

SONDER REGULACIÓN

THE ENERGY CONTROL

Butterfly Valves

Serie 30 · Wafer

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



50 mm x 300 mm (2"-12")

SONDER is proud to introduce butterfly valves a high quality line of butterfly valves to meet the requirements of today's market. Combining years of field application experience, research and development, SONDER has designed many unique features in the Series 30 not previously available. The results are longer service life, greater reliability, ease of parts replacement and interchangeability of components.

Disc and stem connection (A + B)

(A) Features a high-strength through stem design. The close tolerance, double «D» connection that drives the valve disc is an exclusive feature of the Bray valve. It eliminates stem retention components being exposed to the line media, such as disc screws and taper pins, which commonly result in leak paths, corrosion, and vibration failures. Disc screws or taper pins, due to wear and corrosion, often require difficult machining for disassembly. Disassembly of the SONDER stem is just a matter of pulling the stem out of the disc. Without fasteners obstructing the line flow, the Series 30 valves are higher than many other valves, turbulence is reduced, and pressure recovery is increased. The stem ends and top mounting flange are standardized for interchangeability with SONDER actuators. **DISC (B)** Casting is spherically machined and hand polished to provide a bubbletight shut off, minimum torque, and longer seat life. The disc

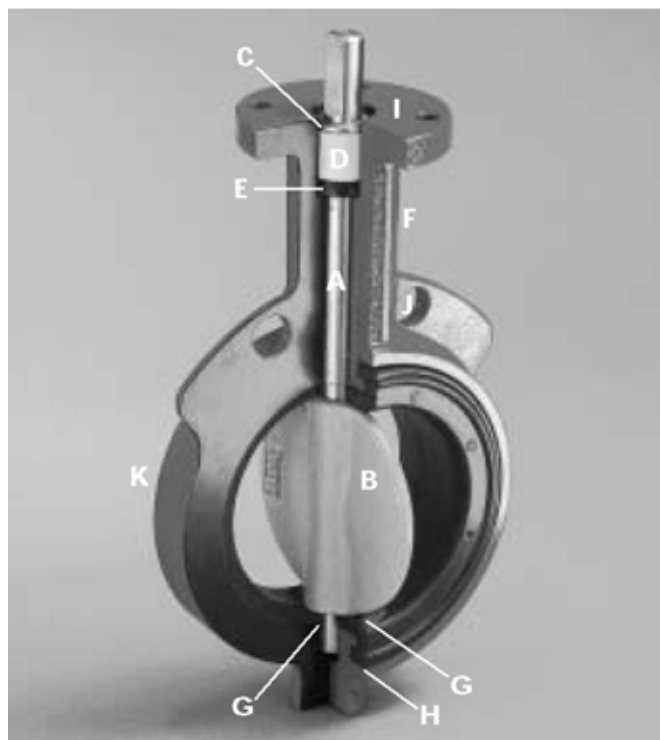
O. D. clearance is designed to work with all standard piping.

Stem retaining assembly (C)

The stem is retained in the body by means of a unique Stainless Steel «Spirolox®» retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.

Stem bushing (D)

Non-corrosive, heavy duty acetal bushing absorbs actuator side thrusts.



Stem seal (E)

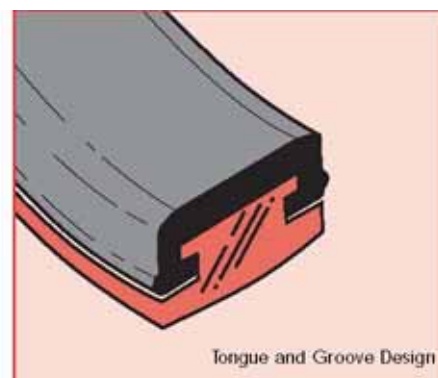
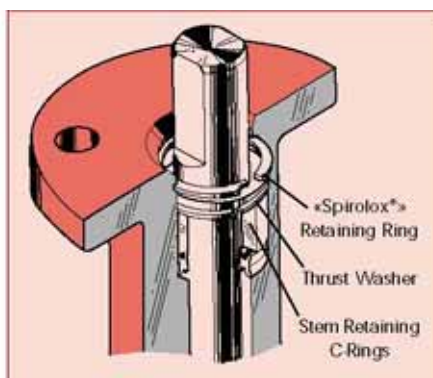
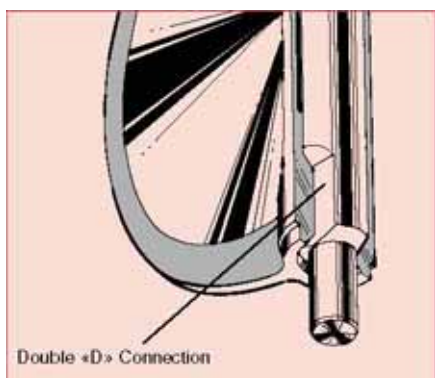
Double «U» Cup seal design is self-adjusting and gives positive sealing in both directions. Prevents external substances from entering the stem bore.

Neck (F)

Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

Primary and secondary seals (G)

The Primary Seal is achieved by an interference fit of the molded seat flat with the disc hub. The Secondary Seal is created because the stem diameter is greater than the diameter of the seat stem hole. These seals prevent line media from coming in contact with the stem or body.



Bray unique set design (H)

One of the valve's key elements is SONDER's unique tongue and groove seat design. This resilient seat 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 to 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. The seat features a molded O-ring which eliminates the use of flange gaskets. An important maintenance feature is that all resilient seats for SONDER butterfly valves serie 30 are completely interchangeable.

Actuator mounting flange and stem connection (I)

Universally designed to ISO 5211 for direct mounting of JOVENTA/SONDER power actuators and manual operators.

Flange location holes (J)

Provide quick and proper alignment during installation.

Body (K)

One-piece wafer or lug style. Polyester coating for excellent corrosion resistance. Valve bodies meet ANSI 150 pressure ratings for hydrostatic shell test requirements.

Design features

SONDER's Series 30 valve is a wafer version with flange location holes. All SONDER valves are tested to 110% of full pressure rating before shipment. A major design advantage of SONDER valve product lines 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 NP 10/16, 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 de

sign can be used in many different world markets. Due to a modular concept of design, all SONDER handles, manual gear operators and pneumatic and electric actuators mount directly to SONDER valves. No brackets or adapters are required. These on request, butterfly valves above 300 mm. SONDER interchangeability and compatibility offers you the best in uniformity of product line and low-cost performance in the industry today.



Polyester coating corrosion protection

SONDER's standard product offers valve bodies with a polyester coating, providing excellent corrosion and wear resistance to the valve's surface. The SONDER polyester coating is hard, gloss red finish. Chemical Resistance – resists a broad range of chemicals including: dilute aqueous acids and alkalis, petroleum solvents, alcohols, greases and oils. Offers outstanding resistance to humidity and water. Weatherability – outdoor tested resistant to ultra-violet radiation. Abrasion Resistance – excellent resistance to abrasion. Impact Resistance – withstands impact without chipping or cracking.

Nylon 11 coating

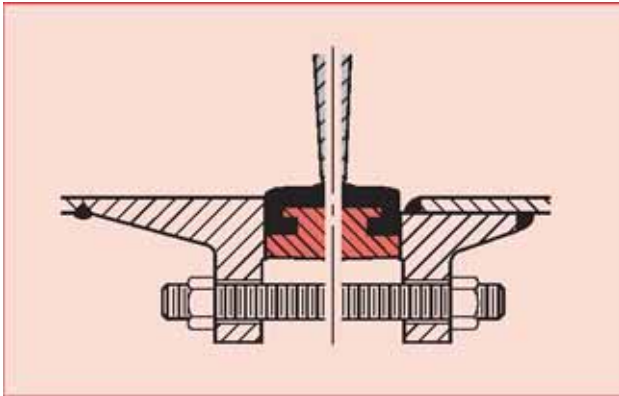
Optionally available for valve bodies where outstanding protection and performance is needed. A thermoplastic produced from a vegetable base, this coating is inert to fungus growth and molds. Nylon 11 is USDA Approved, as well as certified to ANSI/NSF 61 for water service. Corrosion Resistance – superior resistance to a broad range of chemical environments. Salt spray tested in excess of 2,000 hours and seawater immersion tested for over 10 years without corrosion to metal substrates. Nylon 11 features a very low coefficient of friction and excellent resistance to impact and ultra-violet radiation.

Dimensions (Series 30 Wafer)

| Valve Size | | Mounting Flange Drig. | | | | | | | | | | | | |
|------------|-----|-----------------------|------|-------|-------|-------|------|------|-----------|-----------|------|-----|------|-------|
| ins | mm | A | B | C | D | E | F | BC | No. Holes | Hole Dia. | G | H | J | K |
| 2 | 50 | 3.69 | 1.62 | 2.00 | 2.84 | 5.50 | 3.54 | 2.76 | 4 | .39 | .55 | .39 | 1.25 | 1.32 |
| 2½ | 65 | 4.19 | 1.75 | 2.50 | 3.34 | 6.00 | 3.54 | 2.76 | 4 | .39 | .55 | .39 | 1.25 | 1.91 |
| 3 | 80 | 4.88 | 1.75 | 3.00 | 4.03 | 6.25 | 3.54 | 2.76 | 4 | .39 | .55 | .39 | 1.25 | 2.55 |
| 4 | 100 | 6.06 | 2.00 | 4.00 | 5.16 | 7.00 | 3.54 | 2.76 | 4 | .39 | .63 | .43 | 1.25 | 3.57 |
| 5 | 125 | 7.06 | 2.12 | 5.00 | 6.16 | 7.50 | 3.54 | 2.76 | 4 | .39 | .75 | .51 | 1.25 | 4.63 |
| 6 | 150 | 8.12 | 2.12 | 5.75 | 7.02 | 8.00 | 3.54 | 2.76 | 4 | .39 | .75 | .51 | 1.25 | 5.45 |
| 8 | 200 | 10.50 | 2.50 | 7.75 | 9.47 | 9.50 | 5.91 | 4.92 | 4 | .57 | .87 | .63 | 1.25 | 7.45 |
| 10 | 250 | 12.75 | 2.50 | 9.75 | 11.47 | 10.75 | 5.91 | 4.92 | 4 | .57 | 1.18 | .87 | 2.00 | 9.53 |
| 12 | 300 | 14.88 | 3.00 | 11.75 | 13.47 | 12.25 | 5.91 | 4.92 | 4 | .57 | 1.18 | .87 | 2.00 | 11.47 |

Flange requirements

Bray valves are designed for installation between ANSI Class 125/150 lb. weld-neck or slip-on flanges, BS 10 Tables D & E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and JIS 10, either flat faced or raised faced. While weld-neck flanges are recommended, SONDER has specifically designed its valve seat to work with slip-on flanges, thus eliminating common failures of other butterfly valve designs. When using raised face flanges be sure to properly align valve and flange. Type C stub-end flanges are not recommended.



Pressure ratings*

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

| Inches | mm | psig | bar |
|--------|--------|------|-----|
| 2-12 | 50-300 | 175 | 12 |

For Dead-end Service Applications

With *downstream flanges installed* or with *vulcanized seats*, the dead-end pressure ratings are equal to valve bi-directional ratings as stated above. With no downstream flanges or with seats that are not vulcanized, the dead-end pressure rating 2"-12" valves is 75 psi (5 bar).

Velocity limits

For On/Off Services: Fluids
– 30 ft/sec (9 m/s) Gases –
175 ft/sec (54m/s)

* Pressure Ratings are based on standard disc diameters. For low pressure application, SONDER offers a standard reduced disc diameter to decrease seating torques and to extend seat life, thus increasing the valve's performance and reducing actuator costs for the customer.

C_v Values - Valve Sizing Coefficient

| Valve Size | | Disc Position (degrees) | | | | | | | | |
|------------|-----|-------------------------|------|------|------|------|------|-----|-----|-----|
| ins | mm | 90° | 80° | 70° | 60° | 50° | 40° | 30° | 20° | 10° |
| 2 | 50 | 144 | 114 | 84 | 61 | 43 | 27 | 16 | 7 | 1 |
| 2½ | 65 | 282 | 223 | 163 | 107 | 67 | 43 | 24 | 11 | 1.5 |
| 3 | 80 | 461 | 364 | 267 | 154 | 96 | 61 | 35 | 15 | 2 |
| 4 | 100 | 841 | 701 | 496 | 274 | 171 | 109 | 62 | 27 | 3 |
| 5 | 125 | 1376 | 1146 | 775 | 428 | 268 | 170 | 98 | 43 | 5 |
| 6 | 150 | 1850 | 1542 | 1025 | 567 | 354 | 225 | 129 | 56 | 6 |
| 8 | 200 | 3316 | 2842 | 1862 | 1081 | 680 | 421 | 241 | 102 | 12 |
| 10 | 250 | 5430 | 4525 | 2948 | 1710 | 1076 | 667 | 382 | 162 | 19 |
| 12 | 300 | 8077 | 6731 | 4393 | 2563 | 1594 | 1005 | 555 | 235 | 27 |

C_v is defined as the volume of water in U.S.G.P.M. that will flow through a given restriction or valve opening with a pressure drop of one (1) p.s.i at room temperature. Recommended control Recommended control angles are between 25° – 70° open. Preferred angle for control valve sizing 60° – 65° open.

Expected Seating/Unseating Torques (Nm)

| Valve Size | | Full-Rated Pressure Valves – Δ P (PSI) | | | | Reduced Disc Diameter – Δ P (PSI) |
|------------|-----|--|------|------|------|-----------------------------------|
| ins | mm | 50 | 100 | 150 | 175 | 50 |
| 2 | 50 | 125 | 130 | 135 | 140 | 125 |
| 2½ | 65 | 195 | 205 | 215 | 220 | 195 |
| 3 | 80 | 260 | 275 | 290 | 297 | 260 |
| 4 | 100 | 400 | 425 | 450 | 462 | 267 |
| 5 | 125 | 615 | 670 | 725 | 755 | 410 |
| 6 | 150 | 783 | 871 | 953 | 1003 | 537 |
| 8 | 200 | 1475 | 1650 | 1825 | 1915 | 983 |
| 10 | 250 | 2240 | 2520 | 2800 | 2940 | 1493 |
| 12 | 300 | 3420 | 3870 | 4320 | 4545 | 2280 |

Valve Torque Rating – SONDER has classified valve torque ratings according to 3 types: non-corrosive lubricating service, general service, and severe service. Torques listed above are for general services. Consult SONDER for torque information corresponding to specific applications.

Recommended specifications for series 30 shall be:

- Polyester coated, cast iron, wafer or lug bodies.
- Through-stem direct drive double «D» design requiring no disc screws or pins to connect stem to disc with no possible leak paths in disc/stem connection.
- Stem mechanically retained in body neck and no part of stem of body exposed to line media.
- Tongue-and-groove seat design with primary hub seal and a molded O-ring suitable for weld-neck and slip-on flanges. Seat totally encapsulates the body with no flange gaskets required.
- Spherically machined, hand polished disc edge and hub for minimum torque and maximum sealing capability.
- Equipped with non-corrosive bushing and self-adjusting stem seal.
- Bi-directional and tested to 110% of full rating.
- Bi-directional pressure ratings: 2"–12" valves: 175 psi
- No field adjustment necessary to maintain optimum field performance.
- With flange location holes that meet ANSI Class 125/150 (or BS 10 Tables D & E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and

Weights

| Valve Size | | Series |
|------------|-----|--------|
| ins | mm | kg |
| 30 | | |
| 2 | 50 | 5.5 |
| 2 1/2 | 65 | 7.0 |
| 3 | 80 | 7.5 |
| 4 | 100 | 11.5 |
| 5 | 125 | 14.0 |
| 6 | 150 | 17.0 |
| 8 | 200 | 34.0 |
| 10 | 250 | 49.0 |
| 12 | 300 | 67.0 |

Components

| No. | Qty. | Description |
|-----|------|----------------|
| 1 | 1 | Body |
| 2 | 1 | Seat |
| 3 | 1 | Disc |
| 4 | 1 | Stem |
| 5 | 1 | Stem Seal |
| 6 | 1 | Stem Bushing |
| 7 | 2 | Stem Retainer |
| 8 | 1 | Thrust Washer |
| 9 | 1 | Retaining Ring |

Temperature range of seats

| Type | Maximum | Minimum |
|--------|----------------|---------------|
| EPDM | 121°C (+250°F) | -40°C (-40°F) |
| Buna-N | 100°C (+212°F) | -18°C (-0°F) |
| FKM* | 121°C (+400°F) | -40°C (-40°F) |

* FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers).

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Materials Selection

50 mm – 300 mm (2"–12")

Body

- Cast Iron ASTM A126 Class B
- Ductile Iron ASTM A536
- Cast Steel ASTM A216 WCB
- Aluminium ASTM B26

Seat

- Buna-N – Food Grade
- EPDM – Food Grade
- FKM*
- White Buna-N – Food Grade

Stem

- Coated Carbon Steel
- 416 Stainless Steel ASTM A582 Type 416
- 304 Stainless Steel ASTM A276 Type 304
- 316 Stainless Steel ASTM A276 Type 316
- Monel

Disc

- Aluminium Bronze ASTM B148-954
- Coated Ductile Iron ASTM A536 Gr. 65-45-12
- Ductile Iron, Nylon 11 Coated, ASTM A536 Gr. 65-45-12
- Ductile Iron, Halar® Coated, ASTM A536 Gr. 65-45-12
- 316 Stainless Steel ASTM A351 CF8M
- Hastelloy® C-276 ASTM B575 Alloy N10276



Installation

Position the disc in the partially open position, maintaining the disc within the body face-to-face. Place the body between the flanges and install flange bolts. *Do not use flange gaskets.* Before tightening flange bolts, carefully open the disc to the full open position to ensure proper alignment and clearance of the disc

O.D. with the adjacent pipe I.D. Leave disc in the full open position and tighten flange bolts per required specification. Once bolts are tightened, carefully rotate disc to closed position to ensure disc O. D. clearance.

Maintenance and repair

The many SONDER features minimize wear and maintenance requirements. No routine lubrication is required. All component – stem, disc, seat, bushing, stem seal, etc., are field replaceable, no adjustment is needed. If components require replacement, remove the valve from the line by placing the disc near the closed position, spread the flanges, support the valve, then remove the flange bolts. No valve maintenance, including remo-val of manual or power actuators, should be performed until the piping system is completely depressurized.

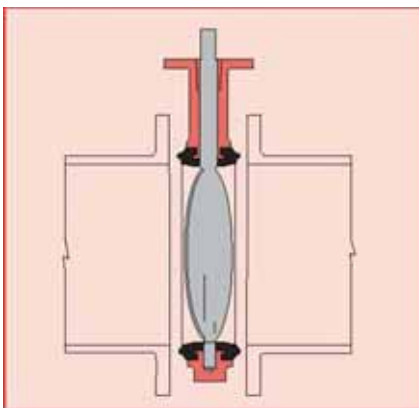
Disassembly

Remove the handle, gear operator, or actuator from actuator mounting flange. Remove «Spirolox®» retaining ring. Remove stem with its thrust washer and two C-ring stem retainers. Remove bushing and seal. Remove the disc from the seat, protecting disc edge at all times. Push the seat into an oval shape, then remove the seat from the body.

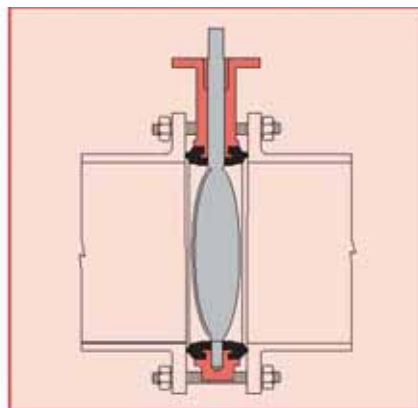
Assembly

Push the valve seat into an oval and push it into the body with seat stem holes aligned to body stem holes. Push stem into the stem hole of body. For aid in inserting disc, slightly protrude stem beyond the I. D. of the top of the seat. Install a light coating of foodgrade silicone oil (for silicone free applications use soap and water) on the I. D. of seat. Insert the disc into the seat by lining up the disc hole with the stem hole of the seat.

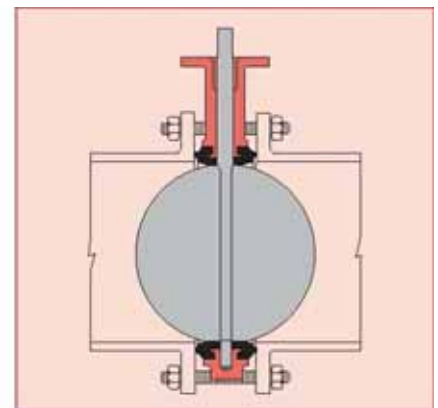
Note: the broached double «D» flats in the disc must be toward the bottom of valve body. (Take special care when lining disc up with stem.) With a downward pressure and rotating the stem back and forth, push the stem until the stem touches the bottom of the body stem hole. Make certain that when pushing the stem trough disc bottom, the broached flats of stem and disc are aligned. After the stem has engaged the disc, but before the stem is firmly seated in the body, replace the steam seal and bushing. Install the two C-ring stem retainers in the groove in the stem and thrust washer on top of the C-rings. Seat the stem firmly in the body and install the «Spirolox®» retaining ring back into position.



Disc in the Near Closed Position



Disc in the Partially Open Position



Disc in the Full Open Position

All statements, technical information, and recommendations in this bulletin are for general use only. Consult SONDER 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.

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