

# 400 series



**PureFlex**<sup>®</sup>  
an ANDRONACO INDUSTRIES company

PureFlex is a strategic business unit of ANDRONACO INDUSTRIES located in Kentwood Michigan. Pictured below is our 200,000 sq. foot state of the art manufacturing facility.



# 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 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 E-Plus™ 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"- 10".

### 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"- 10". 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 E-Plus™ 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"- 10".

### 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 E-Plus™ 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"- 10". 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)

# 4000 SERIES

## FEATURES

### Wrench

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

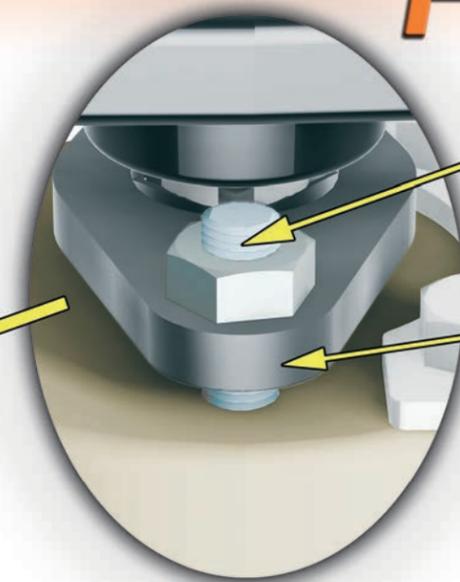
### Wrench Stop

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.

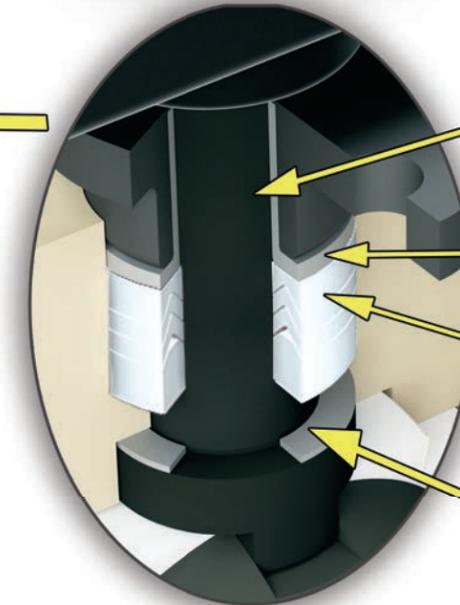


### Packing Gland Adjustment

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

### Packing Gland

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



### Valve Stem - Blow-Out Proof

Stem insert is Hastelloy® C276 encapsulated with either carbon graphite reinforced vinyl ester or E-Plus™ 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 E-Plus™ epoxy. Ball O.D. is micro polished to provide longer seat life.

### Seat Energizer

PTFE coated Viton® O-rings energize seats to ball and aid in bubble tight shut-off at low pressures.

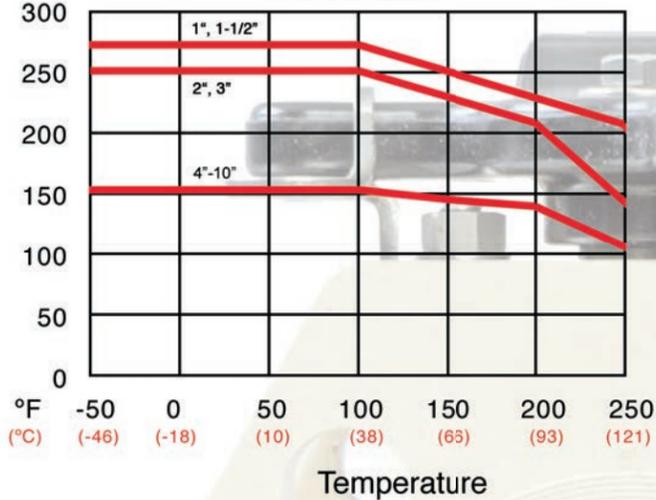
### Seats

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

# TECHNICAL DATA

# PARTS LIST & MATERIALS

## PRESSURE/TEMPERATURE CURVE



## 400 VALVE DATA

SIZE RANGE: 1" TO 10"

PRESSURE RANGE: FULL VACUUM TO 275 psi

TEMPERATURE RATINGS: (-)50 °F TO 275 °F

PROCESS FLUID MAY AFFECT 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

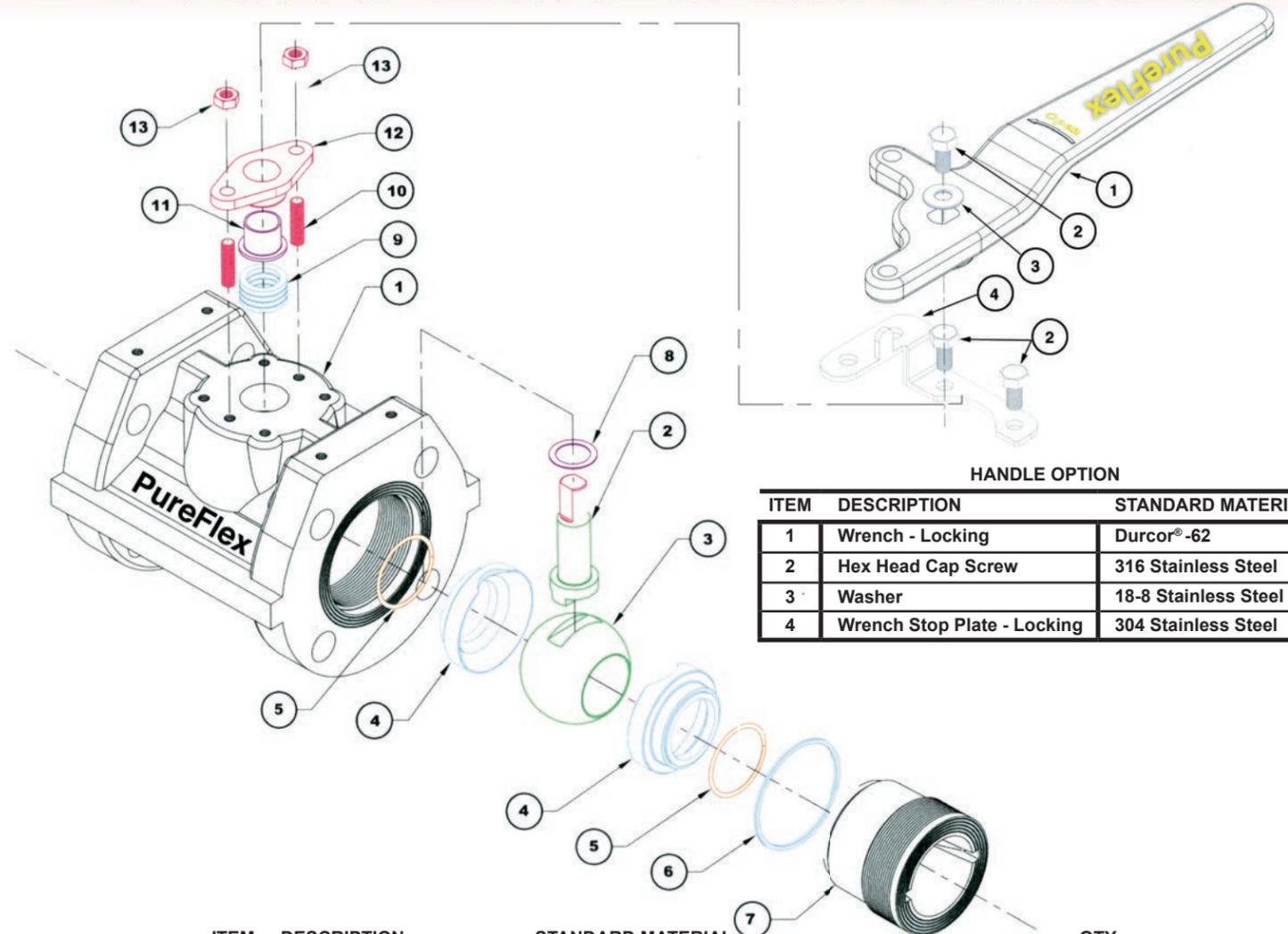
FLANGE ADAPTABILITY: ANSI B16.5 CLASS 150 (STD) DIN, JIS AND BS AVAILABILTY

## CV DATA

| VALVE SIZE | FULL OPEN CV |
|------------|--------------|
| 1"         | 65           |
| 1 1/2"     | 120          |
| 2"         | 165          |
| 3"         | 350          |
| 4"         | 550          |
| 6"         | 1245         |
| 8"         | 2180         |
| 10"        | 2575         |

## 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            |
| 8"         | 4800 in-lbs            |
| 10"        | 7200 in-lbs            |

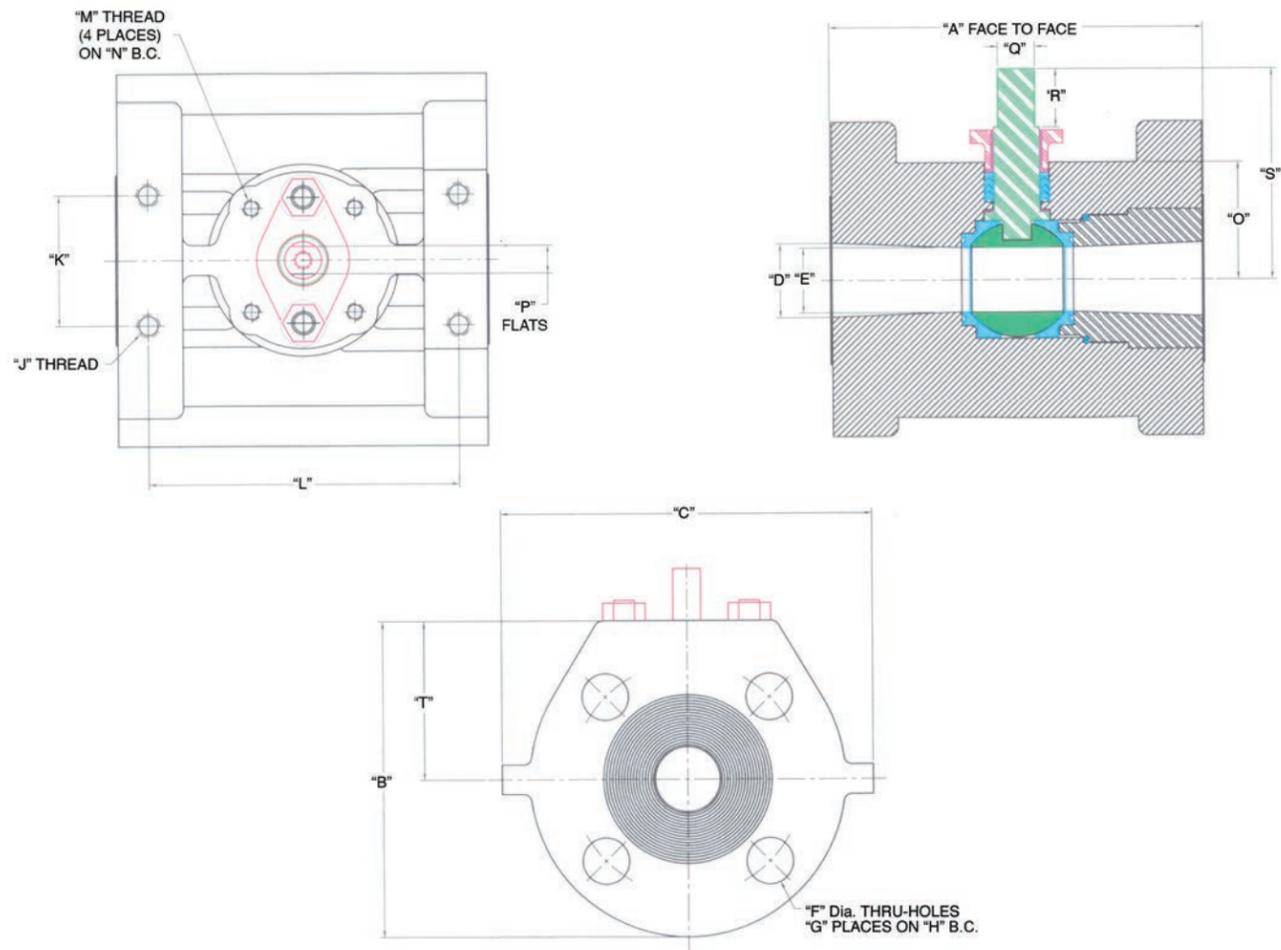


HANDLE OPTION

| ITEM | DESCRIPTION                 | STANDARD MATERIAL    |
|------|-----------------------------|----------------------|
| 1    | Wrench - Locking            | Durcor® -62          |
| 2    | Hex Head Cap Screw          | 316 Stainless Steel  |
| 3    | Washer                      | 18-8 Stainless Steel |
| 4    | Wrench Stop Plate - Locking | 304 Stainless Steel  |

| ITEM | DESCRIPTION              | STANDARD MATERIAL   | QTY |
|------|--------------------------|---|-----|
| 1    | Body 400                 | Derakane® 470 Vinyl Ester / Fiberglass                      | 1   |
|      | 405                      | Derakane® 470 Vinyl Ester / Carbon                          |     |
|      | 450                      | Epoxy E-Plus™ / Fiberglass                                  |     |
|      | 455                      | Epoxy E-Plus™ / Carbon                                      |     |
|      | 455                      | Epoxy E-Plus™ / Carbon                                      |     |
| 2    | Stem 400 & 405           | Derakane® 470 Vinyl Ester / Carbon / Hastelloy® C276 Insert | 1   |
|      | 450 & 455                | Epoxy E-Plus™ / Carbon / Hastelloy® C276 Insert             |     |
| 3    | Ball 400 & 405           | Derakane® 470 Vinyl Ester / Carbon                          | 1   |
|      | 450 & 455                | Epoxy E-Plus™ / Carbon                                      |     |
| 4    | Seat - Cavity Filled     | PTFE (Optional Materials: Glass Filled PTFE/UHMWPE)         | 2   |
| 5    | Seat Energizer Ring      | PTFE Coated Viton®  | 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 E-Plus™ / Fiberglass                                  |     |
|      | 455                      | Epoxy E-Plus™ / Carbon                                      |     |
| 8    | Thrust Bearing           | PTFE / Graphite   | 1   |
| 9    | Chevron Packing          | PTFE  | 1   |
| 10   | Stud - Packing Gland     | Hastelloy® C276 (UNS N10276)                                | 2   |
| 11   | Radial Bearing           | PTFE / Graphite   | 1   |
| 12   | Packing Gland            | Hastelloy® C276 (Optional Materials: Durcor®)               | 1   |
| 13   | Gland Nut                | Hastelloy® C276 (UNS N10276)                                | 2   |

# 400 SERIES DIMENSIONS & WEIGHTS



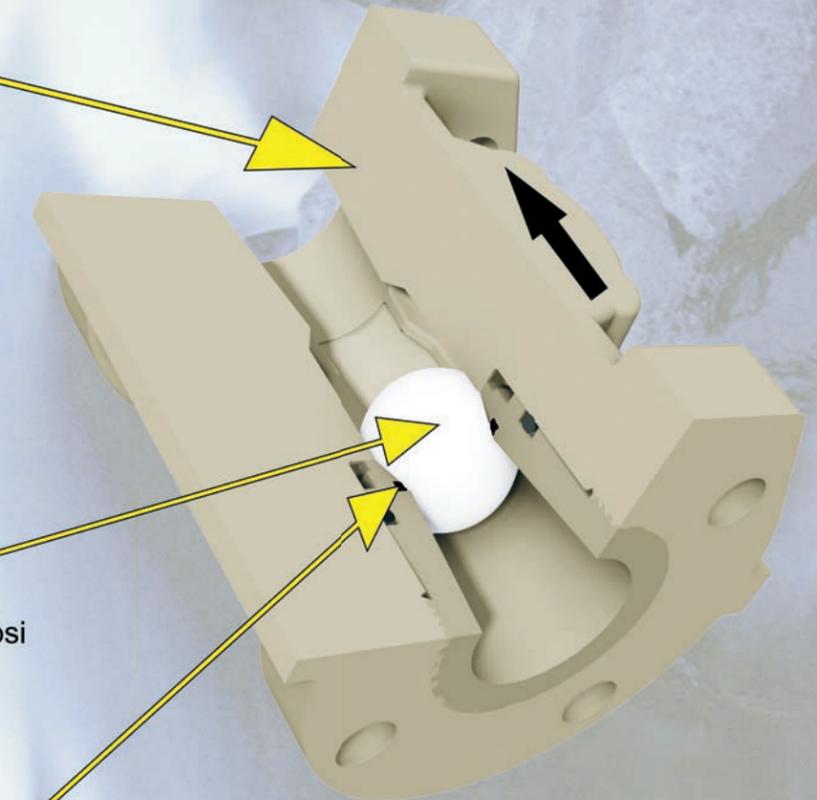
# 100 SERIES

# BALL CHECK VALVES

**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. Available in fiberglass or carbon graphite reinforced vinyl ester or E-Plus™ epoxy materials. The valve body meets ANSI B16.10 and flange connections are compliant to ASME B16.5 Class 150. Other flange drilling options are available.

**Valve Ball**  
The solid check valve ball is manufactured from virgin PTFE. The PTFE ball needs just over 1 psi to unseat when the valve is in the vertical position.

**Valve Seat**  
Check valve seat is manufactured from PTFE coated Viton and is designed for tight trouble free sealing in your most demanding applications. The seat is easily field repairable with only the end cap needing removal.



## HOW TO ORDER

**Example:**  
2" ANSI BALL CHECK VALVE WITH GLASS FILLED 470 RESIN, VINYL ESTER RESIN AND STANDARD PTFE BALL.  
**PART NUMBER: 100 - 02 - A - O**

STEP 1    STEP 2    STEP 3    STEP 4  
**100 - 02 - A - O**

**STEP 1**  
DETERMINE VALVE SERIES  
**100** = 470 / GLASS  
105 = 470 / CARBON GRAPHITE  
150 = EPOXY / GLASS  
155 = EPOXY / CARBON GRAPHITE

**STEP 2**  
DETERMINE VALVE SIZE  
01 = 1"  
15 = 1 1/2"  
**02** = 2"  
03 = 3"  
04 = 4"  
06 = 6"  
08 = 8"  
10 = 10"

**STEP 3**  
DETERMINE VALVE BALL DESIGN  
**A** = SOLID PTFE  
B = HOLLOW PTFE

**STEP 4**  
SPECIAL ADDERS  
**O** = (STD) NONE  
A = SPECIAL FLANGE DRILLING  
B = SPECIAL

| SIZE<br>IN<br>(MM) | ACTUATION             |                  |                  |                  |                        |                    |                     |                    |                 |                  |                    |                 |                 |                  |                 |                 |                 |                  |                  | WEIGHTS<br>lb<br>(kg) |
|--------------------|-----------------------|------------------|------------------|------------------|------------------------|--------------------|---------------------|--------------------|-----------------|------------------|--------------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|------------------|------------------|-----------------------|
|                    | ANSI B16.5<br>FLANGES |                  |                  |                  | FLANGE<br>MOUNTING PAD |                    | ISO<br>MOUNTING PAD |                    |                 | STEM             |                    |                 |                 |                  |                 |                 |                 |                  |                  |                       |
| A<br>IN<br>(MM)    | B<br>IN<br>(MM)       | C<br>IN<br>(MM)  | D<br>IN<br>(MM)  | E<br>IN<br>(MM)  | F<br>IN<br>(MM)        | G<br>PER<br>FLANGE | H<br>IN<br>(MM)     | J<br>THREAD<br>TAP | K<br>IN<br>(MM) | L<br>IN<br>(MM)  | M<br>ISO<br>THREAD | N<br>IN<br>(MM) | O<br>IN<br>(MM) | P<br>IN<br>(MM)  | Q<br>IN<br>(MM) | R<br>IN<br>(MM) | S<br>IN<br>(MM) | T<br>IN<br>(MM)  |                  |                       |
| 1"<br>(25.4)       | 5.00<br>(128)         | 4.25<br>(107.9)  | 5.00<br>(127)    | 1.00<br>(25.4)   | 0.88<br>(22.2)         | .625<br>(15.8)     | 4                   | 3.125<br>(79.3)    | 5/16-18         | 1.750<br>(44.4)  | 4.180<br>(106.1)   | F05<br>M6       | 1.969<br>(50)   | 1.575<br>(42.8)  | .375<br>(9.4)   | .500<br>(12.7)  | .775<br>(19.7)  | 2.82<br>(71.6)   | 2.12<br>(54.0)   | 3.50<br>(1.59)        |
| 1 1/2"<br>(38.1)   | 6.50<br>(166.1)       | 5.00<br>(127)    | 5.75<br>(146)    | 1.50<br>(38.1)   | 1.25<br>(31.75)        | .625<br>(15.8)     | 4                   | 3.880<br>(98.5)    | 5/16-18         | 1.750<br>(44.4)  | 5.620<br>(142.7)   | F05<br>M6       | 1.969<br>(50)   | 2.250<br>(57.2)  | .375<br>(9.4)   | .500<br>(12.7)  | .775<br>(19.7)  | 3.49<br>(88.6)   | 2.50<br>(63.5)   | 6.50<br>(2.95)        |
| 2"<br>(50.8)       | 7.00<br>(178.8)       | 6.00<br>(152.4)  | 6.75<br>(171.4)  | 2.00<br>(50.8)   | 1.50<br>(38.1)         | .750<br>(19)       | 4                   | 4.750<br>(120.6)   | 5/16-18         | 2.250<br>(57.1)  | 6.180<br>(157.0)   | F07<br>M8       | 2.756<br>(70)   | 2.600<br>(66.0)  | .470<br>(11.8)  | .625<br>(15.8)  | .900<br>(22.9)  | 4.12<br>(104.6)  | 3.00<br>(76.2)   | 10.25<br>(4.66)       |
| 3"<br>(76.2)       | 8.00<br>(204.2)       | 7.50<br>(190.5)  | 8.25<br>(209.5)  | 3.00<br>(76.2)   | 2.25<br>(57.15)        | .750<br>(19)       | 4                   | 6.000<br>(152.4)   | 3/8-16          | 3.500<br>(88.9)  | 7.120<br>(180.8)   | F07<br>M8       | 2.756<br>(70)   | 3.290<br>(83.6)  | .470<br>(11.8)  | .625<br>(15.8)  | .900<br>(22.9)  | 4.73<br>(120.1)  | 3.75<br>(95.3)   | 17.75<br>(8.08)       |
| 4"<br>(101.6)      | 9.00<br>(229.6)       | 9.00<br>(228.6)  | 9.75<br>(247.6)  | 4.00<br>(101.6)  | 3.00<br>(76.2)         | .750<br>(19)       | 8                   | 7.500<br>(190.5)   | 7/16-14         | 4.000<br>(101.6) | 8.000<br>(203.2)   | F10<br>M10      | 4.016<br>(102)  | 4.500<br>(114.3) | .750<br>(19)    | 1.000<br>(25.4) | 1.350<br>(34.3) | 6.53<br>(165.8)  | 4.500<br>(114.3) | 29.75<br>(13.52)      |
| 6"<br>(152.4)      | 10.50<br>(267.7)      | 11.00<br>(279.4) | 11.75<br>(298.4) | 6.00<br>(152.4)  | 4.50<br>(114.3)        | .875<br>(22.2)     | 8                   | 9.500<br>(241.3)   | 7/16-14         | 5.250<br>(133.3) | 9.000<br>(228.6)   | F10<br>M10      | 4.016<br>(102)  | 5.500<br>(139.7) | .750<br>(19)    | 1.000<br>(25.4) | 1.350<br>(34.3) | 7.82<br>(198.6)  | 5.500<br>(139.7) | 42.50<br>(19.32)      |
| 8"<br>(203.2)      | 11.50<br>(292.1)      | 13.50<br>(342.9) | 14.00<br>(355.6) | 8.02<br>(203.6)  | 6.00<br>(152.4)        | .875<br>(22.2)     | 8                   | 11.750<br>(298.5)  | 7/16-14         | 6.000<br>(152.4) | 9.750<br>(247.7)   | NA              | NA              | NA               | 1.094<br>(27.8) | 1.250<br>(31.8) | 1.500<br>(38.1) | 9.21<br>(233.9)  | 6.75<br>(171.5)  | 85.0<br>(38.56)       |
| 10"<br>(254.0)     | 13.0<br>(330.2)       | 16.00<br>(406.4) | 16.50<br>(419.1) | 10.00<br>(254.0) | 7.50<br>(190.5)        | 1.00<br>(25.4)     | 12                  | 14.250<br>(362.0)  | 1/2-13          | 7.750<br>(196.9) | 11.250<br>(288.6)  | NA              | NA              | NA               | 1.258<br>(32.0) | 1.438<br>(36.5) | 1.125<br>(28.6) | 11.10<br>(281.9) | 8.00<br>(203.2)  | 122.00<br>(55.33)     |



DURCOR® STRUCTURAL COMPOSITE PFA LINED VALVES



800 SERIES - PTFE/PFA LINED



860 SERIES - RESILIENT SEATED



DURCOR® STRUCTURAL COMPOSITE PTFE LINED PIPING SYSTEM



PURESITE™ - UNBREAKABLE FEP



BLUELINE™ EXPANSION JOINTS

# TRULY VISIONARY



# INNOVATION

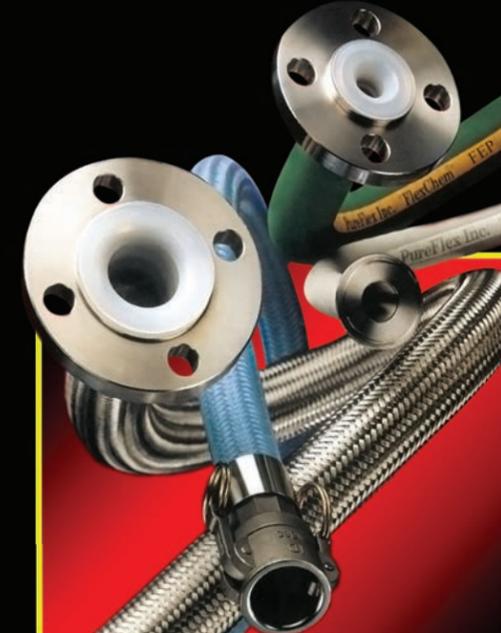


AUTOMATED VALVES



100% COMPLIANT WITH CHLORINE INSTITUTE

PTFE/FEP/PFA HOSE & FITTINGS



TASK-LINE® - GROUNDING PADDLES



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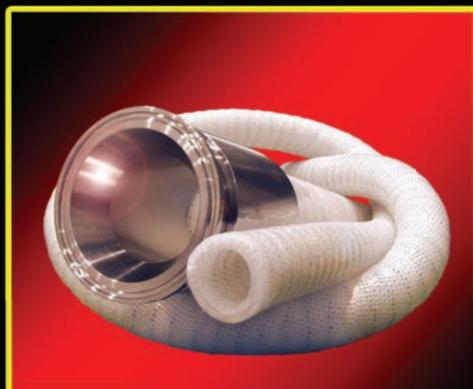
TASK-LINE® - GASKETS



HEATED HOSES



PLATINUM CURED SILICONE



# 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"  
 08 = 8"  
 10 = 10"

### STEP 3

DETERMINE VALVE SEAT DESIGN

**A** = (STD) CAVITY FILLED VIRGIN PTFE  
 C = NON-CAVITY FILLED VIRGIN PTFE  
 E = GLASS REINFORCED PTFE  
 F = UHMWPE

### 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 specifications applies to 1" through 10" flange composite valves for chemical and waste water service. Values 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 compatability with your material selections.

## 2. Valve Body

2.1 Valve body shall be one piece of design manufactured from premium Derakane vinyl ester or E-Plus 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 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 wrenches shall not be allowed.

3.2 Actuated valves shall have both integrally 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 graphite / PTFE thrust bearing.

## 5. Valve Stem Sealing

5.1 Valve stem seal shall be PTFE Chevron style and held in compression via Hastelloy C276 packing gland or optional Durcor packing gland. Packing gland shall be adjusted via a Hastelloy C276 nut and stud assembly. Bolts used as a gland adjusters shall not be allowed.

5.2 Valve stem shall have a graphite / PTFE radial bearing 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 E-Plus epoxy.

6.2 Valve ball seats shall be cavity filled design manufactured from PTFE (TFM or glass filled PTFE available) and be energized with PTFE coated Viton O-Rings.

## 7. Valve Manufacturer

7.1 Valve shall be manufactured by:

PureFlex Inc.  
 4855 Broadmoor Ave.  
 Kentwood, Michigan 49512  
 Phone: 616-554-1100 Fax: 616-554-3633  
[www.pureflex.com](http://www.pureflex.com)

**PureFlex**<sup>®</sup>  
 Inc.  
 an ANDRONACO INDUSTRIES company

4855 Broadmoor Ave. Kentwood, MI. 49512 USA  
 Ph 616-554-1100 Fax 616.554-3633  
[www.pureflex.com](http://www.pureflex.com)

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