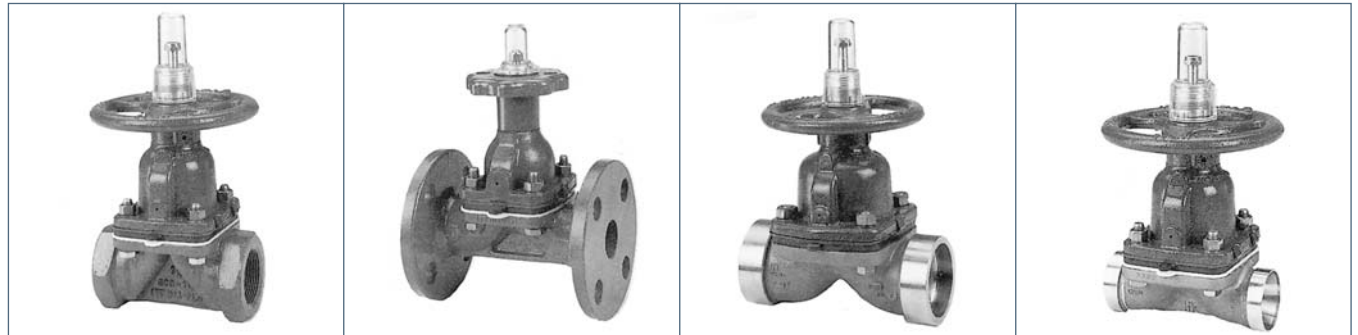
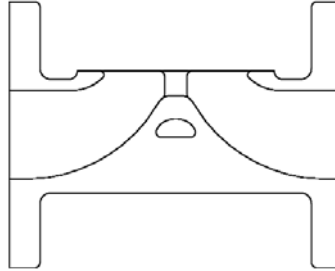


## Weir Valve Selections

### Unlined Metal

- Excellent Cv's
- Complete Selection of End Connections
- ASTM Materials Include:
  - Cast Iron ASTM A-126 Class B
  - Ductile Iron ASTM A-395 Grade 60-40-18
  - Cast Steel ASTM A-216 Grade WCB
  - 316 Stainless Steel ASTM A-351 Grade CF8M
  - 316L Stainless Steel ASTM A-351 Grade CF3M
  - Bronze ASTM B62 Alloy 836
  - Alloy 20 ASTM A-351 Grade CN7M
  - Hastelloy C ASTM A-494 Grade CW-6M
  - Monel ASTM A-494 Grade M-35-1
  - And More



#### Screwed Metal<sup>2</sup>

1/2"-3" Cast Iron	2401
1/2"-3" Bronze	2402
1/2"-3" Stainless Steel (316)	2403
1"-3" Cast Steel	2405
1/2"-3" CN7M	2407
1/2"-3" Monel	2408
1/2"-3" Hastelloy	2410
1"-3" Ductile Iron	2412

#### Flat Faced Flanged Metal<sup>1,2</sup>

1/2"-12" Cast Iron	2431
1/2"-6" Bronze	2432
1/2"-8" Ductile Iron	2441
<b>Raised Face Flanged Metal<sup>1,2</sup></b>	
1/2"-8" Stainless Steel	2433R
1/2"-8" Cast Steel	2435R
1/2"-8" CN7M	2437R
1/2"-8" Monel	2438R
1/2"-8" Hastelloy	2440R

#### Socket Weld Metal<sup>2</sup>

1/2"-3" Stainless Steel (316L)	2470
1/2"-3" Cast Steel	2472
1/2"-3" CN7M	2474

#### Socket (Solder)

1/2"-2" Bronze	2456
----------------	------

#### Butt Weld Metal<sup>2</sup>

1/2"-8" Stainless Steel (316L)	
Schedule 5	2464
Schedule 10	2465
Schedule 40	2466

#### ANSI Dimensions

1"-2" Stainless Steel	2433A
-----------------------	-------

Maximum temperature for all of the above configurations is 350° F<sup>3</sup> (177° C)

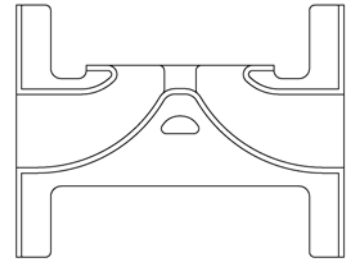
#### Notes:

- <sup>1</sup> 3/4" flanged valve is supplied with 1" bonnet and diaphragm.
- <sup>2</sup> 1 1/4" valves are supplied with 1 1/2" bonnet and diaphragm.
- <sup>3</sup> Temperature may decrease dependent upon media, pressure and valve size.

## Weir Valve Selections

### Rubber Lined Bodies

- 1/8" Minimum Lining Thickness
- Ductile Iron or Cast Iron Available
- Full Flat Faced Flange Lining
- Excellent for Abrasive Applications



### Broad Choice of Lining Materials as Follows:



- **Neoprene**...A synthetic base elastomer with some physical properties similar to natural rubber. Superior to natural rubber in resistance to heat, ozone, sunlight and oil. Typical applications include: phosphoric acids; magnesium oxide and sodium hydroxide. Maximum temperature 200° F (93° C)<sup>3</sup>



- **Soft Rubber**...Good resistance to most inorganic chemicals with the exception of strong oxidizing agents. Exhibits outstanding abrasion resistance. Typical applications include: gypsum, flyash, titanium dioxide slurries and sewage. Maximum temperature 180° F (82° C)<sup>3</sup>



- **Hard Rubber**...Better chemical and heat resistance than soft rubber. Wide application in organic and inorganic acids and chlorine gas. Typical applications include: potable water; oxidizing agents; plating solutions; salts; sludge and ferric chloride. Maximum temperature 200° F (93° C)<sup>3</sup>



- **Hypalon\***...Good resistance to high concentrations of sulfuric and nitric acids. Good heat, weather, ozone and abrasion resistance. Other typical applications include: nickel plating solutions and ferric chloride. Maximum temperature 200° F (93° C)<sup>3</sup>



- **Chlorobutyl**...Good heat resistance. Unaffected by cold weather or rapid temperature changes. Typical applications include: hydrofluoric acid, various zinc solutions and fertilizer solutions. Maximum temperature 200° F (93° C)<sup>3</sup>



#### Flanged Rubber Lined<sup>1, 2</sup>

##### Cast Iron

1/2"-12" Neoprene #7	2501
1/2"-12" Soft Rubber #5	2516
1/2"-12" Hard Rubber #10	2521
1/2"-12" Chlorobutyl #16	2522
1/2"-12" Hypalon #9	2523

##### Ductile Iron

1/2"-8" Neoprene #7	2550
1/2"-8" Soft Rubber #5	2551
1/2"-8" Hard Rubber #10	2552
1/2"-8" Hypalon #9	2553

##### Cast Steel

1/2"-8" Neoprene #7	2561
1/2"-8" Hard Rubber #10	2563

#### Notes:

- <sup>1</sup> 3/4" flanged valve is supplied with 1" bonnet and diaphragm.
- <sup>2</sup> 1 1/4" valves are supplied with 1 1/2" bonnet and diaphragm.
- <sup>3</sup> Temperature may decrease dependent upon media, pressure and valve size.

\*Hypalon is a registered trademark of E.I DuPont de Nemours and Co. Inc.

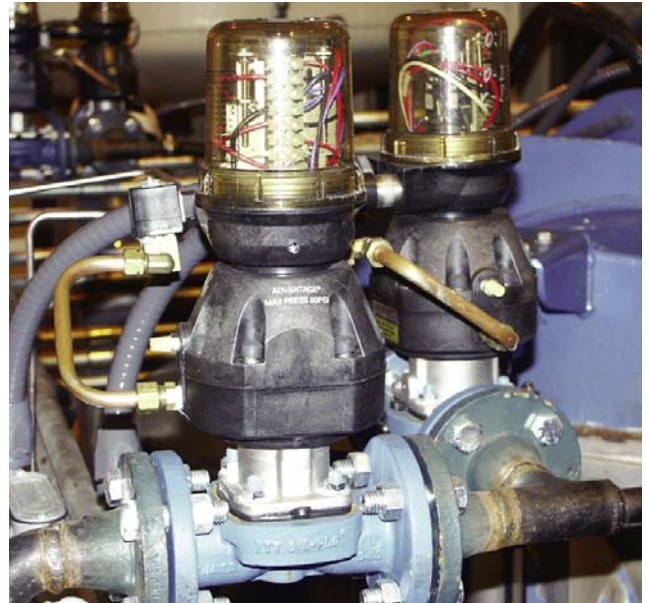
## Weir Valve Selections

### Plastic Lined

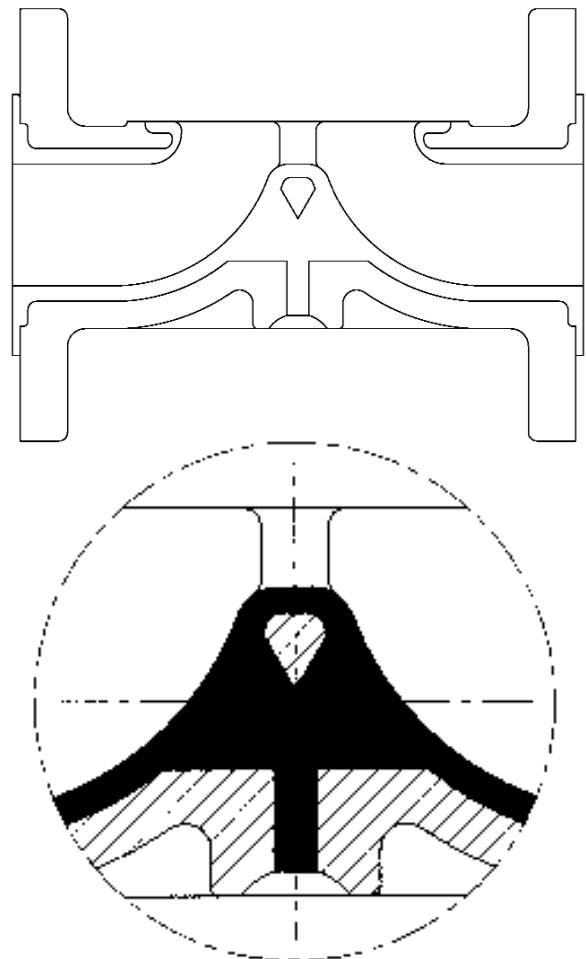
- $\frac{3}{16}$ " Minimum Lining Thickness\*
- Superior Flow Capabilities
- Line-Lok feature
- Wide Selection of Lining Materials

\*Lining thickness of PFA is .14" minimum.

Line-lok is a unique feature of Dia-Flo diaphragm valves. As can be seen by the drawing below, the weir area is locked firmly to the body eliminating flexing of lining during valve cycling, which can lead to premature liner failure.



Dia-Flo® weir diaphragm valve with Advantage Actuator and SP2.0 switch pack.



## Weir Valve Selections

### Plastic Lined (continued)



#### PFA

- Excellent chemical resistance to all common solvents, superior high purity resistance, excellent temperature resistance.  
 Maximum temperature 350° F (177° C)<sup>3</sup>



#### ETFE (Tefzel)

- Suitable for strong acids and solvents. Compatible with a very broad range of chemicals under a wide range of conditions.  
 Maximum temperature 300° F (149° C)<sup>3</sup>

Note Tefzel is a registered trademark of E.I. DuPont de Nemours and Co. Inc.



#### Polypropylene

- Especially suitable for organic solvents degreasing agents, excellent resistance to alkalines...economically priced, poor resistance to chlorinated solvents.  
 Maximum temperature 200°F (93° C)<sup>3</sup>



#### PVDF

- Very good corrosion and chemical resistance, performs well in many applications at elevated temperatures.  
 Maximum temperature 285° F (140° C)<sup>3</sup>



#### PVC

- Very good corrosion and weather resistance...note that temperatures may be restricted.  
 Maximum temperature 140° F (60° C)<sup>3</sup>

### Flanged Plastic Lined<sup>1,2</sup>

#### Cast Iron

- 3/4"-8" Tefzel 2529
- 3/4"-8" PVC 2536
- 3/4"-8" Polypropylene 2538
- 3/4"-8" Polypropylene+ 2539
- 3/4"-8" PVDF 2575

+ unpigmented

#### Ductile Iron

- 3/4"-8" PVDF 2555
- 3/4"-8" Polypropylene 2558
- 3/4"-8" Tefzel 2559
- 1"-6" PFA 2556
- 1"-2" PFA (ANSI) 2556A

#### Cast Steel

- 3/4"-8" Tefzel 2545
- 3/4"-8" Polypropylene 2546
- 3/4"-8" PVDF 2548

#### Stainless Steel

- 3/4"-8" Tefzel 2549
- 1"-2" PFA (ANSI) 2540A

#### Notes:

<sup>1</sup> 3/4" flanged valve is supplied with 1" bonnet and diaphragm.

<sup>2</sup> 1 1/4" valves are supplied with 1 1/2" bonnet and diaphragm.

<sup>3</sup> Temperature may decrease dependent upon media, pressure and valve size.

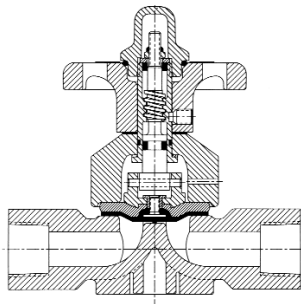
## Weir Valve Selections

### Solid Plastic

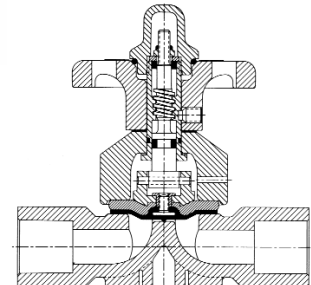
- Lightweight and economical
- Excellent interior/exterior corrosion resistance
- Body materials include:
  - PVC (Polyvinyl chloride)
  - CPVC (Chlorinated polyvinyl chloride)
  - PVDF (Polyvinylidene fluoride)
  - Polypropylene
- End connections include:



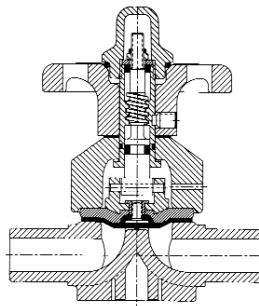
Solid plastic PVDF body with ring flanges and PAS plastic manual bonnet.



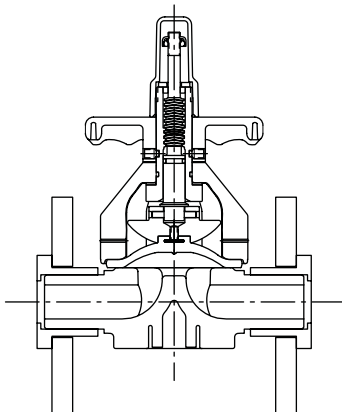
**NPT THREADED**



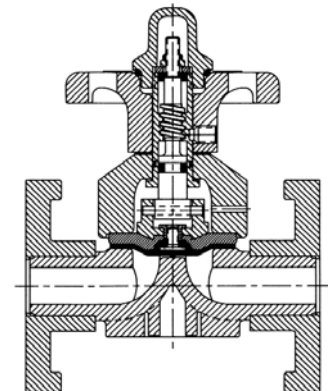
**SOCKET WELD**  
 PVC & CPVC: SCH. 80  
 PP & PVDF: SCH. 80



**SPIGOT WELD**  
 PVC & CPVC: IPS SCH. 80  
 PP & PVDF: DIN 11



**FLANGED\***  
 PP & PVDF: RING FLANGE



**FLANGED\***  
 PVC & CPVC: FIXED FLANGES

\*150# ANSI Dimensions

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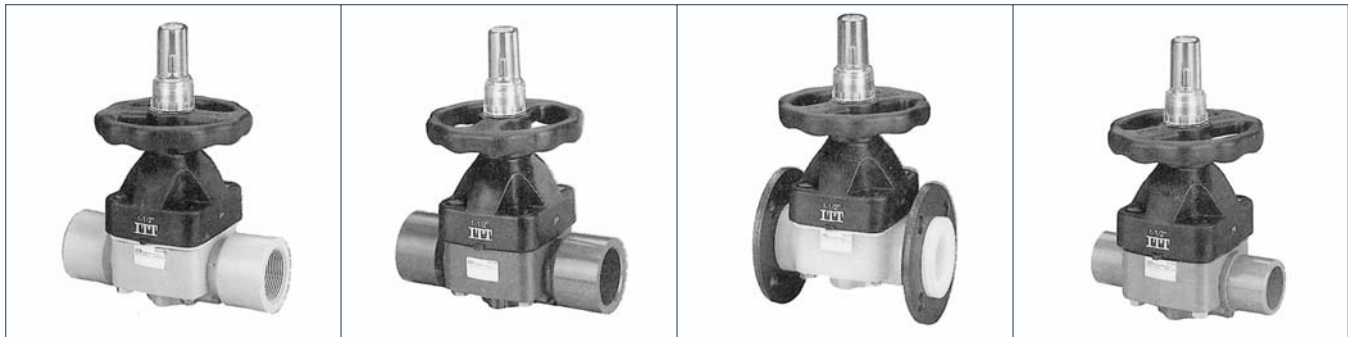


## Weir Valve Selections

### Solid Plastic

The body of the Dia-Flo plastic diaphragm valve is available in a variety of high-performance engineered polymers including polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), polypropylene (PP), and natural polyvinylidene fluoride (PVDF).

The bonnet is manufactured from glass-reinforced polymers: either PP (polypropylene) or, for high temperature service, PAS (polyarylsulfone). An optional PAS pneumatic actuator is also available.



#### Screwed Plastic<sup>4</sup>

1/2"-2" PVC	2406
1/2"-2" Polypropylene <sup>2</sup>	2414
1/2"-2" CPVC	2416
1/2"-2" PVDF <sup>2, 3</sup>	2417

#### Socket Weld Plastic<sup>4</sup>

1/2"-2" Polypropylene <sup>2</sup>	2424
1/2"-2" PVDF <sup>2, 3</sup>	2427
1/2"-2" PVC	2451
1/2"-2" CPVC	2463

#### Flanged Plastic<sup>2, 4</sup>

1/2"-4" PVC	2436
1/2"-2" CPVC	2442
1/2"-4" Polypropylene	2444
1/2"-4" PVDF <sup>3</sup>	2447

#### Spigot Weld Plastic<sup>4</sup>

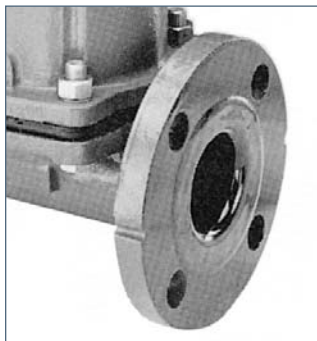
<b>IPS-Spigot</b>	
1/2"-2" CVPC	2443
1/2"-4" PVC	2486

#### DIN-Spigot<sup>4</sup>

1/2"-4" Polypropylene	2484
1/2"-4" PVDF <sup>3</sup>	2487

### Glass Lined

- Excellent lining for contaminant free or corrosion resistant applications
- Available in cast or ductile iron
- 100% spark testing before and after assembly assures the highest lining integrity.

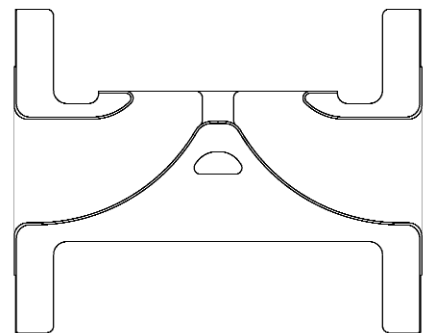


#### Flanged Glass Lined<sup>1, 4</sup>

<b>Cast Iron</b>	
1/2"-8" Glass	2511

<b>Ductile Iron</b>	
1/2"-8" Glass	2544

Maximum temperature for glass lined valves is 350° F<sup>5</sup> (177 C)



#### Notes:

<sup>1</sup> 3/4" flanged valve is supplied with 1" bonnet and diaphragm

<sup>2</sup> Not available in 1 1/4" size.

<sup>3</sup> Unpigmented

<sup>4</sup> 1 1/4" valves are supplied with 1 1/2" bonnet and diaphragm

<sup>5</sup> Temperature may decrease dependent upon media, pressure and valve size.

## Weir Valve Selections

### ANSI B16.10 Face-to-Face Dimensions

Improve performance for Active Pharmaceutical Ingredients (API) and chemical process customers by replacing ball and plug valves. The Dia-Flo diaphragm valve with ANSI B16.10 face-face dimensions offers all of the advantages of diaphragm valves and is a direct replacement for ball and plug valves without the need for piping modifications.

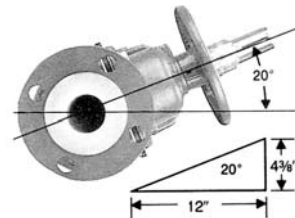
As with all other diaphragm valves this valve offers these clean service benefits:

- Can be cleaned in place without disassembly or removal from the pipeline;
- Has no cavities or pockets to trap process or cleaning fluids;
- Is available in FDA Compliant Materials;
- Is available with stainless steel exterior to eliminate contamination potential from chipping paint;
- Can be steam sterilized

Also suitable for corrosive and abrasive applications the ANSI face-to-face diaphragm valve offers:

- A smooth flow path for media resulting in less damage to the valve body and diaphragm;
- No ball or plug to become damaged by abrasive media;
- A large sealing surface provided by the diaphragm;
- No cavities or pockets for process fluid to become trapped;
- Available sizes 1", 1½" and 2"
- Bodies available in - Stainless steel lined with PFA;  
- Ductile iron lined with PFA  
- Stainless steel unlined
- Bonnet assemblies available - Stainless steel or ductile iron, hand wheel operated or automatic operation

### Added Feature



Drain angles are marked on body for optimum drainage.



## Weir Valve Selections

The diaphragm material and design are integral to the successful performance of the diaphragm valve. For that reason, 10 weir elastomer diaphragms and 2 weir PTFE diaphragms are available to handle a multitude of process fluids and parameters.

### ELASTOMER DIAPHRAGMS<sup>1</sup>

Grade	Material (FDA Compliant)	Size	Temperature <sup>2,3</sup>	Typical Services
Grade B	Black Butyl (FDA Compliant)	1/2-12"	-20 to 250°F (-29 to 121°C)	Chemicals, gases, stronger acids
Grade W1	White Butyl (FDA Compliant)	1/2-6"	0 to 225°F (-18 to 107°C)	Foods, beverages, pharmaceuticals
Grade 17	EPDM (FDA Compliant)	1/2-8"	-30 to 300°F (-34 to 149°C)	Beverages, pharmaceuticals
Grade M	EPDM	1/2-12"	-30 to 300°F (-34 to 149°C)	Chemicals, acids, hi-temp, abrasives
Grade C	Hypalon® CSM	1/2-12"	0 to 225°F (-18 to 107°C)	Oxidizing fluids, oil resistant
Grade S	Natural Rubber	1/2-8"	-30 to 180°F (-34 to 82°C)	Water, abrasives
Grade T	Neoprene®	1/2-12"	-20 to 200°F (-29 to 93°C)	Weak chemicals, air, oil resistant
Grade DP	Buna N® NBR (FDA Compliant) Direct Loaded Valve only	1/2-3"	10 to 180°F (-12 to 82°C)	For direct load valve only
Grade P	Buna N® NBR (FDA Compliant)	1/2-12"	+10 to 180°F (-12 to 82°C)	Foods, oils
Grade V	Viton® FKM <sup>4</sup>	1/2-6"	-20 to 325°F (-29 to 163°C)	Specific solvents & chemicals, oils

<sup>1</sup> To be used as general guide; for complete service guide see section 5 of this binder.

<sup>2</sup> Diaphragms at maximum temperature cannot be used satisfactorily at maximum pressures. Pressure/temperature charts are provided in section 5 of this binder.

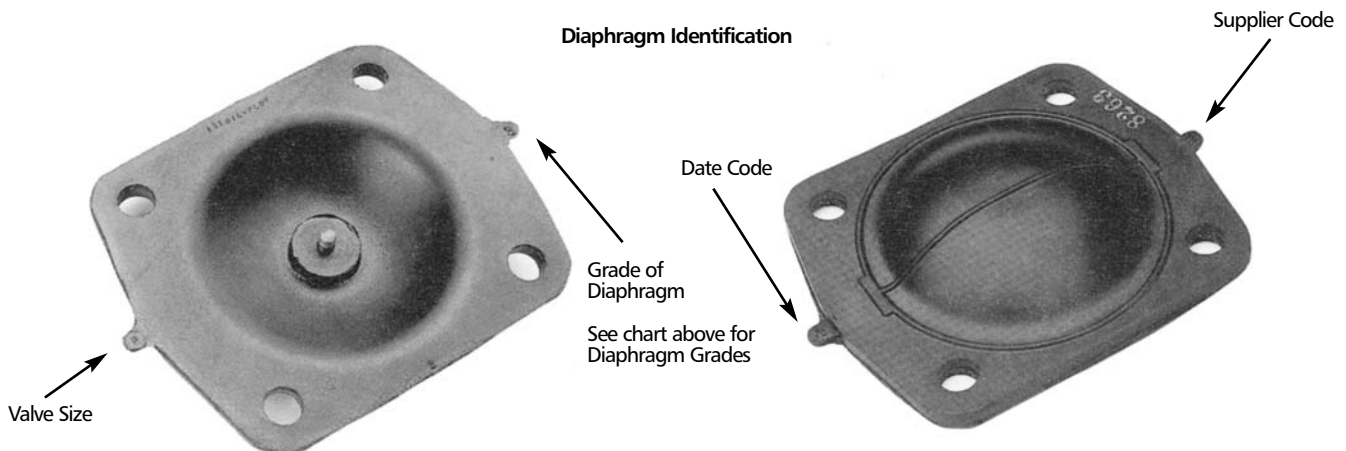
<sup>3</sup> Cast Iron, Ductile iron & Carbon Steel should not be used below -20 degrees F (-29 C).

<sup>4</sup> Viton is a registered trademark of DuPont de Nemours and Co. Inc.

Our elastomer diaphragms are available in a variety of materials to address various process characteristics. Some elastomer diaphragms are softer and better suited to abrasive and slurry applications. Others are harder, providing greater chemical resistivity and higher temperature limitations. All elastomer diaphragms in sizes 1" - 8" are molded in the closed position to provide the most effective seal. Each diaphragm contains markings identifying the size, material, mold date and diaphragm supplier.

• The molded closed design increases the sealing properties of the diaphragm. The relaxed position of the diaphragm is contoured to the same shape as the weir which increases the ability of the diaphragm to provide a bubble-tight shut-off.

Due to diaphragm area limitations, sizes smaller than 1" are molded open.



### Diaphragm Traceability

All diaphragm materials and physical properties are batch traceable via permanent codes molded into the diaphragm tabs. The molding date, material type, and diaphragm size provide traceability to original batch records.



## Weir Valve Selections

### PTFE DIAPHRAGMS



Grade	Material (FDA Compliant)	Size	Temperature <sup>2,3</sup>
Grade TM	Modified PTFE (FDA Compliant)	1/2"-6"	-30 to 350° F (-34-177°C)
Grade R2	PTFE (FDA Compliant)	8"-10"	-30 to 350°F (-34-177°C)

The two-piece PTFE (Polytetrafluoroethylene) diaphragm assembly utilized in the Dia-Flo diaphragm valve has proven through years of outstanding service to be the best design available. The two-piece construction, consisting of PTFE diaphragm and ethylene propylene elastomer backing cushion, fully eliminates the problem of delamination permeational cracking common to competitive "PTFE-faced" designs.

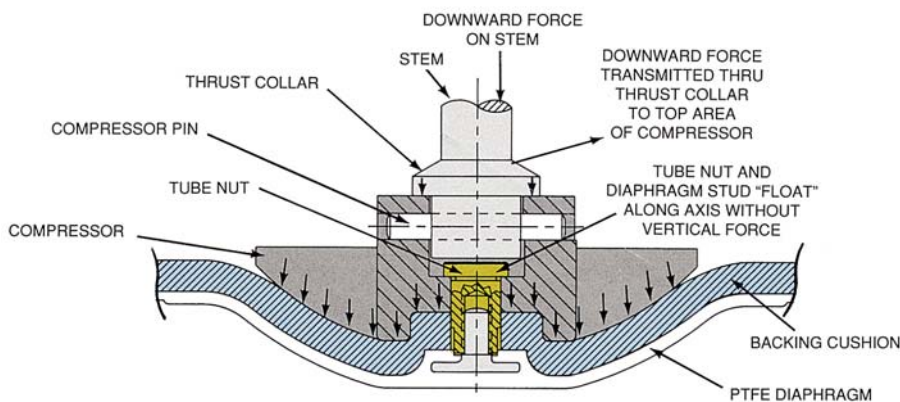
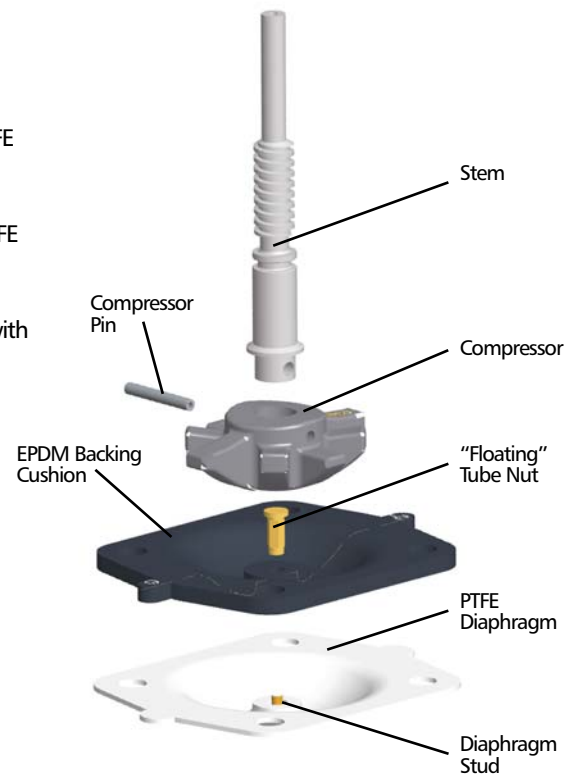
To ensure the best possible diaphragm, ITT maintains a continuing development program to utilize new materials and improve existing compounds. The result of this effort is the recent introduction of the PTFE grade TM diaphragm (1/2-6").

Proven benefits of the PTFE grade TM diaphragm versus conventional PTFE diaphragms are:

- Reduced permeation due to a more homogeneous microstructure with minimal voids
- Reduced cold flow similar to 25% carbon reinforced PTFE
- Increased cycle life due to a more amorphous compound



PTFE DIAPHRAGM ASSEMBLY



### FLOATING TUBE NUT

The floating tube nut feature contributes largely to the successful operation of plastic diaphragms in Dia-Flo diaphragm valves. The downward force of the stem is transferred to the compressor, by-passing the tube nut. The result is that forces are evenly distributed over the seating area of the diaphragm, thus reducing cold flow and stud pull out concerns. This design is also used on 6" and larger elastomer diaphragms.

## Weir Valve Selections

### Manual Bonnet Assemblies

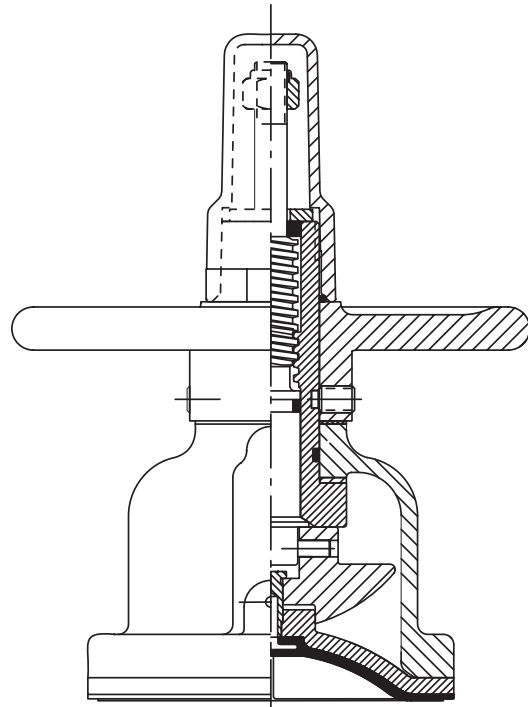
Dia-Flo diaphragm valve bonnet assemblies are equipped as standard with:

- Bronze Stem Bushing
- Molded-in Fingers\*
- Grease Fitting\*\* (6-12")
- Thrust Bearing Visual Position Indication
- Adjustable Travel Stop (1/2-4")
- Permanently Sealed Lubrication (1/2-4")
- Clear Stem Cover (1/2-4")

\*In conjunction with the compressor, the fingers positively support the diaphragm from the closed to open position. The diaphragm is lifted high when the valve is opened and is pressed tightly against the weir when the valve is closed. It is supported in all positions by alternate fingers of the compressor and bonnet. Fingerplates in place of molded in fingers are utilized in 3" through 6" stainless steel bonnet assemblies.

For specific 902 and 903 bonnet parts call-out refer to the technical section of this binder.

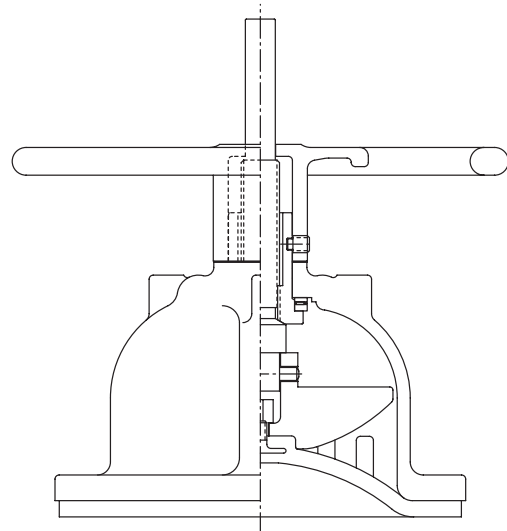
Refer to Bonnet Assembly Options pages for other bonnet variations.



903 Bonnet Assembly  
Standard on valves 1/2" - 4"



PVDF corrosion resistant coated bonnet shows the molded-in fingers utilized to support the diaphragm in the open position.



902 Bonnet Assembly  
Standard on valves 6"-12".  
See technical section for parts call-outs and materials for 902 and 903 assemblies.

\*\* Not used with sealed bonnet