



Bray[®]

SIZES:
50mm-300mm
(2" -12")

**RESILIENT SEATED BUTTERFLY VALVES
WITH POLYURETHANE TRIM**

POLYURETHANE TRIM

POLYURETHANE SEATED VALVES

50mm–300mm (2"–12")

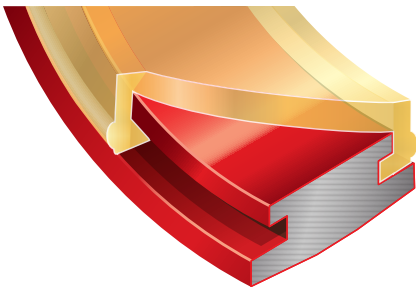
Bray Controls proudly offers a range of high quality abrasion resistant polyurethane seats for the Series 20/21 and Series 30/31 butterfly valves with the advantage of resistance to wear in abrasive services. Polyurethane (more commonly referred to as "urethane") has successfully been used to line pipelines for a wide range of industries because of its ability to resist abrasive wear in many applications such as slurries, pneumatic conveying, hopper isolation, sediment, dry powder, dust extraction, mineral sands, mining, potash and fertilizer.

POLYURETHANE APPLICATIONS

Urethane seats are primarily used for their ability to resist abrasive wear. Urethane can be used on a reasonably broad range of services. Urethane will withstand severe impact, recover its original shape after distortion and resist abrasion better than other elastomers such as EPDM and Buna N.

URETHANE TEMPERATURE RANGE

Type	Maximum	Minimum
Dry Heat	+80°C(+176°F)	-40°C(-40°F)
Wet Heat	+50°C(+122°F)	-40°C(-40°F)



BRAY UNIQUE SEAT DESIGN

One of the valve's key elements is Bray's unique tongue and groove seat design. This seat design features lower torque than many valves on the market today and provides complete isolation of flowing media from the body. The tongue-and-groove seat body retention method is superior to traditional designs, making field replacement simple and fast. The seat is specifically designed to seal with slip-on or weld neck flanges.

PRIMARY AND SECONDARY SEALS

The primary seal is achieved by an interference fit of the molded seat hub with the polished disc hub. The secondary seal is created as a result of the stem diameter being greater than the diameter of the seat stem hole. These seals prevent line media from coming in contact with the valve stem or body.



SERIES 20/21 VALVE

The series 20/21 butterfly valves feature a two piece wafer or lug style split body with a one piece disc/stem. Bray's standard body coating of Nylon 11 provides excellent corrosion and wear resistance to the external surface. The disc/stem design inherently provides complete protection from particle entrapment and bacterial decay. The thin disc profile provides a much higher C_v (up to 50% greater than most through stem designs) and greater pressure recovery, thus resulting in lower pressure drop and a more efficient valve. The metallic disc/stem is available in a variety of materials such as 316 Stainless Steel and Hastelloy® to handle abrasive and corrosive services. In addition, rubber encapsulated disc/stems can be provided.

SERIES 30/31 VALVE

The Series 30/31 wafer or lug style butterfly valves feature a high-strength through stem design. The close tolerance double "D" connection that drives the disc is an exclusive feature of the Bray valve. It eliminates stem retention components such as screws and taper pins being exposed to the line media. These type of components, which are simply not part of the Bray design, commonly result in leakage paths, corrosion, erosion and vibration failures. Due to wear or corrosion, disc screws or pins often require difficult machining for disassembly. Disassembly of Bray S30/31 valves is simply a matter of removing the stem from the disc. Without fasteners obscuring the line flow, the C_v values are higher than many other valves, turbulence is reduced and pressure recovery is increased. The S30/31 is available in a broad range of materials to ensure maximum performance and service life. Standard external coating of the body is polyester.

DIFFERENTIAL PRESSURE RATINGS	
For Bi-directional Bubble-tight Shut Off (Downstream Flanges/Disc in Closed Position):	
Series 20/21 (metallic disc)	10.3 Bar (150 psi)
Series 20/21 (encapsulated disc)	6.9 Bar (100 psi)
Series 30/31	12.1 Bar (175 psi)
Series 20/21 and 30/31 (reduced disc valve)	3.2 Bar (50 psi)
Dead-End Service (No Downstream Flanges, Disc in Closed Position)	
Series 21 (metallic or encapsulated disc)	5.2 Bar (75 psi)
Series 31	5.2 Bar (75 psi)
DO NOT USE REDUCED DISC DIAMETER VALVES FOR DEAD-END SERVICE	



All valves are factory tested to 110% of their specified differential pressure (ΔP) rating before shipping and meet the body shell testing requirements of MSS SP 67.

EXPECTED SEATING / UNSEATING TORQUES - Nm (Lb-Ins)

TYPE B - LUBRICATED SERVICE					
Valve Size	Full-Rated Differential (ΔP) Pressure - Bar (Psi)				Reduced Disc Diameter Bar - (psi)
mm (ins)	3.5 (50)	7 (100)	10 (150)	12 (175)	3.5 (50)
50 (2)	14 (125)	15 (130)	15 (135)	16 (140)	—
65 (2 1/2)	22 (195)	23 (205)	24 (215)	25 (220)	—
80 (3)	29 (260)	31 (275)	33 (290)	34 (297)	—
100 (4)	45 (400)	48 (425)	51 (450)	52 (462)	30 (267)
125 (5)	69 (615)	76 (670)	82 (725)	85 (755)	46 (410)
150 (6)	88 (783)	98 (871)	108 (953)	113 (1003)	61 (537)
200 (8)	167 (1475)	186 (1650)	206 (1825)	216 (1915)	111 (983)
250 (10)	253 (2240)	285 (2520)	316 (2800)	332 (2940)	169 (1493)
300 (12)	386 (3420)	437 (3870)	488(4320)	514 (4545)	258 (2280)

TYPE C - DRY SERVICE					
Valve Size	Full-Rated Differential (ΔP) Pressure - Bar (Psi)				Reduced Disc Diameter Bar - (psi)
mm (ins)	3.5 (50)	7 (100)	10 (150)	12 (175)	3.5 (50)
50 (2)	18 (157)	18 (163)	19 (169)	20 (175)	—
65 (2 1/2)	28 (244)	29 (257)	30 (269)	31 (275)	—
80 (3)	37 (325)	39 (344)	41 (363)	42 (375)	—
100 (4)	56 (500)	60 (532)	64 (563)	66 (582)	39 (348)
125 (5)	87 (769)	95 (838)	102 (907)	107 (944)	58 (513)
150 (6)	111 (980)	123 (1090)	136 (1200)	142 (1255)	76 (672)
200 (8)	208 (1844)	233 (2063)	258 (2282)	270 (2394)	139 (1230)
250 (10)	316 (2800)	356 (3150)	395 (3500)	415 (3675)	211 (1867)
300 (12)	483 (4275)	547 (4838)	610 (5400)	642 (5682)	322 (2850)

TO USE TORQUE CHART, NOTE THE FOLLOWING:

- 1) For Bray valves, Series 20, 21, 30 and 31.
- 2) Review Technical Bulletin No. 1001, Expected Seating/Unseating Torques, for explanation of the three services classes and their related seating/unseating torque values for given pressure differentials of full and reduced diameter (undercut) discs valves.
- 3) Dynamic Torque values are not considered. See Technical Bulletin No. 1002 for evaluation of dynamic torque values vs. Seating/unseating torque values.
- 4) Safety factor included, but may vary dependent on process conditions - consult factory.

DIRECT MOUNTING OF ACTUATORS TO VALVES

Due to a modular concept of design all Bray handles, gear operators and pneumatic or electric actuators mount directly to Bray Valves. No additional brackets or couplings are required. This allows for simple installation in the field and minimizes possible misalignment.

SERIES 70 ELECTRIC

The Series 70 is a low profile, compact and powerful actuator with output torque ranging from 34 to 2018 Nm (300 - 18,000 lb-ins). Powered by high-torque, permanent split-capacitor, reversible, UL approved induction motors with thermal overload protection. Other unique features include manual handwheel override, two travel limit switches, high visibility valve position indicator and externally adjustable mechanical travel stops. Standard motor voltages are 120 VAC and 220 VAC – optional voltages are available



SERIES 92/93 PNEUMATIC ACTUATOR

Bray rack and pinion actuators are available in double acting and spring return. They have a maximum inlet pressure rating of 10 bar (145 psi) and a temperature range of -40°C to 95°C (+220°F). Features include internal porting, travel stops, NAMUR instrument & solenoid valve mounting.



SERIES 6A ELECTRO-PNEUMATIC DA & SA POSITIONERS

Digital positioners that feature modular design, advanced communication, simple calibration, optional bus intelligence and add on controls components all housed in a robust, light weight polymer enclosure that can be optioned up to an explosion proof / flame proof housing if required.



SERIES 52 VALVE STATUS MONITOR

The Bray 2N1 Proxy Sensor provides 2 inductive proximity sensors in 1 self contained, fully sealed compact enclosure. The 2 sensors are completely encapsulated with epoxy resin in a nylon enclosure for superior moisture, chemical and corrosion protection. Features include LED indicators, high visibility pointer or beacon for local position indication, fully adjustable non-magnetic target and multi-pin electrical cable connector. The Series 52 mounts directly to Bray actuators or can be mounted to signal valve position of manually operated valves. AC, DC NAMUR intrinsically safe versions and bus network capable with solenoid drive are available. AC Sensor units operate 20-250 VAC with a maximum load current of 500 mA. DC Sensor units operate on 10-30 VDC with a maximum load limit of 200mA.



SERIES 63 3-WAY AND 4-WAY SOLENOID VALVE

For electrical operation of pneumatic actuator on-off functions, Bray Series 63 solenoids are direct-mounted to the actuator by NAMUR interface.

All statements, technical information, and recommendations in this bulletin are for general use only. Consult Bray representatives or factory for the specific requirements and material selection for your intended application. The right to change or modify product design or product without prior notice is reserved.

United States patent number 5,152,501.
Other patents issued and applied for worldwide.

Bray® is a registered trademark of BRAY INTERNATIONAL, Inc.

Bray® CONTROLS

A Division of BRAY INTERNATIONAL, Inc.
13333 Westland East Blvd. Houston, Texas 77041
281.894.5454 FAX 281.894.9499 www.bray.com

© 2009 Bray International. All rights reserved.
P-2024_EM_POLYU_2009-05