

# 8600

SERIES

RESILIENT  
SEATED

PureFlex

**PUREFLEX**  
COMPOSITE GROUP



# 860 SERIES VALVE BODY

**Strong  
Light Weight  
Zero Corrosion**

The 860 series valve body is manufactured from Durcor-62™, PureFlex proprietary advanced fiber reinforced composite. Durcor-62™ has tensile and compressive strengths that rival steel along with outstanding impact resistance that is unmatched in the industry. Its reinforcing fibers are long and interlocked, this interlocked reinforcement system transfers loads throughout the fiber matrix, making the 860 series valve body virtually indestructible. The strength of Durcor-62™ enables the 860 series valve to maintain ANSI face to face dimensions, be direct threaded for lug design and allows it to be installed in any type of piping system without the need for special considerations. Durcor-62™ excels in temperatures from (-)60°F to 250°F and has only .001" of thermal expansion across its full temperature range.

- Tensile strength of 50,000psi per ASTM D-638 or 358 Mpa
- Notched Izod impact strength of 30 ft.. lb/inch per ASTM D-256 or 1760 J/M are achieved.

#### Tensile strength comparison

Steel 60,000psi

**Durcor-62™ 50,000psi**

FRP 12,000psi



Durcor-62™ vinyl ester resin backbone provides excellent protection when exposed to aggressive chemicals and hostile atmospheres such as acid sprays, bleach, salt water and high chlorides. The 860 series valve body out performs ductile iron valves not only in corrosive environments but non-corrosive as well. Its lightweight advantage reduces the need for heavier support structures for hanging, eliminates the need for extra equipment and personnel for valve installation and reduces pipe strain once installed. The 860 series "valve body" is so dependable and maintenance free that we offer the industries first 5 year warranty against failure. Contact PureFlex or your local distributor for details.

**5**  
LIMITED  
**YEAR**  
**WARRANTY**  
Visit [www.pureflex.com](http://www.pureflex.com) for details



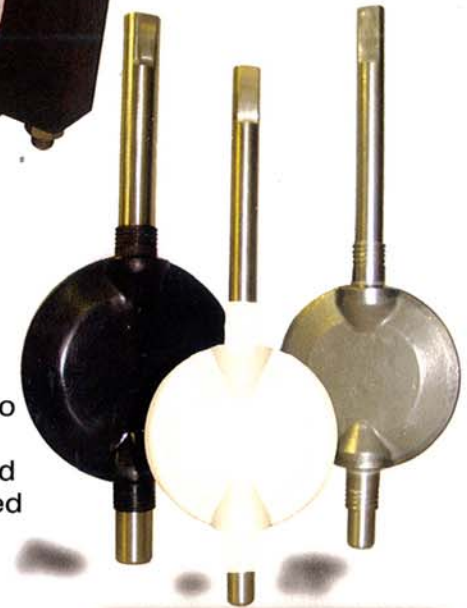
**The strongest, lightest, most chemically resistant  
valve body in the world**



# FEATURES



PureFlex 860 series valves take resilient seated butterfly valve technology to the next generation in reliability. The valve is bubble tight at full rated pressure of 150psi, has triple stem seals for unmatched leak free dependability and it can operate at temperatures between (-)60°F to 250°F (Consult factory for higher temperature applications). The 860 fiber reinforced vinyl ester valve body has a zero corrosion rate, the strength of steel with only 1/2 the weight, and is virtually indestructible. The 860 series is used for shut-off, throttling and transfer of many corrosive and erosive fluids and has the purity required for ultra-pure and food applications.



**Double "D" machined stem**

**ISO 5211 compliant actuator mounting flange**

**Atmospheric stem seal**

**PTFE composite bearing (top & bottom) is self lubricating, reduces turning torque and is maintenance free**

**304 s.s. tapered ring compresses resilient seat onto Locking barbs located on disc stem to provide tortuous no leak path, part of triple stem seal design**

**Disc & Stem are one piece cast design (no welding) with thin profile for higher Cv flow rates. Disc is metal alloy or Encapsulated with food grade EPDM or Hypalon**

**Seat is thick elastomer in either food grade EPDM meeting FDA regulation 21CFR177.2600 or Hypalon**

**Durcor-62™ body virtually indestructible, light weight & corrosion resistant**

## Disc Choices

- EPDM / Plated DCI
- Hypalon / Plated DCI
- 316 s.s.
- Titanium Gr. C-2
- UHMWPE/S.S.

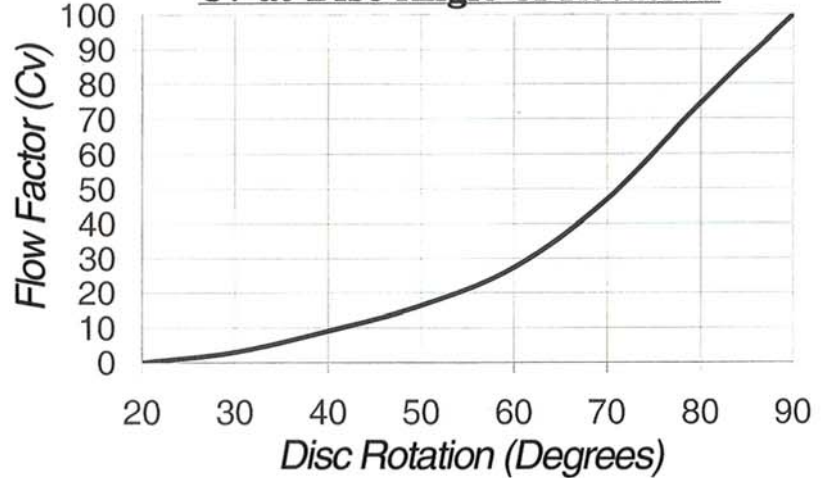


# TECHNICAL DATA

## Cv Data

Valve Size	Full Open Cv
2"	112
3"	334
4"	570
6"	1415
8"	3110
10"	5223
12"	7944
Refer To Flow Chart	

## Cv at Disc Angle of Rotation



## Sizing Torques

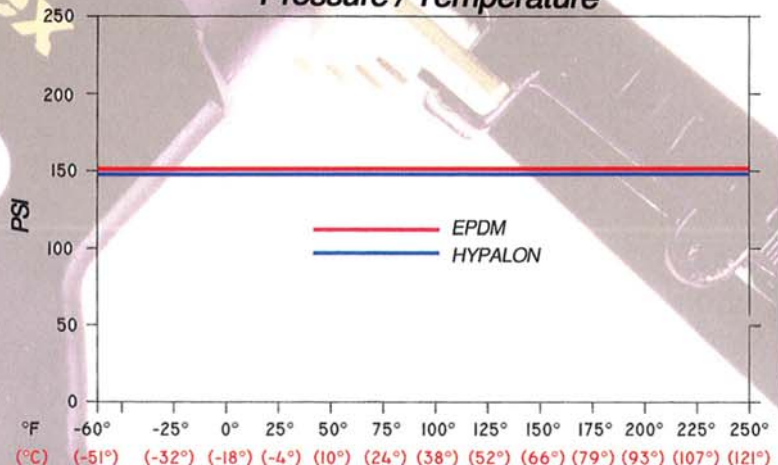
Valve Size	Max. Differential Pressure
2"	152 in. - lbs.
3"	218 in. - lbs.
4"	350 in. - lbs.
6"	794 in. - lbs.
8"	1210 in. - lbs.
10"	2360 in. - lbs.
12"	3617 in. - lbs.

Disc Position (degrees)	Percent of Total Cv
20	0
30	3
40	9.1
50	16.3
60	27.4
70	47
80	74.5
90	100
Refer to chart above	

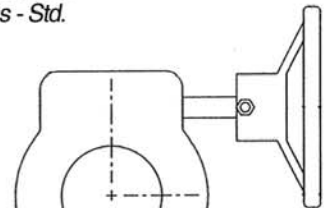
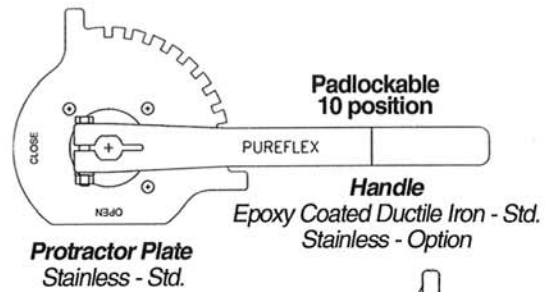
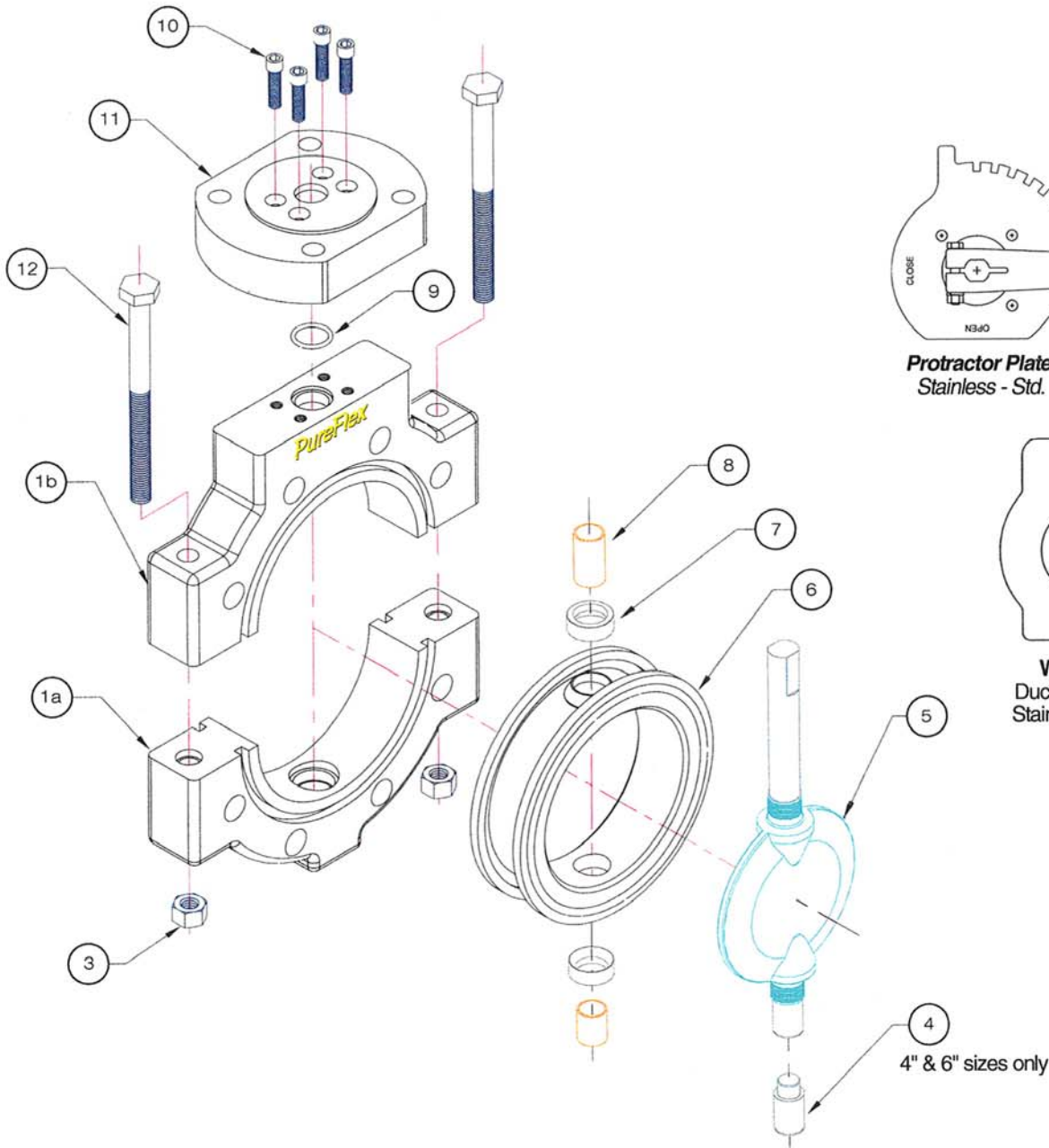
## 860 VALVE DATA

**SIZES:** 2" TO 12" FLANGED WAFER & LUG BODY  
**PRESSURE:** FULL VACUUM TO 150PSI  
**TEMPERATURE RATING:** (-)60°F TO 250°F  
**FLOW:** BI-DIRECTIONAL  
**COMFORMANCE:** CONFORMS TO ALL APPLICABLE STANDARDS API 609, DIN 3202 ISO 5752, BS EN593 AND FDA 21CFR177.2600  
**FLANGE ADAPTABILITY:** ANSI B16.5 CLASS 150 ANSI CLASS B16.1 CLASS 125. OTHER FLANGE DRILLINGS ARE AVAILABLE  
 (CONSULT FACTORY FOR HIGHER TEMPERATURE RATINGS)

## Pressure / Temperature



# PARTS LIST & MATERIALS



**Worm Gear**  
 Ductile Iron - Std.  
 Stainless - Option

4  
 4" & 6" sizes only

860 series valve parts list			
ITEM	DESCRIPTION	STANDARD MATERIAL	QTY.
1a & 1b	Body	Durcor-62™	1
2	omitted		
3	Nut	Gr. 2H ASTM A194-PTFE Coated	2
4	Stem Extension ( 4" & 6" Sizes Only )	CF8M Stainless Steel	1
5	Disc	EPDM \ Nickel Plated DCI	1
6	Seat	*Food Grade EPDM (ASTM D2000 #MICA714Z)	1
7	Taper Ring	304 Stainless Steel	2
8	Bearing	PTFE-Composite	2
9	Atmospheric Seal	Viton® ( FKM )	1
10	Socket Head Cap Screw	Gr. B7 ASTM A193 Zinc Plated	4
11	ISO Mounting Flange	Durcor-62™	1
12	Hex Head Cap Screw	Gr. B7 ASTM A193 Zinc Plated	2

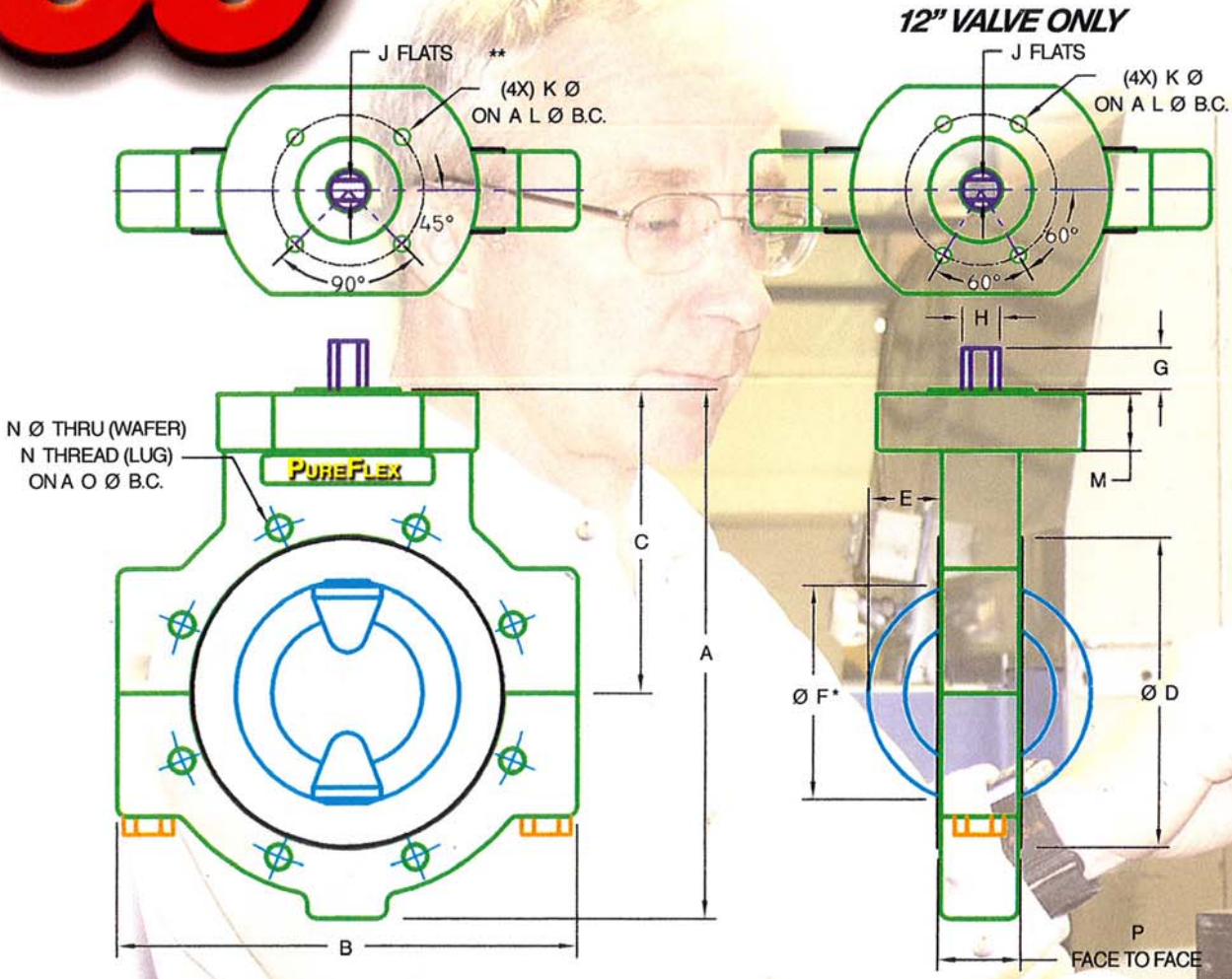
\* = Raw material compliant with requirements set forth in FDA reg. 21 CFR 177.2600  
 Viton® = Registered trademark of Dupont Dow Elastomers

Valve Options	
ITEM	OPTIONAL MATERIAL
10	Gr. B840 ASTM A193 Stainless Steel
	Hastelloy® C276 ASTM B574
6	Viton (FKM)
	Hypalon® (CSM)
	UHMWPE \ Stainless Steel
5	CF8M Stainless Steel
	CW6M (Hastelloy C276) ASTM A494
	Titanium Gr. C-2 ASTM B367
12	Gr. B840 ASTM A193 Stainless Steel
	Hastelloy C276 ASTM B574
4	CW6M (Hastelloy C276) ASTM A494
	Titanium Gr. C-2 ASTM B367

Hastelloy® = Registered trademark of Haynes International, Inc.  
 Hypalon® = Registered trademark of Dupont Dow Elastomers



# 860 SERIES



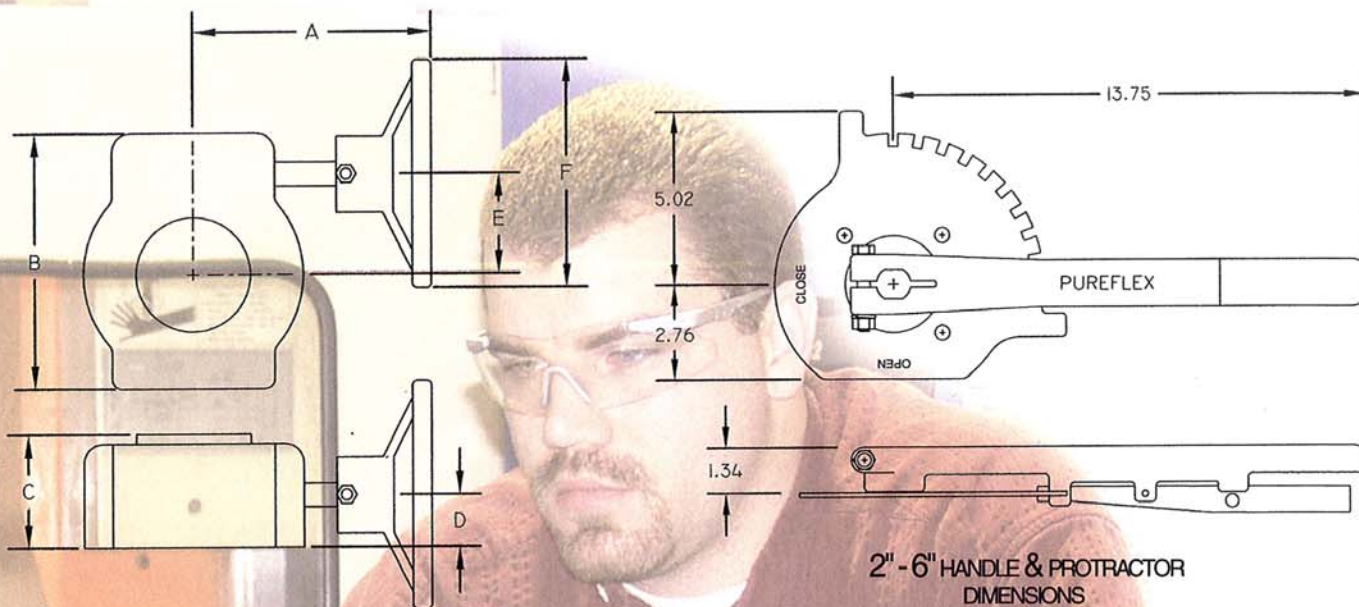
Series 860 Butterfly Valves

SIZE	A	B	C	D	E	F*	SHAFT			ISO FLANGE			WAFER	LUG	O	P	WEIGHT
							G	H	J	K	L	M	N	N			
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	lb. (kg)
2 (50.8)	8 <sup>25</sup> / <sub>32</sub> (223)	8 <sup>1</sup> / <sub>2</sub> (209.6)	5 <sup>17</sup> / <sub>32</sub> (140.5)	3 <sup>39</sup> / <sub>64</sub> (91.7)	1 <sup>15</sup> / <sub>32</sub> (11.9)	2 <sup>1</sup> / <sub>16</sub> (52.4)	1 <sup>5</sup> / <sub>16</sub> (33.3)	5/8 (15.9)	0.439 (11.2)	7/16 (11.1)	4.021 (102.1)	1 <sup>1</sup> / <sub>2</sub> (12.7)	3/4 (19.1)	11 (279.4)	4 <sup>3</sup> / <sub>4</sub> (120.7)	1 <sup>5</sup> / <sub>8</sub> (41.3)	6 (2.7)
3 (76.2)	10 <sup>1</sup> / <sub>16</sub> (255.6)	9 (228.6)	6 <sup>5</sup> / <sub>16</sub> (160.3)	5 (127)	1 <sup>11</sup> / <sub>16</sub> (17.5)	2 <sup>19</sup> / <sub>32</sub> (65.9)	1 <sup>5</sup> / <sub>16</sub> (33.3)	5/8 (15.9)	0.439 (11.2)	7/16 (11.1)	4.021 (102.1)	7/8 (22.2)	3/4 (19.1)	11 (279.4)	6 (152.4)	1 <sup>3</sup> / <sub>8</sub> (44.5)	9 (4.1)
4 (101.6)	11 <sup>5</sup> / <sub>16</sub> (287.3)	10 <sup>1</sup> / <sub>4</sub> (260.4)	6 <sup>13</sup> / <sub>16</sub> (173)	6 (152.4)	1 (25.4)	3 <sup>15</sup> / <sub>32</sub> (88.1)	1 <sup>5</sup> / <sub>16</sub> (33.3)	5/8 (15.9)	0.439 (11.2)	7/16 (11.1)	4.021 (102.1)	7/8 (22.2)	3/4 (19.1)	11 (279.4)	7 <sup>1</sup> / <sub>2</sub> (190.5)	2 (50.8)	14 (6.3)
6 (152.4)	14 <sup>3</sup> / <sub>32</sub> (358)	12 <sup>7</sup> / <sub>32</sub> (310.4)	8 <sup>1</sup> / <sub>16</sub> (204.8)	8 <sup>1</sup> / <sub>4</sub> (209.6)	1 <sup>7</sup> / <sub>8</sub> (47.6)	5 <sup>1</sup> / <sub>2</sub> (139.7)	1 <sup>5</sup> / <sub>16</sub> (33.3)	1 (25.4)	0.836 (21.2)	7/16 (11.1)	4.021 (102.1)	1 <sup>1</sup> / <sub>2</sub> (38.1)	7/8 (22.2)	10 (254)	9 1/2 (241.3)	2 <sup>1</sup> / <sub>8</sub> (54.0)	25 (11.3)
8 (203.2)	17 <sup>3</sup> / <sub>16</sub> (436.6)	15 <sup>3</sup> / <sub>8</sub> (390.5)	8 <sup>7</sup> / <sub>16</sub> (214.3)	10 <sup>1</sup> / <sub>4</sub> (260.4)	2 <sup>11</sup> / <sub>16</sub> (68.3)	7 <sup>3</sup> / <sub>8</sub> (187.3)	1 <sup>5</sup> / <sub>16</sub> (33.3)	1 (25.4)	0.836 (21.2)	7/16 (11.1)	4.021 (102.1)	1 <sup>1</sup> / <sub>2</sub> (38.1)	7/8 (22.2)	10 (254)	11 <sup>3</sup> / <sub>4</sub> (298.5)	2 <sup>1</sup> / <sub>2</sub> (63.5)	34 (15.3)
10 (254)	21 <sup>3</sup> / <sub>32</sub> (535.8)	18 <sup>13</sup> / <sub>16</sub> (477.8)	12 <sup>5</sup> / <sub>16</sub> (312.7)	12 <sup>1</sup> / <sub>4</sub> (311.2)	3 <sup>5</sup> / <sub>8</sub> (92.1)	9 <sup>7</sup> / <sub>16</sub> (242.9)	1 <sup>3</sup> / <sub>4</sub> (44.5)	1 <sup>3</sup> / <sub>8</sub> (34.9)	1.000 (25.4)	9/16 (14.3)	4.921 (125)	1 <sup>1</sup> / <sub>2</sub> (38.1)	1 (25.4)	9 (228.6)	14 <sup>1</sup> / <sub>4</sub> (362)	2 <sup>1</sup> / <sub>2</sub> (63.5)	52 (23.4)
12 (304.8)	23 <sup>3</sup> / <sub>4</sub> (603.3)	21 (533.4)	13 <sup>5</sup> / <sub>16</sub> (338.1)	14 <sup>3</sup> / <sub>8</sub> (365.1)	4 <sup>7</sup> / <sub>16</sub> (112.7)	11 <sup>9</sup> / <sub>16</sub> (293.7)	2 <sup>1</sup> / <sub>8</sub> (54)	1 <sup>3</sup> / <sub>8</sub> (34.9)	1.000 (25.4)	9/16 (14.3)	4.921 (125)	1 <sup>1</sup> / <sub>2</sub> (38.1)	1 (25.4)	9 (228.6)	17 (431.8)	3 (76.2)	65 (29.3)

Notes: \* Lined piping which exceeds the liner thickness specification of ASTM 1545 may require ring spacers to avoid disc swing  
 \*\* 12" valve size only, the operator mounting holes are offset 15° on ISO 5211 F12 bolt circle

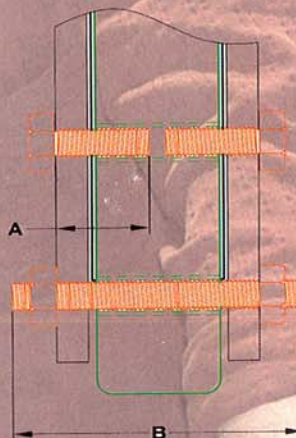


# DIMENSIONS & WEIGHTS



2" - 6" HANDLE & PROTRACTOR DIMENSIONS

## FASTENER INFORMATION



ANSI B16.5  
CLASS 150#  
FLANGE THICKNESS

Wafer and Lug Valves with Gear						
SIZE in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)
2 - 4 (76.2) (152.4)	6 <sup>1</sup> / <sub>4</sub> (158.7)	5 (127)	2 <sup>37</sup> / <sub>64</sub> (65.5)	1 <sup>7</sup> / <sub>64</sub> (28.2)	2 <sup>1</sup> / <sub>16</sub> (52.3)	6 (152.4)
6 - 8 (152.4) (203.2)	6 <sup>3</sup> / <sub>4</sub> (171.4)	5 (127)	2 <sup>37</sup> / <sub>64</sub> (65.5)	1 <sup>7</sup> / <sub>64</sub> (28.2)	2 <sup>1</sup> / <sub>16</sub> (52.3)	8 (203.2)
10 - 12 (254) (304.8)	7 <sup>1</sup> / <sub>4</sub> (184.1)	6 <sup>23</sup> / <sub>32</sub> (170.7)	2 <sup>63</sup> / <sub>64</sub> (75.7)	1 <sup>3</sup> / <sub>8</sub> (34.8)	2 <sup>1</sup> / <sub>2</sub> (63.5)	12 (304.8)

Fasteners for Installation of Lug Bodies							
Valve Size	2	3	4	6	8	10	12
Number of Fasteners	8	8	16	16	16	24	24
Thread Call-out	5/8 - 11 UNC			3/4 - 10 UNC		7/8 - 9 UNC	
"A" Length of Fastener	1-1/2	1-3/4	1-3/4	2	2-1/4	2-1/2	2-1/2

Fasteners for Installation of Wafer Bodies							
Valve Size	2	3	4	6	8	10	12
Number of Fasteners	4	4	8	8	8	12	12
Thread Call-out	5/8 - 11 UNC			3/4 - 10 UNC		7/8 - 9 UNC	
"B" Length of Fastener	5	5-1/2	5-3/4	6-1/2	6-3/4	7-3/4	8-1/4



# HOW TO ORDER & SPECIFY

## EXAMPLE:

6" WAFER STYLE VALVE WITH EPDM SEAT, 316 S.S. DISC,  
B7 ZINC PLATED FASTENERS, 10 POSITION D.I. WRENCH  
PART NUMBER: **86006WO12P02**



STEP 1    STEP 2    STEP 3    STEP 4    STEP 5    STEP 6    STEP 7  
**860** - **06** - **WO** - **1** - **2** - **P** - **02**

**STEP 1**  
**860** = BUTTERFLY VALVE

**STEP 2**  
DETERMINE VALVE SIZE

- 02 = 2" (50MM)
- 03 = 3" (80MM)
- 04 = 4" (100MM)
- 06** = 6" (150MM)
- 08 = 8" (200MM)
- 10 = 10" (250MM)
- 12 = 12" (300MM)

**STEP 3**  
DETERMINE VALVE BODY STYLE

- WO** = FLANGED WAFER (STD.)
- LC = LUG COMPOSITE THREADS

**STEP 4**  
DETERMINE SEAT MATERIAL

- 1** = EPDM FOOD GRADE
- 2** = HYPALON

**STEP 5**  
DETERMINE DISC MATERIAL

- 1** = EPDM COVERED NICKEL PLATED D.I.
- 2** = 316 STAINLESS
- 3** = UHMWPE COVERED S.S.
- 4** = TITANIUM GRADE C-2
- 5** = HYPALON COVERED
- 6** = SPECIAL

**STEP 6**  
DETERMINE BODY BOLT MATERIAL

- P** = GRADE B7 ZINC PLATED (STD)
- S** = GRADE B8M STAINLESS
- T** = GRADE B7 PTFE COATED
- Z** = SPECIAL

**STEP 7**  
DETERMINE VALVE OPERATOR

- 01** = BARE STEM (STD.)
- 02** = 10 POSITION DI WRENCH
- S2** = 10 POSITION S.S. WRENCH
- 03** = WORM GEAR CAST IRON
- S3** = WORM GEAR STAINLESS
- 04** = PADLOCKING GEAR CAST IRON
- S4** = PADLOCKING GEAR STAINLESS
- 05** = AIR ACTUATED
- 06** = ELECTRIC ACTUATED
- ZZ** = SPECIAL

## 1. Scope

- 1.1 The following product specification applies to resilient seated butterfly valves for food, pharmaceutical, semiconductor, chemical and/or abrasive services. Valve shall be rated for 150 psi continuous operation and have temperature rating of (-)60°F to +250°F. Valves must be bubble tight and provide (5) year valve body warranty.
- 1.2 It is recommended that you check the chemical compatibility with your material selection

## 2. Valve Body

- 2.1 Valve body shall be manufactured from vinyl ester and Fiberglass composite. The valve body shall be full-face flange wafer or lug style for end of the line service. Valve body shall be capable of direct threading for lug style and threads shall have nominal pullout strength of 250ft lbs.
- 2.2 Valve body composite shall have a nominal tensile strength of 50,000psi as per ASTM D-256
- 2.3 Valve body composite shall have a nominal notched izod impact strength of 30ft lb. per inch or 1760 J/M
- 2.4 Valve shall be equipped with operator mounting flange that is compliant to ISO 5211 and flange fasteners shall not be pressure retaining

## 3. Valve seat and energizer

- 3.1 Valve seat shall be molded food grade EPDM or Hypalon elastomer depending on service conditions, and shall be capable of full vacuum service.
- 3.2 Valve sealing face of the seat shall be recessed into valve body to eliminate liner cold flow (creep).
- 3.3 Valve seat shall be mechanically retained to valve body to control movement and retention during installation.

## 4. Valve disc and stem

- 4.1 Disc and stem shall be one-piece blowout resistant investment casting and stem shall be double "D" machined where operator is attached. Two piece stem and disc and exposed fasteners on disc shall not be allowed. Welded stem to disc shall not be allowed.

- 4.2 Disc shall be lined or unlined. Lined disc shall have an electroless-nickel plated ductile iron core encapsulated with food grade EPDM meeting FDA food contact regulation 21CFR177.2600 or commercial Hypalon and have a nominal liner thickness of .125". Unlined disc shall be 316/316L stainless steel, Hastelloy C276, or commercially pure Titanium. Disc material shall be determined by service conditions.
- 4.3 Stem shall have machined locking barbs at both ends of disc to provide torturous no leak path with valve seat.
- 4.4 Valve stem shall have top and bottom PTFE composite stem bearings
5. Valve triple stem seals
  - 5.1 Valve shall have matching radii molded seat and disc (ball and socket)
  - 5.2 Valve shall have tight compression around stem maintained by resilient energizer against valve seat.
  - 5.3 Valve shall have stainless steel tapered rings on top and bottom of disc that compress elastomeric valve seat onto locking barbs on the stem to provide a minimum of (3) sealing grooves.
  - 5.4 Valve shall have Viton atmospheric seal
6. Valve fasteners
  - 6.1 Valve body fasteners shall be hex head cap screws and nuts.
  - 6.2 Fasteners shall be zinc dichromate plated B7 Per ASTM A193 standard material. B840 stainless steel optional.
7. Valve testing
  - 7.1 Valve seat shall meet testing criteria of MSS-SP67. Valve shall be seat seal tested with 150 psi nitrogen and stem seals tested to 165 psi nitrogen with no allowable leakage. All valves shall be tagged per MSS-SP25 for identification and shall have a unique serial number.
8. Valve manufacturer
  - 8.1 Valve shall be manufactured by PureFlex, Inc., 4617 East Paris Ave., Kentwood, Michigan 49512. Phone 616.554-1100, fax 616.554-3633, www.pureflex.com

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