

TOP-FLO® BIOPRO® Forged Diaphragm Valves

The forged body has always been the optimum choice for applications within the bioprocessing and pharmaceutical industries.

BIOPRO® forged body diaphragm valves will be the valves of choice when high purity mechanical and electropolished surface finishes are required.

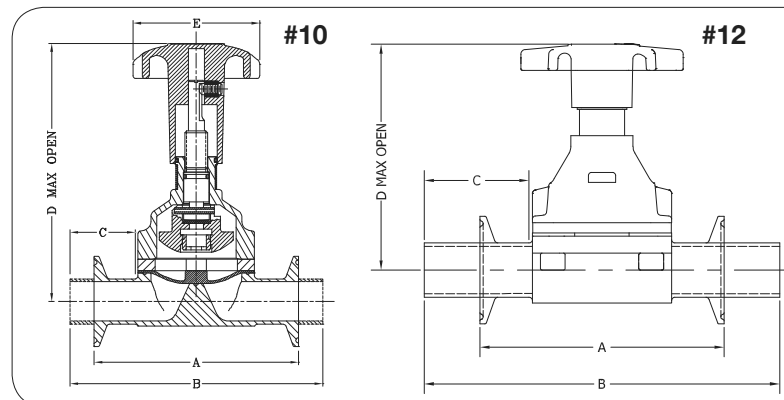
BIOPRO® forged bodies are manufactured from ASTM A182 GR F316L material with additional controls in regards to chemical content. The sulfur content is maintained to meet and exceed the stringent requirements of BPE. All forgings are solution annealed to maintain the ferrite content to be .05% or less. This low ferrite content eliminates the concern for contaminants and migration of oxides throughout the system. Machining of the contours are performed by using state of the art cad/cam system assuring repeatability of the weir and valve cavity profiles for full drainability. Each forging contains two hash marks clearly indicating the drain angle plane for ease of installation.

BIOPRO® forged bodies are in compliance with FDA guidelines as well as cGMP principles, and are specifically designed for use in ultra pure applications where sterility is critical. Steel & O'Brien provides these bodies with heat numbers etched into them for full traceability. Mill test summaries are provided with each shipment.

BIOPRO® forged diaphragm valves are available in sizes ranging from 1/2" through 6" with clamp or weld end connections and surface finishes ranging through 10Ra. Steel & O'Brien can also manufacture valve sin other material grades upon request.



STANDARD END CONNECTIONS	
14-16-18 Gauge O.D. Tube	Tube end style valves have 0.75" Minimum tangent length to facilitate orbital welding
OPTIONAL END CONNECTIONS	
Schedule 5,10,40	Various clamp type connections including ISO 2852 (BS 4825-Part 3)
ISO 1127	Hygienic screwed connections inclusive of BS 1864, SMS, DIN 11851, ISO 2853, (BS4825-Part 4)
DIN 11850	
SMS 3008	



BIOPRO® Manual Valve Forged Dimensions

Size	A Clamp End	B Od Tube End	C Weld Tangent	D (#10) Center To Top	D (#12) Center To Top	E Handwheel	Drain Angle
1/2	3.50	4.88	1.50	4.47	3.27	3.00	30°
3/4	4.00	5.31	1.50	5.00	3.66	3.00	25°
1	4.50	5.56	1.50	5.69	4.17	3.00	28°
1-1/2	5.50	6.63	1.50	8.47	6.10	4.75	20°
2	6.25	7.50	1.63	9.88	7.065	4.75	20°
2-1/2	7.63	10.00	1.88	8.82		8.00	18°
3	8.75	10.00	1.88	10.00		8.00	20°
4	11.50	12.84	2.00	13.63		10.00	15°
6*	13.40	18.00	3.00	18.00		16.00	15°

* MACHINED FROM 316L BAR

TOP-FLO® Bonnet Assemblies For Diaphragm Valves

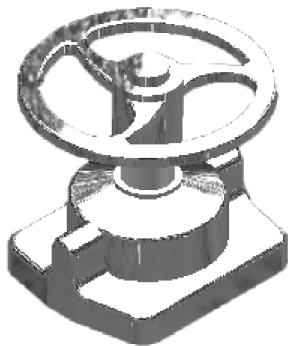
TOP-FLO® manual bonnets offer many features that have been carefully designed with the user in mind. The advanced bonnet design takes into account environmental stresses such as cleanability, reliability, autoclave use, adjustment, and ease of maintenance.

TOP-FLO® stainless steel bonnets are produced using the investment casting process resulting in a durable and lightweight valve operator. Stainless steel bonnets are electropolished externally providing a bright and sanitary exterior that also enhance its corrosion resistance. Ergonomically designed thermoplastic hand wheel and highly visible yellow indicator are standard on stainless steel bonnets sizes 1/2" through 2". Bonnet sizes 2-1/2" through 4" have electropolished stainless steel bodies with stainless steel handwheels. All **TOP-FLO®** manual bonnet versions have sanitary internals as standard.

#09 Bonnet

Sizes 2-1/2" - 4"

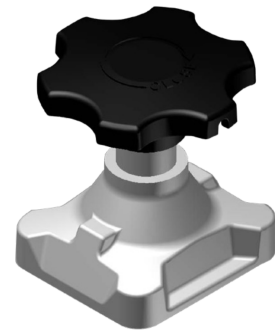
- 304 SS base with 304 SS hand wheel
- Dual FKM O-ring sealed
- Sanitary internals



#12 Bonnet

Sizes 1/2" - 2"

- Non-Adjustable Low Profile
- 304 SS Base with PPS Hand wheel
- Dual FKM O-ring Sealed
- Sanitary Internals



#10 Bonnet

Sizes 1/2" - 2"

- Adjustable close stop
- 304 SS base with 304 SS hand wheel
- Dual FKM O-ring sealed
- Sanitary internals



#15 Bonnet

Sizes 1/2" - 2"

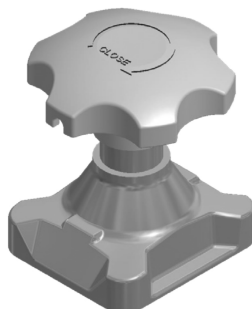
- Adjustable Open Stop
- 304 SS Base with PPS Hand wheel
- Brass Visual Indicator with position gradient



#60 Bonnet

Sizes 1/2" - 2"

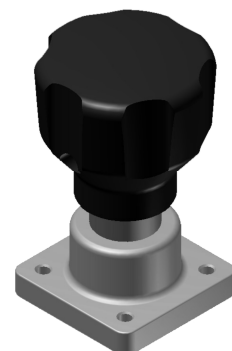
- Non-Adjustable low profile
- 304 SS base with 304 SS hand wheel
- Dual FKM O-ring sealed
- Sanitary internals



#18A Bonnet

Sizes 1/4" - 3/8" - 1/2"

- Adjustable Close Stop
- 304 SS Base with PPS Hand wheel
- Dual FKM O-ring Sealed
- Sanitary Internals



TOP-FLO® FDA & USP Weir Diaphragms

Steel & O'Brien understands that the most important factor of diaphragm valve reliability is the diaphragm itself. To achieve optimum diaphragm performance, only the highest-grade specially engineered materials are used in our diaphragm production.

All diaphragms are produced and controlled in the United States and Canada under a compliant and registered ISO 9001-2000 Quality Management System (QMS).

TOP-FLO® replacement diaphragms are interchangeable with key industry manufacturers when a threaded or bayonet type connection is required.

Each **TOP-FLO®** diaphragm valve can be supplied with a variety of elastomer or MPTFE faced materials. All diaphragms are compliant with FDA codes and USP Class VI standards and are fully traceable.



Diaphragms are molded in both the open and closed position dependent on type. All elastomer type diaphragms are attached to the compressor by a threaded stud. MPTFE diaphragms are attached by a bayonet type fixture that eliminates point loading, thus providing constant diaphragm compression across the weir resulting in a more uniform and reliable seal.

EPDM elastomer diaphragm features:

- Proprietary low extractable steam grade material
- Superior cycle life
- FDA compliant & USP Class VI certified by NAMSA

FKM elastomer diaphragm features:

- High chemical resistance with the life cycle benefits of an elastomer
- FDA compliant material

MPTFE faced high-pressure molded diaphragm features:

- Steam grade material
- Superior cycle life
- Better density
- Virtually non-permeable
- FDA compliant & USP Class VI certified by NAMSA

CROSS REFERENCE CHART		DIAPHRAGM GRADES			
DIAPHRAGM - MATERIAL OF CONSTRUCTION	CONNECTION TYPE	S&O	SAUNDERS	ITT	BURKERT
PEROXIDE CURED EPDM*	THREADED	2E	E2 (425)	17 E1	AB
FKM FLUOROELASTOMER*	THREADED	2V	226 (NON-FDA)	-	FF
MPTFE FACED/EPDM BACKED - STEAM GRADE	BAYONET	1KS	P2 (214/425) S5 (214S/425C)	-	EA EU
MPTFE FACED/FKM BACKED - STEAM GRADE	BAYONET	1PS	P3 (214/226) P3S (214S/226)	-	-

*SIZES 1" (DN25) & ABOVE FOR SAUNDERS HC4 & BURKERT TYPE ONLY
ALL DIAPHRAGM FACES AND BACKING MATERIALS ARE FDA CONFORMING
ALL DIAPHRAGMS ARE USP CLASS VI CERTIFIED - EXCLUDING GRADE 2V