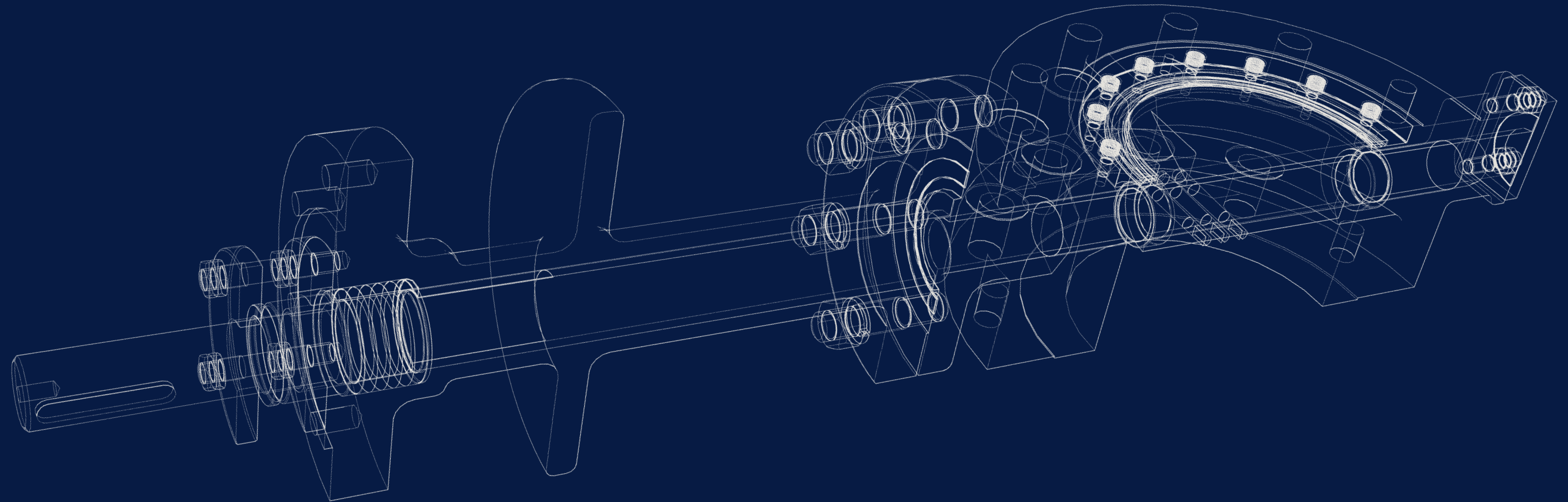


# Cryogenic Butterfly Valves



Engineering  
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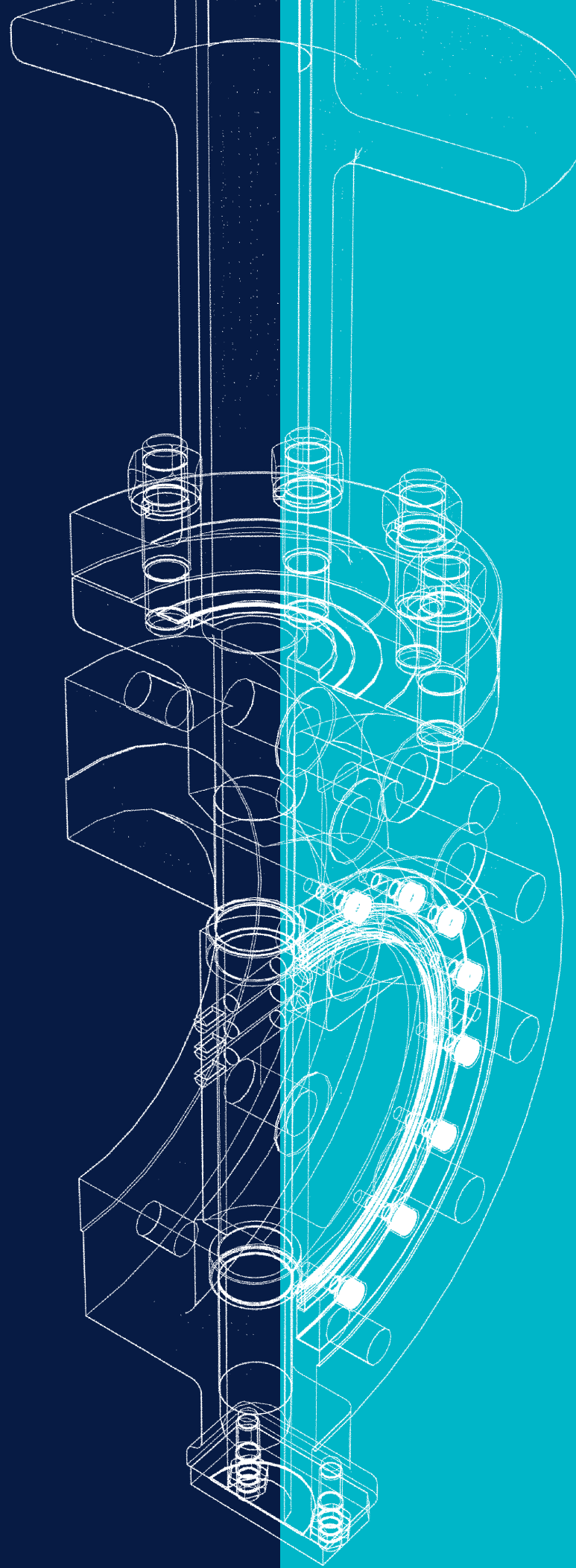
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# Contents

Introduction	01
Engineering data	02 - 03
Performance benefits	02 - 03
Engineering data (continued)	04 - 05
Dimensions	05



## CRYOGENIC BUTTERFLY VALVES

Severn's Cryogenic valve range is developed from our years of control valve knowledge and experience. We have developed our 8100, 8300 and 8500 ranges for cryogenic applications. Open or closed extension bonnets are available for all our valve products, ensuring the gland packings are located away from the line media.

By utilising the principles of our 8100, 8300 and 8500 valve ranges, we can offer a vast range of products, from a single offset swing clear valve, a double offset PTFE seated valve or a Triple Offset valve, all specifically tailored for cryogenic service.

Clients can also choose from standard and bespoke face to face and end connection options. With access panels available on Butt Weld End designs when required.

Severn's Cryogenic Butterfly valve series offers the flexibility in design for assurance in performance and ensures you maintain and achieve your core imperative of safe operations and minimum downtime.



# Engineering data

## General – Design features

- ✔ One piece through shaft
- ✔ Extended bonnet to locate the packings away from the cold line media
- ✔ The quarter turn design ensures ease of actuation for both control and on/off duties
- ✔ Valve size range – 50mm (2in) – 600mm (24in) with larger sizes up to 72in on request.
- ✔ Temperature ratings from -196°C to +230°C (Higher temperatures available on request)
- ✔ Standard face to face dimensions to API 609/ISO 5752 & B16.10 with non-standard dimensions available on request.
- ✔ Body pressure ratings up to 2500lb
- ✔ Can be manufactured in all commercially available metals in Cast, Forged or Plate form.
- ✔ BWE and Top access panel options available
- ✔ Anti-Cavitation Trim options
- ✔ Shut-off pressures up to 100 bar
- ✔ Low emission certified gland arrangements available

## Swing Clear – Design features (see 8100 Series brochure)

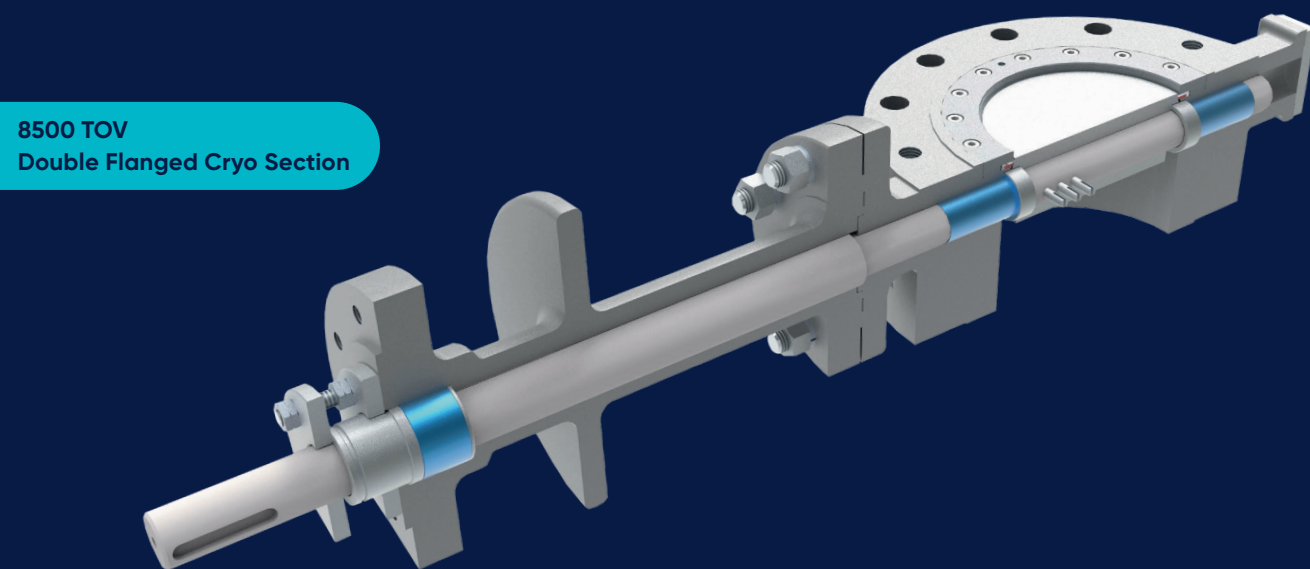
- ✔ Designed to control the flow of liquids and gases for more severe applications generally encountered in chemical and petrochemical applications where a complete tight shut-off is not essential
- ✔ The 'swing clear' disc which has no contact with the valve body enables the valves to be used with high pressures and a wide range of temperatures
- ✔ Streamlined shape disc which provides minimum resistance to flow and on larger valves ribs are incorporated for extra strength

## High Performance – Design features (see 8300 Series brochure)

- ✔ Seat design ensures low seating and breakout torque
- ✔ Pressure Energized seal

## TOV – Design features (see 8500 Series brochure)

- ✔ Interchangeable laminated & hybrid seal options
- ✔ Disc supplied hard faced as standard for improved abrasion resistance
- ✔ Metal seated for arduous conditions
- ✔ Torque seated design ensures consistent sealing performance.
- ✔ Self-compensating design for wear and temperature



# Performance benefits

## General

- ✔ One piece through shaft (BS6364 para 4.12) offers maximum strength and rigidity, minimizing deflection thereby minimizing wear and maximizing longevity of seal performance
- ✔ Anti Cavitation trims and baffle plates available to reduce cavitation and noise issues
- ✔ Anti Blowout options available (standard on #300 and above)

## Swing Clear

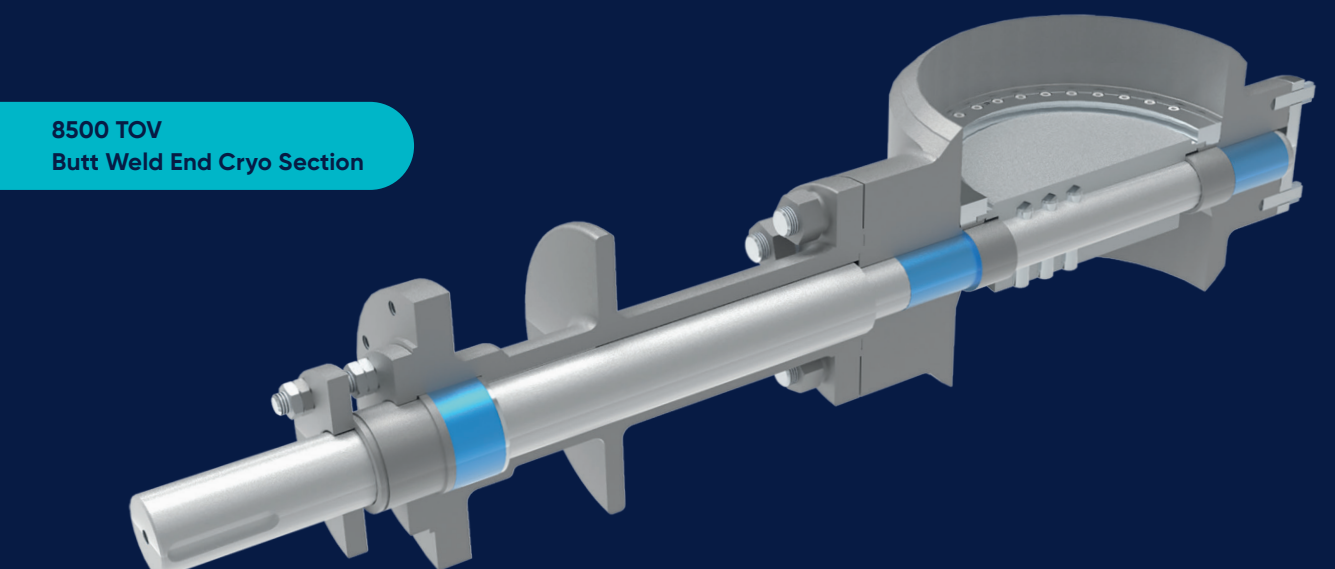
- ✔ Low torque
- ✔ Maximised Cv
- ✔ Hard facing options available for improved abrasion resistance
- ✔ Available with a range of low noise and anti-cavitation trims
- ✔ Reliable performance.

## High performance

- ✔ The double eccentric action enables the disc to achieve a uniform 360° seal contact and to move into and break out from the seat with the minimum of wear
- ✔ The seat design ensures low seating and breakout torque
- ✔ The advanced seal is pressure assisted but also employs a metal energising ring to ensure the seat area of the valve is always loaded even at very low operating pressures
- ✔ Reliable leakage performance

## TOV

- ✔ Torque energised seal for low & high pressures
- ✔ Self-compensating design for wear and temperature
- ✔ No internal bolting to come loose due to vibration (not BWE)
- ✔ Disc supplied hard faced as standard for improved abrasion resistance
- ✔ Available with a range of low noise and anti-cavitation trims
- ✔ Fully in-field serviceable
- ✔ Reliable performance.





## Engineering data (continued)

### End connection sizes/types

2in (50mm) – 24in (600mm), larger sizes available.  
Wafer, Lugged, Flanged or Butt Weld Ends .  
For other styles and sizes please contact us

### Valve body ratings

ASME 150 – ASME 2500 EN 1092 PN 10 to PN 400

### Body configurations

Wafer, Lugged, Double Flanged and Butt Weld End

### Body face to face dimensions

API 609/ISO 5752 & B16.10 with non-standard dimensions available on request.

### Bonnet styles

Standard Cryogenic and Extended cryogenic

### Standard valve packing

Teflon and Graphite

### Trim options

Anti Cavitation, Baffles, Half Baffles and Hard Faced

### Seat leakage class

Up to ANSI/FCI 70.2. Class IV to VI, API 598 Zero available on request.

### Construction materials

A wide range of standard materials are available for both the valve pressure containing parts and trim, including carbon and stainless steel, duplex/super duplex, titanium and high nickel alloys. Stellite and other hard facings/coatings are available. For further details on materials please contact us.

### Paint

A wide range of paint finishes are available including enamel, alkyd gloss and various epoxy finishes.

### Clean build

Severn maintains high clean build standards—utilising clean build areas including Oxygen clean and a Ultra High Purity clean room.

### Actuation

We offer a wide range of actuators including – pneumatic scotch yoke and rack and pinion, electric, hydraulic, electro hydraulic and manually operated.

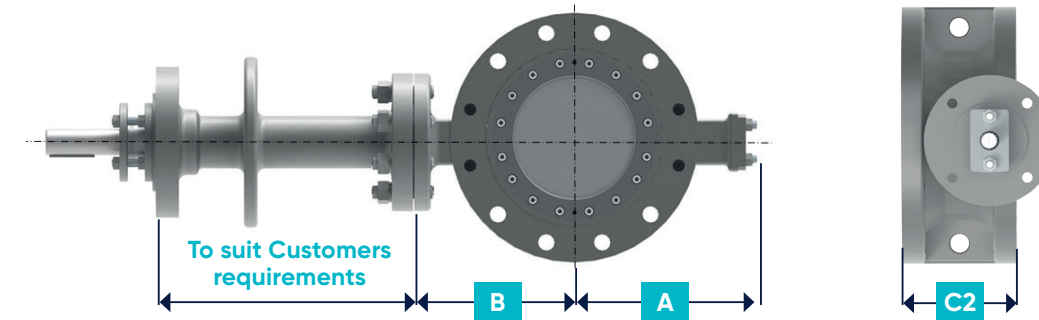
### Instruments

A wide range of control instruments are available from Severn including positioners, air-filter regulators, volume boosters, solenoid valves, and lock-up valves.

## Applications

- ✔ Butane
- ✔ LNG Liquefaction
- ✔ LNG, LPG and GTL Plants
- ✔ LNG receiving terminals
- ✔ Liquid Natural Gas Service
- ✔ Raw LNG
- ✔ Ethanol
- ✔ Propane
- ✔ LNG Tanker Ships
- ✔ Vent Gas
- ✔ End Flash Gas
- ✔ Ammonia
- ✔ Methanol
- ✔ HP MR Liquid and Gas
- ✔ Propylene

## Dimensions

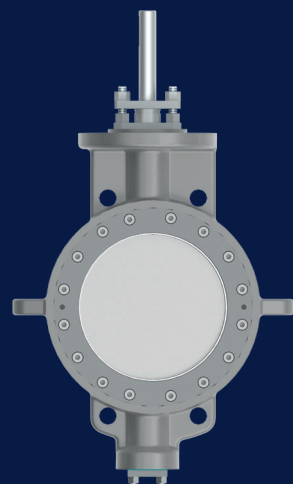


SIZE	TOV 150#				
	A	B	C1 (Wafer)	C2 (D/F)	
80mm (3")	142	125	46	114	
100mm (4")	162	145	54	127	
150mm (6")	186	185	56	140	
200mm (8")	217	265	64	152	
250mm (10")	265	270	71	165	
300mm (12")	320	315	80	178	
350mm (14")	335	340	92	190	
400mm (16")	372	350	102	216	
450mm (18")	405	385	114	222	
500mm (20")	420	445	127	229	
600mm (24")	505	495	154	267	

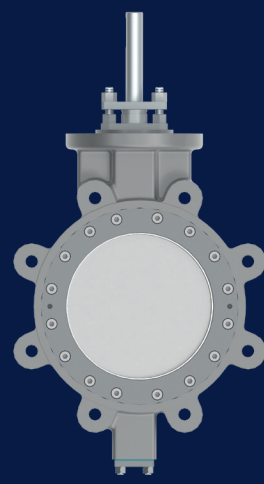
SIZE	TOV 300#				
	A	B	C1 (Wafer)	C2 (D/F)	
80mm (3")	152	135	48	114	
100mm (4")	198	190	54	127	
150mm (6")	215	215	59	140	
200mm (8")	315	245	71	152	
250mm (10")	270	253	83	165	
300mm (12")	308	291	92	178	
350mm (14")	342	325	117	190	
400mm (16")	372	355	133	216	
450mm (18")	408	390	149	222	
500mm (20")	442	421	159	229	
600mm (24")	416	495	181	267	

## Valve body style options

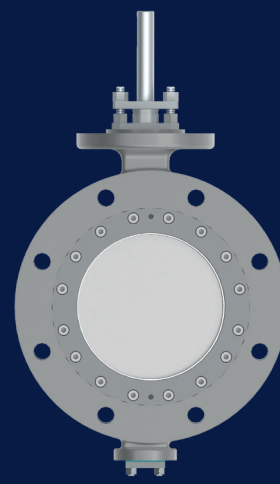
Cryogenic valves are available in four basic body styles, Wafer, Lugged, Double Flanged and Butt Weld End. Special face to face dimensions are available on request.



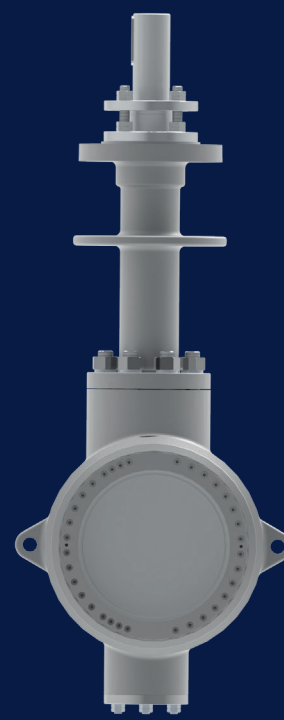
Wafer



Lugged

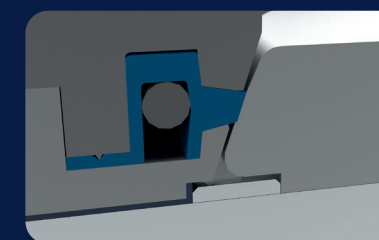


Double Flanged

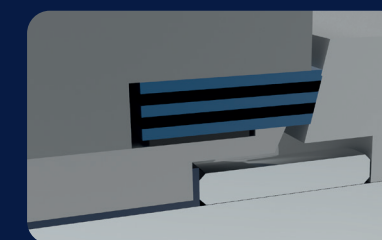


Butt Weld End

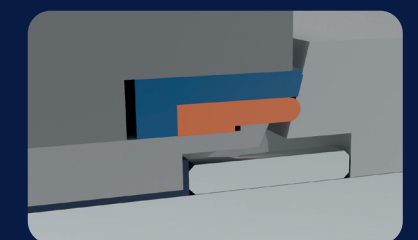
## Seat options available



High Performance

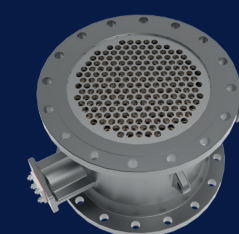


Laminate (TOV)

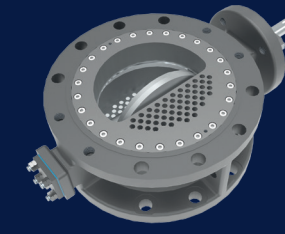


Hybrid Seal (TOV)

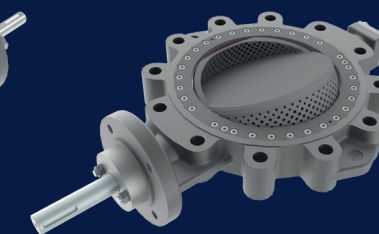
## Trim options and accessories available



Full Baffle



Half Baffle

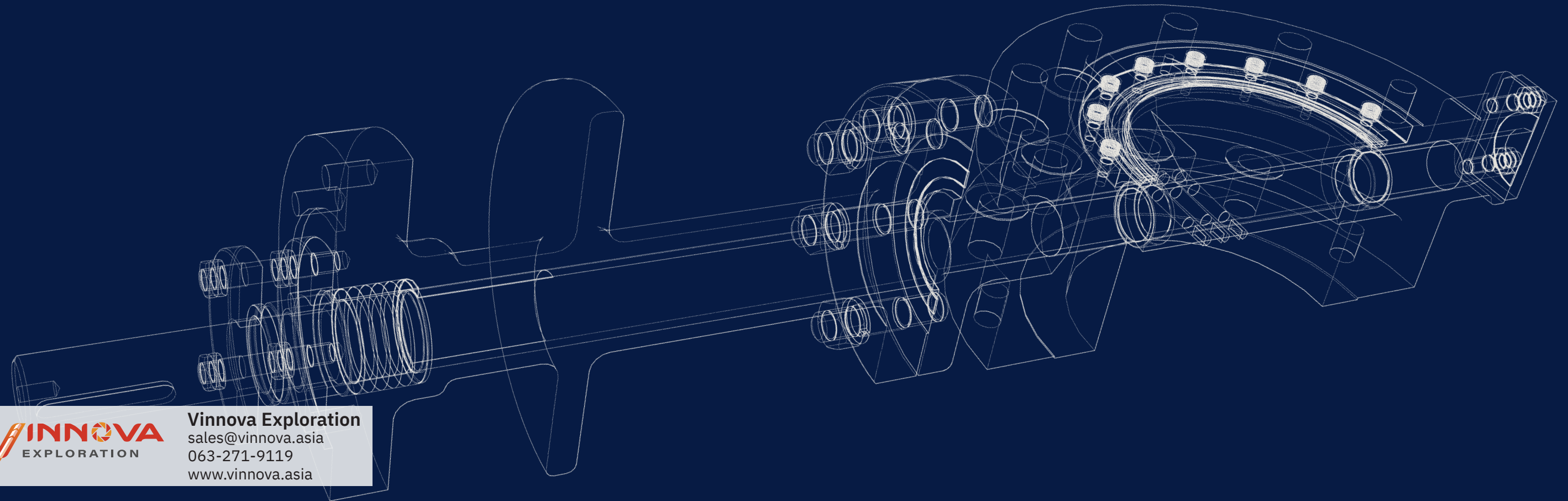


Anti-Cavitation



8000 Series Top Access Panel

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