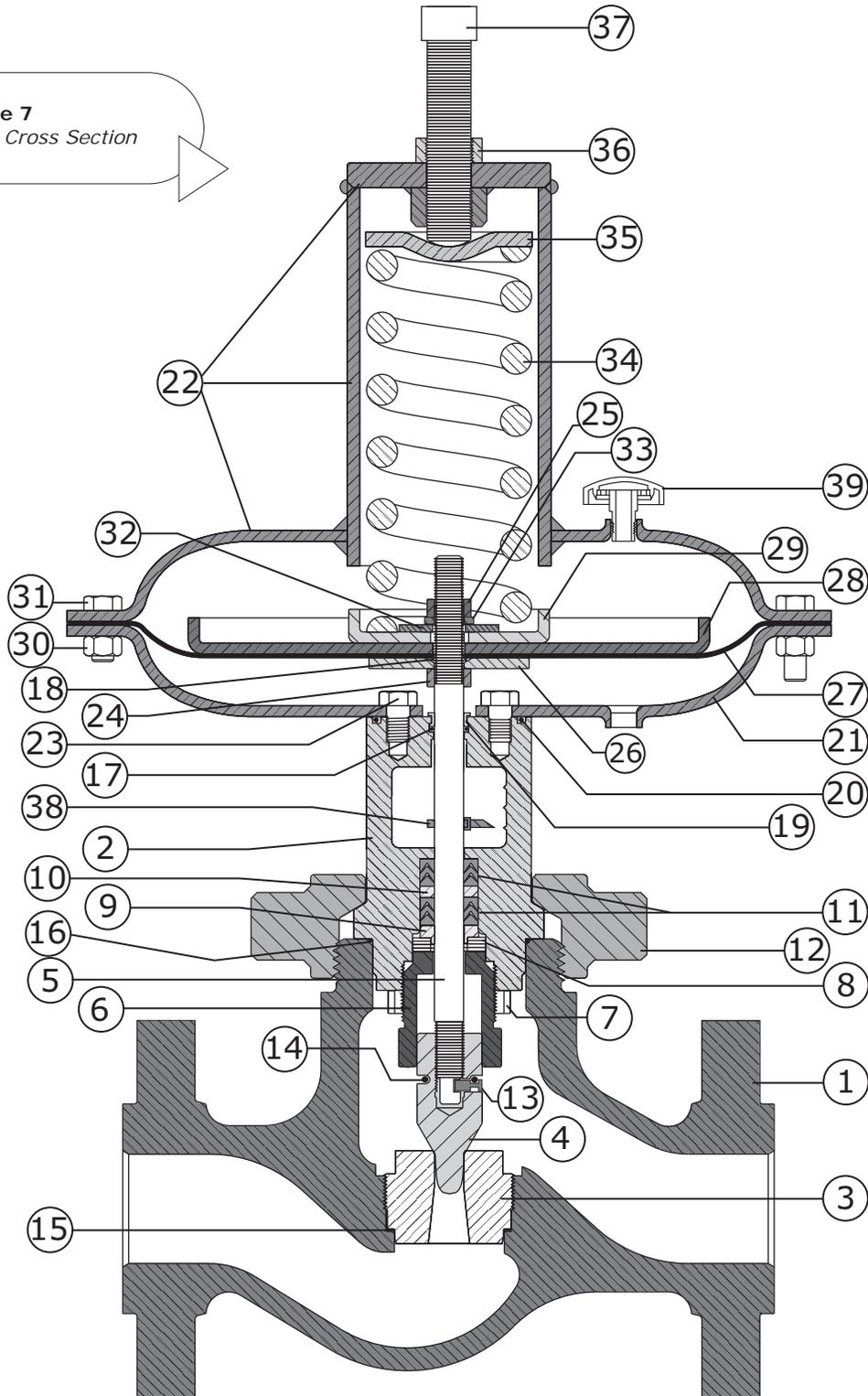


Figure 6 Plug / Stem Assembly Steps



Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Figure 7
Valve Cross Section





Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Parts List

Key	Description	Material	Part Number
1	Body	if you need a body as a replacement part, order by valve size and stem diameter, connection style, and serial number and desired material.	
2	Bonnet	ASTM A352 Grade LCC	DF40201X01D
3	Seat Ring		
	1 inch valve		
	1/4 Inch Port	S17400 DH 1150 (17-4 DH 1150)	2B5097X174D
	3/8 Inch Port	S17400 DH 1150 (17-4 DH 1150)	2B5098X174D
	1/2 Inch Port	S17400 DH 1150 (17-4 DH 1150)	2B5099X174D
	3/4 Inch Port	S17400 DH 1150 (17-4 DH 1150)	2B5100X174D
	1/4 Inch Port	S31600 (316 SST) / CoCr-A	2B5097X001D
	3/8 Inch Port	S31600 (316 SST) / CoCr-A	2B5098X001D
	1/2 Inch Port	S31600 (316 SST) / CoCr-A	2B5099X001D
	3/4 Inch Port	S31600 (316 SST) / CoCr-A	2B5100X001D
	2 Inch Valve		
	1/4 Inch Port	S17400 DH 1150 (17-4 DH 1150)	DF405014X1D
	3/8 Inch Port	S17400 DH 1150 (17-4 DH 1150)	DF405038X1D
	1/2 Inch Port	S17400 DH 1150 (17-4 DH 1150)	DF405012X1D
	3/4 Inch Port	S17400 DH 1150 (17-4 DH 1150)	DF405034X1D
	1 Inch Port	S17400 DH 1150 (17-4 DH 1150)	DF405100X1D
	1-1/4 Inch Port	S17400 DH 1150 (17-4 DH 1150)	DF405114X1D
	1/4 Inch Port	S31600 (316 SST) / CoCr-A	2B5106X001D
	3/8 Inch Port	S31600 (316 SST) / CoCr-A	2B5107X001D
	1/2 Inch Port	S31600 (316 SST) / CoCr-A	2B5108X001D
	3/4 Inch Port	S31600 (316 SST) / CoCr-A	2B5109X001D
	1 Inch Port	S31600 (316 SST) / CoCr-A	2B5110X001D
	1-1/4 Inch Port	S31600 (316 SST) / CoCr-A	2K1801X001D
4	Valve Plug		
	1/4 Inch Port	S17400 (17-4) DH 1150	DF406014X1D
	3/8 Inch Port	S17400 (17-4) DH 1150	DF406038X1D
	1/2 Inch Port	S17400 (17-4) DH 1150	DF406012X1D
	3/4 Inch Port	S17400 (17-4) DH 1150	DF406034X1D
	1 Inch Port	S17400 (17-4) DH 1150	DF406100X1D
	1-1/4 Inch Port	S17400 (17-4) DH 1150	DF406114X1D
	1/4 Inch Port	S31600 (316 SST) / CoCr-A	DF406014X2D
	3/8 Inch Port	S31600 (316 SST) / CoCr-A	DF406038X2D
	1/2 Inch Port	S31600 (316 SST) / CoCr-A	DF406012X2D
	3/4 Inch Port	S31600 (316 SST) / CoCr-A	DF406034X2D
	1 Inch Port	S31600 (316 SST) / CoCr-A	DF406100X2D
	1-1/4 Inch Port	S31600 (316 SST) / CoCr-A	DF406114X2D



Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Parts List

Key	Description	Material	Part Number
5	Valve Stem	S20910 (Nitronic 50)	DF40312X01D
6	Packing Retainer	S17400 DH1150/Nitrided	DF40202X01D
7	Retainer Lock Nut	S31600 (316 SST)	DF40203X01D
8	Disc Spring (4 Req'd)	N07718	LLP500WSHRD
9	Packing Follower	S31600 (316 SST)	DF40205X01D
10	Packing Spacer	S31600 (316 SST)	DF40204X01D
11	Packing Rings (2 Sets)	PTFE / Carbon PTFE	DF10206X01D
12	Hammer Nut	ASME SA 350 LF2 Forged 1040 Steel	DF40208X01D -
13	Pin	S31600 (316 SST)	DF40313X01D
14	Pin Retainer Ring	HNBR	DF40416X01D
	Seat Ring Gasket		
15	1" valve	S30400 (304 SST)	1B19863604D
	2" valve	S30400 (304 SST)	1B19883604D
16	Bonnet O-ring	HNBR (Standard) Fluoroelastemer	DF40210X01D -
17	Stem O-ring (1 Req'd) /	HNBR	DF10210X01D
18	Actuator O-ring (1 Req'd)		
19	Stem Bushing	PPS	DF40418X01D
20	Casing O-ring	HNBR	DF40209X01D
21	Lower Casing	Steel / Zinc	DF40401X01D
22	Upper Casing Assembly	Steel / Zinc	DF40408X01D
23	Bonnet Cap Screw (4 Req'd)	Zinc Plated Steel	H5CZ38.034
24	Lower Stem Nut /	Zinc Plated Steel	NHJFZ12
25	Upper Stem Nut		
26	Diaphragm Washer	Zinc Plated Steel	DF40403X01D
27	Diaphragm	Neoprene 70 Duro	DF40404X01D
28	Diaphragm Plate	Steel / Yellow Zinc	DF40405X01D
29	Lower Spring Seat	Steel / Zinc	DF40406X01D
30	Casing Nut (16 Req'd)	Zinc Plated Steel	H5FZ38.100
31	Casing Cap Screw (16 Req'd)	Zinc Plated Steel	NHFZ38
32	Spring Retainer	Steel	DF40419X01D
33	Lock Washer	Zinc Plated Steel	LWZ12
34	Spring	Steel (Painted)	See Spring Chart
35	Upper Spring Seat	Zinc Plated Steel	DF40409X01D
36	Lock Nut	Zinc Plated Steel	NHJCZ34
37	Adjustment Screw	Steel / Zinc	DF40211X01D
38	Travel Indicator	Plastic	DF40223X01D
39	Vent Cap	Plastic	Y602-1BD
40	Sticker	Vinyl	DF40102X01D
41	Name Plate	Steel	NAME16DF4ZD



Model
DF2410 FAIL CLOSED Control Valve
Operation, Parts and Instruction Manuals

Tungsten Carbide Trim Sets (S31600 / Tungsten Carbide)

Description	Part Number
1" Valve	
1/4 Inch Port	TDX2411014D
3/8 Inch Port	TDX2411038D
1/2 Inch Port	TDX2411012D
3/4 Inch Port	TDX2411034D
2" Valve	
1/4 Inch Port	TDX2410014D
3/8 Inch Port	TDX2410038D
1/2 Inch Port	TDX2410012D
3/4 Inch Port	TDX2410034D
1 Inch Port	TDX2410100D
1-1/4 Inch Port	TDX2410114D

Valve Spring Chart

Description	Part Number
3-15 Psi Spring	1F17682709D
6-30 Psi Spring	1E79242708D

Repair Kits

Description	Part Number
Body Repair Kit	RDF2410X02D
Body / Actuator Repair Kit	RDF2410X04D

Parts Ordering

Whenever corresponding with Dyna-Flo about a Model DF2410 control valve, refer to the actuator nameplate or the back of the valve body for the unit serial number. Please order by the complete part number (as given in the Parts List) of each part required.

Our Commitment of Quality

Dyna-Flo is committed to continuous improvement. All efforts have been taken to maximize the accuracy of this information. Without notification, product specifications and designs may be modified at any time. The issue of this document is for information only, and does not imply suitability, a warranty, or guarantee for a specific service.



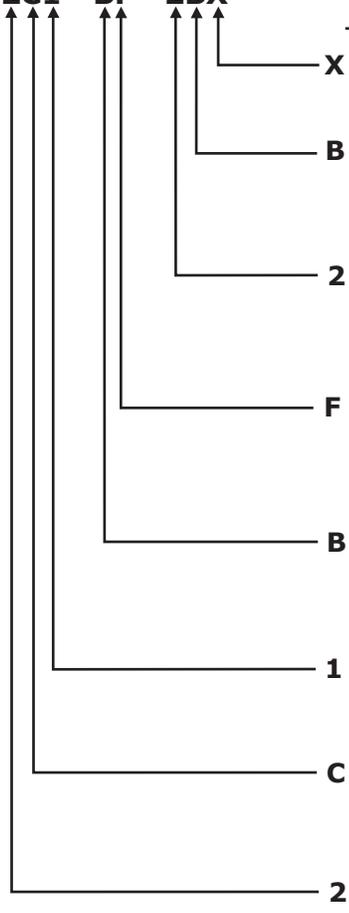
Model
DF2410 FAIL CLOSED Control Valve
 Operation, Parts and Instruction Manuals

Ordering Guide

Dyna-Flo DF2410 Control Valve | Model Numbering System

Sample Part Number

DF2410 - 2C1 - BF - 2BX



Code	Description
<input type="checkbox"/> X	Special
Trim Material	
<input type="checkbox"/> B	S17400 (NACE)
<input type="checkbox"/> D	Tungsten Carbide
Orifice Size	
<input type="checkbox"/> 2	1/4 Inch Port
<input type="checkbox"/> 3	3/8 Inch Port
<input type="checkbox"/> 4	1/2 Inch Port
<input type="checkbox"/> 6	3/4 Inch Port
<input type="checkbox"/> 8	1 Inch Port
<input type="checkbox"/> 1	1-1/4 Inch Port
Connection Style	
<input type="checkbox"/> F	RF
<input type="checkbox"/> J	RTJ
<input type="checkbox"/> N	NPT
ASME Rating	
<input type="checkbox"/> A	150
<input type="checkbox"/> B	300
<input type="checkbox"/> C	600
<input type="checkbox"/> D	900 / 1500
<input type="checkbox"/> E	3750 PSI (NPT)
Spring Range	
<input type="checkbox"/> 0	3-15 Psig (21-103 kPag) (Light Duty)
<input type="checkbox"/> 1	6-30 Psig (41-207 kPag) (Heavy Duty)
Actuator Style	
<input type="checkbox"/> C	Fail Closed
<input type="checkbox"/> O	Fail Open
Body Size	
<input type="checkbox"/> 1	1 Inch Body
<input type="checkbox"/> 2	2 Inch body