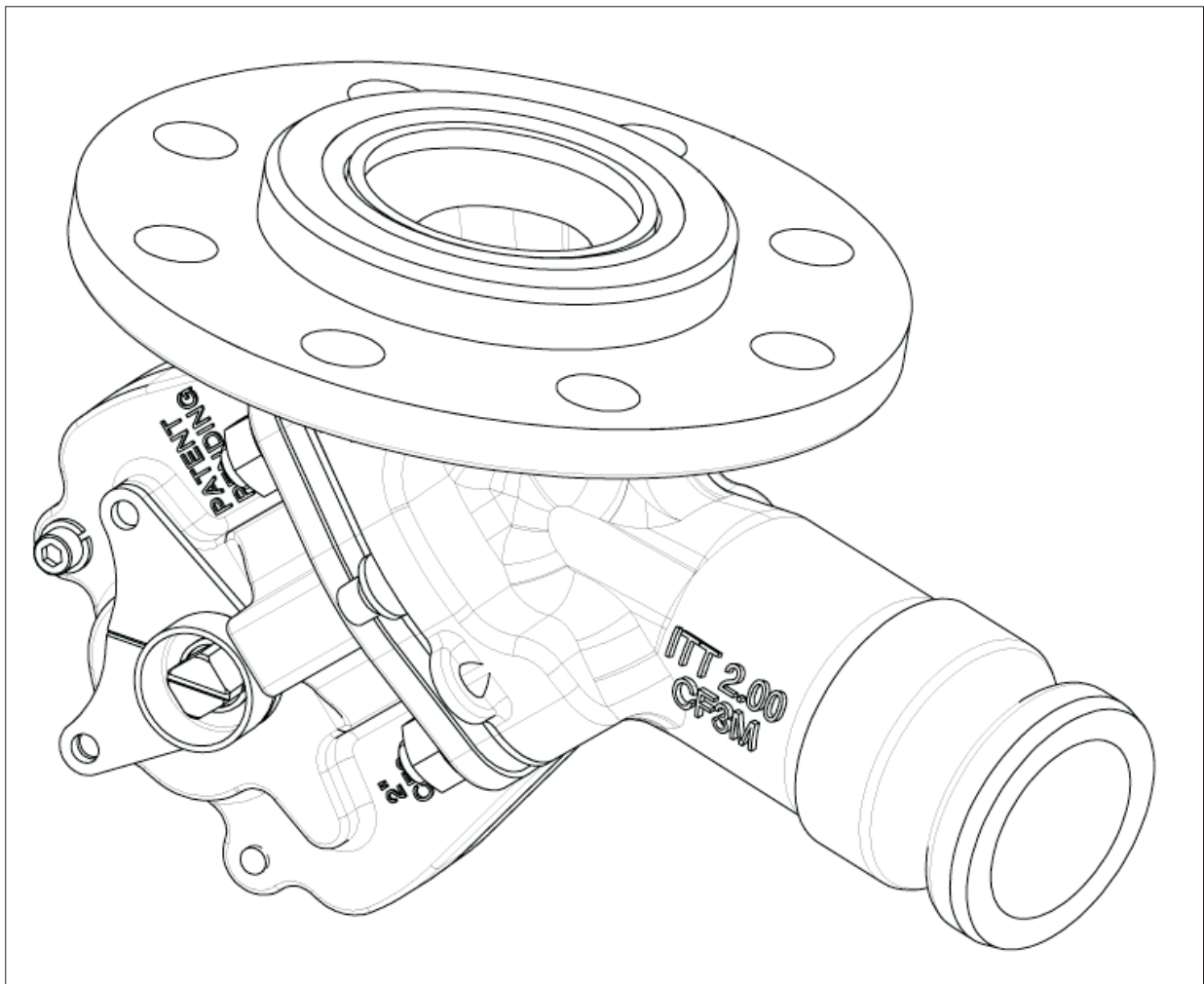


Dia-Flo[®]

Instruction Manual



Paint Tote Valve, Quarter Turn



ITT

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0.0 GENERAL INFORMATION

The latest edition of this manual can be found on the website listed within this manual.



WARNING

The safety precautions in these operating instructions are specially marked with the standard symbol for danger when non-observance could result in personal injury, loss of life or property damage.



CAUTION

Non-observance of these safety precautions can endanger the valve and its functions.

0.1.1 QUALIFICATIONS AND TRAINING OF PERSONNEL

The personnel responsible for operation, maintenance, inspection and assembly must be appropriately qualified.

The operating company must precisely define the responsibilities, competence and supervision of the personnel. If the personnel lack the necessary knowledge, they are to be trained and instructed. If required this can be carried out by the manufacturer/supplier of the valve by order of the operating company. Furthermore, the operating company is to ensure that the contents of the operating instructions have been fully understood by the personnel.

0.1.2 DANGERS THROUGH NON-OBSERVANCE OF THE SAFETY PRECAUTIONS

The non-observance of the safety precautions can result in the endangering of lives as well as the environment and the valve. The non-observance of the safety precautions can lead to the loss of all claims for damages.

Non-observance can result in the following:

- Failure of important functions of the valve/plant.
- Endangering of lives by electrical, mechanical and chemical influences.
- Endangering the environment through leakage of dangerous materials.

Personal injury or property damage.

0.1.3 SAFETY AWARENESS AT WORK

Attention must be paid to the safety precautions in these operating instructions, the current national regulations concerning the prevention of accidents as well as any labor, company and safety-regulations of the operating company.

0.1.4 SAFETY PRECAUTIONS FOR THE OPERATING COMPANY / INDIVIDUAL

OPERATOR

- If hot or cold components of the valves are a source of danger, these components must be secured against contact by operating company.
- Contact guard for moving parts may not be removed when valve is in operation.
- Do not hang items off the valves. Any accessories must be firmly or permanently attached.
- Do not use the product as a step or hand hold.
- Do not paint over identification tag, warnings, notices or other identification marks associated with the product.
- Plastic PTFE diaphragms emit toxic fumes due to thermal decomposition at temperatures of 716°F (380°C) or greater.

0.1.5 SAFETY PRECAUTIONS FOR MAINTENANCE, INSPECTION AND ASSEMBLY

Work on externally actuated valves should only be carried out when the valve is removed from service. Valves that have been exposed to harmful media such as caustic chemicals must be decontaminated.

On completion of work, all safety and protective equipment must immediately be fitted again or reactivated.

Before the re-operation, attention should be paid to the points in the following sections.

0.1.6 UNAUTHORIZED RECONSTRUCTION AND MANUFACTURE OF SPARE PARTS

Reconstruction or modification of the valve is only admissible after consultation with the manufacturer.

Genuine spare parts and accessories authorized by the manufacturer serve to maintain safety. The use of other parts can annul all liability for the consequences.

Manufacturer's parts are not to be used in conjunction with products not supplied by the manufacturer. The use of manufacturer's parts with products not supplied by the manufacturer can annul all liability for the consequences.

0.1.7 INADMISSIBLE MODES OF OPERATION

The operational reliability of the valve supplied is only guaranteed when used as designated. The operating limits given on the identification tag and in the data sheet may not be exceeded under any circumstances.

If the product label is missing or worn contact manufacturer at the address listed within this manual for specific instructions.

0.2 TRANSPORT AND STORAGE



WARNING

The universally recognized technical standards and the regulations regarding prevention of accidents must be observed at all times when handling.

0.2.1 TRANSPORT

The goods have to be carefully handled in order to prevent damage.

The end flange caps supplied are to be fitted to the valve as applicable.

0.2.2 UNPACKING

Unpack the shipment, check to make sure that all contents are present and undamaged.

0.2.3 STORAGE

If the valve is not to be installed immediately following delivery, it must be properly stored.

Storage should be in a dry room at a temperature as constant as possible. Product should not be stacked on top of one another.

Storage over a longer period may necessitate individual moisture proof packing. This is dependent on the local conditions.

0.2.4 DISPOSAL, RECYCLE OR RETURN SHIPMENT

The personnel responsible for disposal of the product or associated components are to comply with federal, state and local requirements.

If the return shipment is required, contact manufacturer at the address listed on backpage for specific instructions.



WARNING

The operator of valves used for aggressive or toxic media such as caustic chemicals must ensure that these are well flushed and cleaned before being handed to the maintenance personnel. This is particularly important when returning to the product manufacturer, disposing of or recycling the product or its component parts. MSDS are required for authorization to return valves to the manufacturer.

1.0 INSTALLATION

1.1 BONNET ASSEMBLY TO BODY INSTALLATION

This section to be followed when assembling a bonnet assembly including diaphragm and backing cushion to a valve body.

1.1.1 Prior to assembly to the body, the diaphragm/backing cushion should be resting flat against the bonnet flange. The compressor should be extending just short of the full closed position. Rotate the input shaft to achieve this position.

1.1.2 Position the bonnet over the studs and onto the body. Drop washers over the studs.

1.1.3 After the bonnet assembly is positioned over the studs and rests against the body, lightly lubricate the studs with Chevron Poly FM2 just above the bonnet flange (i.e. the location at which the nut will engage the stud when tight against the bonnet).

1.1.4 Assemble nuts finger tight. Final tightening of bonnet fasteners shall be done by hand. Pneumatic tools are not permitted. Bring the torque up gradually with at least 3 passes on each nut. Nuts shall be tightened in a crisscross pattern, so as to compress the diaphragm evenly. Tighten nuts securely to 10 ft-lbs (120 in-lbs, 13.5 N-m).



CAUTION

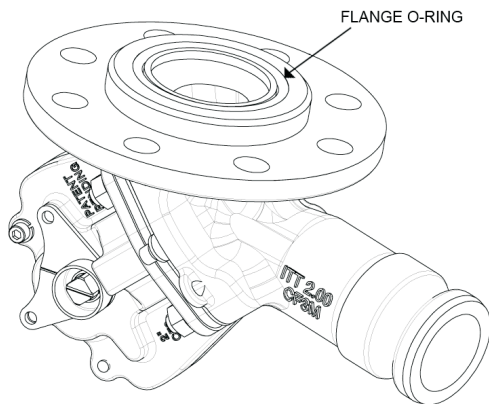
Nut assembly torque requirement of 10 ft-lbs (120 in-lbs, 13.5 N-m) is critical to the success of the valve's sealing function. Excessive torque decreases the valve's sealing function and increases the amount of effort required to actuate the valve.

1.2 TOTE VALVE TO TOTE TANK INSTALLATION

This section to be followed when assembling a tote valve to a tote tank.

1.2.1 Prior to pressurization (with the valve slightly open), verify the torque applied to the bonnet to body nuts per Section 1.1.4.

1.2.2 Assembly of tote valve to tote tank requires an o-ring be located in the flange to create a seal as shown below. This o-ring (#336) is to be provided by the user to insure chemical compatibility.



1.2.3 Position the tote valve over the studs mounted in the tote tank's flange. Make sure that the valve's outlet port does not extend beyond the footprint of the tote tank.

1.2.4 Secure the tote valve to the tote tank using washers and nuts. Washers and nuts are to be provided by the user to insure chemical compatibility. Tighten nuts per user's torque specification.

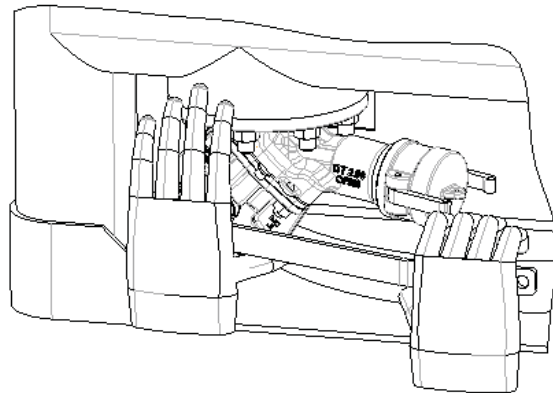
1.3 Maximum valve operating pressure is 14 psig (0.97 bar) at 100% pressure drop (ΔP). A pressure drop of 100% ΔP is when pressure is only acting on one side of the diaphragm when the valve is closed and the outlet is open to atmospheric pressure.

1.4 Cam-Lok cap/cover is to be placed on the valve's outlet port when the tote tank contains fluid. This Cam-Lok cap/cover is to be provided by the user to insure chemical compatibility.

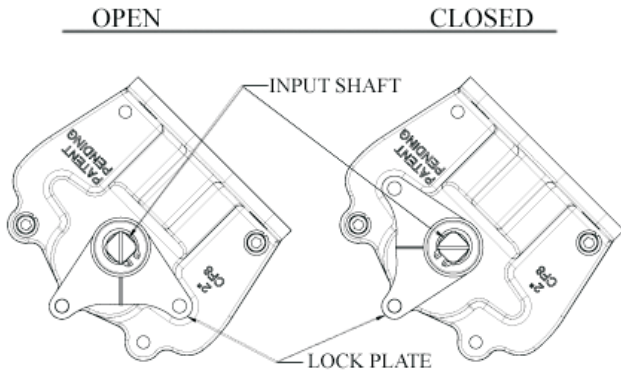
2.0 OPERATION

2.1 The valve is closed with a quarter turn (90°) clockwise rotation of the input shaft, opened with a counterclockwise rotation. The valve is only intended for manual actuation. Do not attempt to exceed the quarter turn (90°) rotation limit. A lever/handle capable of mating with the 0.50" (12.7 mm) square drive on the valve's input shaft is to be used. This lever/handle is to be provided by the user. It is recommended that this lever/handle be at least 14" (355.6 mm) long.

2.2 Properly support the lever/handle against the input shaft during actuation as shown below. Lack of support may allow the lever/handle to disengage from the input shaft during actuation which can cause damage to the input shaft's square drive.



2.3 The valve position is visible based on the position of the groove at the end of the input shaft and lock plate as shown below.



2.4 The valve shall lock itself in the open or closed position. If a secondary lock is desired in the open or closed position, a pin, tie-wrap or other suitable securing device may be placed thru the locking plate's and bonnet half's 1/4" (6.35 mm) thru hole.

3.0 MAINTENANCE

ALL MAINTENANCE PROCEDURES MUST BE PERFORMED BY QUALIFIED PERSONNEL. MAINTENANCE DONE BY PERSONNEL NOT QUALIFIED TO PERFORM IT COULD RESULT IN PERSONAL INJURY, DEATH OR PROPERTY DAMAGE.



WARNING

Remove all line pressure.

3.1 PERIODIC INSPECTION



WARNING

When the process fluid is hazardous or corrosive, extra precautions should be taken. The user should employ appropriate safety devices and should be prepared to control a leak of the process fluid. Failure to follow these instructions could result in serious personal injury or death, and property damage.

Periodically inspect condition of external valve parts. Replace all parts showing excessive wear or corrosion. Contact manufacturer at the address listed on the back page of this manual in order to obtain replacement parts or for specific instructions.

3.2 BONNET TO BODY INTERFACE LEAKAGE

If leakage occurs at the body/diaphragm seating area, immediately depressurize system, open valve slightly and tighten nuts per Section 1.1.4. If leakage continues, diaphragm replacement is required per Section 3.6.

3.3 BONNET ASSEMBLY LEAKAGE

If leakage is occurring thru the bonnet assembly the diaphragm has ruptured and must be replaced per Section 3.6.

3.4 LEAKAGE THRU THE OUTLET WHEN CLOSED

If leakage is occurring thru the body's outlet when the bonnet assembly is in the closed position the diaphragm may be worn. The diaphragm must be replaced per Section 3.6.

3.5 EXCESSIVE TORQUE TO ACTUATE VALVE

If more than 60 ft-lbs (81.3 N-m) of torque is required to actuate the valve verify that the bonnet nuts are tightened to a torque of 10 ft-lbs (120 in-lbs, 13.5 N-m).



CAUTION

Nut assembly torque requirement of 10 ft-lbs (120 in-lbs, 13.5 N-m) is critical to the success of the valve's sealing function. Excessive torque decreases the valve's sealing function and increases the amount of effort required to actuate the valve. If the proper amount of torque is applied to the bonnet nuts but the valve requires excessive torque to actuate contact manufacturer at the address listed on back page for specific instructions.

3.6 DIAPHRAGM REPLACEMENT

Elastomer diaphragms are not intended to be used with the quarter turn tote valve. Replacement diaphragm should be identical in size and grade as the original diaphragm.

3.6.1 Remove pressure/fluid from the tote tank containing the valve. The diaphragm can be replaced with the valve on the tank or after removing the valve from the tote tank if desired.

3.6.2 Partially opened the valve by rotating the input shaft counterclockwise. This will ease the pressure being exerted by the compressor holding the valve diaphragm to the body weir.

3.6.3 Remove the bonnet nuts. Lift bonnet assembly from valve body. If the valve is mounted to the tank support the bonnet assembly as the nuts are removed.

3.6.4 Unscrew diaphragm from compressor by turning counterclockwise. Note: Fine bronze shavings may be present in the bonnet assembly due to component wear. Clean out these shavings once diaphragm and backing cushion are removed.

3.6.5 Replace backing cushion and plastic PTFE diaphragm. Note: To engage the threads of the diaphragm stud invert the plastic PTFE diaphragm. To invert the diaphragm, press on the center of the diaphragm face with thumbs while holding the edge of the diaphragm with fingers.

3.6.6 Screw new diaphragm into compressor by turning hand tight. Then back off until holes in diaphragm and bonnet flange line up.



CAUTION

Do not overtighten diaphragm.

3.6.7 Assemble the bonnet to the body per Section 1.1.

3.7 LUBRICATION

Only Chevron Poly FM2 (silicone free) lubricant is permitted on the tote valve's body studs. These are the only components where lubricant is permitted on the valve assembly. No lubrication shall be used in the assembly of the quarter turn bonnet. No lubrication shall be used on the diaphragm.

3.8 BONNET ASSEMBLY - DISASSEMBLY / ASSEMBLY PROCEDURE

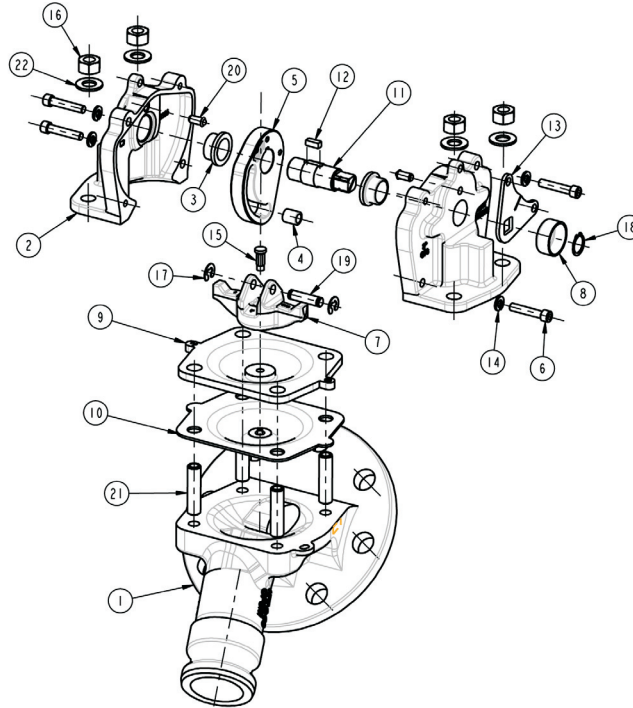
Bonnet assembly is not intended to be disassembled nor assembled in the field. Contact manufacturer at the address listed on the back page for specific instructions.

4.0 ACCESSORIES

4.1 NO ACCESSORIES ARE AVAILABLE FOR THIS PRODUCT.

TOTE VALVE ASSEMBLY

Figure 1:



Item	Description	Material	Quantity
1	Body	Stainless Steel	1
2	Bonnet Half	Stainless Steel	2
3	Bushing, Flanged	Bronze	2
4	Bushing, Sleeve	Bronze	1
5	Cam	Copper Infiltrated Steel	1
6	Screw, Hex Head, Cap	Stainless Steel	4
7	Compressor	Bronze	1
8	Cover, Input Shaft	Stainless Steel	1
9	Backing Cushion	EPDM	1
10	Plastic Diaphragm	PTFE	1
11	Input Shaft	Stainless Steel	1
12	Key	Steel	1

Item	Description	Material	Quantity
13	Lock Plate	Stainless Steel	1
14	Washer, Spring Lock	Stainless Steel	4
15	Tube Nut	Brass	1
16	Nut, Hex	Stainless Steel	4
17	Ring, Retaining	Stainless Steel	2
18	Ring, Retaining	Stainless Steel	1
19	Pin, Roller	Stainless Steel	1
20	Spring Plunger	Stainless Steel	2
21	Stud	Stainless Steel	4
22	Washer, Plain	Stainless Steel	4

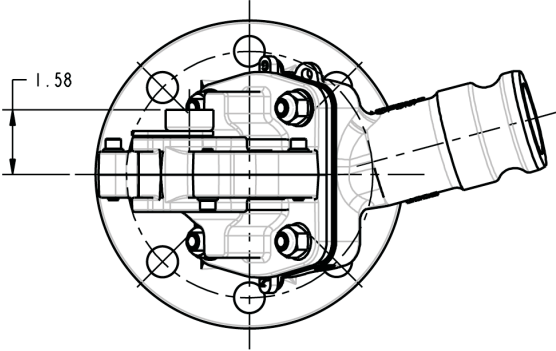
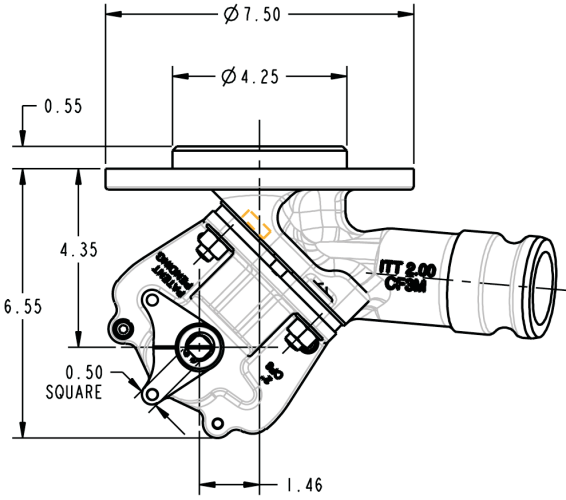
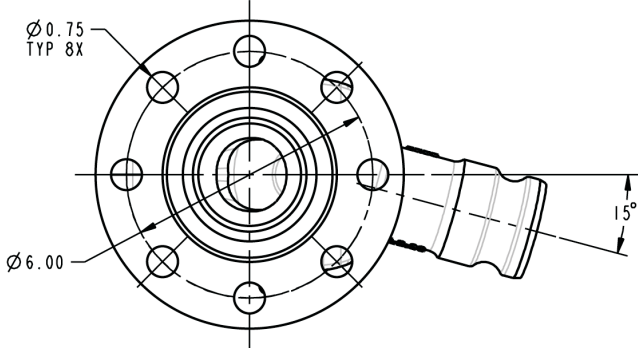
Tote Valve Weight = 20 lbs (9.1 kg)

Bonnet Assembly Weight = 7 lbs (3.2 kg) (less items 1, 9, 10, 16, 21 and 22)

TOTE VALVE DIMENSIONAL DATA

Figure 2:

(Dimensions shown below are in inches)



**THIS MANUAL PROVIDES INSTRUCTIONS FOR THE DIA-FLO®
1/4-TURN TOTE VALVE.**

**IF ADDITIONAL INFORMATION IS REQUIRED,
PLEASE CONTACT:**

**ITT INDUSTRIAL & BIOPHARM GROUP
33 CENTERVILLE ROAD P.O. BOX 6164
LANCASTER , PA 17603-2064 USA**

OR CALL: (800) 366-1111

(717) 509-2200

FAX: (717) 509-2336

WEBSITE: WWW.ENGVALVES.COM

EMAIL: ENGVALVES.CUSTSERV@ITT.COM



WARNING

Valves and related products are designed and manufactured using good workmanship and materials, and they meet all applicable industry standards. These valves are manufactured with various materials, and they should be used only in services recommended by a company engineer.

Misapplication of the product may result in injuries or property damage. A selection of valve and valve components of the proper material and consistent with the particular performance requirement is important for proper application.

Examples of misapplication or misuse of any products include use in an application in which the pressure/temperature rating is exceeded or failure to maintain valve or related product as recommended and use of products to handle caustic and/or hazardous substances when not designed for that purpose.

If valve exhibits any indication of leakage, do not operate. Isolate valve and either repair or replace.

