

Dyna-Flo DFC Operation, Parts and Instruction Manual

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INOTICE!

I These instructions are meant to be used in conjunction with the Dyna-Flo DFC/ DFO Series 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 DFC valve actuators. Revisions and updates are available at above mentioned website.

Introduction

The Model DFC series linear output spring and diaphragm actuators are used in all kinds of demanding applications. The large area of the diaphragm allows low-pressure operation, and the spring provides fail safe positioning of a control valve on loss of the pneumatic supply. Model DFC actuators are used to automate control valves in both throttling and on/off control of liquids or gases.

When combined with a Dyna-Flo Model DF2000 or 360 control valve, the DFC is part of a rugged control valve assembly, to which a wide variety of controllers and instruments can be attached.

Dyna-Flo's high level of quality specifications used in manufacturing the Model DFC and DFO series linear pneumatic actuators ensures superior performance and customer satisfaction.

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

This manual will provide detailed information on the complete disassembly and reassembly of the Model DFC pneumatic actuator. Refer to seperate instruction manuals for the installation of positioners and all other accessories used with these actuators. Do not apply any other conditions to the actuator 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 Model DFC 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 actuator assembly where service conditions could exceed the limits stated in this manual or on the equipment nameplates. Only well trained experienced technicians should perform these procedures. Be sure to use safe work practices and lockout procedures. Always be aware of the hazards of spring-loaded actuators. Be sure that they are in the failed (de-energized) position before performing any maintenance procedure. These actuators have dangerous pinch points. Never put your hands inside the valve unless you are certain that the actuator cannot move.

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Model DFC Valve Actuator

Operation, Parts and Instruction Manuals

Table 1

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Model DFC Actuator Specifications

SPECIFICATION			ACTUATOR SIZE						
			1069	2069	2105	2156	3105	3156	3220(1)
Nominal Effective		inch2	69	69	105	156	105	156	220
Area		cm2	445	445	667	1006	677	1006	1419
Yoke Boss Diameter		inch	2-1/8	2-13/16	2-13/16	2-13/16	3-9-16	3-9/16	3-9/16
		mm	54	71	71	71	90	90	90
Acceptable Va	lve	inch	3/8	1/2	1/2	1/2	3/4	3/4	3/4
Stem Diamete	r	mm	9.5	12.7	12.7	12.7	19.1	19.1	19.1
Maximum Allo	wable	lb	2300	2700	5650	7550	5650	6800	8800
Output Thrust		Ν	10,230	12,010	25,131	33,582	25,131	30,246	39,142
	Standard	inch	1-1/8	1-1/2	2	2	2	2	3(3)
Maximum		mm	29	38	51	51	51	51	76
Travel ⁽²⁾	Top-Loaded	inch	3/4		3/4			1-1/8	
		mm	19		19			29	
Maximum Cas	ing	Psig	70	70	65	55	65	55	50
Sizing ^(4,5)		kPag	483	483	448	379	448	379	345
Maximum Exc	ess	Psig	20	20	10	10	10	10	10
Diaphragm Pr	essure ⁽⁴⁾	kPag	138	138	69	69	69	69	69
Maximum Dia	phragm	Psig	90	90	75	65	75	65	60
Casing Pressu	re ^(4,5)	kPag	621	621	517	448	517	448	414
Annrovimate	Neight	lbs	48	50	90	121	94	122	254
	Weight	Kg	22	23	41	55	43	55	115
Material	Nitrile Elaston	ners			-40 to 1	.80°F (-40 1	to 82°C)		
Temperature Capabilities	Silicone Elasto	omers			-65 to 300°F (-54 to 149°C)				

NOTES:

1 These values also apply to the DFC Size 3220-4 actuator.

- 2 Actuator travel may be less than the value listed after connected to the valve.
- **3** Maximum actuator travel for the 3220-4 is 4 inches (102 mm).
- **4** See Specification section for definitions.
- **5** This Maximum Casing Pressure is not to be used for normal operating pressure. Its purpose is to allow for typical regulator supply settings and/or relief valve tolerances.

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Figure 2 Rigging Setup

Unpacking

Check the Packing List against materials recieved, while unpacking the actuator. The Packing List describes actuator and accessories in each shipping container.

When lifting the actuator from the shipping container, it is advisable to remove 2 actuator casing bolts, 180° apart, and temporarily replace them with eye bolts and nuts. Position the lifting straps through the eye bolts to avoid damage to the tubing and mounted accessories. See Figure 3.

Installation

! CAUTION !-

Do not use an operating pressure that exceeds the Maximum Diaphragm Casing Pressure (See Table 1). Also make sure that the operating pressure does not create a force on the actuator stem that is greater than the Maximum Allowable Output Thrust (See Table 1)!

If the actuator has been installed on the valve in the factory, the assembly is ready to be placed inline. Refer to the proper Dyna-Flo valve manual for installation. Refer to the "Mounting: Actuator to Valve" section (Page) for detailed instructions on how to install the actuator on the valve. The actuator must be installed on the valve before being installed into the pipeline. Ensure that the travel has been checked; refer to the "Bench Settin Actuator" section (below) for detailed instructions on this procedure.

Bench Setting Actuator

(Refer to Figure 3)

! CAUTION !

To prevent valve stem damage perform the bench setting with actuator removed from valve!

! CAUTION !

1

The following procedures must be completed before installing the stem connector (Key 22) between the actuator stem (Key 3) and the valve stem (Key 31). Except for the DFC Size 3220, the stem connector assembly (Key 22) will need to be installed to prevent the stem from rotating while adjusting the bench set.

- To properly verify bench setting 3 pieces of information are required:
 - 1 Upper Bench Set Loading Pressure
 - 2 Lower Bench Set Loading Pressure (example: on a 10-30 Psig bench set, 10 is the lower and 30 Psig is the upper)
 - 3 Travel

This information is available on the actuator name plate (Key 33). If information is missing or incomplete contact your Dyna-Flo Sales Office.

- **2** Before applying pressure to the actuator make sure that the spring (Key 2) is properly seated onto the spring seat (Key 20) (not required on a new factory assembled actuator).
- **3** Connect a supply line with a gauge that can accurately measure both 0 Psi and the upper bench set pressure.
- 4 Apply maximum casing pressure to the actuator to verify seal integrity is good. Use a soapy and solution to check for any air leaks from the lower casing gasket (Key 13) and the diaphragm (Key 7). On a new actuator this will have been done a tthe factory and won't be required.

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For Push Down to Close Valves

- Apply the upper bench set loading pressure 1 plus 5 Psi (34 kPa) to the actuator and note where stem travel stops, this should occur when the travel stop (Key 10) encounters the upper casing (Key 5). The intent is for the travel stop to contact the upper casing at the exact time the upper bench set loading value is reached. Apply 5 Psi (34 kPa) above and below the upper bench set value to verify this. (Example: for a 10-30 bench set the travel stop should contact the upper casing at exactly 30 Psig) If stem (Key 3) travel stops before or after the upper bench set value, the spring adjuster (Key 21) will need to be adjusted to obtain the proper bench set. You may need to relieve pressure to the actuator in order to adjust the spring adjuster. Turning the spring adjuster up (towards the top of the actuator) will increase the bench set pressure.
- 2 Once the upper bench set pressure has been set, use a magnet or piece of tape to attach a piece of metal or ruler to the bottom of the actuator stem (Key 3) to use as an indicator arm. Make a mark to indicate the stem position at the upper bench set pressure (See Figure 3). Make sure the travel is fully extended.
- **3** Adjust the gauge to the lower bench set pressure and mark the actuator stem position. The measurement between the upper and lower bench set marks should equal the travel indicated on the name-plate within 1/16" (1.6 mm).

! Note !-

If these steps do not allow you to reach the proper bench set pressure then an incorrect or damaged spring may be the problem. Contact your Dyna-Flo Sales Office for more information.

Mounting: Actuator to Valve

! CAUTION ! ·

During mounting the actuator stem and valve stem could come into contact with each other. Ensure that the valve stem is pushed down before trying to install the actuator, doing this will help to protect the stem threads from getting damaged.

! CAUTION ! -

It may be necessary to apply loading pressure to the actuator temporarily to move the actuator stem and allow for more clearance between it and the valve stem. Use extreme caution when moving the pressurized actuator; ensure that no clothing, hair, hands or tools come in between the two stems or moving parts. If loading pressure fails personal injury or property damage may occur.

 Make sure the valve is securely supported using a vice or similar method before proceeding. It is advised to place valve on a surface that will be able to support the combined weight of valve and actuator.

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Mounting: Actuator to Valve

(cont'd)

- 2 Make sure the stem is pushed down away from the actuator. Thread the two nuts (Keys 28 & 29) all the way onto the valve stem. Install the travel disk (Key 27) onto the valve stem (concave side down) so that it rests on the jam nuts. Note: with the travel disk on the stem it may not be possible to mount the actuator because the travel disk will not slide through the yoke boss mounting area. Before attempting to mount the actuator check to see that the disk will go through the yoke boss mounting area. If not, the travel disk will need to be inserted on the stem after the yoke nut (Key 27). Place the travel disk overtop of the voke nut during the yoke nut installation process.
- Be sure to have the yoke nut (Key 32) sitting inside the actuator yoke or have the yoke nut ready to be placed in between the actuator stem and valve stem when lowering the actuator onto the valve. Carefully lift and lower the actuator onto the valve, this may require more than one person or a heavy lifting device. Once on the valve, orientate the actuator to be properly aligned parallel with the valve body (see Figure 5).
- 4 Thread the yoke nut onto the valve bonnet and tighten using a heavy blunted chisel and hammer until the yoke is secured tightly to the valve (Refer to Figure 4). DO NOT OVER TIGHTEN.



Figure 4 Yoke Nut Tightening

Stem Connector Installation

1 Apply upper loading pressure plus 5 Psi (34 kPa) to the actuator if loading pressure was not applied prior to mounting. This should put the

the actuator in the fully up position.

- 2 Install the travel scale (Key 24) to the actuator using the speed nuts (Key 26) and machine screws (Key 25). Position the travel disk (Key 27) on top of the jam nuts at the bottom of the travel scale (Key 24) by adjusting the jam nuts (Keys 28 & 29). Carefully move the plug / stem up until the travel disk indicates full travel as indicated on the travel scale. The movement of the plug / stem must be done with caution not to damage the stem.
- 3 As shown in Figure 3, the valve stem should fit inside the actuator stem. Install the stem connector (Key 22). It is important to position the stem connector so that the threads properly engage with those of the stems. Connect the other half of the stem connector and orientate the stem connector as show in Figure 3. It is at this time that any accessories (such as positioner arms) that need to be connected to the stem connector should be put in place. Install the stem connector bolts and tighten.
- 4 Re-position the travel disk (Key 27) under the stem connector (Key 22), thread up the jam nuts (Keys 28 & 29) to hold the travel disk in place and tighten the jam nuts together (Refer to Figure 3). Do not over tighten the jam nuts.
- 5 Apply pressure and stroke the valve several times. Loosen the travel scale (Key 24) and reposition it to align with the closed position of the valve and verify that the travel is still accurate to the value indicated on the name plate (Key 33). If travel is inaccurate it may be necessary to repeat the stem connector procedures or to refer back to Bench Setting Actuator.

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Maintenance

! WARNING ! -

Disconnect all power lines and pneumatic lines making sure the actuator is depres surized prior to commencing disassembly. Remove any power source that may cause the actuator to spontaneously move. Also, relieve any spring pressure or compression before you start the disassembly process, this can be done by lowering the spring adjuster (Key 21).

! CAUTION ! -

Use bypass valves or completely shut off process media to isolate the valve from the process pressure and fluids. Relieve process pressure and drain process media from both side of the valve.

Actuator Disassembly

- 1 Make sure that the valve and actuator are securely supported and that valve body is clamped in place and unable to move during disassembly.
- 2 Completely remove spring compression by turning the spring adjuster (Key 21) until loose. Once spring compression is removed disassemble the stem connector (Key 22) and remove both halves. Inspect all the threads on both halves of the stem connector and make sure there is no damage.
- **3** If removal of the actuator from the valve is necessary, the yoke nut (Key 32) will need to be completely loosened. Using a heavy blunted chisel and hammer, completely loosen the yoke nut (Key 32) (Refer to Figure 4). Note: the yoke nut will not be able to be removed until the actuator is lifted from the valve (Refer to Unpacking and Mounting sections for actuator hoisting instructions).
- 4 Before work begins make sure that the actuator is secured in place and properly supported.

Spring removal

 Unscrew the spring adjuster (Key 21) and remove it from the actuator stem. With the spring adjuster removed it is possible to re move the spring seat (Key 20) from the yoke (Key 1). Inspect the threads of the spring adjuster and for damage and corrosion. Also, inspect the spring.

Upper Diaphragm Casing Disassembly

- Remove all the diaphragm casing cap screws (Key 18) and nuts (Key 19). Lift the upper diaphragm casing (Key 5) from the actuator.
- 2 From the top of the open actuator remove the hex head bolt (Key 11) and travel stop (Key 10). The actuator stem (Key 3) may rotate during hex head bolt removal, it may be necessary to hold the stem or tap the wrench with a hammer to loosen the bolt. Use extreme caution and avoid damaging the actuator stem during this process. Remove the stem from the yoke mounting end.
- **3** Being careful not to damage the actuator stem (Key 3) remove it from the actuator. Inspect the actuator stem for thread damage, deep scratches and corrosion. Minor scratches and corrosion can be polished out (scratches that will not stop your fingernail are considered minor), if there are deep scratches, corrosion or damage the actuator stem will need to be replaced.
- 4 Remove the upper diaphragm plate (Key 8) from the actuator and diaphragm (Key 7), inspect the plate for cracks and wear. Note: on older actuators the upper diaphragm plate maybe composed of two separate pieces. Inspect the diaphragm for tears, abnormal stretching, cracks and pliability. If the diaphragm is brittle, torn or cracked it will need to be replaced.
- **5** Remove the lower diaphragm plate and inspect it for any cracks, wear or corrosion.
- **6** Using a pair of pliers or other tool, remove the snap ring (Key 14) from the yoke (it sits overtop of the bushing (Key 15). Replace if necessary.

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Maintenance

(cont'd)

Upper Diaphragm Casing Disassembly (cont'd)

- 7 Remove the bushing (Key 15) from the actuator being careful not to damage the bushing, seals or actuator yoke. The actuator stem (Key 3) and spring adjuster (Key 21) may be used with extreme caution to remove the bushing. By threading the spring adjuster part way onto the actuator stem the assembly may be inserted up into the yoke and used as a plunger to push out the bushing.
- 8 Using a pick set or small screwdriver, remove the o-rings (Keys 16 & 17) from the bushing being careful not to damage bushing surfaces. Inspect the sealing surfaces of the bushing for deep scratches and corrosion, replace if necessary. O-rings and gaskets should normally be replaced during maintenance.

Lower Diaphragm Casing Removal

- Remove the lower diaphragm casing cap screws (Key 18) and lift lower diaphragm casing (Key 4) off of the yoke (Key 1). Remove the lower casing gasket (Key 13) clean and inspect the yoke / lower casing sealing surfaces for damage. O-rings and gaskets should be re placed during maintenance.
- ! NOTICE ! -

For the DFC Size 3220 inspect the o-ring groove on the top surface of the yoke (Key 1) for any deep scratching or corrosion. Also check the lower diaphragm casing (Key 4) for any deformation excessive tightening may have caused. O-rings and gaskets should be replaced during maintenance.

Actuator Assembly

! CAUTION ! -

Before assembling the actuator, make sure that the yoke and actuator are securely supported with a clamping device and on a surface that will support the assembled actuator weight.

! NOTICE ! -

Use an anti-seize compound that is approved for the service conditions that the actuator is being installed into.

Lower Diaphragm Casing Bushing Installation

- Coat the lower diaphragm gasket (Key 13) with anti-seize compound and place on to the yoke (Key 1) (on a DFC size 3220 actuator there is an o-ring in place of the gasket). The holes of the gasket should align with the holes on the yoke.
- 2 Install the lower diaphragm casing (Key 4), tighten cap screws (Key 12) using a criss-cross pattern. DO NOT over tighten the cap screws as excessive tightening could warp the casing or deflect and cause the gasket to leak.
- 3 Lubricate the bushing seals (Keys 16 & 17) with silicone-based lubricant and place them into the bushing (Key 15) as shown in Figure 6. Pack the inside of the bushing with lubricant (Lubriplate® Mag-1 or equivalent) and insert the bushing into the yoke (Key 1). The bushing is held in place with the snap ring (Key 14) that fits into the groove in the yoke above the bushing (Refer to Figure 6).

Spring Installation

! NOTICE ! -

It may be desirable to have an appropriately sized block of wood nearby to be placed in the bottom of the yoke to be used as support for the stem/spring assembly while working on the actuator.

- Coat the stem (Key 3) threads with anti-seize compound and thread the spring adjuster (Key 21) onto the stem. Place the spring seat (Key 20) onto the stem so that it rests on the spring adjuster as show in Figure 7.
- Insert the spring (Key 2) into the barrel on the yoke (Key 1) and slide stem assembly from Step 1 into the yoke. It may be necessary to support the spring/stem assembly using a block of wood or similar item while assembling the upper portion of the actuator.

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Maintenance

(cont'd)

Upper Diaphragm Casing Assembly

- Place the lower diaphragm plate (Key 6) into the lower diaphragm casing (Key 4) and onto the actuator stem (Key 3) as shown in Figure 7. Insert the diaphragm (Key 7) into the lower casing over the lower diaphragm plate and align the holes on the diaphragm with those of the lower casing.
- 2 Install the upper diaphragm plate (Key 8) onto the actuator stem so that it rests in the diaphragm (for a two piece diaphragm plate design both parts of the plate will need to be installed Figure 6 Key 9).
- **3** Place the travel stop (Key 10) over the actuator stem so that it rests on the upper diaphragm plate. Coat the threads of the hex head bolt with anti-seize and thread it into the top of the actuator stem (Key 3), tighten the hex head bolt completely making sure that the holes on the diaphragm still align with those of the lower casing (Refer to Torque Chart on Page 11).
- 4 Lift and place the upper diaphragm casing (Key 5) onto the top of the actuator, make sure that the holes of the upper casing align with those of the lower casing (Key 4) and diaphragm (Key 7). Install the casing cap screws (Key 18) into the casings, Do Not coat the cap screws with anti-seize. Thread the nuts (Key 19) onto the casing cap screws, Do Not over tighten the cap screws refer to Torque Chart on Page 11. Tighten the casing cap screws in a crisscross pattern to half required torque and in the same pattern completely tighten cap screws to full torque. In a circular pattern re-tighten the casing cap screws (Key 18) to full torque.
- **5** Refer to Bench Setting Actuator portion of manual to complete the actuator assembly.



Figure 5 Actuator & Valve Mounting Diagram

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Casing-Mounted Travel Stops

! NOTICE ! -

For casing-mounted travel stop options refer to Figure 8. These options are available to limit travel in both down and up directions.

Adjusting Casing-Mounted Travel Stops

- Remove the travel stop caps (Key 34, Types 3 & 4) and loosen jam nuts (Key 40) if they impede adjustments in Step 2.
- 2 Use the jam nuts (Key 40, Type 3), the extension stem (Key 39, Type 4) and travel stop screw (Key 37, Type 5) to adjust the travel limit.
- **3** After adjustments have been made, it will be necessary to re-tighten the jam nuts (Key 40) and replace the travel stop caps (Key 34, Types 3 & 4).

Casing-Mounted Travel Stop Disassembly

! NOTICE !

For maintenance purposes it is only necessary to disassemble the travel stops as far as need be to accomplish the required maintenance.

 Remove the travel stop cap (Key 34). For down travel stops (Type 3) the jam nuts (Key 40) must be loosened so that the travel stop is not causing any spring compression.

! WARNING ! -

Disconnect all power lines and pneumatic lines making sure the actuator is depressurized prior to commencing disassembly. Remove any power source that may cause the actuator to spontaneously move. For down travel stops relieve any spring pressure or compression before you start the disassembly process, this can be done by lowering the spring adjuster (Key 21).

! CAUTION ! -

Use bypass valves or completely shut off process media to isolate the valve from the process pressure and fluids. Remove any tubing or piping from the connection on top of the yoke (Key 32).

- 2 Using a wrench on the jam nuts (Key 40) unscrew the extension stem (Key 39) and remove it. Inspect the extension stem for damage or corrosion, replace if necessary.
- 3 Remove all the diaphragm casing cap screws (Key 18) and nuts (Key 19). Lift the upper diaphragm casing (Key 5) from the actuator. For Types 3 and 4 the travel stop assembly will be removed with the upper diaphragm casing.
- 4 Record the position of the travel stop (Key 36) compared to the cap screws (Key 42) for reassembly purposes. Remove the travel stop and cap screws.
- 5 Inspect all travel stop parts for damage or corrosion and replace if necessary.

Casing-Mounted Travel Stop Assembly

- Reassembly the actuator parts in reverse order starting at Step 4 of the Casing-Mounted Travel Stop Disassembly, be sure to apply anti-seize compound to the threads of the extension stem (Key 39). Return the cap screws (Key 42) and travel stop (Key 36) to their original position as recorded in Step 4. Refer to the Upper Diaphragm Casing Assembly procedures on Page for instruction on casing reassembly.
- 2 Retighten the spring adjuster (Key 21) to its original position and adjust the travel stops to their desired limits as per Adjusting Casing-Mounted Travel Stop procedures.

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Actuator Stem Hex Head Bolt Torg	Je (Kev 11)	
Actuator Size	Ft-lbs.	N∙m
1069	30	41
2069	50	68
2105, 2156, 3105, 3156, 3220	135	183
Casing Cap Screws Torque (Keys 1	9 & 20)	
All Sizes	Ft-lbs.	N∙m
Full Torque	20	27



Figure 6 Model DFC Actuator Cross Section (2 Piece Diaphragm Plate Design)

Our Commitment of Quality

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Figure 8 Model DFC Actuator Cross Section

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Parts

Key	Description	Part Number			
1	Yoke		9	Upper Diaphragm Plate (2 Piece Design)
	Cast Iron			Zinc Plated Steel	
	Size 1069	3E88461904D	10	Travel Stop	
	Size 2069	3E82081904D		Steel	
	Size 2105 & 2156	3E90081904D		(See Table 3, Page 17)	
	Size 3105 & 3156	3E84591904D	11	Actuator Stem Hex Head	Bolt
	Size 3220	3N13031904D		Zinc Plated Steel	
2	Spring			(See Table 3, Page 17)	
	Steel		12	Hex Head Cap Screw	
	(See Table 4, Page 18)			Zinc Plated Steel	
3	Stem			Size 1069 & 2069 (Qty. 6)	H5CZ38.034
	17-4			Size 2105, 2156,	H5CZ38.034
	Size 1069	3E8847X174D		3105, 3156 (Qty. 8)	
	Size 2069	2E8209X174D		Size 3220 (Qty. 12)	H5CZ12.100
	Size 2105 & 2156	2J3328X174D	13	Gasket	
	Size 3105 & 3156	2E8461X174D		Composition	
	Size 3220	2N13172174D		Size 1069 & 2069	1E80120402D
	Size 3220-4	21A3812X01D		Sizes 2105, 2156,	1E84540402D
4	Lower Diaphragm Casing			3105,3156	
	Steel			Size 3220 (O-Ring Nitrile)	1D26910699D
	Size 1069 & 2069	2E68262506D	14	Snap Ring	
	Size 2105 & 3105	3E84532506D		SST	
	Size 2156 & 3156	3E84772506D		Size 1069 & 2069	1E80133702D
	Size 3220 & 3220-4	2N13102506D		Size 2105, 2156,	1E84563899D
5	Upper Diaphragm Casing			3105, 3156, 3220	
	Steel		15	Bushing	
	Size 1069 & 2069	2E68142899D		Brass	
	Size 2105 & 3105	3E84462899D		Size 1069 & 2069	1E68281401D
	Size 2156 & 3156	3E84672899D		Size 2105, 2156,	1E845/1401D
	Size 3220	2N12782899D		S105, 3150	11121620050
6	Lower Diaphragm Plate		16	Size 3220	101310X003D
	Steel		10	O-King Runa (Otiv 2)	
	Size 1069 & 2069	1F88582409D		Size 1069 & 2069	10237506990
	Size 2105, 2156,	1F89094402D		Size 2105 2156	102573005550
	3105, 3156	41424524005		3105 3156	10302200330
	Size 3220	IN13152409D		Size 3220	1E73690699D
7	Diaphragm		17	O-Ring	
	Nitrile / Nylon	25660000000		Buna	
	Size 1069 & 2069	2E66990220D		Size 1069 & 2069	1C41570699D
	Size 2105 & 3105	2E85960220D		Size 2105, 2156,	1E84580699D
	Size 2156 & 3156	2E85980220D		3105, 3156, 3220	
	5126 5220	21112030220D	18	Hex Head Cap Screw (cas	sing)
8	Upper Diaphragm Plate			Zinc Plated Steel	57
	Cast Iron	2102020040		Size 1069 & 2069 (Otv. 16)	H5F738 100
		31B2029904D		Size 2105 & 2005 (QU, 10)	H5F738 100
	SIZE 2105 & 3105	4162030904D		Size 2155 & 3155 (Qty. 20)	H5F738 100
	SIZE 2150 & 3150	2E04/51904D		Size 2130 & 3130 (Qty. 24) Size 2230 ($O_{\rm tr}$ 20)	
	5128 5220	ZN12701904D		SIZE SZZU (Q(Y. 28)	HJFZ30.114

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Model DFC Valve Actuator

Operation, Parts and Instruction Manuals

Parts

Key	Description	Part Number			
19	Hex Nut (casing)			Size 2069, 2105, 2156	1A41322412D
	Zinc Plated Steel			Size 3105, 3156, 3220	1A37542412D
	Size 1069 & 2069 (Qty. 16)	NHFZ38	29	Jam Nut	
	Size 2105 & 3105 (Qty. 20)	NHFZ38		Steel PI.	
	Size 2156 & 3156 (Qty. 24)	NHFZ38		Size 1069	1P13122414D
	Size 3220 (Qty. 28)	NHFZ38		Size 2069, 2105, 2156	1A35372412D
20	Spring Seat		-	Size 3105, 3156, 3220	1A35112412D
	Steel Pl.		30	Vent Cap	
	Size 1069 & 2069	1R17992312D		Plastic	Y602-1BD
	Size 2105, 2156,	1R18002312D	31	Valve Stem	
	3105, 3156		32	Yoke Nut	
	3220	1N12961905D	33	Actuator Name Plate	
21	Spring Adjuster		34	Travel Stop Cap	
	Steel PI.			Brass	
	Size 1069 & 2069	1E82102410D		Type3	
	Size 2105, 2156,	1E84622410D		Size 1069 & 2069	1F59781401D
	3105, 3156			Size 2105, 2156.	1H11111401D
	Size 3220	1N13181X01D		3105, 3156	
22	Stem Connector Assembl	У	_	Size 3220	1R38761401D
	Steel PI.			Type 4	
	Size 1069	18A1243X01D		Size 1069 & 2069	1F59781401D
	Size 2069	18A1668X01D		Size 2105, 2156,	1F83961401D
	Size 2105 & 2156	18A1671X01D		3105, 3156	
	Size 3105 & 3156	18A1672X01D		Size 3220	1R38761401D
	Size 3220	18A1675X01D	_	Steel	
23	Stem Connector bolt			Туре 4	
	Part of Stem Connector Asse	mbly (Qty. 2)	_	Size 1069 & 2069	1F59782409D
24	Travel Scale		35	Travel Stop Body	
	SST			Cast Iron	
	(See Table 3, Page 17)			Туре З	
25	Machine Screw		_	Size 1069 & 2069	1K72351901D
	SST (Qty. 2)			Size 2105, 2156,	2K72301901D
	Size 1069, 2069, 2105, 2156	1E79323899D		3105, 3156	
	Size 3105, 3156, 3220	1E83133899D		Size 3220	2U14181902D
26	Speed Nut		-	Туре 4	
	SST (Qty. 2)	242-206		Size 1069 & 2069	37A9437X01D
27	Travel Disk		-	Size 2105, 2156,	37A9432X01D
	SST			3105, 3156	
	Size 1069	1E79313899D		Size 3220	37A9661X01D
	Size 2069, 2105, 2156	1E80753899D	36	Casing-Mounted Travel	Stop
	Size 3105 & 3156	1E83283899D		Steel	
	Size 3220	1B97183899D		(See Table 5, Page 19)	
28	Stem Nut		-		
	Steel Pl.				
	Size 1069	1P13122414D			
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Model **DFC** Valve Actuator Operation, Parts and Instruction Manuals

Parts

Key	Description	Part Number			
37	Travel Stop Screw		43	Lock Washer	
	Steel			Steel	
	Туре 5			Size 1069 & 2069	1A48782899D
	Size 1069 & 2069	1F75373513D		Size 2105, 2156,	1A87322899D
	Size 2105, 2156,	1K13113513D		3105, 3156	
	3105, 3156			Size 3220	1A54932898D
	Size 3220	13A2133X01D	44	Elbow Vent	
38	Travel Stop Nut			Plastic	
	Brass			Size 1069, 2069, 2105,	27A5516X01D
	Туре 4			2156, 3105, 3156	
	Size 1069 & 2069	18A2303X01D		Size 3220	17A6572X02D
	Size 2105, 2156, 3105, 3156	18A1272X01D			
39	Extension Rod (Stem)			
	Steel				
	Type 3	15752625020			
	SIZE 1069 & 2069	1122272502D			
	3105, 3156	1722/22020			
	Size 3220	1V7764X00AD			
	Bronze				
	Туре 4				
	Size 1069 & 2069	27A9655X01D			
	Size 2105, 2156,	27A9656X01D			
	3105, 3156	27407622010			
	5120 3220	2/A9/63X01D			
40	Hex Head Jam Nut				
		1435372/120			
	Size 2105 2156	1A35112412D			
	3105, 3156, 3220	1/001121120			
41	Hex Nut				
	Zinc Plated Steel				
	Туре З				
	Size 1069 & 2069	1A41322412D			
	Size 2105, 2156, 3105, 3156, 3220	1A37542412D			
42	Hex Head Cap Screw				
	Zinc Plated Steel				
	Туре З				
	Size 1069, 2069, 2105,	1A36842405D			
	2156, 3105, 3156				
	Size 3220	1N12932899D			
	Туре 4				
	Size 1069, 2069, 2105	1A36842405D			
	2105, 2156, 3105, 3156	6			

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Table 3

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Keys 10, 11 & 24 Actuator Stem Hex Head Bolt, Travel Stop and Travel Scale

Actuator Size	Travel inch (mm)	Hex Head Bolt	Travel Stop	Travel Scale
1060	3/4 (19)	1R4089X004D	1R40952409D	1E79363999D
1069	1-1/8 (29)	1R4091X003D	1R40962409D	17A9814X01D
	3/4 (19)	1R4089X004D	1R40952409D	1E80813899D
2069	1-1/8 (29)	1R4091X003D	1R40962409D	1E80823899D
	1-1/2 (38)	1R4092X002D	1R40972409D	1E80833899D
	3/4 (19)	1R4098X002D	1R41052409D	1E80813899D
2105	1-1/8 (29)	1R4099X002D	1R41082409D	1E80823899D
2105	1-1/2 (38)	1R4101X002D	1R41062409D	1E80833899D
	2 (51)	1R4102X001D	1R41072409D	1R44453898D
	3/4 (19)	1R4098X002D	1R41052409D	1E80813899D
2156	1-1/8 (29)	1R4099X002D	1R41082409D	1E80823899D
2150	1-1/2 (38)	1R4101X002D	1R41062409D	1E80833899D
	2 (51)	1R4102X001D	1R41072409D	1R44453898D
	3/4 (19)	1R4098X002D	1R41052409D	1E83313899D
2105	1-1/8 (29)	1R4099X002D	1R41082409D	1E83323899D
5105	1-1/2 (38)	1R4101X002D	1R41062409D	1E83333899D
	2 (51)	1R4102X001D	1R41072409D	1E83343899D
	3/4 (19)	1R4098X002D	1R41052409D	1E83313899D
2156	1-1/8 (29)	1R4099X002D	1R41082409D	1E83323899D
3130	1-1/2 (38)	1R4101X002D	1R41062409D	1E83333899D
	2 (51)	1R4102X001D	1R41072409D	1E83343899D
	3/4 (19)	1R4110X001D	1R41162409D	1H74573899D
	1-1/8 (29)	1R4110X001D	1R41152409D	1H74583899D
3220	1-1/2 (38)	1R4098X002D	1R41142409D	1H74593899D
	2 (51)	1R4099X002D	1R41132409D	1H74603899D
	3 (76)	1R4102X001D	1R41072409D	1H74613899D

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Table 4

Key 2 Actuator Spring Chart

	Travalinch (mm)	Diaphragm Pressure Range Psig (kPag)				
Actuator Size	Travel Inch (mm)	3-15 (21-103)	6-30 (41-207)			
1060	3/4 (19)	1E80582708D (light grey)	1E80522708D (orange & red)			
1009	1-1/8 (29)	1E80532709D (dark grey)	1E80552708D (dark blue)			
	3/4 (19)	1E80582708D (light grey)	1E80522708D (orange & red)			
2069	1-1/8 (29)	1E80532709D (dark grey)	1E80552708D (dark blue)			
	1-1/2 (38)	1E80562709D (dark green)	1E80582708D (light grey)			
	3/4 (19)	1E82622708D (light green)	1E82552708D (aluminum & red)			
2105	1-1/8 (29)	1E82612708D (dark grey)	1E82642708D (light grey)			
2105	1-1/2 (38)	1E82662708D (orange)	1E82622708D (light green)			
	2 (51)	1E82692708D (dark green)	1E82652708D (red)			
	3/4 (19)	1E82572708D (brown)	1E82602708D (bronze)			
	1-1/8 (29)	1E82622708D (light green)	1E82552708D (aluminum & red)			
2156	1-1/2 (38)	1E82652708D (red)	1E82572708D (brown)			
	2 (51)	1E82702708D (aluminum & dark blue)	1E82632708D (aluminum & dark green)			
	3/4 (19)	1E82622708D (light green)	1E82552708D (aluminum & red)			
2105	1-1/8 (29)	1E82612708D (dark grey)	1E82642708D (light grey)			
3105	1-1/2 (38)	1E82662708D (orange)	1E82622708D (light green)			
	2 (51)	1E82692708D (dark green)	1E82652708D (red)			
	3/4 (19)	1E82572708D (brown)	1E82602708D (bronze)			
	1-1/8 (29)	1E82622708D (light green)	1E82552708D (aluminum & red)			
3156	1-1/2 (38)	1E82652708D (red)	1E82572708D (brown)			
	2 (51)	1E82702708D (aluminum & dark blue)	1E82632708D (aluminum & dark green)			
	3/4 (19)	1N12792708D (red)				
	1-1/8 (29)	1N71932708D (white)	1N12812708D (brown)			
3220	1-1/2 (38)	1N12872708D (yellow)	1N12792708D (red)			
	2 (51)	1N12842708D (light green)	1N12852708D (light blue)			
	3 (76)	1N12862708D (dark grey)	1N12872708D (yellow)			

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Table 5

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Key 36 Casing-Mounted Travel Stop (Type 3)

Actuator Size	Travel inch (mm)	Travel Stop
1060	3/4 (19)	1E80662409D (Qty: 4)
1009	1-1/8 (29)	1E80672409D (Qty: 4)
	3/4 (19)	1E80662409D (Qty: 4)
2069	1-1/8 (29)	1E80672409D (Qty: 4)
	1-1/2 (38)	1E80682409D (Qty: 4)
	3/4 (19)	1E83192409D (Qty: 4)
2105	1-1/8 (29)	1E83192409D (Qty: 4)
2105	1-1/2 (38)	1E80642409D (Qty: 4)
	2 (51)	1E83212409D (Qty: 4)
	3/4 (19)	1E83192409D (Qty: 4)
2156	1-1/8 (29)	1E83192409D (Qty: 4)
2150	1-1/2 (38)	1E80642409D (Qty: 4)
	2 (51)	1E83212409D (Qty: 4)
	3/4 (19)	1E83192409D (Qty: 4)
2105	1-1/8 (29)	1E83192409D (Qty: 4)
3105	1-1/2 (38)	1E80642409D (Qty: 4)
	2 (51)	1E83212409D (Qty: 4)
	3/4 (19)	1E83192409D (Qty: 4)
2156	1-1/8 (29)	1E83192409D (Qty: 4)
3130	1-1/2 (38)	1E80642409D (Qty: 4)
	2 (51)	1E83212409D (Qty: 4)
	3/4 (19)	1N12882409D (Qty: 3)
	1-1/8 (29)	1N12892409D (Qty: 3)
3220	1-1/2 (38)	1N12902409D (Qty: 3)
	2 (51)	1N12914092D (Qty: 3)
	3 (76)	1N12922409D (Qty: 3)
3220-4	4 (102)	11A8131X01D (Qty: 3)





Dyna-Flo DFC / DFO Series Actuators | Model Numbering System

Ordering Guide



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