



# **BUTTERFLY VALVES**

**PTFE & ELASTOMER MOLDED DISCS & SEATS**

**SERIES 20/21 Wafer/Lug**  
**1"-20" (25mm-500mm)**

# PTFE

## 2"-12" (50MM-300MM)

Bray Controls offers a line of butterfly valves with PTFE molded discs and seats. This special line of valves has all the design features of the standard resilient seated Bray Series 20/21 valve, plus the

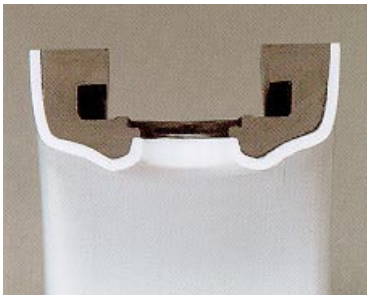
specific advantage of PTFE for use in corrosive environments. One important design feature is the one-piece DISC/STEM. This design provides complete protection from particle entrapment and bacterial decay. The thin disc profile allows a high Cv rating.

The BODY is two-piece wafer or lug style. Standard bodies are Nylon 11 coated for excellent corrosion resistance.

Extended NECK length allows for a minimum of 2" of piping insulation.

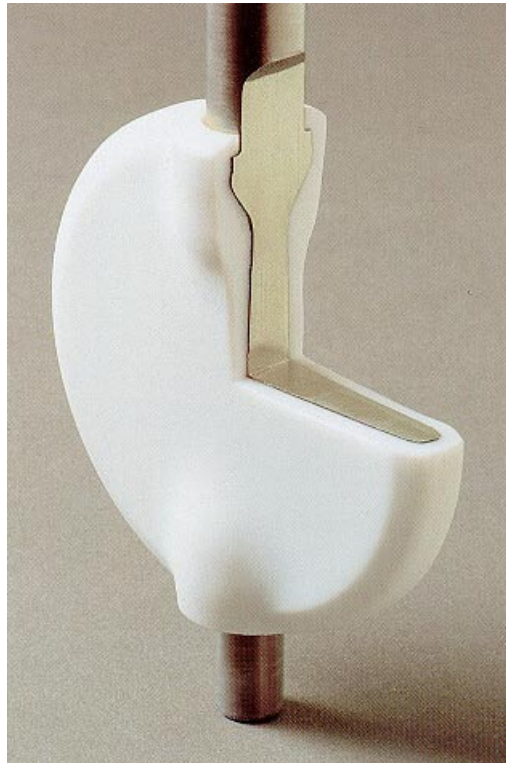
FLANGE LOCATING HOLES provide quick and proper alignment during installation, thus allowing the installer to center the valve in the pipeline between the flanges.

BRAY'S UNIQUE SEAT DESIGN is one of the valve's key elements. The elastomer backed PTFE seat features a *tongue and groove* retention method which holds securely between either slip-on or weld-neck flanges and also allows simple and fast field replacement. This EPDM backing provides resilient support for the molded PTFE, thus maximizing the shut-off and cycle life of the seat.



Seat cross-section at stem hole

PTFE is precisely molded at the seat stem holes into a spherical shape to match the curvature of the disc/stem hubs. Uniform distribution of contact pressure between the disc/stem and the seat hub produces a superior primary stem seal, reduces torque and enhances the sealing and service life of the valve. Additionally, a crown molded on the center of the seat



elastomer back up Increases the seat compression over the disc/stem when in the closed position. This compression increases valve sealing while maintaining low seating/unseating torque.

### BRAY 3-WAY SEAL

- (1) The primary seal is achieved by a PTFE to PTFE interference fit between the seat flat and disc hub.
- (2) The secondary seal is an interference fit due to the diameter of the 17-4 ph stainless steel stem being larger than the diameter of the PTFE seat's stem hole.
- (3) The final seal is a back-up fluoroelastomer O-ring around the stem behind the seat. This seal is fluoroelastomer to stainless steel.

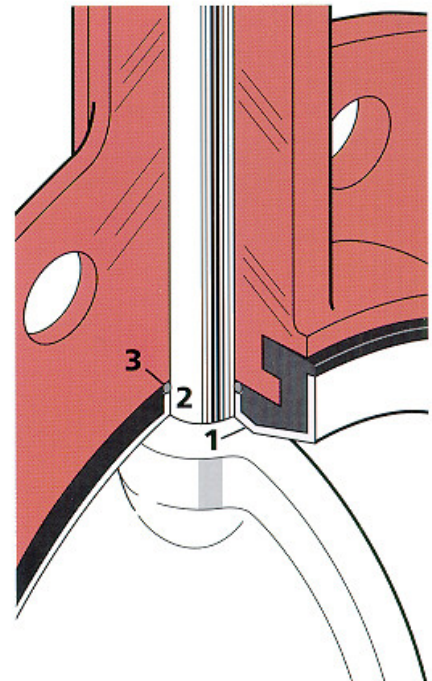
These three seals combine to completely isolate the seat's elastomer support material from the corrosive line media.

For a more detailed description of the many features of this valve please refer to Bray brochure B-1001.

### PTFE ADVANTAGES

PTFE is a superior material for use in highly corrosive applications. It is inert to most chemicals at high temperatures and pressures, and PTFE also has a low coefficient of friction. Bray has combined these properties with the excellent features of our Series 20/21 valve. PTFE is molded 1/8" thick to the 17-4 ph Stainless Steel disc/stem and 1/16" thick to the resilient elastomer seat. This insures that all components that come in contact with the line media are PTFE, thus providing maximum corrosion protection.

The PTFE molded Series 20/21 is the ideal valve to use in the Chemical Industry, in processes with hazardous fluids, in the Food & Beverage Industry, Pharmaceutical facilities, electronics production plants and many other industries where the media must not contact any organic or metallic materials.



# ELASTOMER

## 2"-20" (50mm-500mm)

This is a special version of the Series 20/21 valve. In addition to the design features of the Series 20/21, this valve has an elastomer molded disc. The elastomer material molded to the 17-4 ph Stainless Steel disc/stem is either EPDM, Buna-N, or FKM\* - all excellent choices for severely abrasive and chemically erosive applications. Typical applications are slurry services in Mining, Power, Chemical, Bulk Handling and many other industries. The thin profile of the one piece disc/stem greatly reduces the surface area of the disc, thus allowing for a much higher Cv than most through-stem designs. Bray molds a 1/8" thick, long lasting elastomer material to the disc/stem. The natural ability of the elastomer surface to repel solids prevents in-line particles from damaging the disc, thus greatly extending the life of the valve. The molded disc/stem, combined with an elastomer seat, completely isolates any metallic materials from contact with erosive line media.

## DESIGN FEATURES

Bray's Series 20 valve is a wafer version with flange locating holes, and the Series 21 is the companion lug version for dead-end service and other flange requirements. All Bray valves are tested to 110% of full pressure rating before shipment.

A major design advantage of the Bray product line is international compatibility. The same valve is compatible with most world flange standards - ANSI Class 125/150, BS 10 Tables D and E, BS 4504 NP10/16, DIN ND 10/16, AS 2129 and JIS 10. In addition the valves are designed to comply with ISO 5752 face to face and ISO 5211 actuator mounting flanges. Therefore, one valve design can be used in many different world markets.

## NYLON 11 COATING

### CORROSION PROTECTION

Bray's standard product offers valve bodies 2"-8" (50mm-200mm) with a Nylon 11 coating, providing excellent corrosion and wear resistance to the



valve's exterior surface - the weakest part of most metal components. Larger valve sizes will be coated with a price adder - please consult factory. This external protection is of special importance in severely corrosive applications because no metal is exposed to spillage or harmful chemical environments. Nylon 11 is inert to fungus growth and molds, and it is USDA approved; thus, Nylon 11 is excellent for sanitary applications. For a more detailed description of the advantages of Nylon 11 see Bray Technical Bulletin No. 1009.

## PRESSURE RATINGS

For bi-directional bubble-tight shut off, disc in closed position.

17-4 ph SS Disc/Stem & PTFE Molded Seat

2"-12" (50mm-300mm) 150 psi (10 bar)

PTFE Molded Disc & Seat

2"-12" (50mm-300mm) 100 psi (7 bar)

Elastomer Coated Disc & Elastomer Seat

2"-20" (50mm-500mm) 150 psi (10 bar)

### For Dead-end Service Applications:

With *downstream flanges installed*, the dead-end pressure ratings are equal to valves bi-directional ratings as stated above. With no downstream flanges, the dead-end pressure ratings for 2"-12" valves is 75 psi (5 bar) for 14"-20" valves, 50 psi (3.5 bar).

## MATERIALS SELECTION

2"-20" (50mm-500mm)

### BODY:

- Cast Iron ASTM A126 Class B
- 316 Stainless Steel ASTM A351 CF8m
- Ductile Iron ASTM A395 (Lug only)
- Aluminum ASTM B26 Class B (Wafer only)

### SEAT:

- PTFE - Lined EPDM
- EPDM - Food Grade
- BUNA-N - Food Grade
- FKM\*

### DISC/STEM:

#### PTFE Molded

- PTFE molded over 17-4 ph Stainless Steel per ASTM A747 Type CB7Cu-1 Heat Treated

#### Rubber Molded

2"-12" Material molded over One Piece Stainless Steel insert (Investment Cast)

- EPDM - 17-4 ph Stainless Steel per ASTM A747 Type CB7Cu-1 Heat Treated
- Buna-N - 17-4 ph Stainless Steel per ASTM A747 Type CB7Cu-1 Heat Treated

14"-20" Material molded over Stainless Steel insert (Fabricated)

- Disc EPDM - 316 Stainless Steel per ASTM A240
- Stem EPDM - 17-4 ph Stainless Steel per ASTM A564 Type 360 Heat Treated
- Disc Buna-N - 316 Stainless Steel per ASTM A240
- Stem Buna-N - 17-4 ph Stainless Steel per ASTM A564 Type 360 Heat Treated

## OTHER DISC COATINGS

- Nylon 11 USDA approval and FDA compliance
- Halar® - for abrasive applications where PTFE is not suitable

## TEMPERATURE RANGE OF SEATS

Type	Maximum	Minimum
EPDM	+250°F(121°C)	-40°F(-40°C)
Buna-N	+212°F(100°C)	0°F(-18°C)
FKM*	+400°F(204°C)	0°F(-18°C)
PTFE-Lined EPDM	+250°F(121°C)	-20°F(-29°C)

\*FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers.) halar® is a registered trademark of Ausimont U.S.A., Inc.