

400 series



PureFlex[™]
INC.

PUREFLEX

PureFlex is a world leading manufacturer of high performance Fluoropolymer and Composite products and technologies. We specialize in the manufacturing of fluid handling and sealing products specifically designed for Chemical, Pharmaceutical and ultra-pure related industries.

Since 1994, we have earned a reputation for creating flow solutions that are truly different. We create innovations -- Products that serve demanding applications better than before. PureFlex excels in its service, aggressive in its technology, bold in its vision, and responsible in its regard for safe and dependable products.



Composite Ball Valve

PureFlex 400 series composite ball valve is a superior quality, ANSI Class 150 valve engineered with features not yet available in any other composite ball valve. Manufactured from advanced premium Derakane® 470 grade vinyl ester or Z-Core® epoxy resin reinforced with fiberglass or carbon graphite. The valve is able to withstand severe corrosive media as well as hostile environments up to 275°F. The 400 series ball valve exceeds Class VI shut-off and its stem seal will meet your routine or most demanding service requirements. The massive one piece body meets ANSI B16.10 dimensions and its ISO 5211 universal mounting pad and flange mounting makes automation simple even with the valve in service. The 400 series valves are 1/2 the weight of alloy valves, offer maximum corrosion resistance, the elimination of product contamination and provide the ultimate in flexibility and value.

Industries Served

Chemical Processing
Chlor-Alkali
Steel Processing
Water And Waste Water
Offshore Platforms
Pulp and Paper
Mining
Power Generation
Military And Marine
Agricultural
Pollution Control

MATERIAL OPTIONS



400 series

The 400 series valve is manufactured from advanced premium Derakane® 470 vinyl ester resin reinforced with glass fibers. It is highly corrosion resistant and is suitable for many chemicals from (-)50°F to 215°F up to 275 psi. Size range 1" - 6".

Typical services

Hydrochloric Acid
Calcium Chloride
Ferric Chloride
Isopropyl Alcohol
Phosphoric Acid
Potassium Chloride
70% Sulfuric Acid

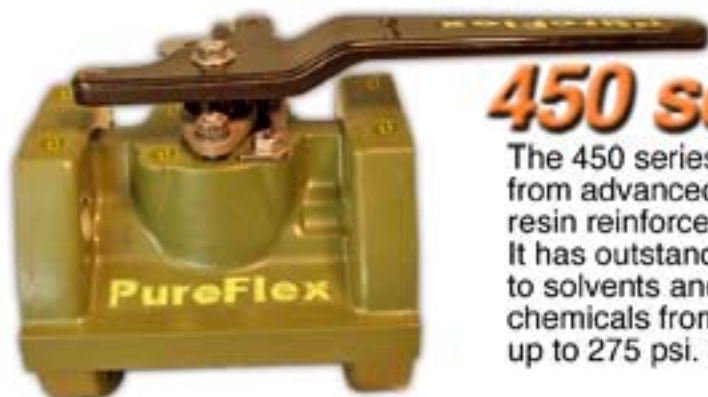


405 series

The 405 series valve is manufactured from advanced premium Derakane® 470 vinyl ester resin reinforced with carbon graphite fibers. It is highly corrosion resistant and is suitable for many chemicals from (-)50°F to 250°F up to 275 psi. Size range 1" - 6". Valve is Conductive <math><10^3</math> ohms-cm resistivity.

Typical services

10% Hydrofluoric Acid
Acetic Acid-Glacial
Ammonium Acetate
Chlorobenzene
Sodium Bisulfite
25-50% Sodium Hydroxide



450 series

The 450 series valve is manufactured from advanced Z-CORE® epoxy resin reinforced with glass fibers. It has outstanding corrosion resistance to solvents and is suitable for many chemicals from (-)50°F to 250°F up to 275 psi. Size range 1" - 6".

Typical services

98% Sulfuric Acid
Methylene Chloride
Acetone
Chloroform
Sodium Hydroxide
Ethyl Acetate
Fluorobenzene
Acetic Anhydride



455 series

The 455 series valve is manufactured from advanced Z-CORE® epoxy resin reinforced with carbon graphite fibers. It has outstanding corrosion resistance to solvents and is suitable for many chemicals from (-)50°F to 275°F up to 275 psi. Size range 1" - 6". Valve is Conductive <math><10^3</math> ohms-cm resistivity.

Typical services

Same as 450 series
with higher
temperature ratings

(VALVE SIZE AND SERVICE MAY LOWER TEMPERATURE & PRESSURE RATINGS)

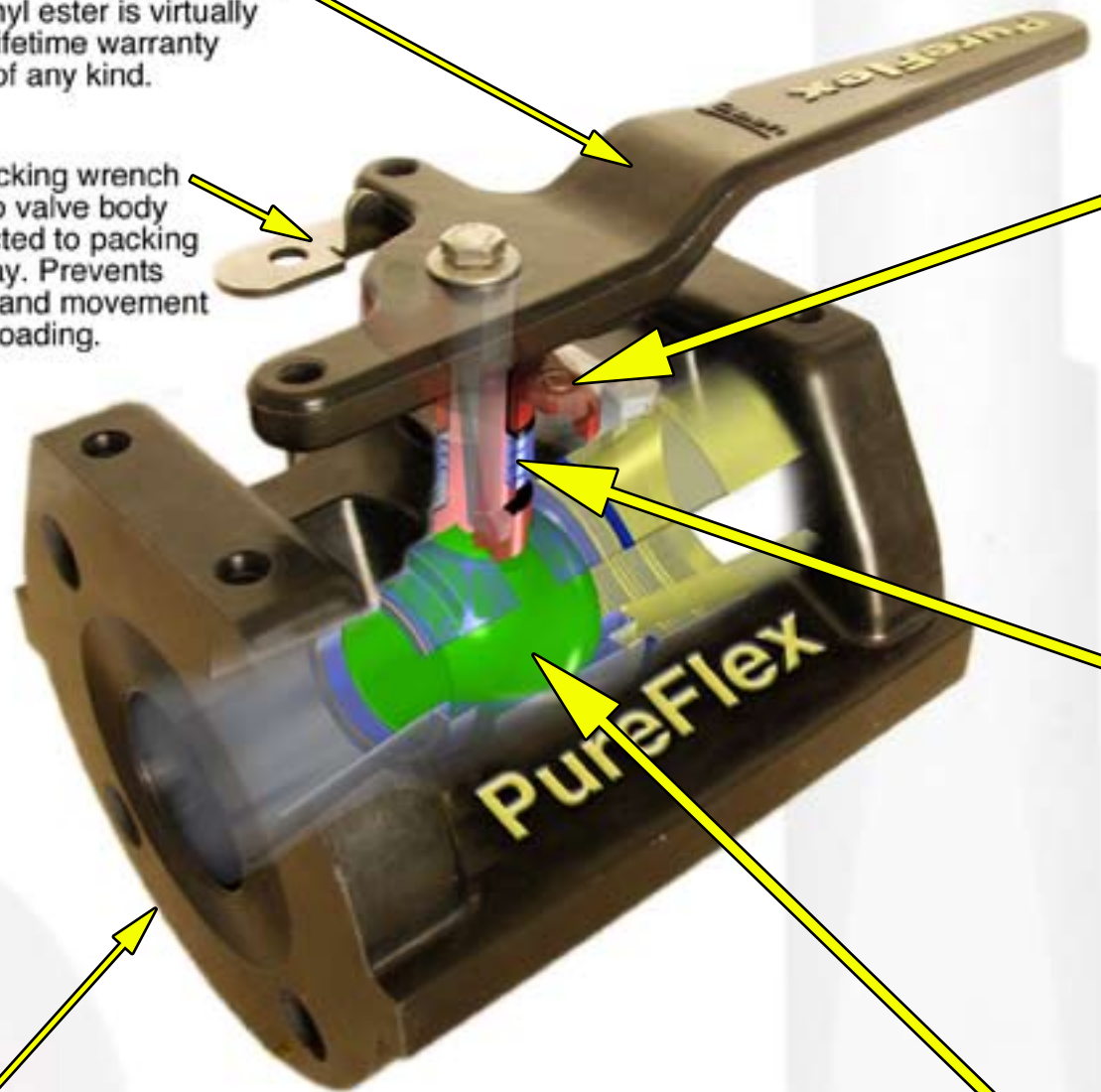
400 SERIES

Wrench

Locking wrench manufactured from Durcor-62™ vinyl ester is virtually unbreakable. Lifetime warranty against failure of any kind.

Wrench Stop

Independent locking wrench stop is bolted to valve body and not connected to packing gland in any way. Prevents unnecessary gland movement and stem side loading.



Valve Body

One piece massive valve body is light weight, rugged and is as corrosion resistant on the outside as it is on the inside to resist environmental attack. Valve body end cap is sealed with a PTFE diametrical seal locked in compression to eliminate cold flow. The valve body meets ANSI B16.10 and flange connections are compliant to ASME B16.5 Class 150. ISO 5211 and flange actuator mounting pads are standard.

FEATURES



Packing Gland adjustment

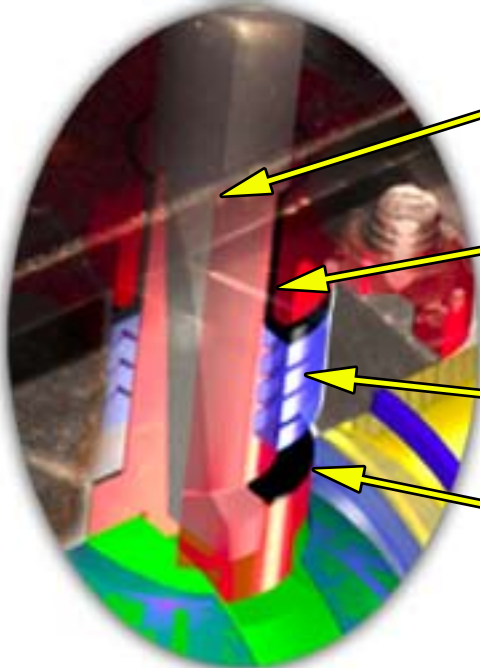
Stud and nut design, standard material is Hastelloy® C276. Designed to minimize valve body stress when adjustment is required.

Live loaded

Packing gland is live loaded, eliminating unnecessary adjustments and aids in reducing stem emissions.

Packing Gland

Packing gland standard material is Hastelloy® C276 and is guaranteed not to corrode in hostile environments.



Valve Stem - Blow-Out Proof

Stem insert is Hastelloy C276 encapsulated with either carbon graphite reinforced vinyl ester or Z-CORE® epoxy resin.

Stem Bearing

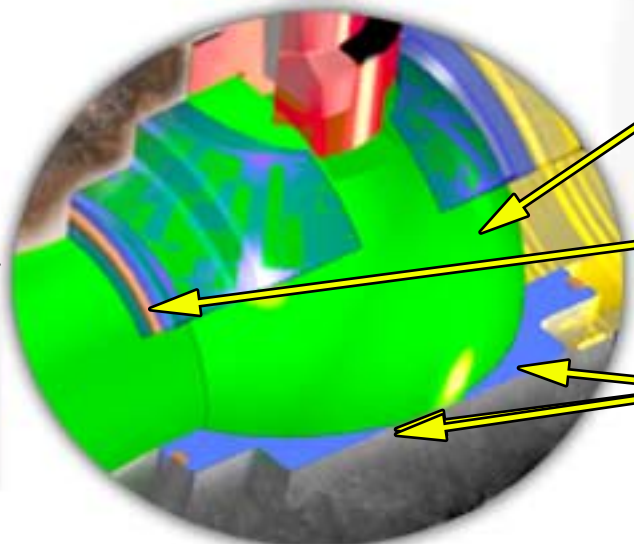
Graphite / PTFE radial bearing prevents stem side loading aiding in eliminating emissions and extending packing life.

Stem Sealing

Chevron PTFE packing provides positive stem sealing while maintaining low turning torque.

Thrust Bearing

Graphite / PTFE stem thrust bearing maintains low turning torque.



Valve Ball

Ball material is carbon graphite reinforced vinyl ester or Z-CORE® epoxy. Ball O.D. is micro polished to provide longer seat life.

Seat Energizer

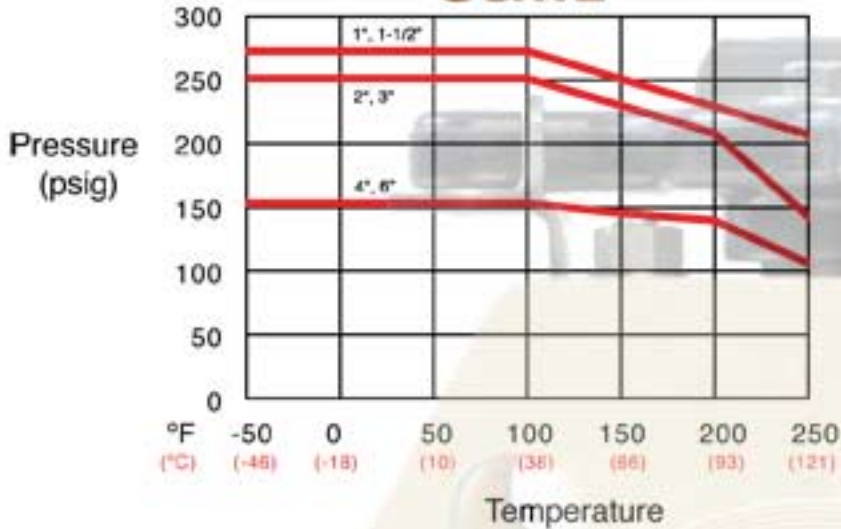
FEP encapsulated silicone (FEP / Viton optional) O-rings energize seats to ball and aid in bubble tight shut-off.

Seats

PTFE cavity filled seats minimize cavity around ball which could retain process media. Other seat materials available.

TECHNICAL DATA

PRESSURE / TEMPERATURE CURVE



Cv DATA

VALVE SIZE	FULL OPEN Cv
1"	45
1 1/2"	120
2"	165
3"	350
4"	550
6"	1245

400 VALVE DATA

SIZE RANGE: 1" TO 6"

PRESSURE RANGE: FULL VACUUM TO 275psi

TEMPERATURE RATINGS: (-)50°F TO 275°F
(PROCESS FLUID MAY EFFECT TEMPERATURE LIMIT, PLEASE CONSULT PUREFLEX CHEMICAL GUIDE)

FLOW: BI-DIRECTIONAL

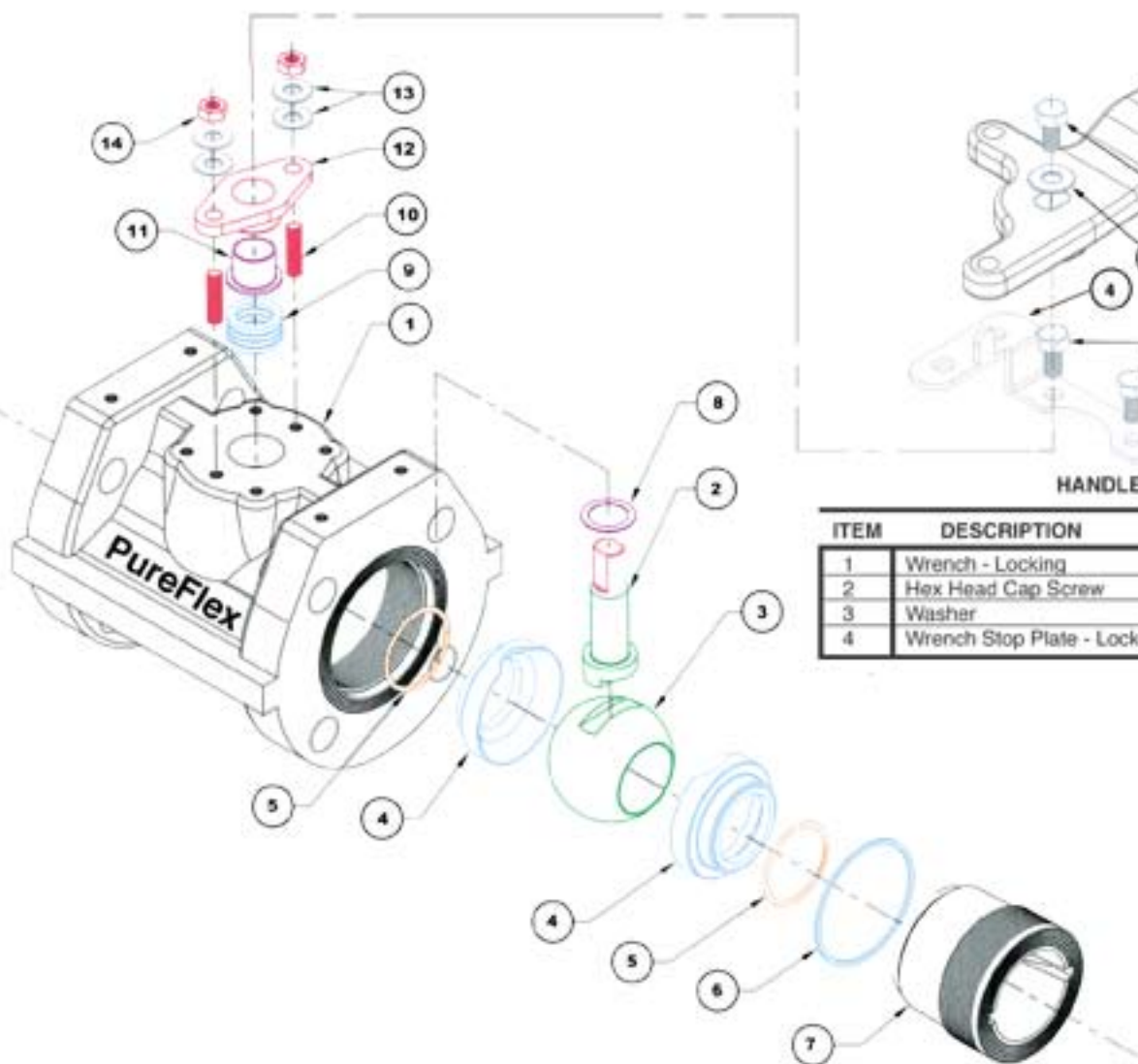
CONFORMANCE: CONFORMS TO ALL APPLICABLE STANDARDS OF ANSI / ASME B16.10, API-598, MSS-SP72 AND ISO-5211

FLANGE ADAPTABILITY: ANSI B16.5 CLASS 150 (STD) DIN, JIS AND BS AVAILABILITY

ACTUATOR SIZING

VALVE SIZE	TORQUE @ MAX. DIFF. PSI
1"	140 in.- lbs
1 1/2"	195 in.- lbs
2"	230 in.- lbs
3"	615 in.- lbs
4"	1155 in.- lbs
6"	2150 in.- lbs

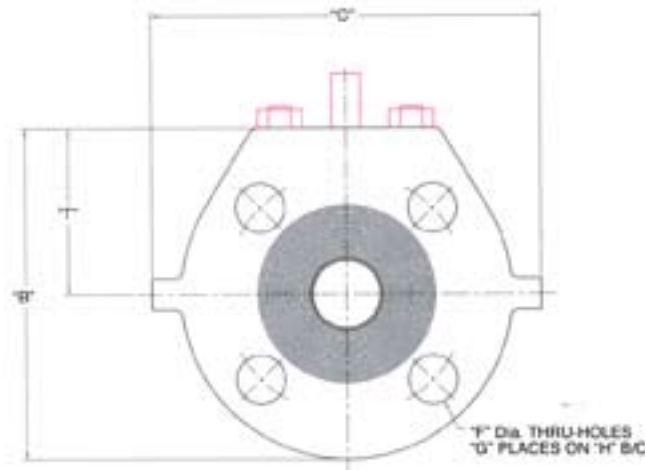
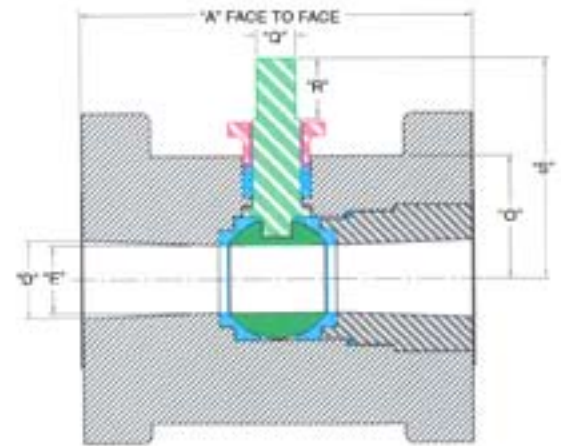
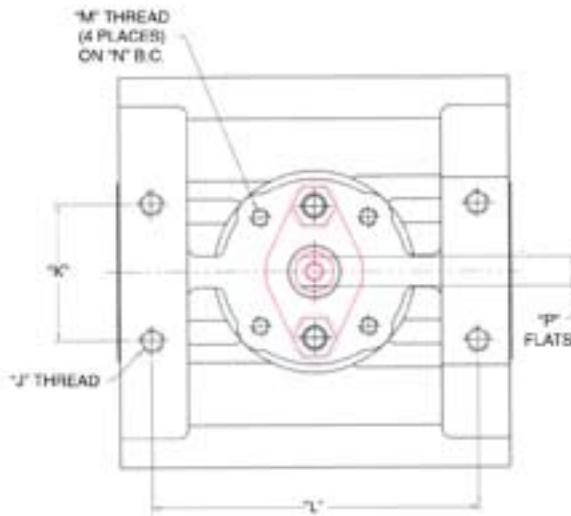
PARTS LIST & MATERIALS



ITEM	DESCRIPTION	STANDARD MATERIAL
1	Wrench - Locking	Durocor-62™
2	Hex Head Cap Screw	316 Stainless Steel
3	Washer	17-7 ph Stainless Steel
4	Wrench Stop Plate - Locking	304 Stainless Steel

ITEM	DESCRIPTION	STANDARD MATERIAL	QTY									
1	Body 400	Derakane® 470 Vinyl Ester / Fiberglass	1	<table border="1"> <thead> <tr> <th colspan="2">OPTIONAL MATERIALS</th> </tr> </thead> <tbody> <tr> <td></td> <td>TFM</td> </tr> <tr> <td></td> <td>FEP Encapsulated Viton</td> </tr> <tr> <td></td> <td>Inconel</td> </tr> </tbody> </table>	OPTIONAL MATERIALS			TFM		FEP Encapsulated Viton		Inconel
	OPTIONAL MATERIALS											
		TFM										
		FEP Encapsulated Viton										
	Inconel											
	405	Derakane® 470 Vinyl Ester / Carbon										
	450	Epoxy Z-CORE® / Fiberglass										
	455	Epoxy Z-CORE® / Carbon										
2	Stem 400 & 405	Derakane® 470 Vinyl Ester / Carbon / Hastelloy C276 Insert	1									
	450 & 455	Epoxy Z-CORE® / Carbon / Hastelloy C276 insert										
3	Ball 400 & 405	Derakane® 470 Vinyl Ester / Carbon	1									
	450 & 455	Epoxy Z-CORE® / Carbon										
4	Seat - Cavity Filled	PTFE	2									
5	Seat Energizer Ring	FEP Encapsulated Silicone	2									
6	End Cap Diametrical seal	PTFE	1									
7	End Cap 400	Derakane® 470 Vinyl Ester / Fiberglass	1									
	405	Derakane® 470 Vinyl Ester / Carbon										
	450	Epoxy Z-CORE® / Fiberglass										
	455	Epoxy Z-CORE® / Carbon										
8	Thrust Bearing	PTFE / Graphite	1									
9	Chevron Packing	PTFE	1									
10	Stud - Packing Gland	Hastelloy C-276 (UNS N10276)	2									
11	Radial Bearing	PTFE / Graphite	1									
12	Packing Gland	Hastelloy C-276 (UNS N10276)	1									
13	Belleville Washer	17-7 ph Stainless Steel	4									
14	Gland Nut	Hastelloy C-276 (UNS N10276)	2									

400 SERIES DIMENSIONS & WEIGHTS



SIZE	ACTUATION																			WEIGHTS Lb. (kg)	
	ANSI B16.5 FLANGES			FLANGE MOUNTING PAD			ISO MOUNTING PAD			STEM											
IN (MM)	A (MM)	B (MM)	C (MM)	D (MM)	E (MM)	F (MM)	G PER FLANGE	H (MM)	J THREAD TAP	K (MM)	L (MM)	M ISO THREAD	N (MM)	O (MM)	P (MM)	Q (MM)	R (MM)	S (MM)	T (MM)		
1" (25.4)	5.00 (128)	4.25 (107.9)	5.00 (127)	1.00 (25.4)	0.88 (22.2)	.625 (15.8)	4	3.125 (79.3)	5/16-18	1.750 (44.4)	4.180 (106.1)	FC5 M8	1.969 (50)	1.685 (42.8)	.375 (9.4)	.500 (12.7)	.775 (19.7)	2.82 (71.6)	2.12 (54.0)		3.50 (1.59)
1 1/2" (38.1)	6.50 (166.1)	5.00 (127)	5.75 (146)	1.50 (38.1)	1.25 (31.75)	.625 (15.8)	4	3.890 (98.5)	5/16-18	1.750 (44.4)	5.620 (142.7)	FC5 M8	1.969 (50)	2.250 (57.2)	.375 (9.4)	.500 (12.7)	.775 (19.7)	3.49 (88.6)	2.50 (63.5)		6.50 (2.95)
2" (50.8)	7.00 (178.8)	6.00 (152.4)	6.75 (171.4)	2.00 (50.8)	1.50 (38.1)	.750 (19)	4	4.750 (120.6)	5/16-18	2.250 (57.1)	6.180 (157.0)	FC7 M8	2.756 (70)	2.600 (66.0)	.470 (11.8)	.625 (15.8)	.900 (22.9)	4.12 (104.6)	3.00 (76.2)		10.25 (4.66)
3" (76.2)	8.00 (204.2)	7.50 (190.5)	8.25 (209.5)	3.00 (76.2)	2.25 (57.15)	.750 (19)	4	6.000 (152.4)	3/8-16	3.500 (89.3)	7.120 (180.8)	FC7 M8	2.756 (70)	3.290 (83.8)	.470 (11.8)	.625 (15.8)	.900 (22.9)	4.73 (120.1)	3.75 (95.3)		17.75 (8.08)
4" (101.6)	9.00 (229.6)	9.00 (229.6)	9.75 (247.8)	4.00 (101.6)	3.00 (76.2)	.750 (19)	8	7.500 (190.5)	7/16-14	4.000 (101.6)	8.000 (203.2)	F10 M10	4.016 (102)	4.500 (114.3)	.750 (19)	1.000 (25.4)	1.350 (34.3)	6.53 (165.8)	4.500 (114.3)		29.75 (13.52)
6" (152.4)	10.50 (267.7)	11.00 (279.4)	11.75 (298.4)	5.00 (127)	4.50 (114.3)	.875 (22.2)	8	9.500 (241.3)	7/16-14	5.250 (133.3)	9.000 (228.6)	F10 M10	4.016 (102)	5.500 (139.7)	.750 (19)	1.000 (25.4)	1.350 (34.3)	7.82 (198.6)	5.500 (139.7)		42.50 (19.32)

How To ORDER & SPECIFY

Example:

2" ANSI BALL VALVE WITH GLASS FILLED 470 RESIN,
CAVITY FILLED PTFE SEATS COMPLETE WITH LOCKING
HAND LEVER AND NO SPECIAL ADDERS.

PART NUMBER: **400 - 02 - A - 02 - O**



STEP 1 STEP 2 STEP 3 STEP 4 STEP 5

400 - 02 - A - 02 - O

STEP 1

DETERMINE VALVE
SERIES

400 = 470 / GLASS
405 = 470 / CARBON GRAPHITE
450 = EPOXY / GLASS
455 = EPOXY / CARBON GRAPHITE

STEP 2

DETERMINE VALVE
SIZE

01 = 1"
15 = 1 1/2"
02 = 2"
03 = 3"
04 = 4"
06 = 6"

STEP 3

DETERMINE VALVE
SEAT DESIGN

A = (STD) CAVITY FILLED
VIRGIN PTFE
B = CAVITY FILLED TFM
C = NON-CAVITY FILLED
VIRGIN PTFE
D = NON-CAVITY FILLED TFM
E = GLASS REINFORCED PTFE

STEP 4

DETERMINE VALVE
OPERATOR

01 = (STD) BARE STEM
02 = HAND LEVER - LOCKING
03 = AIR ACTUATED
04 = ELECTRIC ACTUATED
05 = SPECIAL

STEP 5

SPECIAL ADDERS

O = (STD) NONE
A = SPECIAL FLANGE
DRILLING
B = STEM EXTENSION
C = CHLORINE PREP
D = SPECIAL

1. Scope

- 1.1 The following product specification applies to 1" through 6" flanged composite ball valves for chemical and waste water service. Valves shall be rated for up to 275 psi continuous (size dependent) service and have a temperature range of (-)50°F to 275°F. Valves must be bubble tight in the closed position.
- 1.2 It is recommended that you check chemical compatibility with your material selections.

2. Valve Body

- 2.1 Valve body shall be one piece design manufactured from premium Derakane® vinyl ester or Z-CORE epoxy resin reinforced with either fiberglass or carbon graphite fibers. Valve body shall have support gussets integrally molded in four equal quadrants for added strength. Two or three piece bodies shall not be allowed.
- 2.2 Valve body shall meet ANSI B16.10 face to face dimensions and flange connection shall be compliant to ASME B16.5 Class 150. DIN, JIS and BS drilling shall be available.
- 2.3 Valve body end cap shall be same material as valve body and shall have a solid PTFE diametrical seal for zero leakage.

3. Valve operator

- 3.1 Hand lever operated valves shall have a locking wrench manufactured from Durcor-62™ fiberglass reinforced vinyl ester and shall have a lifetime warranty against failure of any kind. Wrench shall have an independent locking stop plate mounted to valve. Under no circumstances is the handle stop plate to be connected to the valve packing gland. Metal or Nylon wrench's shall not be allowed.
- 3.2 Actuated valves shall have both integral molded ISO 5211 Universal mounting pad and flange mount as standard.

4. Valve Stem

- 4.1 Valve stem shall be blow-out proof design manufactured from Hastelloy® C276 and encapsulated with carbon graphite reinforced vinyl ester or epoxy. Valve stem shall include a graphite / PTFE thrust bearing.

5. Valve Stem Sealing

- 5.1 Valve stem seal shall be PTFE chevron style and held in compression via a Hastelloy® C276 packing gland which is live loaded with (4) Belleville washers. Packing gland shall be adjusted via a Hastelloy® C276 nut and stud assembly. Bolts used as gland adjusters shall not be allowed.
- 5.2 Valve stem shall have a graphite / PTFE radial bearing to located in packing gland to prevent side loading on packing.

6. Valve Ball And Ball Seats

- 6.1 Valve ball shall be independent from stem and be manufactured with carbon graphite fiber reinforced vinyl ester or Z-CORE® epoxy.
- 6.2 Valve ball seats shall be cavity filled design manufactured from PTFE (TFM or glass filled PTFE available) and be energized with FEP encapsulated silicone O-rings. (FEP / Viton available)

7. Valve Manufacturer

- 7.1 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

PureFlex™
Inc.

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400-104-000