

NIBCO® SURE SEAL®

LINED BUTTERFLY VALVES



NIBCO offers a comprehensive selection of lined butterfly valves for industrial and commercial applications that are available in a broad range of materials, sizes, and pressures. Sure Seal® valves will exceed your application expectations and, like all NIBCO products, guarantee superior quality, performance, and service.

NIBCO® Sure Seal® Lined Butterfly Valves



Design Criteria - All Sure Seal lined butterfly valves conform to the following specifications: PED 97/23/EC, ISO 5752/20 (5752/25 for 14"), ISO 5211 (Mounting Flanges), EN-12266-1, API 609, MSS SP-67, MSS-SP25 and ASME B16.5. Valves are also available in conformance with the PN10 requirements.

Bubble Tight Shut-Off - All Sure Seal valves feature a non-wetted, 360° radially-loaded, elastometric energizer that is engineered to provide uniform pressure to the outer circumference of the liner and disc. This energizer ensures **absolute bubble tight shut-off**. Each valve is individually tested and certified for 100% bubble tight shut-off per the EN558-1/T5 and API 598 criteria.

Mechanical Shaft Sealing Mechanism - The Sure Seal state-of-the-art mechanical shaft-sealing mechanism features an industry-proven, three-point, dynamically-loaded Belleville spring technology. The primary seal is created by Belleville springs exerting an axial force at the liner/disc hub interface. The secondary seal is created at the PFA encapsulated stem /PTFE collar interface, and the tertiary seal is created by a radially loaded fluorocarbon O-ring that is strategically placed around the top of the PTFE extended collar. The unique, spherical shape of the Sure Seal disc and liner eliminates the axial cold flow and deformation problems typical of conventional lined butterfly valves, resulting in a reliable, maintenance-free, environmentally safe stem seal.

Disc Swing Clearance - The disc swing of all Sure Seal lined butterfly valves is compatible with PTFE and other fluoropolymer-lined piping systems as well as other metallic, lined and non-metallic piping systems. This results in the elimination of spacers during installation.

ISO 5211 Mounting Flange - The Sure Seal ISO 5211 mounting flange allows the direct mounting of actuators; thus, eliminating hysteresis and costly automation hardware.

Permeation Resistance - NIBCO Sure Seal MPTFE lining features a minimum lining thickness of 3mm and was developed to provide long-term resistance to permeation, absorption, and swelling. Our lining technology features a substantially greater crystallinity, density and lower melt viscosity during the sintering process than conventional fluoropolymer-lined valves. This results in lower rates of permeation, diffusion and absorption. The industry-proven results of our MPTFE technology include long-term, maintenance-free operation in harsh environments such as halogens, chlorinated organics and hydrochloric acid applications.

Reduced Liner Cold Flow - The Sure Seal mechanically enhanced MPTFE liner technology is specifically engineered to reduce the effects of cold flow; thus, facilitating the installation of our valves. The MPTFE technology features superior joint, creep and vacuum resistance, especially at elevated temperatures, placing Sure Seal valves in a performance class of its own. The lined butterfly valve design features spherically-molded and machined, wide-liner sealing surfaces that are securely anchored within the faces of the valve body by a series of concentric serrations, resulting in the reduction of radial cold flow.

Robust Body Construction - The robust body construction of the Sure Seal lined butterfly valve is designed to be equally as strong as the PN10/16 counter flanges it will be fastened to when used. Our technically superior design eliminates the deflection problems experienced by conventional lined butterfly valves, resulting in improved flange sealing properties. Valve bodies meet the minimum wall thickness requirement specified in ASME B16.42.

External Corrosion Protection - Polyester polyurethane powder coating. Test conforms to ASTM B117.

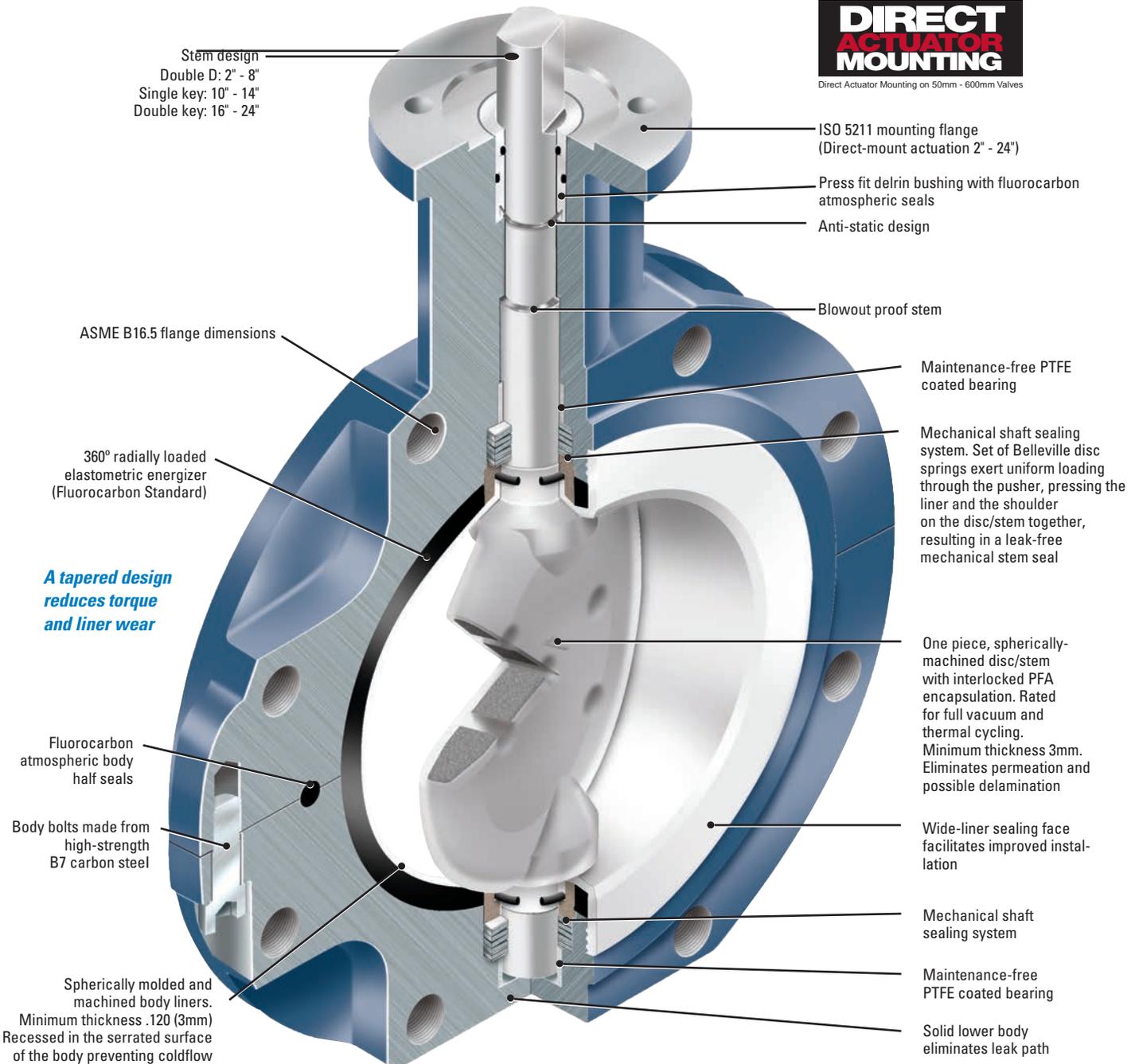
Chlorine Valves - Sure Seal lined butterfly valves are ideally suited for chlorine gas service. Valves for these services are thoroughly cleaned, degreased and packaged per our factory certified procedures.

NIBCO specializes in the design and manufacture of industrial valves and components for any application requiring the safe and efficient processing, movement, control and storage of liquid materials. Sure Seal® products are used in the chemical, food processing, pulp and paper, waste water, high-purity liquids, brewery, steel processing, marine barge, ship building, dry bulk transportation, and pharmaceutical industries, among others.

Known around the world for their quality, reliability and exceptional performance, NIBCO® Sure Seal® products include: butterfly valves, lined ball valves, actuators, high-purity butterfly valves, sample valves and sanitary valves.

Visit our website for the most current information.

NIBCO® Sure Seal® Lined Butterfly Valves feature “the most effective technology” available for controlling and isolating corrosive, high-purity and abrasive process media. Our valves incorporate the absolute highest standards of quality, performance, safety, and reliability that are required by the most demanding industries.



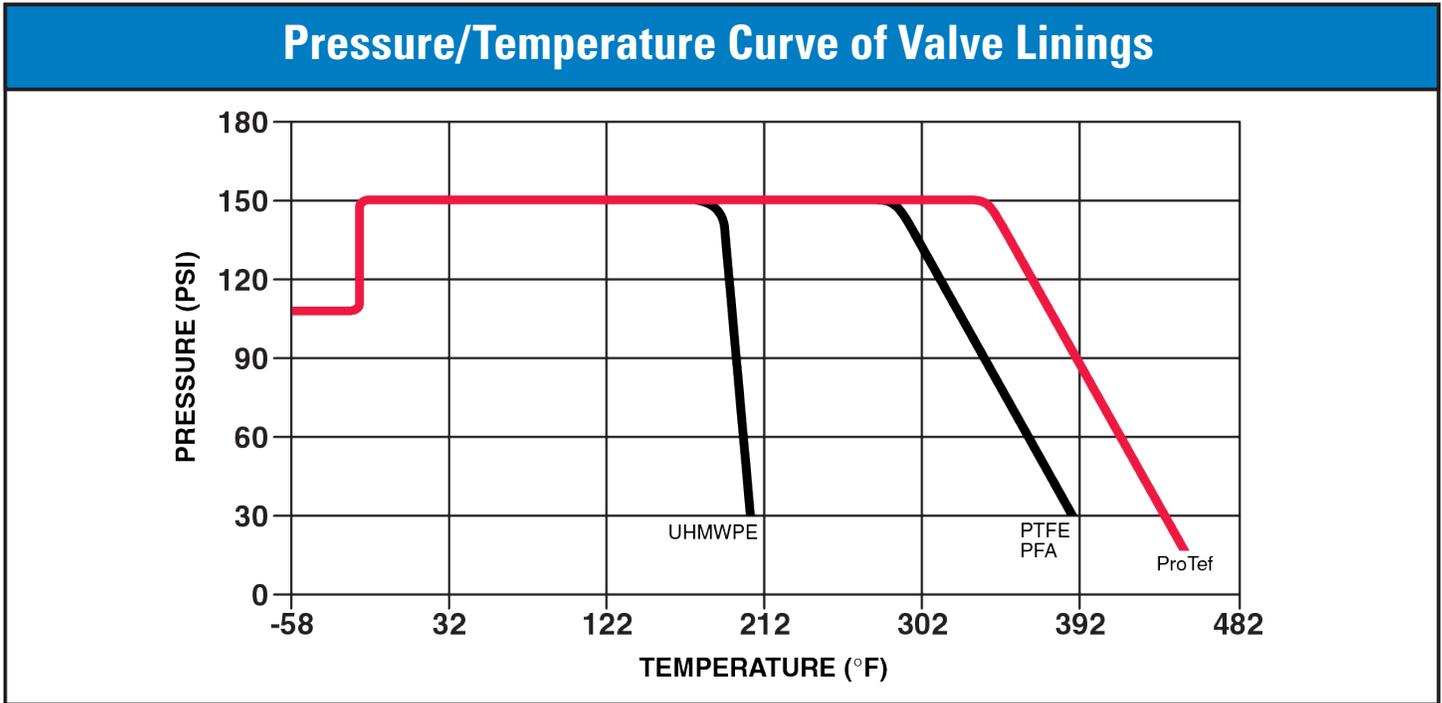
Materials

The PFA/MPTFE disc/liner combination provides the ultimate in corrosion resistance. The MPTFE liner is made from molecular enhanced PTFE to ensure the densest seat possible. Then, it is machined to strict tolerances. The one-piece disc/stem has a 3mm thick precision-molded PFA locked-in-liner, encapsulating the wetted surfaces of the 255 duplex stainless steel core. This eliminates the permeation and delamination commonly found in lined butterfly valves. Fluorocarbon elastomer backup rings are fitted to give a bubble tight shut-off at minimum operating torque. The stem seal is mechanical with a set of Belleville disc springs. This provides a live load to keep the sealing surfaces under a constant controlled pressure. The result is a butterfly valve with a maintenance-free seal and high cycle life.

An UHMWPE (Ultra High Molecular Weight Polyethylene), PFA and ETFE liners are also available with various body, stem and disc materials in the same configuration.

Visit our website for the most current information.

NIBCO® Sure Seal® Lined Butterfly Valves Pressure/Temperature & Flow Rate Charts



Max DP at 100°F 2"-10" 150 PSIG.

Max DP at 100°F 12"-24" 100 PSIG.

NIBCO Sure Seal Lined Butterfly Valves Flow Rate Values Cv

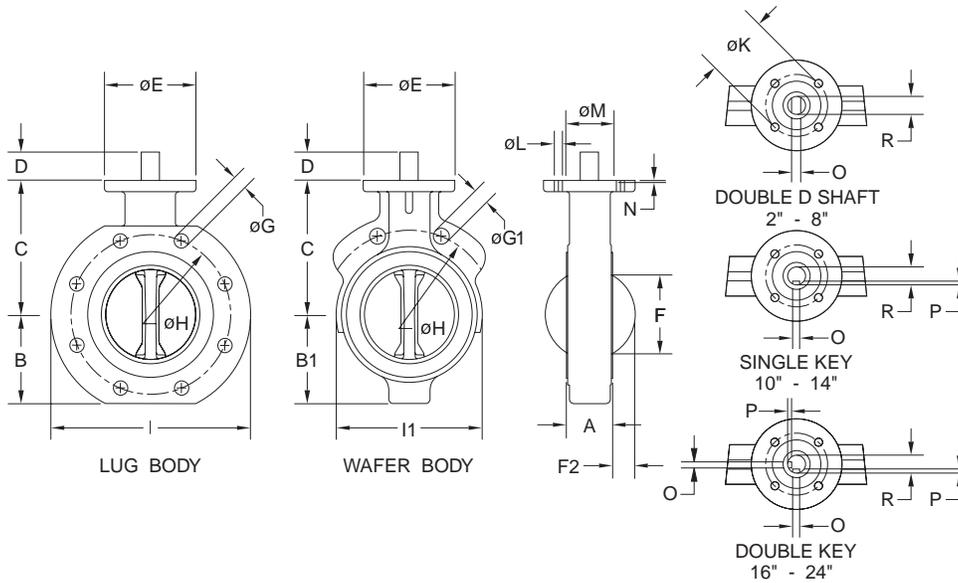
Valve Disc Angle of Degrees Open

| Valve Size | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
|------------|------|------|------|------|-------|-------|-------|-------|
| 2" | 8 | 20 | 43 | 73 | 111 | 159 | 205 | 233 |
| 3" | 18 | 40 | 86 | 150 | 229 | 326 | 405 | 473 |
| 4" | 24 | 59 | 117 | 199 | 314 | 474 | 597 | 720 |
| 6" | 74 | 160 | 289 | 485 | 793 | 1174 | 1500 | 1838 |
| 8" | 117 | 283 | 571 | 977 | 1451 | 2231 | 2964 | 3750 |
| 10" | 211 | 422 | 857 | 1400 | 1943 | 2919 | 4403 | 5441 |
| 12" | 319 | 630 | 1200 | 2075 | 3215 | 4783 | 7191 | 8699 |
| 14" | 422 | 797 | 1424 | 2172 | 3475 | 5489 | 8662 | 10568 |
| 16" | 616 | 1189 | 1786 | 2956 | 5103 | 7902 | 11160 | 13693 |
| 18" | 817 | 1543 | 2742 | 4734 | 7685 | 11312 | 15063 | 18321 |
| 20" | 1094 | 1992 | 3664 | 6578 | 10021 | 14509 | 19133 | 22133 |
| 24" | 1576 | 2669 | 5188 | 9209 | 14088 | 20418 | 26313 | 30409 |

All values represented in US gallons per minute (GPM).

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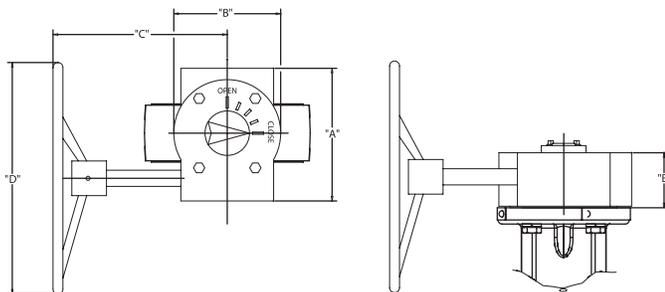
NIBCO® Sure Seal® Lined Butterfly Valves Dimensions



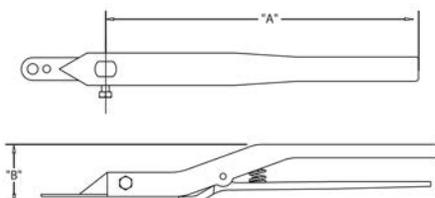
| ANSI 150 | | | | | | | | | | | | | | | | | | | | | |
|------------|------|-------|------|-------|------|------|-------|------|-------------------|---------|-------|-------|-------|------|------|-------|------|-----|-------|-------|-------|
| Valve Size | A | B | B1 | C | D | E | F | F2 | G | G1 | H | I | I1 | K | L | M | N | ISO | O | P | R |
| 2 | 1.69 | 2.28 | 2.20 | 5.12 | 1.25 | 4.02 | 1.22 | 0.24 | 4 x 5/8 - 11 | 2 x 3/4 | 4.75 | 6.02 | 4.09 | 2.76 | 0.35 | 2.205 | 0.14 | F07 | 0.375 | | 0.500 |
| 3 | 1.81 | 3.46 | 3.31 | 6.50 | 1.25 | 4.02 | 2.48 | 0.67 | 4 x 5/8 - 11 | 2 x 3/4 | 6.00 | 8.27 | 5.69 | 2.76 | 0.35 | 2.205 | 0.14 | F07 | 0.438 | | 0.551 |
| 4 | 2.05 | 4.02 | 3.94 | 7.28 | 1.25 | 4.02 | 3.54 | 1.06 | 8 x 5/8 - 11 | 2 x 3/4 | 7.50 | 9.65 | 6.46 | 2.76 | 0.35 | 2.205 | 0.14 | F07 | 0.500 | | 0.750 |
| 6 | 2.19 | 4.92 | 4.92 | 8.54 | 1.18 | 4.02 | 5.31 | 1.81 | 8 x 3/4 - 10 | 2 x 7/8 | 9.50 | 11.61 | 8.66 | 2.76 | 0.35 | 2.205 | 0.14 | F07 | 0.625 | | 0.875 |
| 8 | 2.36 | 6.30 | 6.22 | 9.65 | 1.18 | 5.98 | 7.44 | 2.80 | 8 x 3/4 - 10 | 2 x 7/8 | 11.75 | 14.44 | 10.79 | 4.92 | 0.56 | 3.425 | 0.14 | F12 | 0.625 | | 0.875 |
| 10 | 2.68 | 7.64 | 7.48 | 10.63 | 2.25 | 5.98 | 9.41 | 3.62 | 12 x 7/8 - 9 | 2 x 1 | 14.25 | 16.97 | 12.99 | 4.92 | 0.56 | 3.425 | 0.14 | F12 | 0.250 | 0.125 | 1.125 |
| 12 | 3.08 | 9.02 | 8.86 | 12.13 | 2.40 | 5.98 | 11.42 | 4.41 | 12 x 7/8 - 9 | 2 x 1 | 17.00 | 20.31 | 14.94 | 4.92 | 0.56 | 3.425 | 0.14 | F12 | 0.250 | 0.125 | 1.125 |
| 14 | 3.62 | 10.08 | | 12.99 | 2.40 | 8.27 | 12.91 | 4.92 | 12 x 1 - 8 | | 18.75 | 22.82 | | 6.50 | 0.83 | 5.197 | 0.20 | F16 | 0.250 | 0.125 | 1.125 |
| 16 | 4.02 | 11.50 | | 14.37 | 1.46 | 8.27 | 14.84 | 5.75 | 16 x 1 - 8 | | 21.25 | 25.45 | | 6.50 | 0.83 | 5.197 | 0.20 | F16 | 0.500 | 0.216 | 1.250 |
| 18 | 4.49 | 12.28 | | 15.75 | 1.97 | 8.27 | 16.72 | 6.46 | 16 x 1 1/8 - 8 UN | | 22.75 | 27.04 | | 6.50 | 0.83 | 5.197 | 0.20 | F16 | 0.500 | 0.216 | 1.875 |
| 20 | 5.00 | 13.49 | | 17.13 | 2.00 | 8.27 | 18.78 | 7.24 | 20 x 1 1/8 - 8 UN | | 25.00 | 29.54 | | 6.50 | 0.83 | 5.197 | 0.20 | F16 | 0.500 | 0.216 | 1.875 |
| 24 | 6.06 | 15.72 | | 20.08 | 2.46 | 8.27 | 22.05 | 8.46 | 20 x 1 1/4 - 8 UN | | 29.50 | 34.50 | | 6.50 | 0.83 | 5.197 | 0.20 | F16 | 0.500 | 0.216 | 1.875 |

Note: All Valves are designed in conformance with API 609 standards. Valves greater than 24" are available on separate data sheets.

Lined Butterfly Valves Gear-Op and Handle Dimensions



| Dimension | | | | | |
|------------|--------|--------|--------|-----|-------|
| Valve Size | "A" | "B" | "C" | "D" | "E" |
| 2" - 6" | 5.07" | 4.00" | 5.77" | 8" | 2.65" |
| 8" - 12" | 6.90" | 6.00" | 9.50" | 12" | 3.00" |
| 14" - 16" | 7.80" | 6.70" | 9.00" | 16" | 3.00" |
| 18"-24" | 11.50" | 10.25" | 10.75" | 16" | 4.40" |



| Dimension | | |
|------------|---------|-------|
| Valve Size | "A" | "B" |
| 2" - 4" | 10.33" | 1.13" |
| 6" | 12.875" | 2.15" |

Visit our website for the most current information.

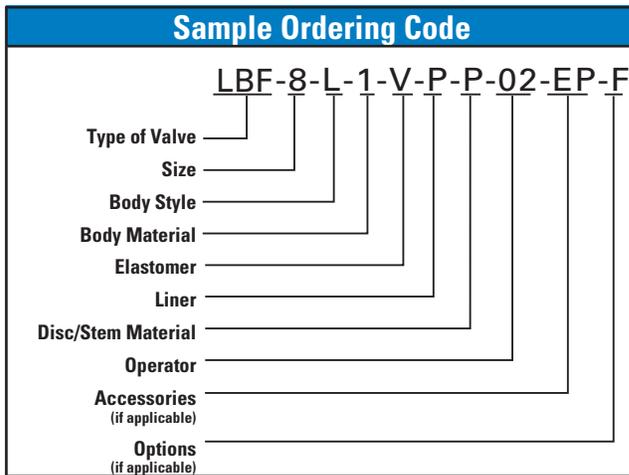
| Torque Values | | | | | | |
|---------------|-------------------|--------|------------|------|-------|-------|
| Size ANSI | Breakaway Torque* | | Body Style | | | |
| | MPTFE | | Wafer | | Lug | |
| | Nm | In Lbs | Kg | Lbs | Kg | Lbs |
| 2 | 30 | 266 | 2.6 | 5.7 | 4.7 | 10.4 |
| 3 | 44 | 399 | 4.3 | 9.5 | 8.9 | 19.6 |
| 4 | 60 | 531 | 6.3 | 13.9 | 12.3 | 27.1 |
| 6 | 114 | 1009 | 10.9 | 24.0 | 17.7 | 39.0 |
| 8 | 190 | 1682 | 16.2 | 35.7 | 28.8 | 63.5 |
| 10 | 300 | 2655 | 24.1 | 53.1 | 40.3 | 88.8 |
| 12 | 400 | 3540 | 31.2 | 68.8 | 61.4 | 135.3 |
| 14 | 465 | 4115 | | | 87.8 | 193.5 |
| 16 | 615 | 5443 | | | 92.4 | 203.7 |
| 18 | 755 | 6682 | | | 112 | 246.9 |
| 20 | 920 | 8142 | | | 122.2 | 269.3 |
| 24 | 1200 | 10620 | | | 183.1 | 403.6 |

*Actual operating torques will be lower. When sizing actuator, multiply torque values by 1.25 safety factor.

NIBCO® Sure Seal® Lined Butterfly Valves

Ordering Information

| | | | | | |
|-------------|-----------------------|------------------|--------------|----------------------------------|-------------------------------------|
| SIZE | BODY STYLE | ELASTOMER | LINER | DISC/STEM | OPERATOR |
| 2 2" | W Wafer | V Fluorocarbon | P MPTFE | P PFA Lined 255SS | 00 Bare Stem |
| 3 3" | L Lug | S Silicone | T PTFE | E ETFE Lined 255SS | 01 Lever Locking Handle |
| 4 4" | | H Hypalon | U UHMWPE | A Alloy 20 | 02 Manual Gear |
| 6 6" | | E EPDM | E ETFE | B Hastelloy B | 03 Double Acting Pneumatic Actuator |
| 8 8" | BODY MATERIAL | | A PFA | I Inconel 600 | 04 Fail Open Pneumatic Actuator |
| 10 10" | 1 A395 Ductile Iron | | | S 316L Stainless Steel | 05 Fail Closed Pneumatic Actuator |
| 12 12" | 2 316 Stainless Steel | | | SP 316L Stainless Steel Polished | 06 Electric Actuator |
| 14 14" | | | | T Titanium Grade 2 | 07 Hydraulic Actuator |
| 16 16" | | | | H Hastelloy C276 | |
| 18 18" | | | | | |
| 20 20" | | | | | |
| 24 24" | | | | | |



| | |
|---------------------------------|-----------------------------|
| ACCESSORIES | OPTIONS |
| P Pneumatic Positioner | S Solenoid Valve |
| EP Electro Pneumatic Positioner | F Filter Regulator W/ Gauge |
| PS Proximity Switch Box | M Manual Override |
| LS Micro Limit Switches | |

For additional options and materials, contact your nearest NIBCO Sure Seal distributor.

Quality Assurance

NIBCO Sure Seal Lined Butterfly Valves are strictly produced under a company-committed, statistical quality assurance process to assure defect-free products that are delivered to our customers on time. All valves are manufactured utilizing the latest computer-aided production methods and molding technology, guaranteeing control of the manufacturing process and reduction of rework. Each valve is individually tested in accordance with the EN558-1/T5 and API 598 specifications and is spark tested with 30,000 volts to assure lining integrity. Each valve is individually designed and tested using applicable standards as a minimum requirement. A PMI process is performed on all critical components allowing total identification. Valves are also subject to visual and dimensional examinations as well as functional tests. Upon successfully completing all testing, each valve is assigned a stainless steel serial numbered identification plate that quickly identifies the valve and assures complete traceability. Mill Test Certificates are available upon request.

Visit our website for the most current information.

NIBCO® Sure Torque® Actuators



NIBCO Sure Torque Actuators are a proven winner in today's market. With over 14 sizes and 90°, 120°, 135°, 180°, 240° and 270° rotation, Sure Torque actuators can accommodate any situation.

All NIBCO Sure Torque Actuators can be easily field converted from double acting

to spring return by inserting the correct number of spring cartridges to the double acting unit, thus eliminating bulky housing extensions, saving weight and space. Specially designed, preloaded self-contained spring cartridges are completely contained before end cap screws release, ensuring the safest installation and removal.

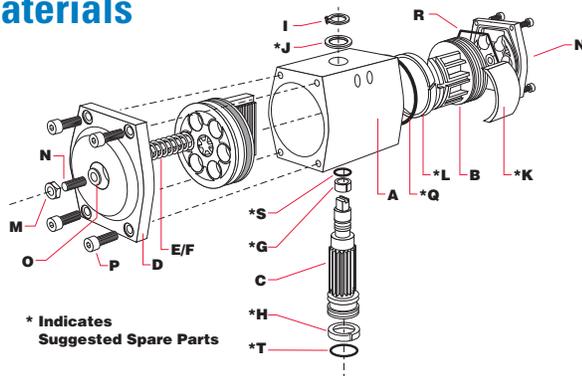
NIBCO Sure Torque Actuators have an uncomplicated compact design. Internal porting eliminates the need for costly, external tubing. Accessory mounting is to NAMUR standards. Solenoid mounting to NAMUR specifications is available, and is standard on sizes STU148 and above.

NIBCO Sure Torque Actuators are available with a variety of accessories. Direct mount solenoids are available in NEMA 4, 7, and 9 in standard and special voltages. Limit switches are available in NEMA 4, 7 and 9. Positioners can be supplied to receive .207-1.034 bar or 4-20 mA input control signals. Declutchable manual gear overrides are available for all size actuators.

The actuator drive side directly mounts to NIBCO Sure Seal butterfly valves. Available in ISO 5211 Dimensional Standards to meet your needs.

Safe, compact, versatile, rugged, long-lasting and economical. NIBCO Sure Torque Actuators are the best choice for your actuation needs. Call or write for further information.

NIBCO Sure Torque Actuator Materials



| Qty. | Description | Material | |
|------|-------------|----------------------|--|
| A | 1 | Body | Anodized aluminum Polyester epoxy coating |
| B | 2 | Piston** | Die cast aluminum |
| C | 1 | Pinion | E.N.P. ASTM B656 Steel |
| D | 2 | End cap** | Epoxy coated aluminum |
| E | Max 12 | Spring | Epoxy coated steel |
| F | Max 12 | Spring cartridge | Acetal/brass |
| G | 1 | Upper pinion bearing | Acetal 500 |
| H | 1 | Lower pinion bearing | Acetal 500 |
| I | 1 | Circlip | E.N.P. ASTM B656 Steel |
| J | 1 | Pinion washer | Acetal 500 |
| K | 2 | Piston skate | Acetal 500 |
| L | 2 | Piston guide ring | Acetal 500 |
| M | 2 | Sealing nut | 304 Stainless Steel |
| N | 2 | Travel stop | 304 Stainless Steel |
| O | 2 | Travel stop O-ring | Buna-N |
| P | 8 | End cap screw | 304 Stainless Steel |
| Q | 2 | Piston O-ring | Buna-N |
| R | 2 | End cap O-ring | Buna-N |
| S | 1 | Upper pinion O-ring | Buna-N |
| T | 1 | Lower pinion O-ring | Buna-N |

**ST10-ST20 utilize polyamide materials

NIBCO Sure Torque Actuator Accessories



Limit Switches

Sure Seal® Watchman VPT series are ruggedly designed to meet industrial process requirements for reliable cost effective feedback systems. Sure Seal Sentinel VPT series are ruggedly designed to keep up with today's advanced process control technology. The Sentinel VPT is an accurate, versatile valve position transmitter.

Positioners

The Sure Torque series SP/SE is designed and manufactured to offer years of trouble free and economical operation. Every component has been field tested and field proven to exceed your expectations of performance and reliability. The series SP/SE simply outperforms every other positioner in its class.



Solenoids

Sure Seal solenoids are constructed with quality anodized aluminum for the body, phosphate treated black steel springs, copper shading coil and stainless steel core and core tube. We are committed to providing the strength and performance you demand.



Visit our website for the most current information.

VALVES



Pressure-rated bronze, iron and alloy-iron gate, globe and check valves • Pressure-rated bronze ball valves • Boiler specialty valves • Commercial and industrial butterfly valves • Lined butterfly valves • Circuit balancing valves and kits • Carbon and stainless steel ball valves • ANSI flanged steel ball valves • Lined ball valves • Pneumatic and electric actuators and controls • Grooved ball and butterfly valves • High performance butterfly valves • UL/FM fire protection valves • MSS specification valves • Bronze specialty valves • Low pressure gate, globe, check and ball valves • Frostproof sillcocks • Quarter-turn supply stops • Quarter-turn low pressure valves • PVC and CPVC plumbing and industrial ball valves • Bronze and iron y-strainers • Sample valves • Sanitary valves • Lead-free valves • Hydronic valves • Labor saving valves • Manifold systems • Water temperature control valves • System quality valves • Press x PEX transition valves

FITTINGS

Wrot and cast copper pressure and drainage fittings • Cast copper alloy flanges • Powder coated steel companion flanges • Wrot and cast press fittings • ABS and PVC DWV fittings • Schedule 40 PVC pressure fittings • CPVC CTS fittings • CPVC CTS-to-metal transition fittings • Schedule 80 PVC and CPVC systems • Lead-free fittings • Press x PEX transition fittings • Cast bronze push fittings

LEAD-FREE: Weighted average lead content ≤0.25%



INDUSTRIAL PLASTICS

PVC and Corzan® CPVC schedule 80 fittings, true union ball and ball check valves, butterfly valves, and specialty valves • Polypropylene and Kynar® PVDF schedule 80 pipe, fittings, and true union ball and ball check valves • Pneumatic and electric actuation systems

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Kynar® is a registered trademark of Arkema Inc.



eNIBCO

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NIBCO®
AHEAD OF THE FLOW®

NIBCO INC.

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