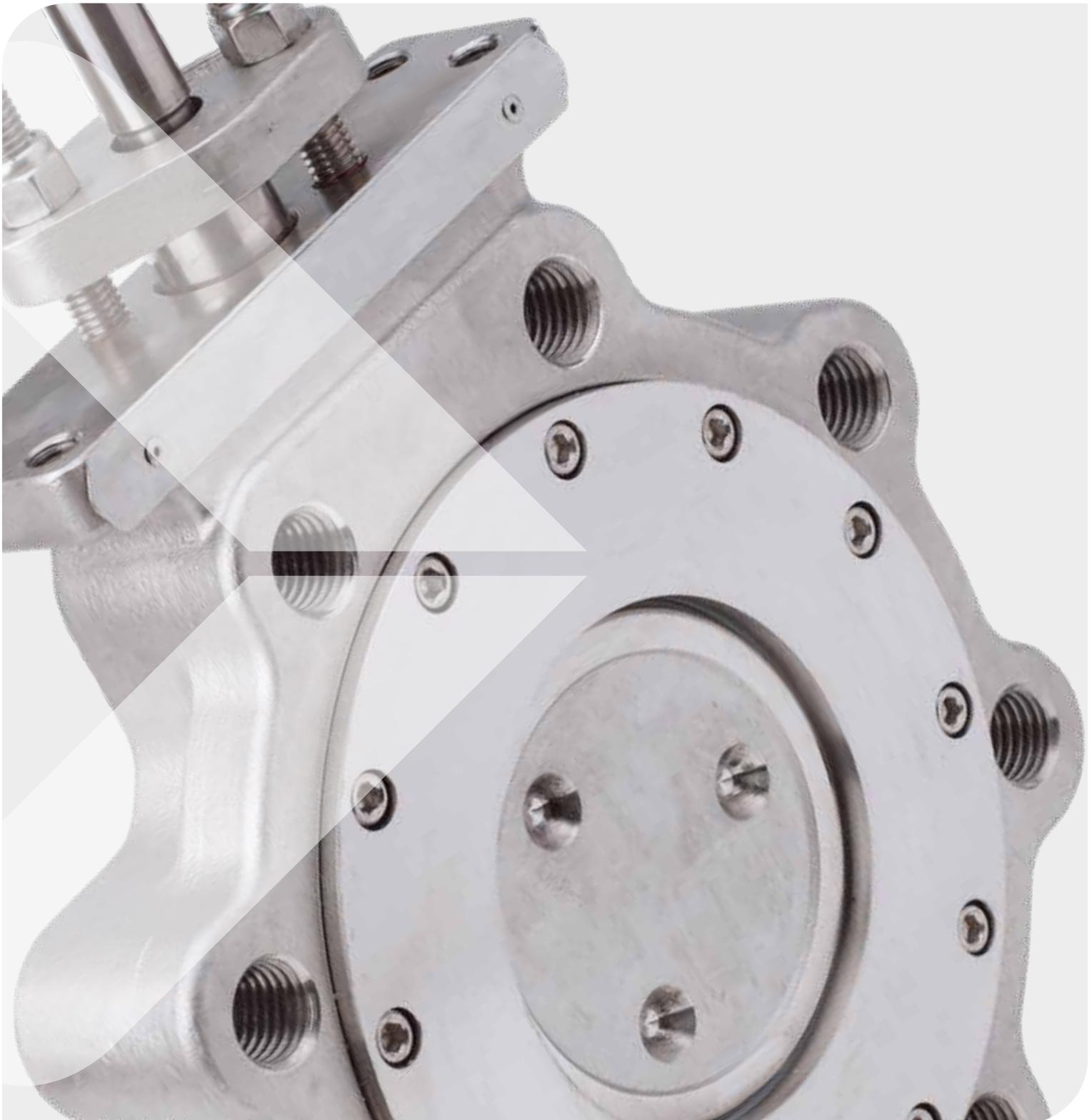


Reliable tightness and performance

Jamesbury™ Wafer-Sphere™ high-performance butterfly valve





Why Jamesbury Wafer-Sphere high-performance butterfly valves?

Jamesbury™ brand valves have always been recognized leaders in valve technology. For nearly 50 years, our unique features have been field-proven to provide trouble-free shut-off in thousands of applications just like yours. This experience allows us to provide a butterfly valve that can lower your costs without risking performance.

Our **Wafer-Sphere™ high-performance butterfly valve** combines a special off-center disc with proprietary seat designs and revolutionary Xtreme™ sealing technology to provide you with the tightest-sealing, longest-lasting, lowest-cost alternative to gate valves, as well as to other heavier, rotary-type valves.

Since our cycle life is far greater than a traditional butterfly valve, Wafer-Sphere high-performance butterfly valves are often a more cost-effective solution even for applications without high-performance service demands. They are especially suited for

applications in grain/corn processing, chemicals, petrochemicals, power, refining, steel, air separation, HVAC and more.

Wafer-Sphere benefits over typical gate valves

- Flexible lip seats and eccentric disc resist erosion and wear.
- Total costs are comparatively lower as valve size increases.
- Simple tightening of the valve gland packing stops leakage.
- Actuators easily accept limit switches and positioners.
- Easy to automate and accessorize



Wafer-Sphere benefits over typical gate valves

- Significantly less weight
- Higher pressure ratings
- Compact design requiring less space
- Leaktight shut-off over long cycle life
- Ease of automation
- Multitude of applications
- Ease of maintenance
- Lower overall installed cost

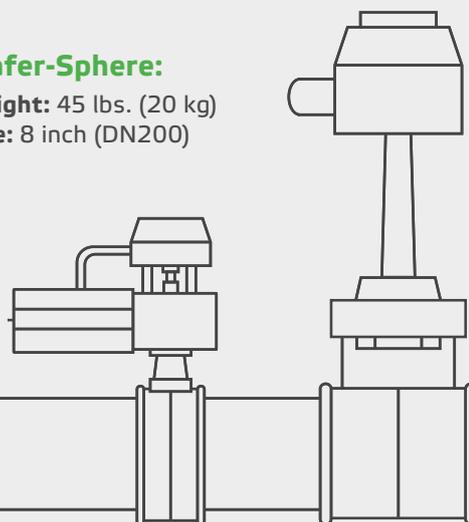
Dimension comparison between Wafer-Sphere and typical gate valves

Wafer-Sphere:

Weight: 45 lbs. (20 kg)
Size: 8 inch (DN200)

Gate valve:

Weight: 310 lbs. (141 kg)
Size: 8 inch (DN200)



Performance advantages over ordinary valves

Nothing compares when you take a close look at Wafer-Sphere butterfly valves. See for yourself what makes it the most preferred brand of high-performance butterfly valve.

High pressure ratings

Jamesbury high-performance butterfly valves are rated at ASME 150, 300 and 600 pressure classes. They offer proven reliability in applications ranging from vacuum to very high pressure.

Application range

Wafer-Sphere designs and materials can handle a broad range of services.

Wide temperature range

With Xtreme sealing materials, Wafer-Sphere butterfly valves are fully rated to replace costlier valves in cryogenic (-320°F / -196°C) to high-temperature (500°F / 260°C) applications.

Lower weight

The narrower dimensions of the Wafer-Sphere compared to typical gate valves allows reaching the same or higher rating with a valve that weighs considerably less. This allows for cost savings in terms of material use, space requirements and installation times.

Easy automation

Like traditional butterfly valves, Wafer-Sphere high-performance butterfly valves are always easier to automate than gate valves, and often easier to automate than gate and other rising stem valve types.

A low-cost environmental solution

With Emission-Pak™ assemblies and our unique, retrofittable stem sealing device, Wafer-Sphere valves can easily be adapted to comply with evolving emissions regulations.

Reliability

Jamesbury seats can provide reliability and tight shut-off under many damaging process conditions.

Lower installed cost

Wafer-Sphere high-performance butterfly valves are designed to replace gate valves in most applications, whether for easier automation or simply for lower cost and improved performance. This is truly one case where less is more.

Increased safety assurance

In difficult applications the reliable, tight sealing of Wafer-Sphere high-performance butterfly valves reduces fugitive emissions.



Wafer-Sphere key features

Positive shaft retention

- Positive shaft retention prevents movement of the shaft past the compression plate.

Positive shut-off

- Flexible-lip polymeric seat assures positive shut-off, compensating for wear to extend life.

Easy maintenance

- Only the insert needs to be removed to replace the seat. The insert and seat are self-aligning.

Fire-Tite™ sealing

- Wafer-Sphere Fire-Tite valves meet the requirements of API 607, 4th edition with a secondary metal seat that ensures tight sealing before, during and after a fire.

Low torque requirements

- Low output torque requirements allow the use of less costly actuators.

Wide pressure range

- Available in ASME 150, 300 and 600 pressure classes – in wafer and in single-flanged lugged designs.

Broad range of materials

- Available in a broad range of materials for standard and special services including chlorine, oxygen, cryogenics and vacuum.



Tighter, more reliable sealing

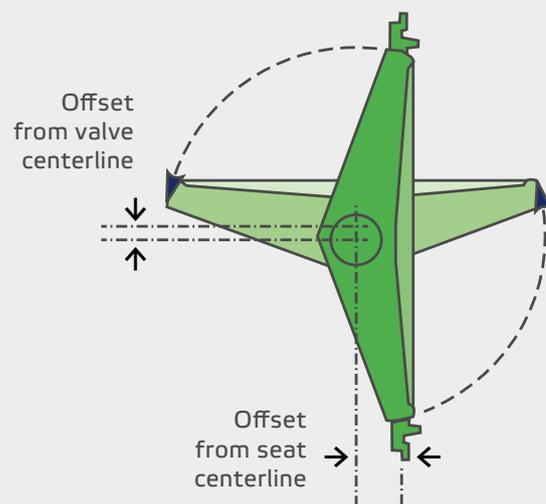
What turns an ordinary butterfly valve into a high-performance butterfly valve?

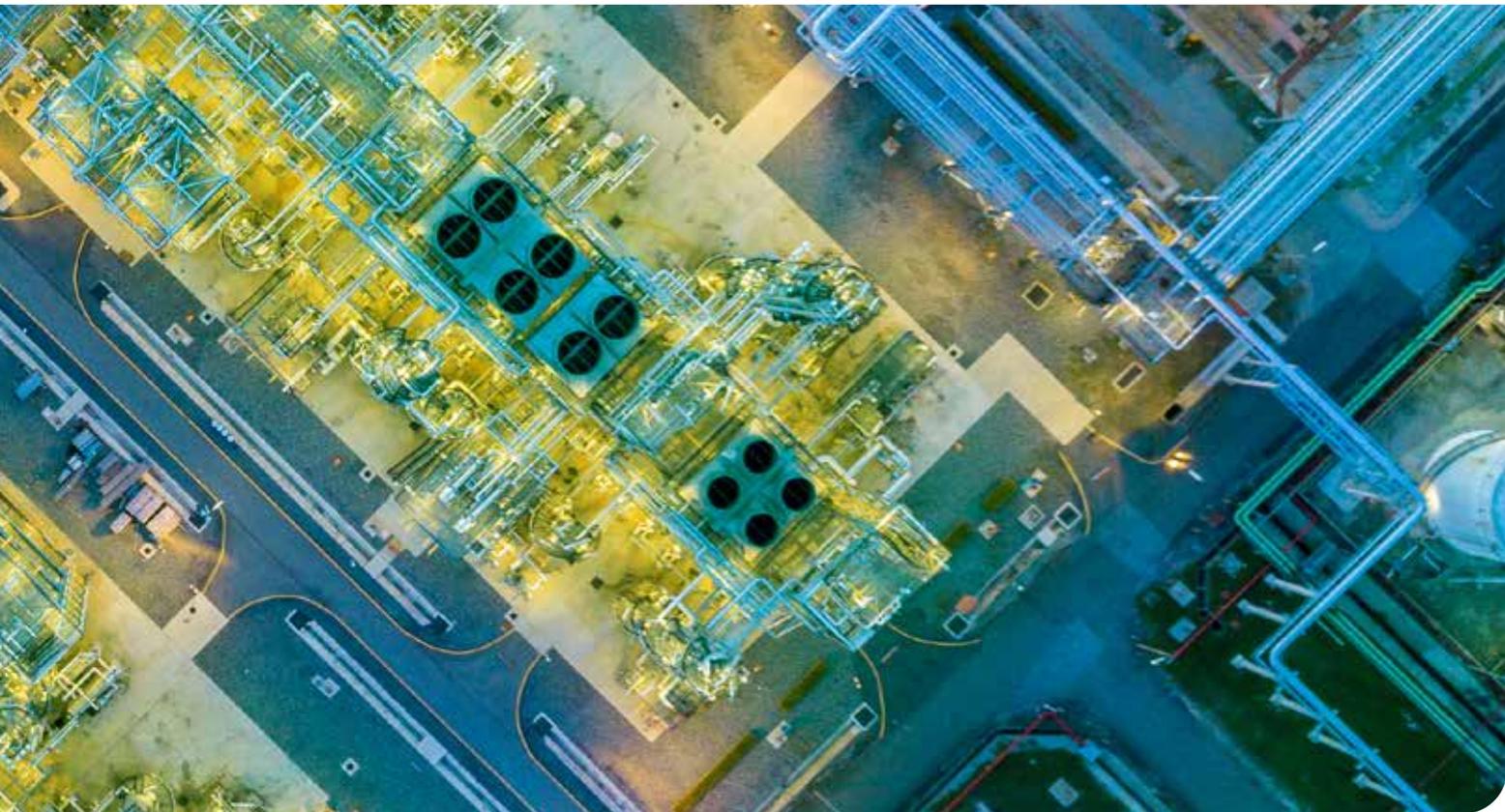
It begins with an offset shaft and eccentric disc arrangement. This double offset design transmits a camming action to the disc and swings the disc completely away from the seat. Conventional butterfly valves do not have this

feature. This design eliminates wear points around the disc at the top and bottom of the seat, as well as the resulting beading, scuffing, and ultimate tearing and leakage. When closed, the disc cams tightly into its seat to create a dependable tight seal.

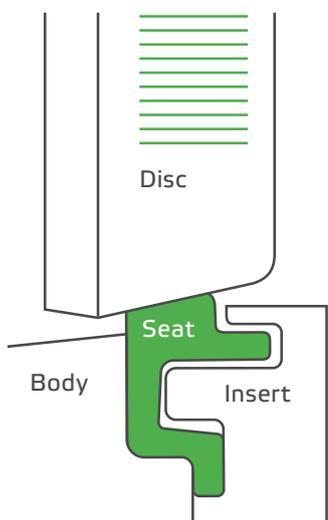
Double offset design

- The unique sealing system also incorporates a double eccentric disc and shaft design to further extend the effectiveness of the seat.
- This unique offset design transmits a camming action to the disc and swings the disc completely away from the seat preventing jamming.
- This design eliminates wear points around the disc at the top and bottom of the seat. When closed, the disc cams tightly into its seat to create a bubble-tight seal.
- The combination of the double-offset disc and the flexible-lip seat are especially effective in a full range of applications from high vacuum (1×10^{-5} Torr) to 1480 psi (102.1 bar).



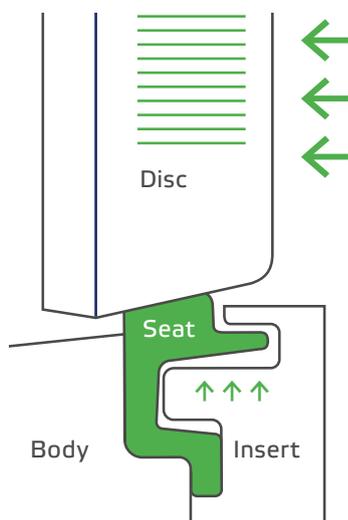


Unique polymeric sealing provides trouble-free operation



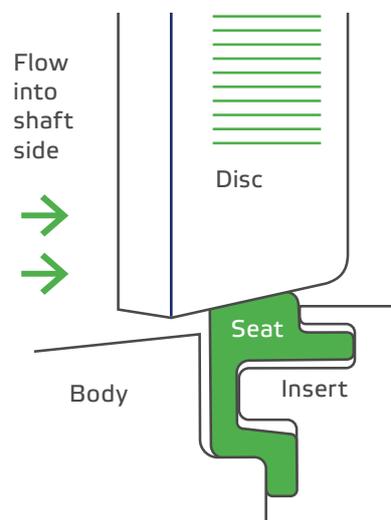
Energized seat

When the valve is shut, the disc slightly deflects and the seat “energizes”. While energized, the seat’s sealing surface is constantly pushing against the edge of the disc.



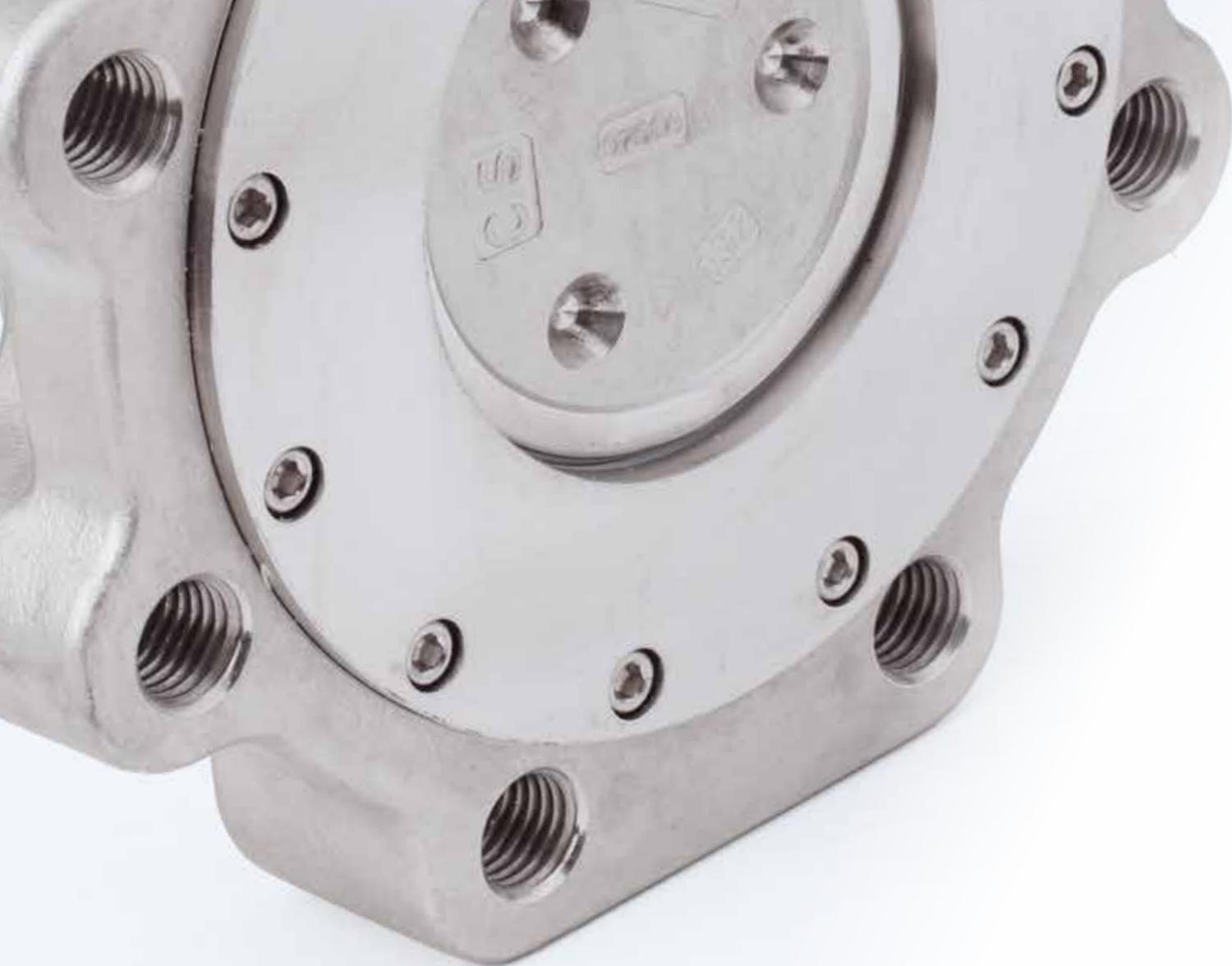
Pressure on insert side

When pressure is on the insert side, pressure is applied under the seat lip, further amplifying the sealing force between the disc and the seat.



Pressure on non-insert side

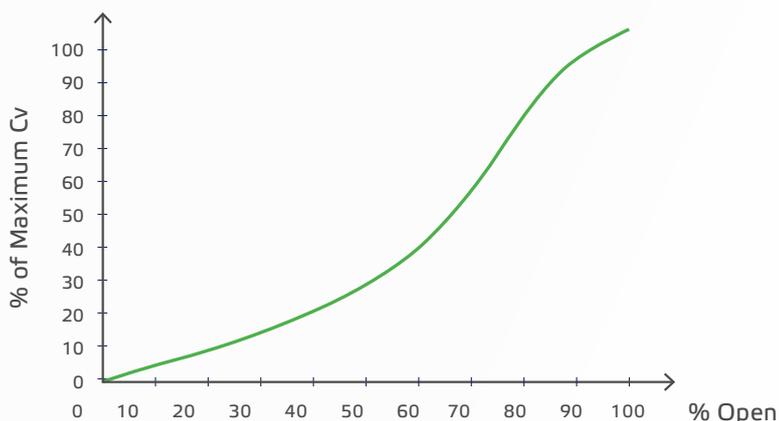
When pressure is on the non-insert side, the disc moves into the seat. Due to the spherical profile of the disc, the more the disc moves into the seat, the tighter the shut-off. Excessive movement of the seat is limited by the flexible lip, which contacts the bottom of the grooves in the insert ring.



Suited for both on-off and control applications

Wafer-Sphere butterfly valves accommodate a variety of pneumatic and electric actuators for on-off service, as well as, pneumatic double-acting and spring-return actuators with positioners for control service. They offer superior control characteristics, wide rangeability, and an inherent flow characteristic that is modified equal percentage.

Cv factors for series 815, 830 and 860 valves in intermediate positions



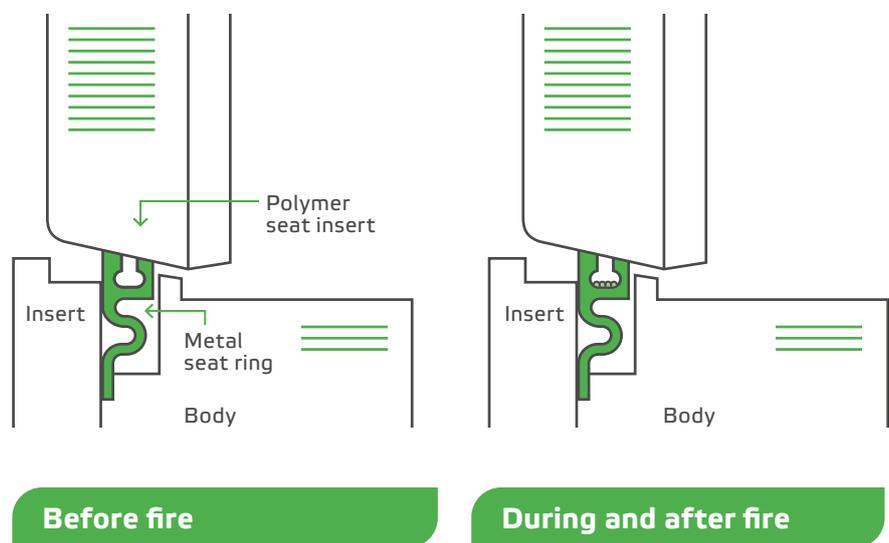


High reliability for critical applications

Our products are qualified with intense cryogenic, fire, temperature and pressure testing in our engineering and development laboratories.

Fire-Tite Wafer-Sphere valves offer outstanding advantages in providing reliable operation under normal conditions as well as during a fire. They are specifically developed for use in such industries as petroleum refining and distribution, chemical, marine and others.

The metal-seat ring effectively stops flow through the valve if the polymer seat is destroyed in a fire. Fire-Tite valves meet the requirements of NACE and are qualified to API 607 and BS 6755.



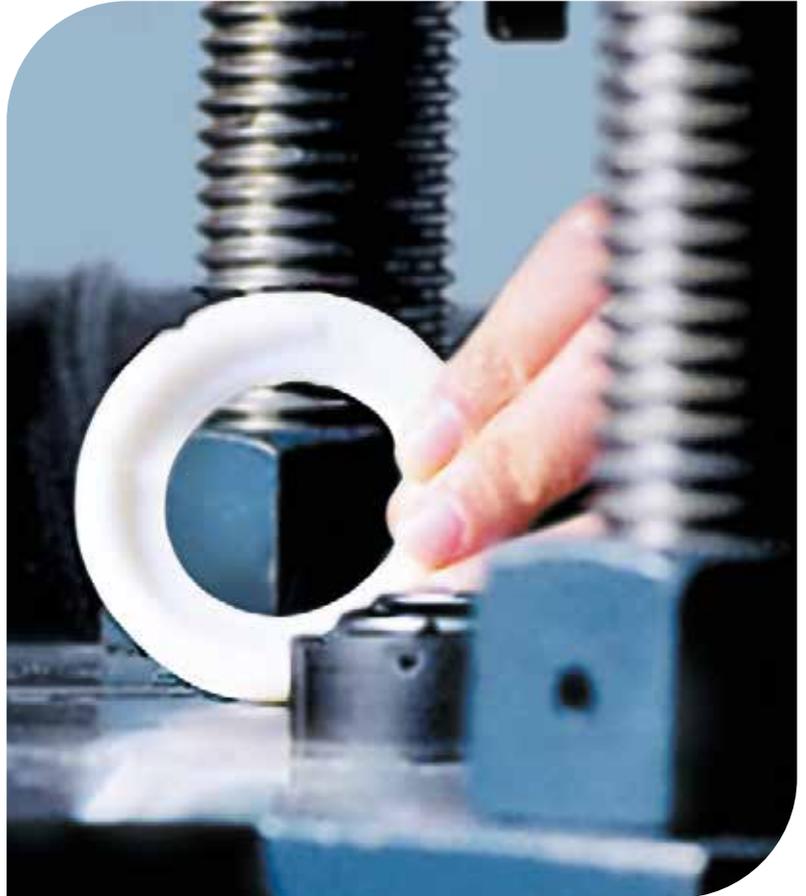
Expanding performance boundaries

When combined with our unique and application-proven seat designs, proprietary Xtreme seating materials broaden Wafer-Sphere butterfly valves' temperature and pressure range.

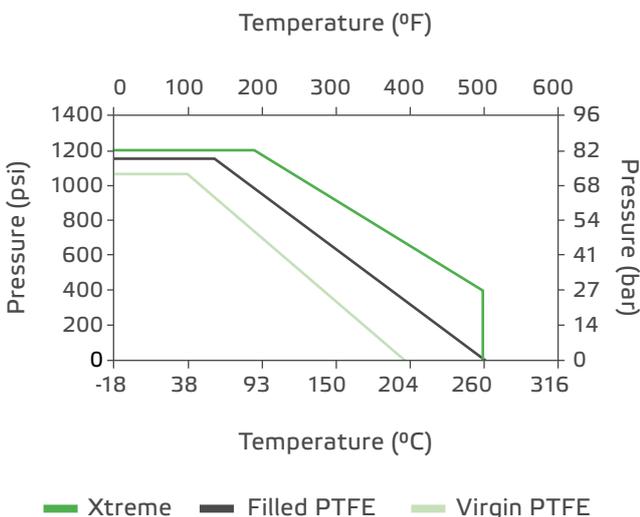
When combined with our unique, industry-proven seat designs, the Xtreme seating material broadens the range of temperature and pressure applications. Xtreme sealing technology provides for applications from -320° to 500°F (-196° to 260°C) and pressures from vacuum to 1480 psi (102 Bar) with chemical compatibility similar to PTFE.

Xtreme seat material's unique design and higher density produces a valve seat with lower permeability and less permanent deformation. This results in longer cycle life, better thermal cycle performance and better pressure cycle capability. Lower permeability improves performance in polymerizing service.

The broader temperature and pressure range eliminates the need for multiple seat options and lowers cost. With Xtreme seats, you get superior performance and greater value with no additional investment.

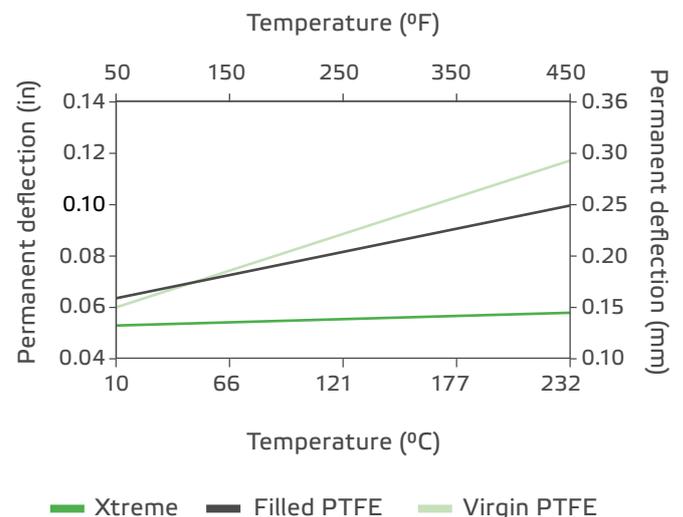


Typical pressure-temperature ratings



Typical seat recovery

Permanent deflection with 2500 ft-lbs (3390 Nm) load



Wafer-Sphere special services

Emission-Pak live-loaded packing

When enhanced emissions control is needed to comply with evolving emissions standards, Emission-Pak live-loaded packing is available. The Emission-Pak live-loaded packing assembly includes PTFE V-ring packing live-loaded with disc spring washers for standard construction valves and graphite packing with Inconel disc springs for Fire-Tite valves to maintain a constant packing force without overcompression. It is available with new valves or as a retrofit kit for existing valves. Additional options, available with or without the Emission-Pak live-loaded packing, include double packing or double packing with monitoring port to facilitate testing of the primary seal and allow detection of a potential leak problem.

Steam service

Wafer-Sphere butterfly valves are well-suited for a wide range of steam applications. These range from PTFE-seated valves capable of handling lower pressure to valves with Xtreme seats.

Cryogenic service

Using Wafer-Sphere with unique polymeric and polymeric/ metal composite seats, cryogenic Wafer-Sphere valves are rated to give tight, reliable shutoff on service extending from -320°F (-196°C) to ambient condition at pressures up to 1440 psi (99 bar). Cryogenic seats for valve sizes 3" – 12" (DN 80 – 300) are composite. Seats for sizes 14" – 48" (DN 350 – 1200) are Kel-F® material. **See Bulletin W130-1.**

Chlorine service

Wafer-Sphere valves reliably control the flow of both liquid and gaseous chlorine. The patented seat design insures positive, leaktight shutoff of this lethal substance. A range of key materials permits selection of the Wafer-Sphere valve best suited for the moisture content of the chlorine that is to be handled. Valves for chlorine service are specially cleaned to preclude possible reaction of the chlorine to foreign substances. **For further information see Bulletin W150-2.**

Oxygen service

Wafer-Sphere valves are available specially prepared for oxygen service, capable of filling a wide range of applications that include both on-off operation and control service. A rigid procedure is followed in preparing components, assembling, testing, and packaging these valves to assure cleanliness and to avoid the inherent danger of oxygen's reaction with grease, oil, or other foreign matter. Bulletin W150-3 contains additional details.

NACE service

ASME Class 150, 300 and 600 Wafer-Sphere valves are available to comply with the NACE standards. These valves are well suited for oil and gas industry applications requiring sulfide stress cracking resistant metallic materials.

Abrasive service

For applications involving slurries or gas-borne solid particles, Wafer-Sphere valves are available with the disc hard-coated with tungsten titanium carbide (TTC). Service life of the valve is increased significantly with the assurance of extended sealing capability. This hard coating is also available on other valve components that may be subject to wear in other unusual process conditions.

Vacuum service

Standard Wafer-Sphere valves are rated for tight shut-off of vacuum to 2×10^{-2} torr. Special high vacuum Wafer-Sphere valves can be provided for vacuums to 1×10^{-5} torr. Additionally, high vacuum valves can be certified to have a leakage rate not to exceed 1×10^{-5} cc/sec. of helium at 1×10^{-5} torr vacuum. **Refer to Bulletin W150-4 for details.**

High-cycle option

Testing in the Jamesbury R&D laboratories indicates that a combination of components, including Xtreme (X) seat, filled super PTFE shaft seals, 316 SS/Woven PTFE shaft bearings, PEEK®-filled PTFE thrust bearings and excluder rings, yields significantly longer cycle life than a standard configuration valve. Actual cycle performance is subject to media, pressure, and temperature conditions. Applications such as oxygen, nitrogen, hydrogen, water, and other clean media are ideally suited for this option. Warning: Avoid any media containing acids or chemicals such as chlorine, bromine, sulfur dioxide, or steam, or temperatures that exceed 325°F (163°C).

Jamesbury Wafer-Sphere high-performance butterfly valves

Butterfly valves

| Jamesbury butterfly valves | | | | | | | |
|---|----------------------------|------------------------------|--|--|--|---|--------|
| Product | Series | Size | Body | Specifications | | Bulletin | |
| ASME class 150 butterfly valves  | 815-series | 2 1/2 – 30" (65 – 750DN) | Wafer | Pressure: Max 285 psi / 19.6 bar Temperature: Max 500°F / 260°C Body/trim: Carbon Steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C Seat: Teflon®, Xtreme, UHMW | W101-6 | | |
| | | 2 1/2 – 60" (65 – 1500DN) | Lugged | | | | |
| | F815-series Fire-Tite | 3 – 30" (80 – 750DN) | Wafer | | | Pressure: Max 285 psi / 19.6 bar Temperature: Max 500°F / 260°C Body/trim: Carbon Steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C Seat: 316SS/PTFE, 316SS/XT | W101-6 |
| | | 3 – 60" (80 – 1500DN) | Lugged | | | | |
| ASME class 300 butterfly valves  | 830-series | 3 – 30" (80 – 750DN) | Wafer | Pressure: Max 740 psi / 51 bar Temperature: Max 500°F / 260°C Body/trim: Carbon Steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C Seat: Teflon®, Xtreme, UHMW | W101-6 | | |
| | | 3 – 36" (80 – 900DN) | Lugged | | | | |
| | F830-series Fire-Tite | 3 – 30" (80 – 750DN) | Wafer | | | Pressure: Max 740 psi / 51 bar Temperature: Max 500°F / 260°C Body/trim: Carbon Steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C Seat: 316SS/PTFE, 316SS/XT | W101-6 |
| | | 3 – 36" (80 – 900DN) | Lugged | | | | |
| ASME class 600 butterfly valves  | 860-series | 3 – 24" (80 – 600DN) | Wafer | Pressure: Max 1440 psi / 99.3 bar Temperature: Max 500°F / 260°C Body/trim: Carbon Steel, 316SS Seat: Xtreme | W104-1 | | |
| | | | Lugged | | | | |
| F860-series Fire-Tite | 3 – 24" (80 – 600DN) | Wafer | Pressure: Max 1440 psi / 99.3 bar Temperature: Max 500°F / 260°C Body/trim: Carbon Steel, 316SS Seat: 316SS/PTFE | | | W104-1 | |
| | | Lugged | | | | | |
| ASME class 150 butterfly valves  | 835-series | 30 – 60" (750 – 1500DN) | | Lugged | Pressure: Max 100 psi / 6.9 bar Temperature: 500°F / 260°C Body/trim: Carbon Steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C Seat: Teflon®, Xtreme, 316SS/PTF | | W105-1 |
| | | | | Lugged | | | |
| F835-series Fire-Tite | 30 – 60" (750 – 1500DN) | Lugged | Pressure: Max 100 psi / 6.9 bar Temperature: 500°F / 260°C Body/trim: Carbon Steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C Seat: Teflon®, Xtreme, 316SS/PTF | W105-1 | | | |
| | | Lugged | | | | | |

Cryogenic services butterfly valves

| Jamesbury cryogenic services butterfly valves | | | | | |
|--|-------------|------------------------------|-----------------|---|----------|
| Product | Series | Size | Body | Specifications | Bulletin |
| ASME class 150 cryogenic services butterfly valves  | K815-series | 2 1/2 – 30" (65 – 750DN) | Wafer | Pressure: Max 275 psi / 19 bar Tempature: -320 to +100°F / -198 to +38°C Body/trim: 316SS, Monel Seat: 316SS/PTFE, KEL-F | W130-1 |
| | | 2 1/2 – 60" (65 – 1500DN) | Lugged | | |
| ASME class 300 cryogenic services butterfly valves  | K830-series | 2 1/2 – 30" (65 – 750DN) | Wafer | Pressure: Max 720 psi / 49.6 bar Tempature: -320 to +100°F / -198 to +38°C Body/trim: 316SS, Monel Seat: 316SS/PTFE, KEL-F | W130-1 |
| | | 2 1/2 – 60" (65 – 1500DN) | Lugged | | |
| ASME class 600 cryogenic services butterfly valves  | K860-series | 3 – 12" (80 – 300DN) | Wafer Lugged | Pressure: Max 1440 psi / 99.3 bar Tempature: -320 to +100°F / -198 to +38°C Body/trim: 316SS, Monel Seat: 316SS/PTFE | W130-1 |



Valmet's professionals around the world work close to our customers and are committed to moving our customers' performance forward – every day.

Valmet Flow Control Oy

Vanha Porvoontie 229
01380 Vantaa, Finland
flowcontrol@valmet.com
+358 10 417 5000
valmet.com/flowcontrol

