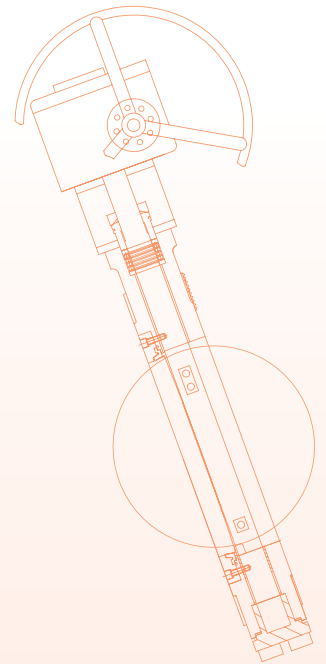


# BUTTERFLY VALVES - HIGH PERFORMANCE & LINED



SHORT VERSION

[Click here](#) for complete version of this catalogue



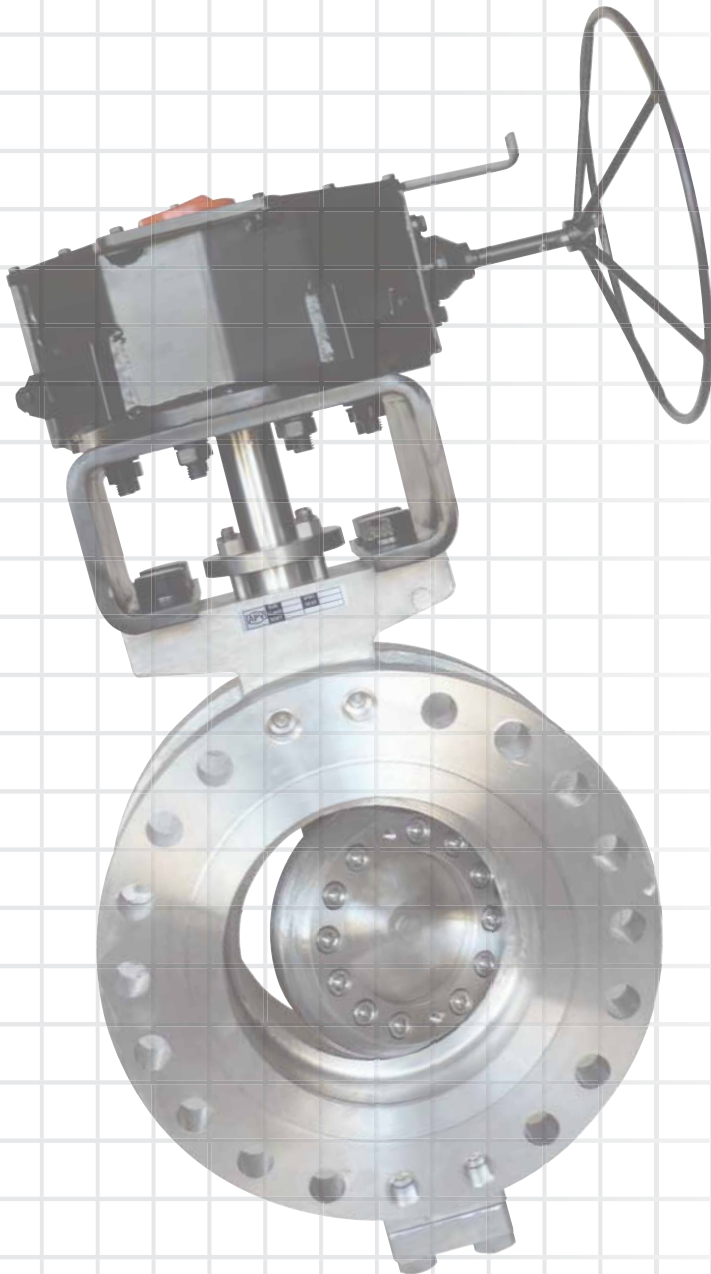
API 607 6th & 7th Ed.  
& ISO 10497-5  
Firesafe Certified



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# QUALITY VALVE MANUFACTURER



## QUALITY COMMITMENT

Quality is Our First Priority.

Consistent product quality and a proven track record makes Australian Pipeline Valve a dependable choice for cast Gate, Globe and Check Valves, where total reliability is the number one concern.

Since its founding, APV's philosophy has been focused on quality. Our valves are manufactured in full compliance to worldwide standards (such as ASME, ANSI, API 6D, API 600, EN, ISO, BS, AS).



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\* This version excludes some of these pages, refer to full version at website.



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# DOUBLE OFFSET BUTTERFLY VALVES

## MODEL SLHBF, SLHBFFS 150 TO 1500 CLASS DOUBLE OFFSET

### RANGE & STANDARDS

<b>Size</b>	50NB - 1800NB (2" to 72")
<b>Class</b>	150 to 1500 ANSI
<b>General Design</b>	API 609 (Cat B) & ASME B16.34
<b>Design Standards</b>	Flanged: MSS-SP-67 Wafer: MSS-SP-68/ API 609-B Wall Thickness: API 609
<b>Construction</b>	Wafer, lugged, flanged
<b>Pressure/ Temp.</b>	ASME B16.34 & API 609-B/ ISO 5752
<b>Face to Face</b>	ASME B16.10 short/ MSS-SP-67/ MSS-SP-68/ API 609-B/ ISO 5752 short
<b>Flange Dimensions</b>	ASME B16.5, over 600NB (24") - MSS-SP-44 OR API 605 or ASME B16.47, AS 4331.1, ISO 7005-1, E1092-1 PN10 ~ 250 also available
<b>Pressure Test</b>	API 598, ISO 5208, EN 1266, MSS-SP67
<b>Leakage Rates</b>	FCI 70-2 Class VI up to zero leakage API 598/ ISO 5208
<b>Temperature Range</b>	Resilient Seal (Soft) -46°C to 220°C (-50°F to 428°F) Metal Seal -46°C to 900°C (-50°F to 1652°F)



### PRINCIPLES OF VALVE DESIGN

The standard SLHBF/SLHBFFS design is double offset (double eccentric). Available in firesafe & non firesafe in soft and metal seated. The soft seated version incorporates a metal seat retainer with an RPTFE insert for high pressure service and long life.

The basic concept of the SLHBF/SLHBFFS is to only utilise a thin slice of a ball valve at the seat ring area. The body is only wide enough to hold the disc, shaft & seat in place, all the remaining material is eliminated because it serves no purpose. Ball valves have 2 seats, but floating balls only seal on the upstream seat hence the sealing effectiveness of a HP Butterfly Valve is the same. The disc seating edge is a segment of a sphere and creates a reliable, high pressure seal against an un-interrupted 360° seat sealing surface. The disc profile is very thin & allows maximum flow with a low pressure drop.

The most common use of the SLHBF/SLHBFFS is to shut-off flow inside a pipeline. Every component of the valve is designed to contribute to this goal. The disc, shaft, bearings, packing & disc pins all work together to ensure that the disc is accurately positioned when closed to allow the seat to energise to the disc & create a seal.



# DOUBLE OFFSET BUTTERFLY VALVES

## MODEL SLHBF, SLHBFFS 150 TO 1500 CLASS DOUBLE OFFSET

### FEATURES - DOUBLE OFFSET

The SLHBF Range is based on a unique quarter-turn design. The double offset shaft and disc configuration together with the advanced high technology seat system provides a reliable rugged multi-purpose butterfly valve range.

At the point of the disc opening, the double offset disc provides a cam-like action, thus preventing excessive seat wear & ensuring a long maintenance free life.

- Seat removal is possible without disassembly of the shaft and disc.
- Body insert protects seat from abrasion and erosion.
- Graphoil or PTFE seal-ring & packing.
- 2 Piece stem for extra flow.

Actuator bracket according to ISO 5211, which allows replacement of the stem seals without removal of the actuator.



### PTFE-Seat System - SLHBF/SLHBFFS

In the preferred flow-direction, the PTFE-Seat system provides optimum performance. In this design, the line pressure acts as a positive force in the seat system even in fluctuating working conditions. The seat ring is retained by a metal seat retainer and is well protected by the valve-body, thus preventing seat distortion.

### Bi-directional\* - SLHBF/SLHBFFS

The primary PTFE-seat ring is backed up by a secondary metal ring. This metal seat provides a mechanical load to energize the PTFE-seat. The metal sealing ring secures and encapsulates the PTFE ring to ensure rigidity. In combination with the line pressure a Bi-directional\* sealing against the line pressure is obtained.

\* Bi-directional flow, however, bi-directional leak tight shut off must be specified with order.

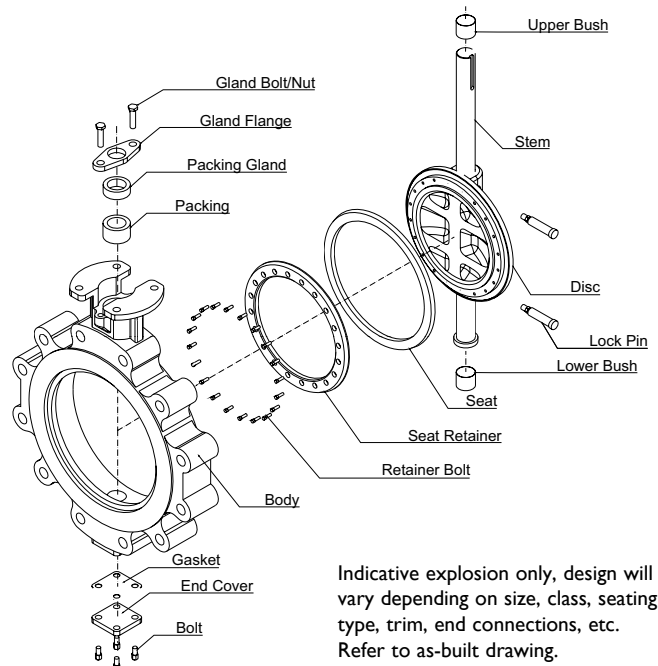
### Fire Safe - SLHBFFS

The model SLHBFFS has a secondary metal seat which gives bi-directional sealing in the event of the PTFE seat insert being burned away in a fire.

### Metal to Metal Seat - SLHBF/SLHBFFS

High temperature service and Abrasive service. Bi-directional and inherently firesafe design.

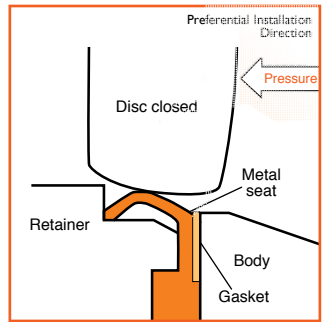
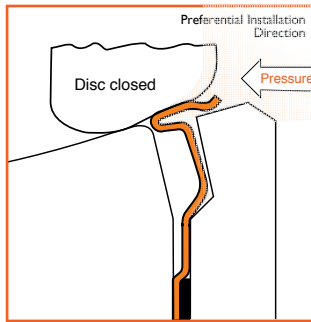
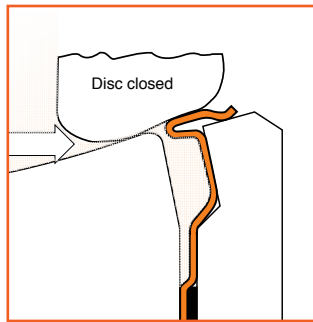
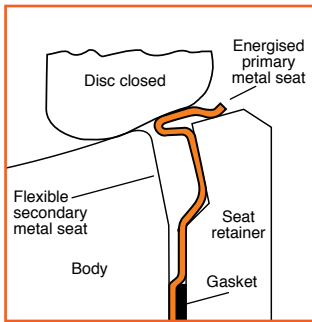
The primary metal seal enables this execution to be used up to 670°C. Seat-rings available are stainless steel ANSI 316L-chromium plated, (maximum allowed temperature: 310°C) and Inconel 625 (maximum allowed temperature: 760°C). As a result the Metal to Metal range meets the full pressure and temperature rating according to ANSI class ratings. Seat leakage can be specified to API 598 (ISO 5208 Leakage Class A), API 6D, FCI 70-2 Class VI etc.



Indicative explosion only, design will vary depending on size, class, seating type, trim, end connections, etc. Refer to as-built drawing.

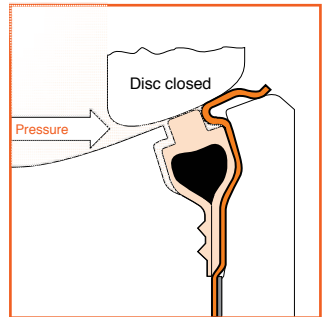
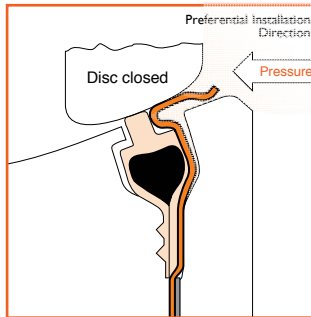
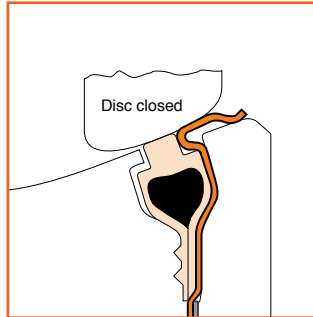
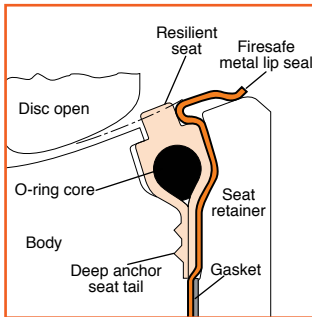
# SEATING STYLES DOUBLE OFFSET

## METAL TO METAL SEAT (FLEXIBLE FLO-SEAL STYLE)

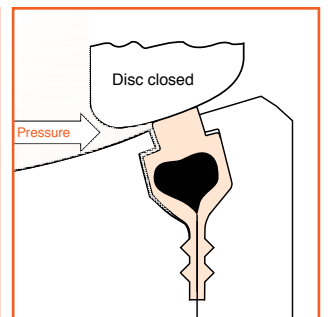
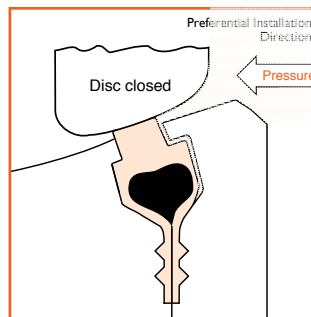
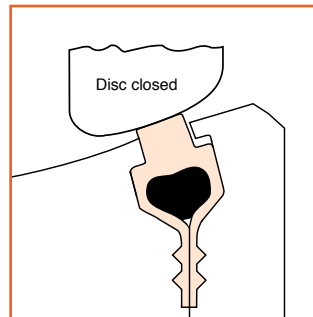
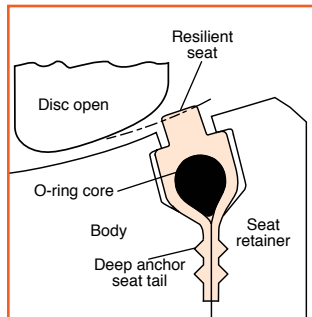


## (SOLID ENERGISED STYLE)

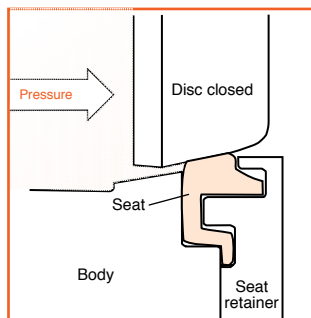
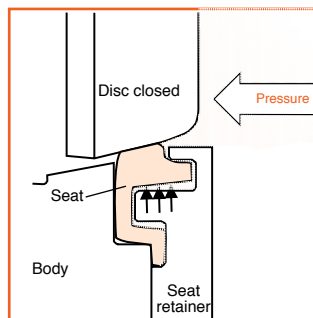
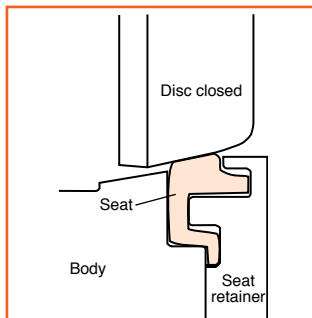
## FIRESAFE SOFT SEAT (ENERGISED FLO-SEAL STYLE)



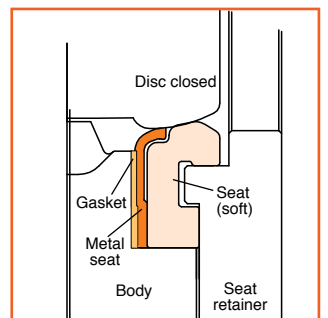
## SOFT SEAT (ENERGISED FLO-SEAL STYLE)



## SOFT SEAT (ENERGISED LIP-SEAL STYLE)



## (FIRESAFE ENERGISED LIP-SEAL STYLE)



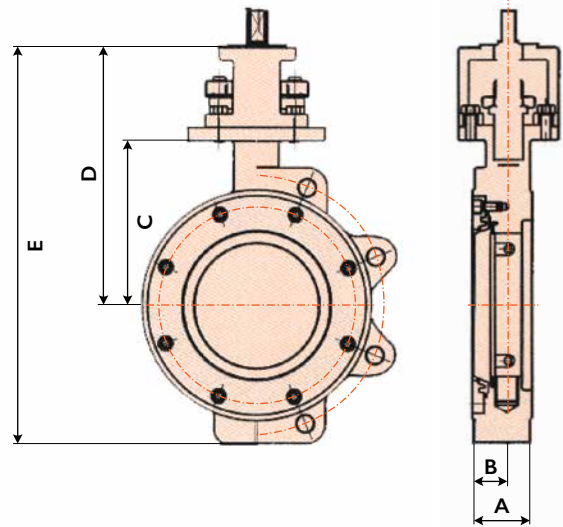
Preferential Installation Direction

Actual drawing supplied on request. Indicative drawings only.

# SLHBFFS/SLHBF DOUBLE OFFSET WAFER & LUG DIMENSIONS

## APPLICABLE STANDARDS

Mounting Pad:	ISO 5211
End Flange:	ANSI B16.5
Wall Thickness:	ANSI B16.34
Face to Face:	MSS SP-68/ API 609
Pressure Temperature Rating:	B16.34
Design	API 609-B



## DIMENSIONS (MM) 150LB & PN25

Size mm	80	100	150	200	250	300	350	400	450	500	600
Size inch	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
A	48.0	54.0	57.0	63.5	71.5	81.0	92.0	101.5	114.5	127.0	154.0
B	27.3	30.6	33.9	40.5	41.8	48.0	56.5	63.0	71.5	79.0	90.5
C	113.0	132.0	162.0	192.0	262.0	298.0	320.0	365.0	388.0	418.0	498.0
D	183.4	202.5	245.3	289.0	364.0	401.5	420.0	482.0	510.0	535.0	679.0
E	256.4	309.6	375.8	470.4	585.2	660.6	710.6	800.6	876.5	930.4	1302.7
ISO 5211 MOUNTING PAD	F07	F07	F10	F10	F10	F14	F14	F14	F16	F16	F25

Dimensions indicative only, refer drawing.

## WEIGHT (KG)

Lug	5.5	15.5	21	36	45	69	95	162	216	242	554
Wafer	9.5	11	16	27	30	45	68	120	168	195	433

## DIMENSIONS (MM) 300LB

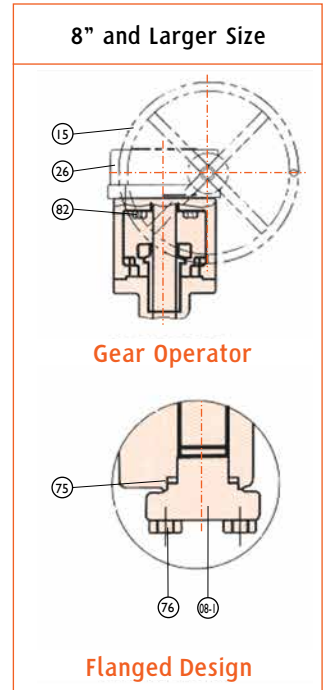
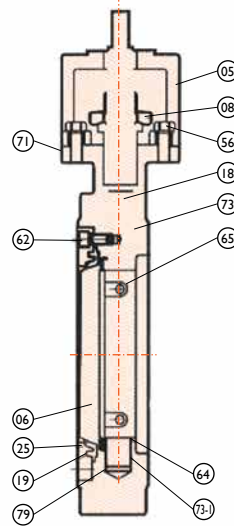
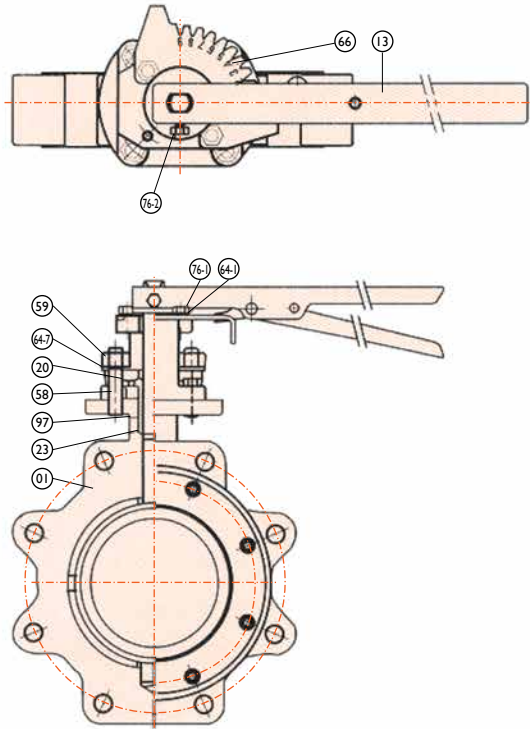
Size mm	80	100	150	200	250	300	350	400	450	500	600
Valve Size	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
A	48.0	54.0	59.0	73.0	82.5	92.0	117.5	133.5	149.5	159.0	181.0
B	27.3	30.6	33.9	40.5	50.3	59.0	60.5	72.5	81.5	94.0	116.5
C	123.0	138.0	183.0	213.6	282.0	324.0	340.0	369.0	421.4	458.6	552.0
D	193.4	206.0	265.5	311.0	384.0	427.5	446.0	501.0	548.5	581.0	690.0
E	292.4	321.0	416.6	514.8	626.7	708.7	731.8	816.4	962.0	1053.5	1414.6
ISO 5211 MOUNTING PAD	F07	F07	F10	F10	F10	F14	F14	F14	F16	F16	F25

Dimensions indicative only, refer drawing. 600 to 2500 Class refer to drawing.

## WEIGHT (KG)

Lug	15.5	24	36	54	79	117	253	329	504	649	986
Wafer	10	13	19	32	39	55	167	195	325	407	632

# SLHBF/FS-150 / SLHBF/FS-300 DOUBLE OFFSET ASSEMBLY DRAWING



**PARTS LIST**

**150LB & 300LB**

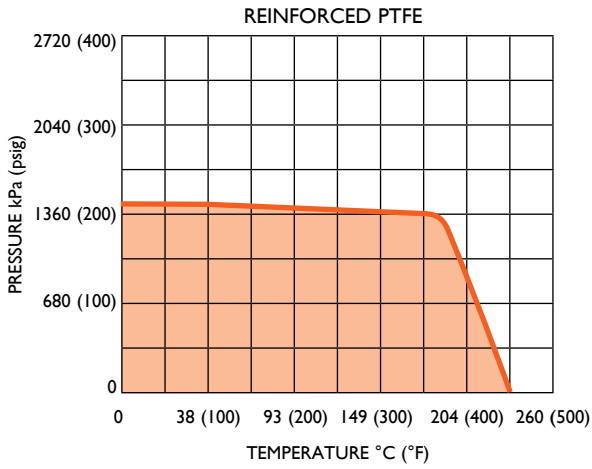
No.	Description	Material	QTY.	No.	Description	Material	Qty.
01	Body	A351 CF8M / A216 WCB	1	62	Wrench Bolt	A193 B8M / B8	1 SET
05	Yoke	A351 CF8 / A216 WCB	1	64	Disc Washer	A276 316 / 304	2
06	Disc	A351 CF8M	1	64-1	Lock Washer	Stainless Steel	2
08	Gland Flange	A351 CF8 / A105	1	64-2	Spring Washer	Stainless Steel	2
08-1	Low Gland Flange	A351 CF8M / A216 WCB	1	65	Disc Pin	316 / 17-4 PH / 304	2
13	Lever	Carbon Steel	1	66	Stopper	Carbon Steel	1
15	Handwheel (Gear)	Carbon Steel	1	71	Name Plate	Stainless Steel	1
18	Stem	17-4 PH / 316 / 304	1	73	Stem Bearing	316 S/S Backed R.T.F.E.	1
19	Seat	R-PTFE / 316 / Stellite	1	73.1	Stem Bearing	316 S/S Backed R.T.F.E.	1
19a	Seat Metal Fire Seal	A276 316	1	75	O-Ring	PTFE / Graphite	1
20	Gland Ring	A276 316 / 304	1	76	Low Gland Bolt	A193 B8	1 SET
23	Spacer	A276 316 / 304	1	76-1	Setting Bolt	A193 B8	2
25	Seat Retainer	A351 CF8M / A105	1	76-2	Setting Bolt	A193 B8	1
26	Gear Box	Ductile Iron	1 SET	79	Disc Spring	Stainless S	1
56	Yoke Bolt	A193 B8	1 SET	82	Gear Bolt	A193 B8	1 SET
58	Gland Bolt	A193 B8	2	97	Packing	PTFE / GRP	1 SET
59	Gland Nut	A194 8	2				

Indicative example only, design varies according to size, class and specifications. Refer to as-built drawing.

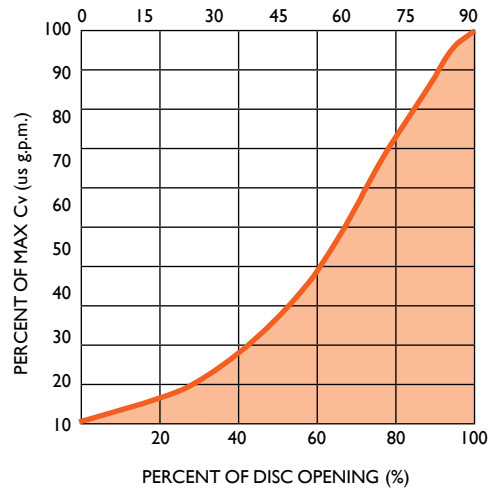


# SLHBF & SLHBFFS DOUBLE OFFSET ENGINEERING DATA

PRESSURE/TEMPERATURE RATING 150/300 CLASS



CV CURVE ANSI 150/300 CLASS



CV RATING ANSI 150 CLASS

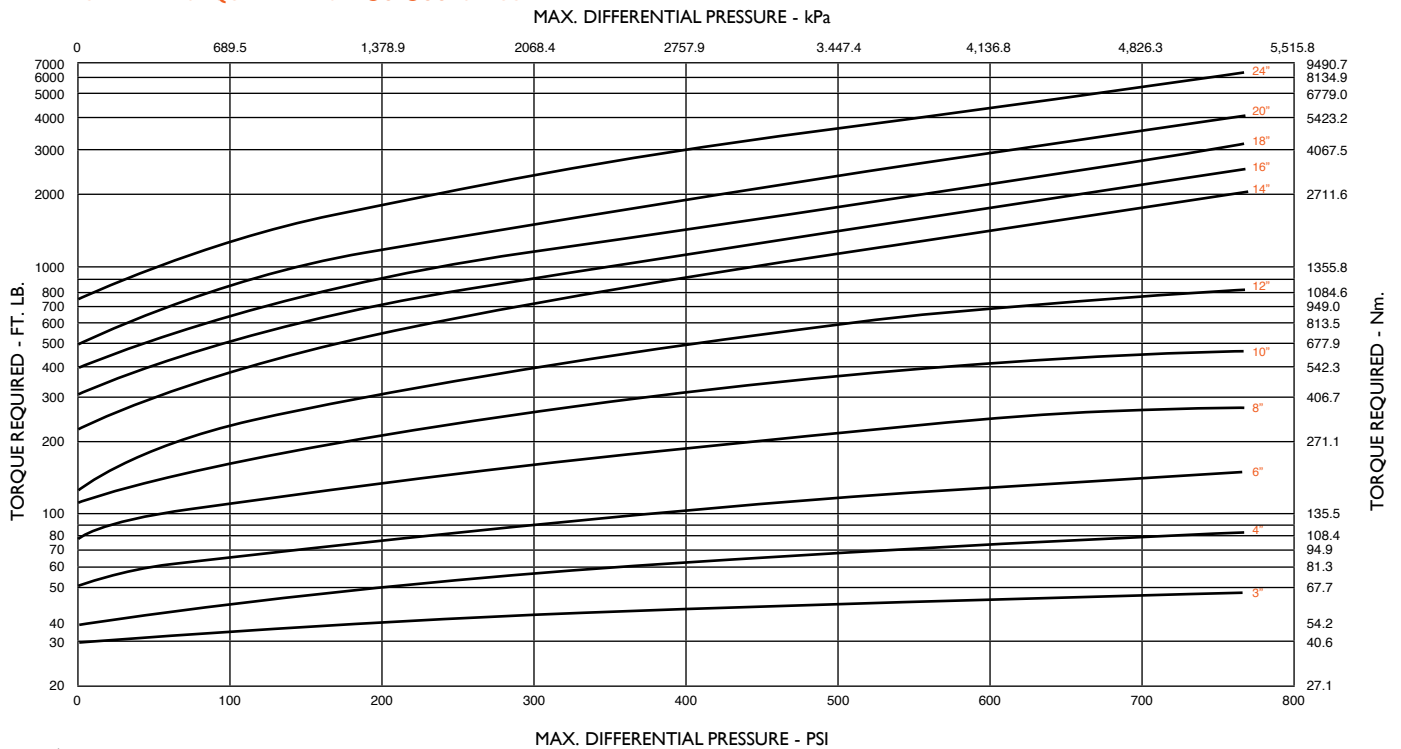
Valve Size DN (NPS)	Cv
80 (3")	240
100 (4")	430
150 (6")	1150
200 (8")	2100
250 (10")	3200
300 (12")	47000
350 (14")	5160
400 (16")	6930
450 (18")	9330
500 (20")	11340
600 (24")	18540

150 CLASS BODY PRESSURE/TEMPERATURE RATING

Temperature °c	Carbon Steel	Stainless Steel 316	20# Alloy	Monel
-20 -38	19.7	19.0	15.8	15.8
93	17.9	16.5	13.8	13.8
149	15.8	14.8	12.4	13.1
204	13.8	13.4	11.0	12.8
260	11.7	11.7	10.3	11.7
Test Pressure	31	29.3	24.1	24.1

Refer Data Sheet Class ≥ 300lb.

## SLHBF - TORQUE RATING\* 150/300 CLASS



\* SLHBFFS torque refer to data sheets.

# TRIPLE OFFSET BUTTERFLY VALVES

## MODEL SLHBFFS-T 150 TO 2500 CLASS TRIPLE OFFSET

### RANGE & STANDARDS

<b>Size</b>	50NB - 1800NB (2" to 72")
<b>Class</b>	150 to 1500 ANSI
<b>Design Standards</b>	API 609 Category B & ASME B16.34
<b>Dimensions</b>	API 609-B/ ISO 5752/ MSS-SP-67/68
<b>Construction</b>	Wafer, lugged, flanged short & long pattern
<b>Pressure/ Temp.</b>	ASME B16.34 & API 609-B/ ISO 5752
<b>Face to Face</b>	ASME B16.10 short & long/ API 609/ API 6D/ ISO 5752 short
<b>Flange Dimensions</b>	ASME B16.5, over 600NB (24") - MSS-SP-44 or API 605 or ASME B16.47
<b>Pressure Test</b>	API 598, ISO 5208 Rate A, EN 1266, API 6D
<b>Leakage Rates</b>	True zero leakage

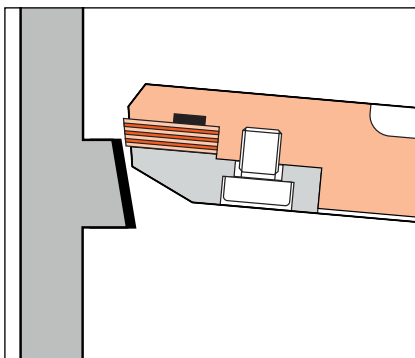


The SLHBFFS-T Range is based on a unique quarter-turn design. The Triple offset shaft and disc configuration together with the advanced high technology seat system provides a reliable rugged multi-purpose butterfly valve range.

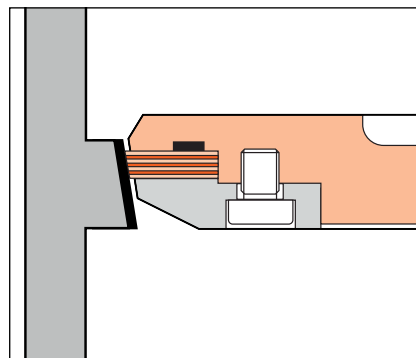
### Laminated/Metal Seat

The triple laminated design seat with multiple stainless steel seat rings laminated with graphite inserts to provide zero leakage. The SLHBFFS-T is suitable for high temperature and abrasive service. The laminated and all-metal seat design facilitates bi-directional high temperature service and is inherently firesafe design. The primary metal seat enables the execution to be used up to 670°C.

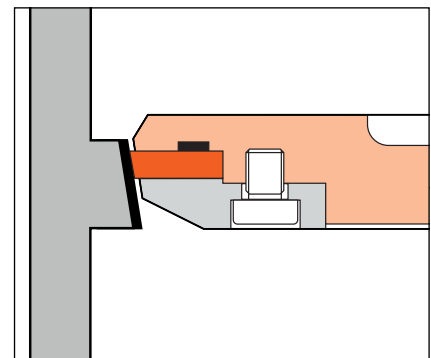
Seat-rings available are stainless steel ANSI 316L-chromium plated or stellite, (maximum allowed temperature: 310°C) and Inconel 625 (maximum allowed temperature: 760°C). As a result the metal/laminated seat range meets the full pressure temperature rating according to ASME class ratings. Seat leakage can be specified to API 6D/API 598 (ISO 5208 Zero Leakage Class A), FCI 70-2 Class VI etc.



Disc slightly open



Disc closed: Multi layer seat ring



Disc closed: Pure metal seat ring

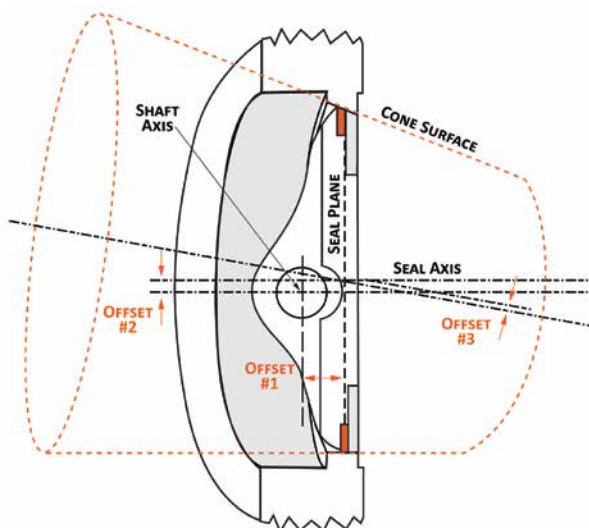
## MODEL SLHBFFS-T 150 TO 2500 CLASS TRIPLE OFFSET

### PRINCIPLES OF VALVE DESIGN - TRIPLE OFFSET

Superseal Model SLHBFFS-T 150 to 2500 Class triple offset metal seat butterfly valves provide a bi-directional and bubble-tight shut-off which is attributed to the geometry of the triple offset seat. Available in metal to metal and metal laminated graphite seat designs. Can also be used for flow control linear flow characteristics between 90 degrees and 70 degrees of opening.

The valve stem is offset from the seat area (1st offset) and the valve seat surface centre line is offset against the centre line of the pipe (2nd offset) and the conical axis is offset from the valve centre line (3rd offset: inclined cone). The 3rd offset completely eliminates rubbing or scraping. The seat surfaces of the body and seal ring in this triple offset design, contact with an inclined “cone-in-cone”, and this design requires precision seating tolerances and durability to ensure a slight precision lapped wedge-mating effect. In addition, the angle of contact between the body and seat ring provides a low opening and closing torque due to almost no wedging and no scraping action on opening or closing (unlike trunnion mounted ball valves). This eccentric triple offset design provides excellent sealing performance and seat durability and it hardly ever needs repair under normal service conditions.

The seat design can be all metal to metal (optional resilient metal seat design) or multiple laminated using resilient metal alternated with one or even two of the following laminations depending on service: - graphite/aramid fibre/ ceramic fibre.



Triple Offset Design



### DESIGN FEATURES - TRIPLE OFFSET

#### Characteristics and Merits

- Excellent seat durability and low operating torque due to non-rubbing characteristics of triple offset construction.
- Bi-directional zero leakage service available (when specified).
- Unrestricted selection of face to face dimensions for API, ASME (ANSI), EN, ISO etc. & perfect interchangeability of gate, ball, plug, high performance butterfly, & other valves.
- Low emission design, quarter turn construction, low operating torque & lower cost.

#### Leakage Rates

Leakage rates range from FCI-70 Class IV, V or VI through to zero leakage. Valves can be specified to:-

- API 598 Zero Leakage
- ISO 5208 Leakage Rate A
- EN 1866
- API 6D

# MODEL SLHBFFS-T 150 TO 2500 CLASS TRIPLE OFFSET

## MATERIALS

**Body** Carbon Steel / Stainless Steel / Ni-Al-Bronze / Hastelloy / Inconel / Titanium / Other

**Disc** Carbon Steel / Stainless Steel / Ni-Al-Bronze / Hastelloy / Inconel / Titanium / Other

**Stem** 410 SS, 17-4PH & XM-19 & Other Materials

**Seat** 321 SS, 316 SS Hardened, 316 SS, Stellite 21 & Other Materials



API 607 7th Ed., ISO 10497-5  
Firesafe Certified

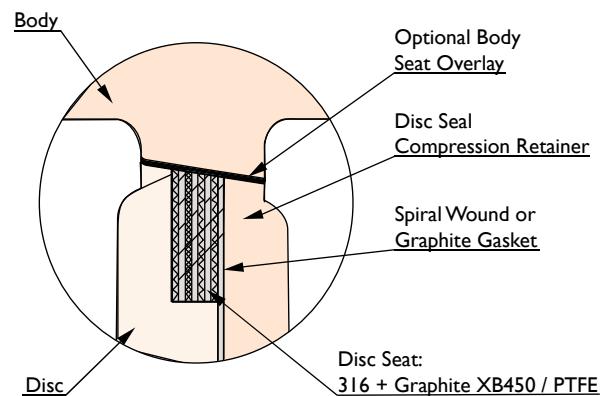
ISO 15848-2  
Fugitive Emission Certified

## STANDARD MULTI-LAMINATED SEAT

The APV-Superseal triple offset butterfly valve design incorporates metallic composite cone bevelling. The cam effect ensures the valve seat can be released from the seal ring through the whole switching process with zero friction between valve seat and plate seal ring during the entire stroke process. This extends valve life, ensures no over-travel of the disc, allows for a lower torque and ensures bubble tight closure of the valve, resulting in zero-leakage performance.

The butterfly plate seal ring is designed as multi-layered seal ring. This seal compresses on a radial basis and move flexibly and elastically.

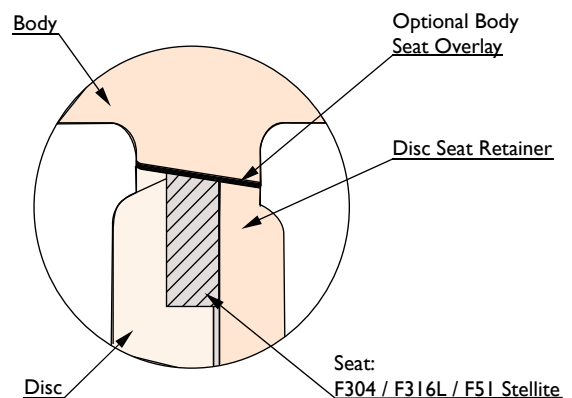
Graphite + metal combination as standard. Optionally, sealing materials such as PTFE + metal combinations can be supplied for different temperature and medium.



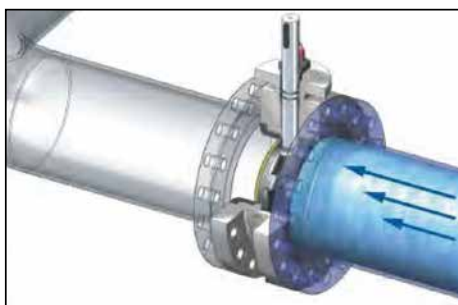
## OPTIONAL SOLID METAL-TO-METAL SEAT

The APV-Superseal triple offset solid seat all metal to metal seat system are manufactured with three dimensional eccentric sealing structure. The valves are designed and manufactured with unique techniques and dedicated facilities for maximum machined accuracy. This ensures full cone match of sealing pair and eliminates the interference and abrasion between sealing faces.

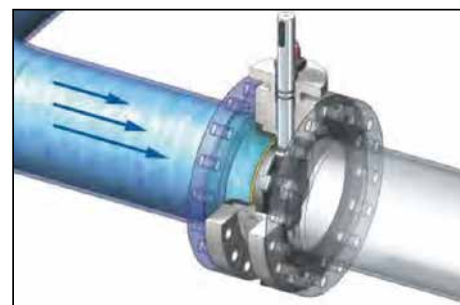
A low degree of seating resistance, reliable sealing performance, reduced sealing face abrasion ensures a vastly extended valve life. The alloy hard sealing allows a higher pressure and temperature range whilst still providing bubble-tight shut off. Semi-flexible solid design is also available.



## Bi-directional Tight Sealing Design



Preferred Direction



Non-Preferred Direction

# MODEL SLHBFFS-T 150 TO 2500 CLASS TRIPLE OFFSET

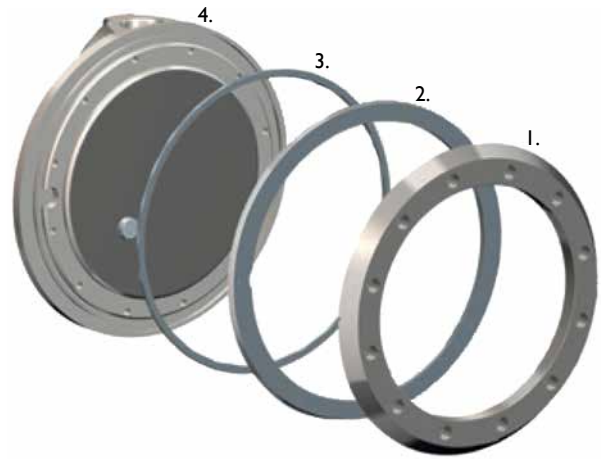
## MULTIPLE LAMINATED DISC SEATING

### Key Components

1. Disc retainer
2. Seal ring triple laminated
3. Spiral wound or graphite gasket
4. Disc

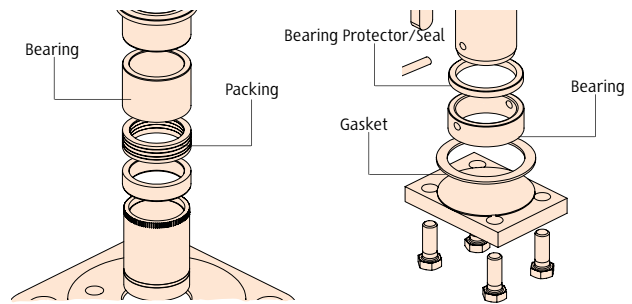
Due to the elasticity and the radial compression of the multiple laminated seal ring, the contact pressure is uniformly distributed around the seating surface guaranteeing zero leakage.

The use of graphite (or PTFE) laminated between multiple metal sealing rings ensures tightness between seal ring layers and an ideal level of flexibility allowing each metal layer to independently find the optimal seating position. One-piece metal Solid Seal Ring (SSR) is also available.



### Slide Seal Design

This dynamic seating arrangement features a double inclined cone design. The disc seal ring slides into the seating area to close the valve. This slide touch provides a better sealing than the typical conventional of contact touch. Also, the seal ring is solid metal enabling it to sweep away particles left on seat surface to double secure a tight sealing and ensure a long life cycle.

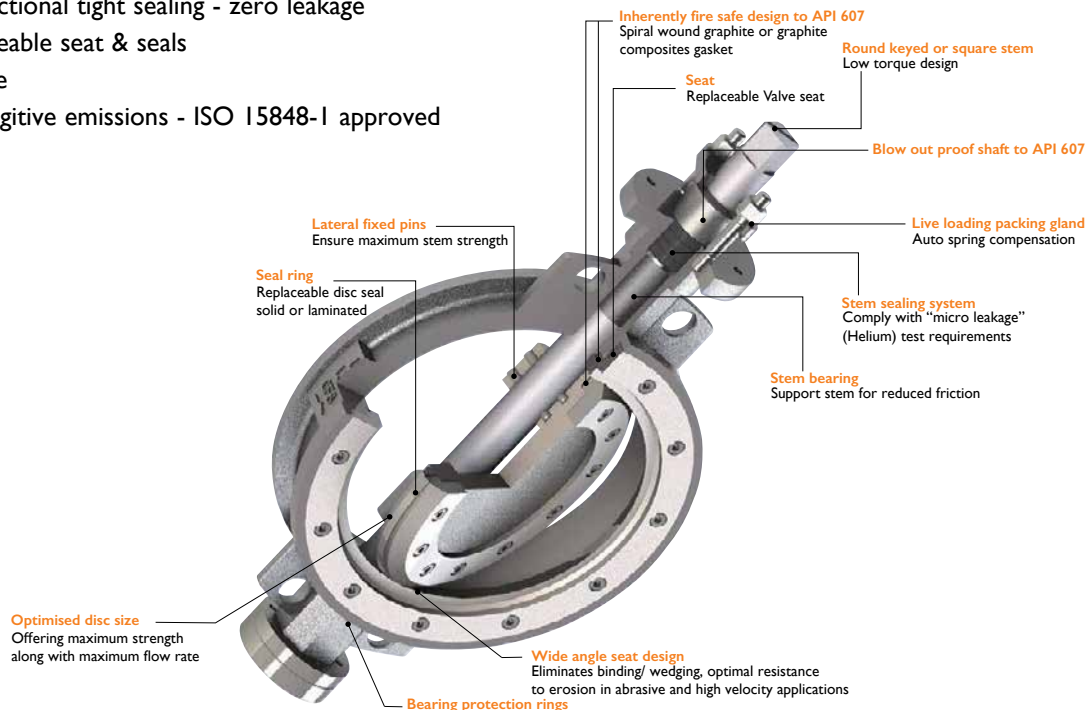


Top Bonnet Parts

Bottom Bonnet Parts

## PRODUCT FEATURES

- Triple offset disc rotation to minimise the rubbing of the seat & seal contact surface and achieve high integrity sealing
- Bi-directional tight sealing - zero leakage
- Replaceable seat & seals
- Firesafe
- Low fugitive emissions - ISO 15848-1 approved



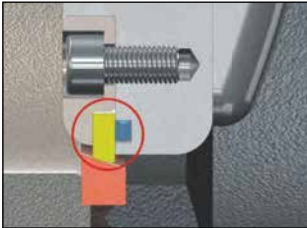
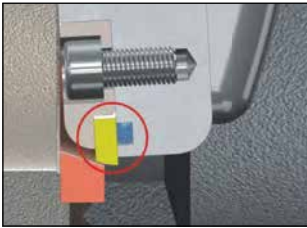
Indicative only. Refer to as built drawing design varies according to size & class.

# MODEL SLHBFFS-T 150 TO 2500 CLASS TRIPLE OFFSET

## DESIGN OPTIONS - TRIPLE OFFSET

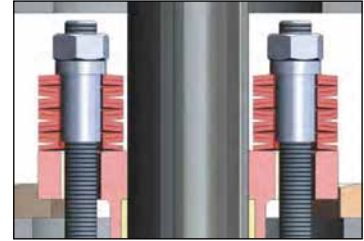
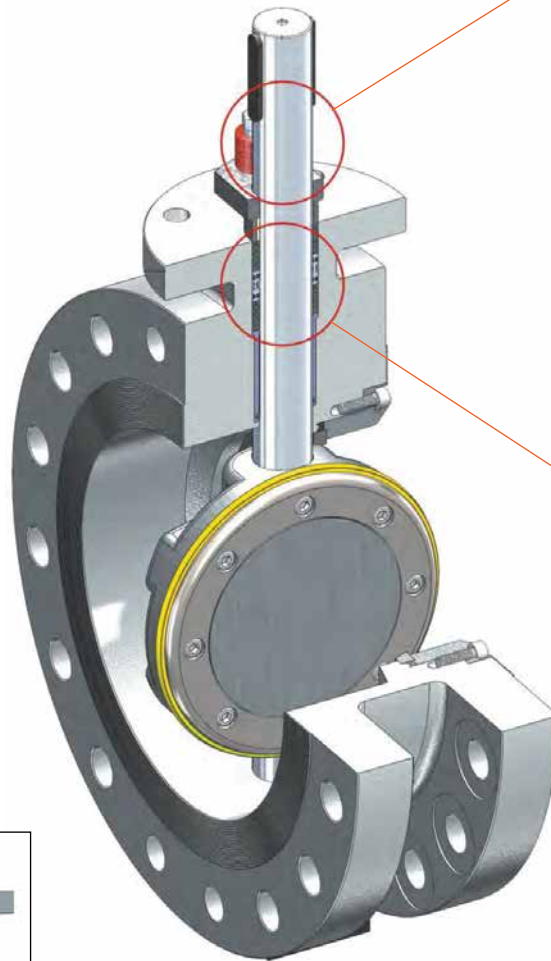
### One Piece Metal Seat Design Option

The semi-flexible metal one piece seal ring design guarantees the tightest shut-off and ensures safety in case of thermal expansion.



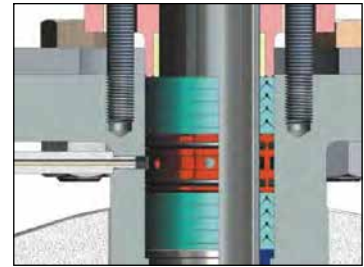
### Stellite® Body Seat

The body seat can optionally be supplied in Stellite® #21 (zero leakage).



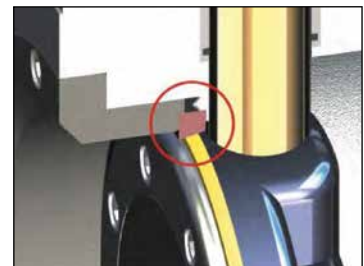
### Live-loading Design Option

A Belleville spring provides abrasion compensation by compressing the packing constantly which ensures a long life cycle. Design varies depending on size & class.



### Low Emission Design

- Double packing design as standard guarantees safety.
- Leakage detection optional
- Emergency sealing injection optional.
- Additional 'chemical seal' packing gland seal system optional.



### Replaceable Body Seat Design Option

The design includes a separate seat (not welded on the valve body) allowing ease of maintenance.

# FIRESAFE, FUGITIVE EMISSION & CYCLE TEST CERTIFICATES

**Fire Test Report**  
ANSI/API Standard 607, 6th Edition, 2010  
ISO 10497: 2010

Performed for  
**Australian Pipeline Valve**

[www.australianpipelinevalve.com.au](http://www.australianpipelinevalve.com.au)

2 inch Class 300  
Double Eccentric  
Product Code: SLHBF-201

Project Number: 21300  
Test Date: January 2014

Performed by  
**YARMOUTH RESEARCH AND TECHNOLOGY, LLC**

434 Walnut Hill Road  
North Yarmouth, ME 04097 USA  
(207) 829-5359  
[info@yarmouthresearch.com](mailto:info@yarmouthresearch.com)  
[www.yarmouthresearch.com](http://www.yarmouthresearch.com)

**Fire Test Report**  
ANSI/API Standard 607, 6th Edition, 2010  
ISO 10497: 2010

Performed for  
**Australian Pipeline Valve**

[www.australianpipelinevalve.com.au](http://www.australianpipelinevalve.com.au)

6 inch Class 150  
High Performance  
Product Code: SLHBF-600

Project Number: 21300  
Test Date: January 2014

Performed by  
**YARMOUTH RESEARCH AND TECHNOLOGY, LLC**

434 Walnut Hill Road  
North Yarmouth, ME 04097 USA  
(207) 829-5359  
[info@yarmouthresearch.com](mailto:info@yarmouthresearch.com)  
[www.yarmouthresearch.com](http://www.yarmouthresearch.com)

**ISO 15848-1:2015**  
**Helium Fugitive Emission Test Report**

Performed for  
**Australian Pipeline Valve**

[www.australianpipelinevalve.com.au](http://www.australianpipelinevalve.com.au)

8 inch Class 150 RF  
Double Eccentric Butterfly Valve  
Product Code: SLHBF-800

Project Number: 21300  
Test Date: January 2014

Performed by  
**YARMOUTH RESEARCH AND TECHNOLOGY, LLC**

434 Walnut Hill Road  
North Yarmouth, ME 04097 USA  
(207) 829-5359  
[info@yarmouthresearch.com](mailto:info@yarmouthresearch.com)  
[www.yarmouthresearch.com](http://www.yarmouthresearch.com)

**VALVE AND ACTUATOR ENDURANCE CYCLE TEST CERTIFICATE**

DESIGNATION TESTED	SIZE	BODY	SEAT/SEALS	PRODUCT DESCRIPTION	STANDARD / METHOD	COVERAGE RANGE
ANY MODEL 150 RF BALL VALVE C/W GEARBOX TORQUEMATIC ACTUATOR	2"	API CLASS 300 CAST IRON	FFTE / GRAPHITE VITON	2" CLASS 150 RF BALL VALVE C/W GEARBOX TORQUEMATIC ACTUATOR	API 607 2ND EDITION 2010 & ISO 10497: 2010	100 TO 800 CLASS 150 TO 200
ANY MODEL 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	2"	API CLASS 300 CAST IRON	FFTE / GRAPHITE VITON	2" CLASS 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	API 607 2ND EDITION 2010 & ISO 10497: 2010	100 TO 800 CLASS 150 TO 200
ANY MODEL 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	2"	API CLASS 300 CAST IRON	FFTE / GRAPHITE VITON	2" CLASS 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	API 607 2ND EDITION 2010 & ISO 10497: 2010	100 TO 800 CLASS 150 TO 200
ANY MODEL 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	2"	API CLASS 300 CAST IRON	FFTE / GRAPHITE VITON	2" CLASS 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	API 607 2ND EDITION 2010 & ISO 10497: 2010	100 TO 800 CLASS 150 TO 200
ANY MODEL 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	2"	API CLASS 300 CAST IRON	FFTE / GRAPHITE VITON	2" CLASS 150 RF BALL VALVE C/W APV SERIES TORQUEMATIC ACTUATOR	API 607 2ND EDITION 2010 & ISO 10497: 2010	100 TO 800 CLASS 150 TO 200

Laboratory Information:  
Name: Yarmouth Research and Technology, LLC  
Address: 434 Walnut Hill Road, North Yarmouth, ME 04097 USA  
Contact: Matthew Wasielewski, PE  
[www.yarmouthresearch.com](http://www.yarmouthresearch.com)  
(207) 829-5359

**INSPECTION REPORT**

DET NORSKE VERITAS

This is to certify that at the request of the Australian Pipeline Valve, Australia, the undersigned Surveyor to this Society did attend the Yarmouth Research and Technology Facility, North Yarmouth, ME, USA on 20 January, 21 February and 20 March 2014 in order to witness Fire Testing in accordance with ANSI/API Standard 607, 6th Edition, and ISO 15848-1: 2015 (Class 150) valve.

Product: 3 inch Class C/W JA Series Australian SLHBF-201

Valve Product Code: JE10121V

Actuator Drawing: 600 psig at 1510 Reqs

Test Pressure: 2550 psig at 1510 Reqs

Number of Mechanical Cycles: 1510 Reqs

Number of Thermal Cycles: 8 Complete

Test Media: 99% Meth

Cycling Rate: 60 seconds

Cycle Stroke: 1/2 turn

Valve Body: ASTM A21

Valve Shaft/Seat Retainer: SS 316

Locking Pin/Packing Studs: SS 316

Body Packing Description: PTFE + SS

Seat Ring: SS316

Guide Bush: 2.6

Item: 2.6

**INSPECTION REPORT**

DET NORSKE VERITAS

This is to certify that at the request of the Australian Pipeline Valve, 9-13 Rocklands Road, Salisbury Plain, Australia, the undersigned Surveyor to this Society did attend the Yarmouth Research and Technology Facility, North Yarmouth, ME, USA on 9 January, 9-18 February, 27-28 February and 20 March 2014 in order to witness Cycling Endurance Simulated Testing in accordance with API Standard 622, Second Edition, 2011 requirements on the following four (4) valves and Actuators:

- 2" Class 150 RF Ball Valve C/W HID Series with Pneumatic Actuator.
- 2" Class 150 RF Ball Valve C/W ASK Series Pneumatic Actuator.
- 8" Class 150 RF Gate Valve C/W APV Series with Gearbox Actuator.
- 3" Class 300 RF Butterfly Valve C/W JA Series with Yoke Torqturn Actuator.

Attached is the Yarmouth Research and Technology Valve and Actuator Endurance Cycle Test Certificate No. 1, dated 10/09/14 and duly endorsed by the witnessing Surveyor.

For Det Norske Veritas (USA), Inc.  
Paul R. Salverson  
New York Station

David Bernick

**INSPECTION REPORT**

DNV-GL

This is to certify that at the request of the Australian Pipeline Valve, Australia, the undersigned Surveyor to this Society did attend the Yarmouth Research and Technology Facility, North Yarmouth, ME, USA on 21 July, 2015 in order to witness Fire Testing in accordance with ANSI/API Standard 607, 6th Edition, 2010 (Identical to ISO 10497: 2010) requirements on the following one (1) valve:

Product: 6" Class 150 High Performance Butterfly Valve

Manufacturer: Australian Pipeline Valve

Valve Product Marking: SLHBFPS-AL2000

Pressure Rating: 60RE Class 150

Is Valve "Self-Sealing"? Yes

Model: SLHBFPS-AL2000

Type: Double Offset

Drawing Number: PMP04 Drawing Item 1.1.1 (30/06/14)

Body Material: ASTM A316 WCB

Disc/Seat Ring Material: SS 316

Disc/Flywheel Bush Material: SS 316

Guide Bush Material: C.S. + PTFE Coated

Gland Packing Material: Graphite

Mounting Bracket Material: Carbon Steel

Retainer Bolt Material: SS 316

Bottom Cover Material: ASTM A216 Gr WCB

Qualified Sizes: 6", 8", 10" and 12" of the same basic valve design made from ferritic pressure retaining materials.

Qualified Ratings: Classes 150 and 300 valves of the same basic valve design made from ferritic pressure retaining materials.

The test results are shown in the Fire Test Data Sheet 215067-1.11 dated 07/21/15 duly endorsed by the witnessing Surveyor, and are within the ANSI/API Standard 607, 6th Edition, 2010 requirements.

The above mentioned valve has passed the fire test.

Attached is the Yarmouth Research and Technology Fire Test Information Sheet 215067-1.11, dated 07/21/15.

For Det Norske Veritas (USA), Inc.  
Guoqing Fu  
New York Station

David Bernick



API 607, ISO 10497-5  
Firesafe Certified



API 622 & ISO 15848-1  
Endurance Test Certified



API 622 2011 2nd Edition  
Fugitive Emission Certified



# FIGURE NUMBER SYSTEM

## SLHBF, SLHBFFS & SLHBFFS-T DOUBLE & TRIPLE OFFSET

# SLHBF - A L J B R 1 G - MS

MODEL	RATINGS	END CONNECTIONS	BODY MATERIALS	TRIM MATERIALS	SEATING	SHAFT	PACKING	SPECIAL
<b>SLHBF</b> Double offset - Standard	A = 150 CLASS B = 300 CLASS C = 600 CLASS	F = FLANGED-SHORT G = FLANGED-LONG L = LUG TYPE	A = WCB B = WC1 C = WCB	A = F304/CF8 B = F316/CF8M C = F316L/CF3M	C = CARBON FILLED PTFE H = PPL UUHMW K = KELF L = LAMINATED METAL & GRAPHITE	1 = 17-4PH 2 = 431SS 3 = 316SS 4 = S31803/F51 5 = XM19/ NITRONIC 50	G = GRAPHITE P = PTFE Z = SPECIAL	B = BI-DIRECTIONAL TESTED C = ADDITIONAL ELASTOMER/PTFE GLAND SEAL D = DOUBLE PACKING F = FLUSHING PORT L = LIVE LOADED PACKING GLAND M = MONITORING PORT N = NACE O = OXYGEN CLEANED P = PEEK/ COMPOSITE BEARING R = CHLORINE SERVICE S = STELLITE OVERLAY SEAT Z = OTHER
<b>SLHBFFS</b> Double Offset - Firesafe	D = 900 CLASS E = 1500 CLASS F = AS/BST-E	W = WAFER TYPE	D = WC9 E = C-5 F = C-12	D = F304/CF3 E = F321 F = ALLOY-20	M = METAL ISO 5208-D N = METAL CLASS IV O = METAL CLASS V	6 = MONEL K500 7 = ALLOY 20 8 = 416SS 9 = OTHER BLANK = SAME AS DISC		
<b>SLHBFFS-T</b> Triple Offset - Firesafe	G = AS/BST-F H = AS/BST-H Z = SPECIAL		G = LCB H = LC3 I = CF8 J = CF8M K = CF3 L = CF3M M = CF8C N = CN7M P = WCC Z = SPECIAL	G = MONEL H = HASTELLOY I = WCB+ENP J = F51/S31803 Z = OTHER	Q = METAL ISO 5208-A R = RPTFE R = METAL API 598 S = METAL CLASS VI T = LAMINATED METAL & PTFE U = PEEK			
<b>SLHBFFS-TD</b> Double Block & Bleed-Twin					Y = DOUBLE BLOCK & BLEED Z = OTHER			

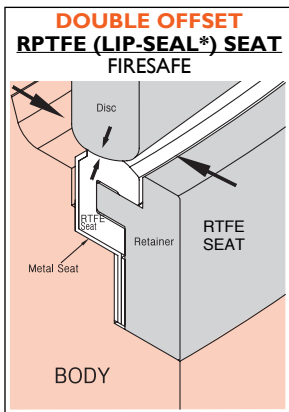
### EXAMPLE - SLHBF-ALJBR1G-MS

Double offset Standard  
150LB  
Lug type  
CF8M Stainless steel body  
F316 Trim  
RPTFE Seat insert  
17-4 PH Stem  
Graphite Packing  
Monitoring Port  
Stellite Overlay Seat

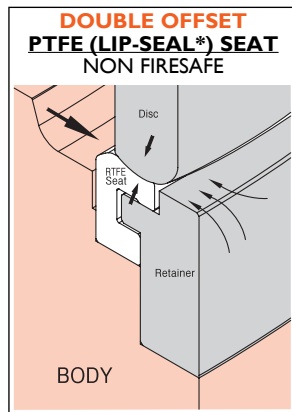


API 622 & ISO 15848-1  
Endurance Test Certified

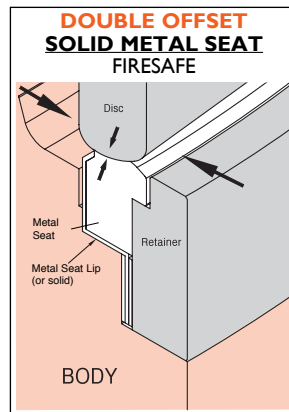
## SEAT DESIGNS



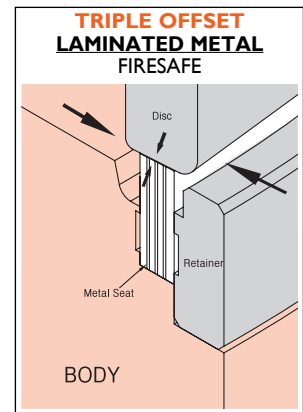
1. Double sealing construction  
- Primary RTFE seat  
- Secondary metal firesafe lip seat
2. Excellent sealing (in Bi-directions on request)
3. Conforms to API 607 6th & 7th Edition



1. Reinforced PTFE
2. Excellent sealing (in both directions on request)
3. Cost effective



1. High temperature capability allows maximum of 620°C (1150°F)
2. High pressure capability
3. Stainless steel sealing area is resistant to corrosion and wear
4. Inherently firesafe in class V, VI or API 598 (metal seat) or ISO 5208-A/D shutoff



1. Multi-sealing triple eccentric construction  
- Primary metal seat  
- Multiple metal laminations graphite or PTFE filled
2. Excellent sealing in Bi-directions
3. Inherently firesafe to API 607 7th Edition
4. Stellite overlay all metal disc seat optional

\*Or Flo-Seal style seat, refer page 5. Actual drawing supplied on request. Indicative drawings only.



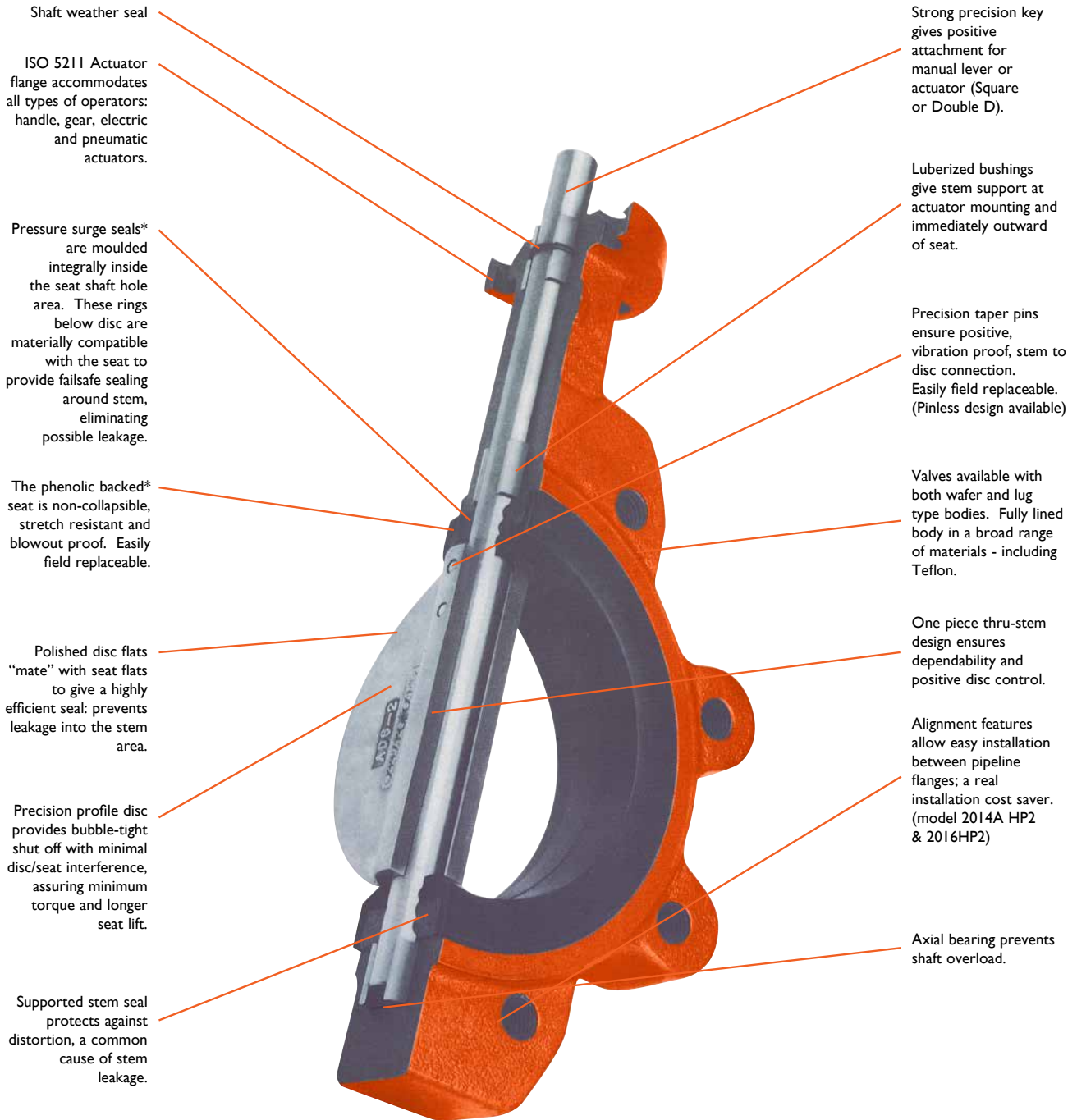
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**LINED BUTTERFLY VALVE**  
**10/16 BAR MODEL 2014 / 2016**

TYPE: 2014, 2016, 2014A 1000 KPA & 1600 KPA RATED  
SUIT AS/BS TABLE D, E, ASA 125, AS/BS/EN PN10 & PN16



# MODEL 2014 / 2016 - (PINNED STEM) SEAL CONSTRUCTION & FEATURES

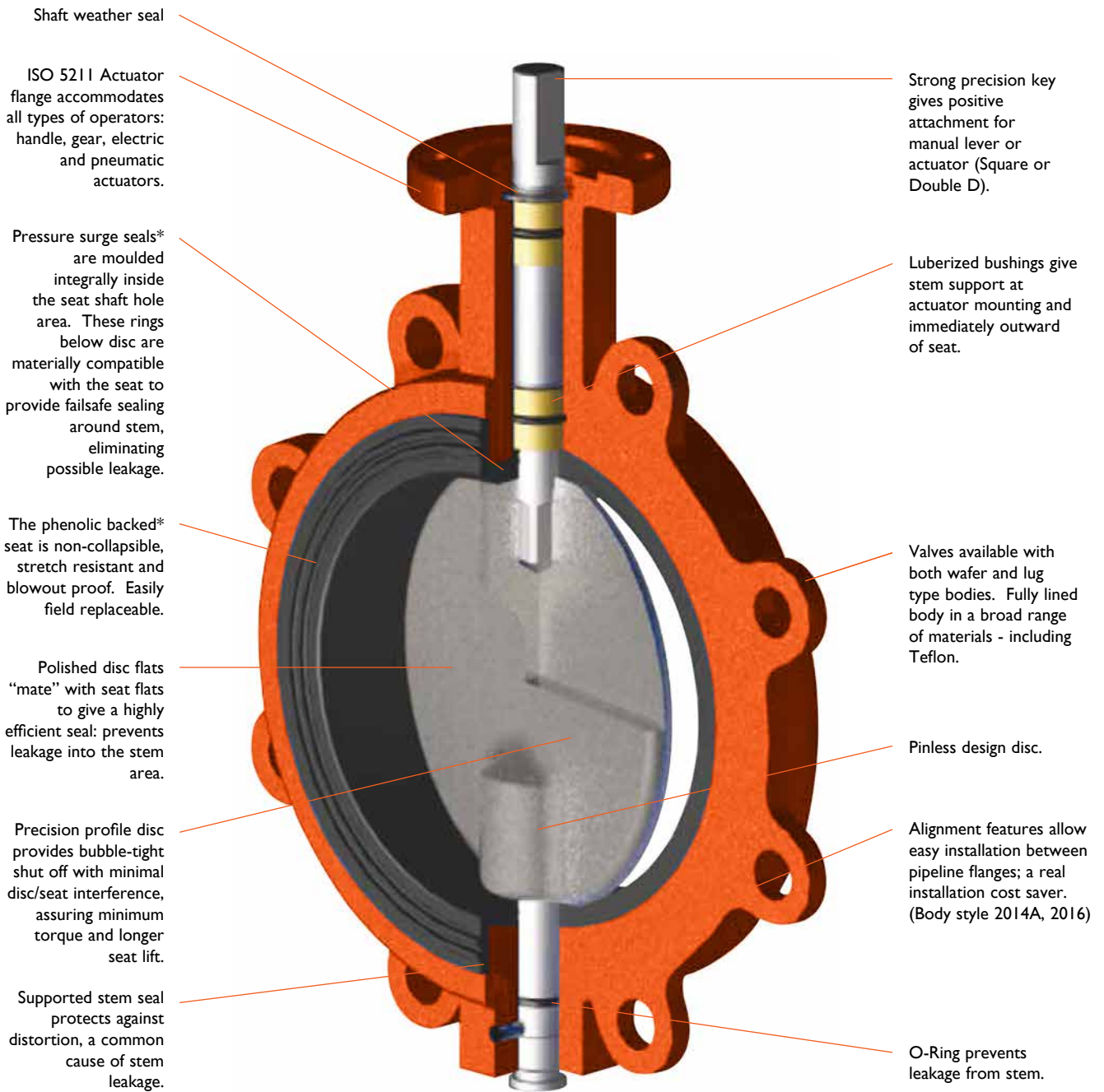



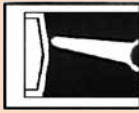


<p><b>SUPERSEAL CONSTRUCTION</b></p>	 <p>The disc is precision manufactured to close tolerances on the O.D. and the flats. Seating edge is a polished half ball for torque control.</p>	<p>The modern seat and disc design insures positive sealing while maintaining low seating torque. The superseal design extends seat life by eliminating any bunching or tearing.</p>	 <p>The superseal seat design* has a much smaller mass of elastomer which can swell, in turn torque is controlled to a reasonable degree.</p>	<ul style="list-style-type: none"> <li>• Precision machined disc edge &amp; shaft flats.</li> <li>• Bonded distortion proof seat, close tolerances.</li> <li>• Positive shaft seals.</li> <li>• Low potential of seat swell.</li> <li>• Controlled torque by design superiority.</li> </ul>
<p><b>TRADITIONAL CONSTRUCTION</b></p>	 <p>The conventional disc has been sanded to remove rough area, precise dimensions are not maintained.</p>	<p>The conventional design relies on distortion and bunching of the seat to achieve a bubble tight shutoff. Seat life is decreased causing higher maintenance cost and increased down time.</p>	 <p>Elastomers are subject to swelling from fluid absorption which can increase the mass of the seat. This increase can and often does cause excessively high seating torque. Seat life is shortened.</p>	<ul style="list-style-type: none"> <li>• Non-precision disc dimensions.</li> <li>• Seat distorts during installation and operation.</li> <li>• Shorter seat life.</li> <li>• Higher torque due to bunching and potential swelling.</li> </ul>

\*Design varies according to size, rating and material specifications.

This brochure is general in it's nature and design is subject to change at any time without notice.

# MODEL 2014 / 2016 - HU-1 (PINLESS) SEAL CONSTRUCTION & FEATURES



<p>SUPERSEAL CONSTRUCTION</p>	 <p>The disc is precision manufactured to close tolerances on the O.D. and the flats. Seating edge is a polished half ball for torque control. The disc is pinless design.</p>	<p>The modern seat and disc design insures positive sealing while maintaining low seating torque. The superseal design extends seat life by eliminating any bunching or tearing.</p>		<p>The superseal seat design* has a much smaller mass of elastomer which can swell, in turn torque is controlled to a reasonable degree.</p>	<ul style="list-style-type: none"> <li>• Pinless Disc</li> <li>• Precision machined disc edge and shaft flats.</li> <li>• Bonded distortion proof seat, close tolerances.</li> <li>• Positive shaft seals.</li> <li>• Low potential of seat swell.</li> <li>• Controlled torque by design superiority.</li> </ul>
<p>TRADITIONAL CONSTRUCTION</p>	 <p>The conventional disc has been sanded to remove rough area, precise dimensions are not maintained.</p>	<p>The conventional design relies on distortion and bunching of the seat to achieve a bubble tight shutoff. Seat life is decreased causing higher maintenance cost and increased down time.</p>		<p>Elastomers are subject to swelling from fluid absorption which can increase the mass of the seat. This increase can and often does cause excessively high seating torque. Seat life is shortened.</p>	<ul style="list-style-type: none"> <li>• Non-precision disc dimensions.</li> <li>• Seat distorts during installation and operation.</li> <li>• Shorter seat life.</li> <li>• Higher torque due to bunching and potential swelling.</li> </ul>

\*Design varies according to size, rating and material specifications.

# MODEL 2014 / 2016

## SPECIFICATIONS

### Available To Suit Following Flanging

ANSI (ASA) ASME B16.5 / B16.47, 125LB / 150LB, AS 2129 Table D, E, AS 4087, PN14 & PN16. ISO 5752 / EN 1092.2 PN10, PN16, AS 4331.1 / ISO 7005-1 PN10, PN16, JIS etc. Face to face dimension available in accordance with BSEN 593 / BSEN 558 / API 609-A / ISO 5752 / AS 4795.

**Fluid Application** - Water, seawater, sewage, air, oil, powder, petroleum, gas, chemicals, salts, alkalines etc.

**Design** - Available in API 609 category A, ASME B16.34, AS 4795:1, EN 593, EN 558-1, MSS SP67.

**Operation** - Generally flow control lever & notch plate to 300NB. Gear operator 250NB & over.

**Mounting** - To ISO 5211 on request. Long lasting, high performance design.



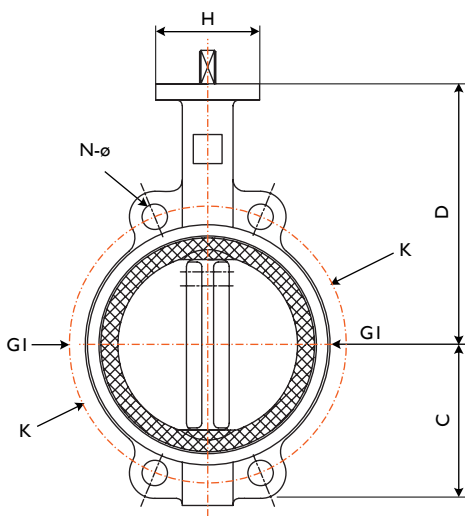
Pneumatic Actuated Version

### Pressure Rating

Bi-directional bubble-tight shut off seat tested to 110% of full rating.

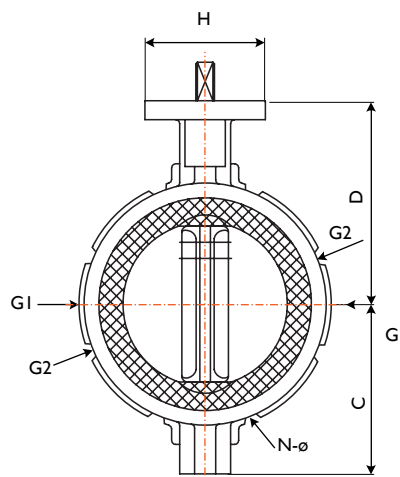
2 types available in this model:-  
Working pressure: 150 psig (1000kpa) & 232 psig (1600kpa). See HP Version brochure if higher pressure required.

Over 600NB request pressure rating.

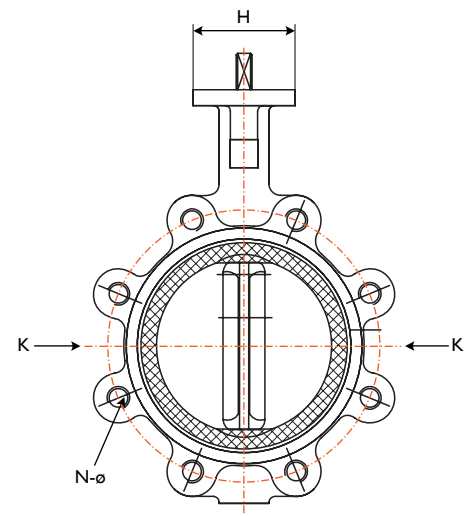


Wafer Style 2014A

(Semi-lugged with 2 or 4 lugs). PCD of Lug holes (K) supplied according to order i.e. ASA 125, AS/BS D, E etc.

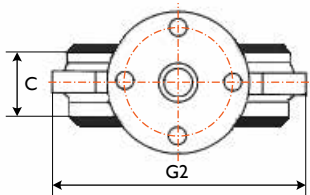


Wafer Style 2014

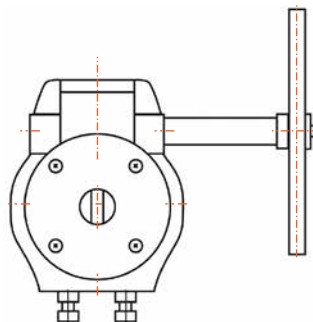


Lugged Style 2016

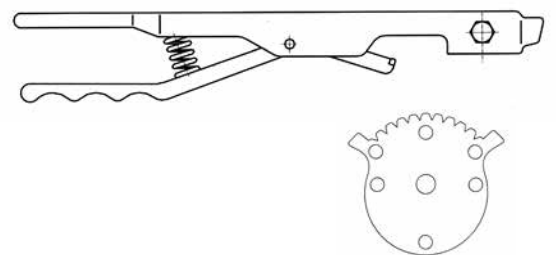
(Can be supplied ASA 125 AS/BS D, E etc.)



Semi Lug



Gear Operated



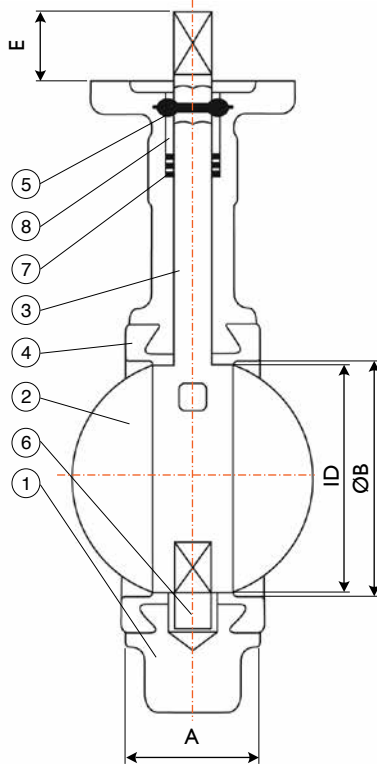
Lever & Notch Plate

General Applications	Continuous Working Temperature Range	Disc Material	Seat Material
Steam, Water, Hot Gases, Powders, Slurries & Aqueous Slurries of an abrasive nature	Liquids - 10°C to 120°C Dry Services - 10°C to 100°C	Stainless Steel	General Purpose EPDM
Brines, Sea Water, Estuary Water, Marine Bilge & Ballast Systems	-10°C to 90/100°C	Aluminium Bronze or ENP or S/S or Nylon coated	Black Nitrile or EPDM
Oils, Fuels, Water, Air, Gases, Powders, Pellets, Slurries etc.	Hydrocarbons (Except Aromatics) - 10°C to 90°C Other Liquids - 10°C to 90°C Dry Services - 10°C to 60°C	Teflon or Nylon Coated or SG Iron or ENP or stainless	Black Nitrile
Water & other non erosive fluids	All -10°C to 90/100°C (Solid PTFE will do up to 160°C)	S.G Iron or powder coated	ANY

# MODEL 2014 / 2016

## MATERIALS

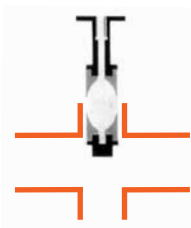
1. Body	Cast iron, stainless ductile iron, aluminium, carbon steel, stainless steel etc
2. Disc	316SS, 304SS, AL-Bronze, hard epoxy coated, hard rubber coated, nickel plated, PTFE coated, 410SS etc
3. Stem	316SS, 304SS, PTFE coated, AL-Bronze etc.
4. Seat	NBR (90°-100°C), EPDM (90°C) teflon, food grade rubber, Buna-N, Viton, Hypalon etc
5. Retaining Pin/ Gland Ring	304SS/316SS/410SS
6. Bottom Bushing	Bronze/Nylon
7. O-Rings	NBR (nitrile)/EPDM
8. Upper Bush	Delrin/Nylon/Bronze



## DIMENSIONS (MM)

Valve Size	Dimension								Weight Kg	Suit Flanging				
	in	mm	A	B	C	D	E	H		ID	G1*	G2*	K*	N-Ø
1	25	31	57	85						1.1				
1-1/4	32	32	60	100						1.8				
1-1/2	40	33	58	124	90	40	2			2				
2	50	43	57	55	143	30	90	52		2.3				
2-1/2	65	46	70	64	155	30	90	65		2.7				
3	80	46	82	72	162	30	90	80		3.6				
4	100	52	104	90	181	30	90	100		5				
5	125	56	127	101	197	30	90	125		6.1				
6	150	56	150	114	210	30	90	148		7.1				
8	200	60	194	145	240	35	95	197		13.6				
10	250	68	247	178	286	35	110	247		21.3				
12	300	78	297	204	309	35	120	297		32.2				
14	350	76	330	266	355	55	125	327		85				
15	375	86	387	300	380	55	175	387						
16	400	86	387	300	380	55	175	387		106				
18	450	105	435	323	425	55	175	435		135				
20	500	130	489	350	430	90	210	477		170				
24	600	150	602	407	500	90	210	560		250				

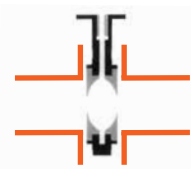
650NB to 900NB refer to separate drawing  
 \*G1, G2, K & N-Ø available to suit: AS/BST-C, D, E, ASA 125, PN10, PN16, JIS etc.  
 Sizes shown are subject to variation at any time



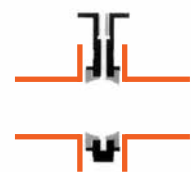
### INSTALLATION

(DO NOT USE GASKETS)

Pipework opened to allow valve free entry, disc in semi-closed position



Valve in semi-open to protect disc edge and reduce rubber interference during installation and start up, this helps reduce initial torque build up.



Disc should be turned to full open position after flange alignment and before doing up flange bolts.

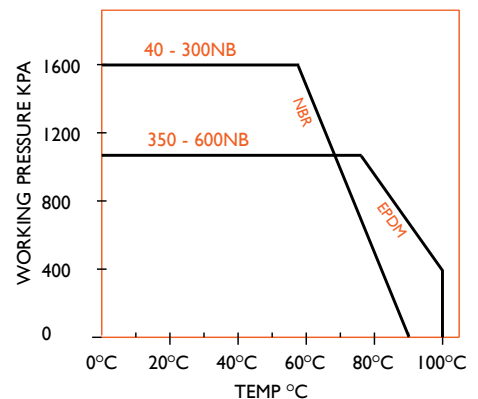
### TORQUE

Torques based on clean, wet fluids. 20% safety factor recommended. For oil/lubricated fluids torque can reduce from 20% to 50%.

For non lubricating dry gases torque can increase 35% to 80%. (see separate chart).

Dry or abrasive/dirty service, temperature variations as well as infrequent use can all dramatically increase torque.

### SEAT PRESSURE / TEMPERATURE



### OPERATING TORQUE (NM)

2014/2014A/2016

VALVE SIZE		Δ kPa (psi)				
in	mm	170 (25)	340 (50)	680 (100)	1020 (150)	1600 (232)
2	50	12	12	20	25	35
2-1/2	65	12	12	25	30	42
3	80	18	19	30	35	60
4	100	32	33	40	50	80
5	125	49	51	60	70	90
6	150	72	76	70	90	215
8	205	127	139	160	190	400
10	255	196	219	240	300	
12	305	289	323	400	500	
14	355	439	481	554	830	
16	405	568	636	762	1110	
18	455	751	831	1005	1390	
20	510	931	1052	1282	1730	
24	610	1375	1559	1871	2020	

\* Torque shown is break/reseating (same).

This brochure is general in it's nature and details shown are subject to change at any time without notice.

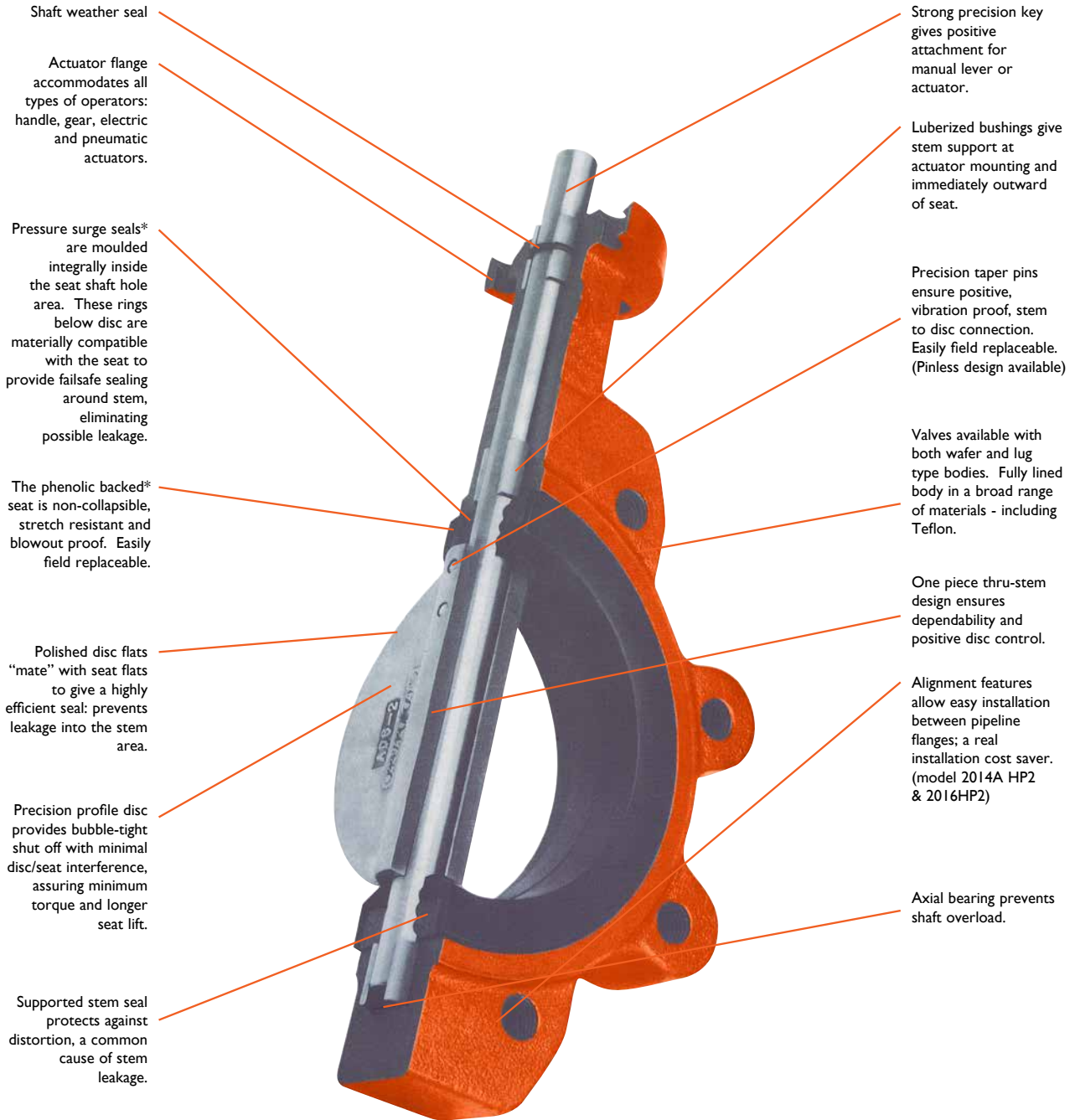
## **LINED BUTTERFLY VALVE**





### **16/21 BAR MODEL 2014-HP / 2016-HP**

TYPE: 2014-HP, 2016-HP, 2014A-HP 2100 KPA RATED TO 300NB 1600 KPA RATED TO 350-500NB  
SUIT AS/BS TABLE F ANSI 150 AS/EN/BS PN16/20/21



# MODEL 2014-HP / 2016-HP SEAL CONSTRUCTION & FEATURES

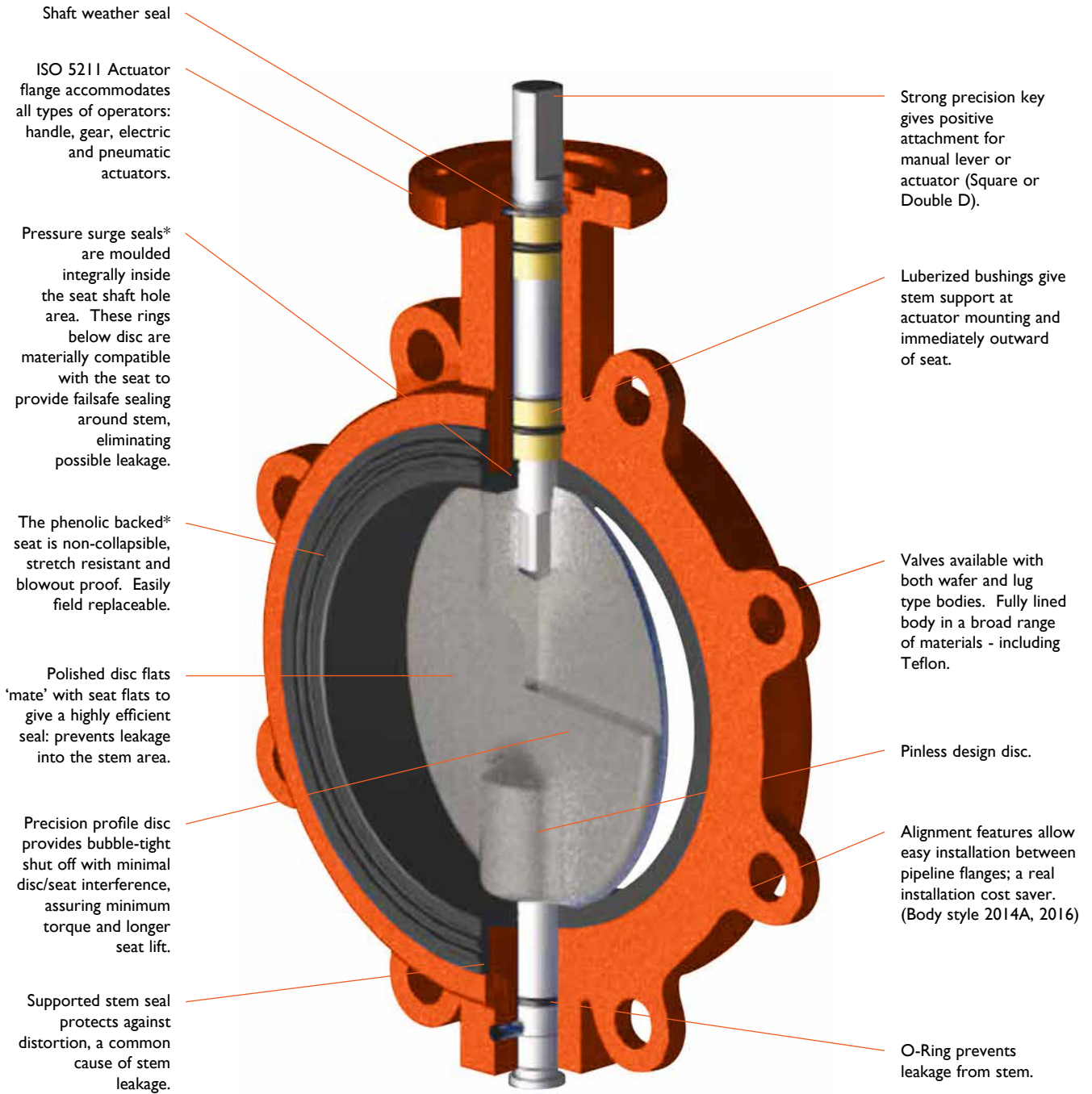






<p>SUPERSEAL CONSTRUCTION</p>	 <p>The disc is precision manufactured to close tolerances on the O.D. and the flats. Seating edge is a polished half ball for torque control.</p>	<p>The modern seat and disc design insures positive sealing while maintaining low seating torque. The superseal design extends seat life by eliminating any bunching or tearing.</p>	 <p>The superseal seat design* has a much smaller mass of elastomer which can swell, in turn torque is controlled to a reasonable degree.</p>	<ul style="list-style-type: none"> <li>• Precision machined disc edge &amp; shaft flats.</li> <li>• Bonded distortion proof seat, close tolerances.</li> <li>• Positive shaft seals.</li> <li>• Low potential of seat swell.</li> <li>• Controlled torque by design superiority.</li> </ul>
<p>TRADITIONAL CONSTRUCTION</p>	 <p>The conventional disc has been sanded to remove rough area, precise dimensions are not maintained.</p>	<p>The conventional design relies on distortion and bunching of the seat to achieve a bubble tight shutoff. Seat life is decreased causing higher maintenance cost and increased down time.</p>	 <p>Elastomers are subject to swelling from fluid absorption which can increase the mass of the seat. This increase can and often does cause excessively high seating torque. Seat life is shortened.</p>	<ul style="list-style-type: none"> <li>• Non-precision disc dimensions.</li> <li>• Seat distorts during installation and operation.</li> <li>• Shorter seat life.</li> <li>• Higher torque due to bunching and potential swelling.</li> </ul>

\*Design varies according to size, rating and material specifications.

# MODEL 2014-HP - HU-1 / 2016-HP

## SEAL CONSTRUCTION & FEATURES - PINLESS DESIGN



<p><b>SUPERSEAL CONSTRUCTION</b></p>	 <p>The disc is precision manufactured to close tolerances on the O.D. and the flats. Seating edge is a polished half ball for torque control. The disc is pinless design.</p>	<p>The modern seat and disc design insures positive sealing while maintaining low seating torque. The superseal design extends seat life by eliminating any bunching or tearing.</p>	 <p>The superseal seat design* has a much smaller mass of elastomer which can swell, in turn torque is controlled to a reasonable degree. The 21 bar rated valve has a bonded hard lined backing.</p>	<ul style="list-style-type: none"> <li>• Pinless Disc</li> <li>• Precision machined disc edge and shaft flats.</li> <li>• Bonded distortion proof seat, close tolerances.</li> <li>• Positive shaft seals.</li> <li>• Low potential of seat swell.</li> <li>• Controlled torque by design superiority.</li> </ul>
<p><b>TRADITIONAL CONSTRUCTION</b></p>	 <p>The conventional disc has been sanded to remove rough area, precise dimensions are not maintained.</p>	<p>The conventional design relies on distortion and bunching of the seat to achieve a bubble tight shutoff. Seat life is decreased causing higher maintenance cost and increased down time.</p>	 <p>Elastomers are subject to swelling from fluid absorption which can increase the mass of the seat. This increase can and often does cause excessively high seating torque. Seat life is shortened.</p>	<ul style="list-style-type: none"> <li>• Non-precision disc dimensions.</li> <li>• Seat distorts during installation and operation.</li> <li>• Shorter seat life.</li> <li>• Higher torque due to bunching and potential swelling.</li> </ul>

\*Design varies according to size, rating and material specifications.



# MODEL 2014-HP / 2016-HP

## SPECIFICATIONS

### Available To Suit Following Flanging

ANSI (ASA) ASME B16.5 / B16.47 150LB, AS 2129 Table E & F, AS 4087, PN14, PN16 & PN21. EN 1092-2 PN10, PN16, PN25, JIS, DIN etc. Face to face dimension available in accordance with BSEN 593 / BSEN 558 / API 609-A / ISO 5752 / AS 4795.

**Design** - Available in API 609-A, AS 4795.1, AS 4795, BS, EN 12266-1, BSEN 593.

**Fluid Application** - Water, seawater, sewage, air, oil, powder, petroleum, gas, chemicals, salts, alkalines etc.

**Operation** - Generally flow control lever & notch plate to 300NB, gear op over 300NB

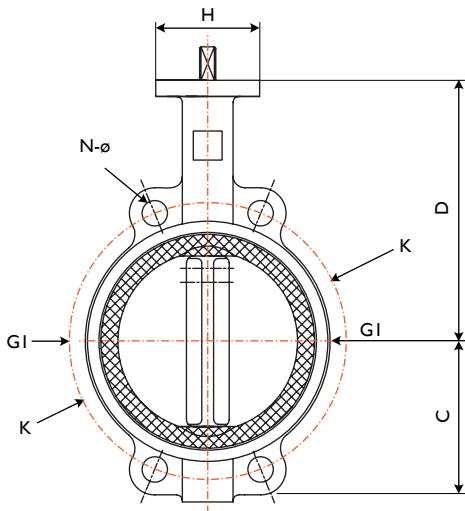
**Mounting** - To ISO 521 I on request. Long lasting, high performance design.

### Pressure Rating (to 300NB)

2100 KPA Working pressure-  
Bi-directional bubble-tight shut off and seat tested to 110% of full rating.

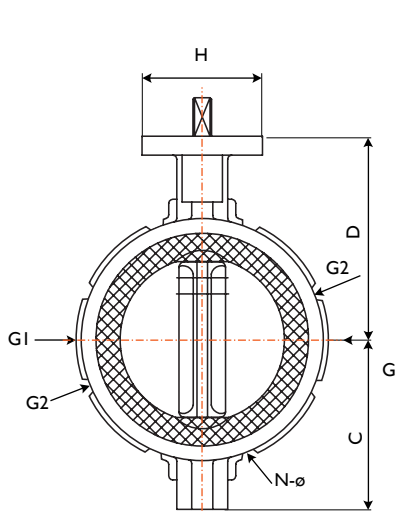
Test Pressure: 314 psi.

Over 300NB rating is 1600 KPA to 400NB

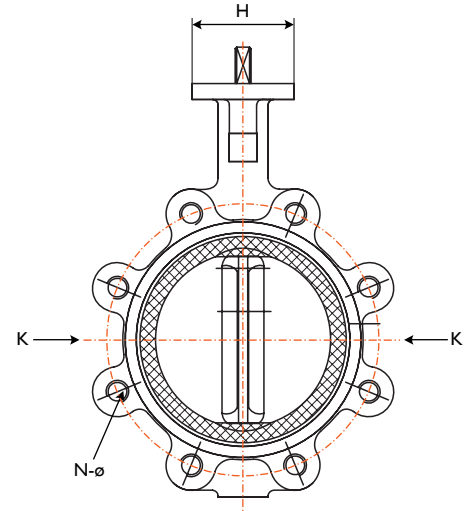


**Wafer Style 2014A HP**

Semi-lugged with 2 or 4 lugs). PCD of Lug holes supplied according to order i.e. ASA 150, AS/BS E, F etc

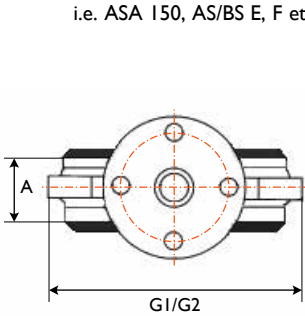


**Wafer Style 2014 HP**

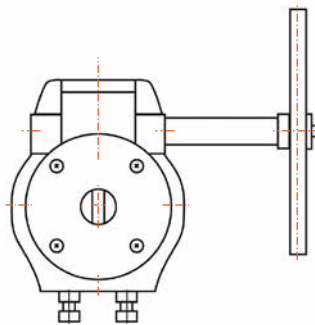


**Lugged Style 2016 HP**

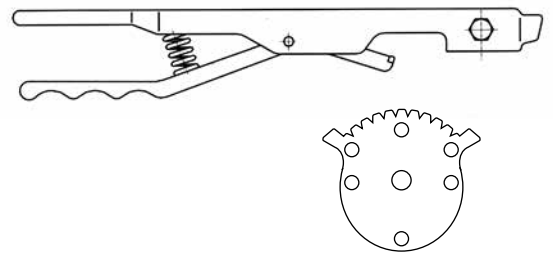
(Can be supplied ANSI 150 AS/BS E, F etc.)



**Semi Lug**



**Gear Operated**



**Lever & Notch Plate**

General Applications	Continuous Working Temperature Range	Disc Material	Seat Material
Steam, Water, Hot Gases, Powders, Slurries & Aqueous Slurries of an abrasive nature	Liquids - 10°C to 120°C Dry Services - 10°C to 100°C	Stainless Steel	General Purpose EPDM
Brines, Sea Water, Estuary Water, Marine Bilge & Ballast Systems	-10°C to 90/100°C	Aluminium Bronze or ENP or S/S or Nylon coated	Black Nitrile or EPDM
Oils, Fuels, Water, Air, Gases, Powders, Pellets, Slurries etc.	Hydrocarbons (Except Aromatics) - 10°C to 90°C Other Liquids - 10°C to 90°C Dry Services - 10°C to 60°C	Teflon or Nylon Coated or SG Iron or ENP or stainless	Black Nitrile
Water & other non erosive fluids	All -10°C to 90/100°C (Solid PTFE will do up to 160°C)	S.G Iron or powder coated	ANY

# MODEL 2014-HP / 2016-HP

## MATERIALS

1. Body	Cast iron, stainless ductile iron (ASTM A396), aluminium, carbon steel etc
2. Disc	316SS, 304SS, AL-Bronze, hard epoxy coated, hard rubber coated, nickel plated, PTFE coated, 410SS etc
3. Stem	316SS, 304SS, 410SS, PTFE coated etc
4. Seat	NBR (90°C), EPDM (90°-100°C), solid teflon (170°C), phenolic backed teflon (160°C), EPDM back teflon (150°C), food grade rubber, Buna-N, Viton, Hypalon etc
5. Retaining Pin/Gland Ring	304SS/410SS/316SS
6. Bottom Bushing	Bronze/Nylon
7. O-Rings	NBR (nitrile)/EPDM
8. Upper Bush	Delrin/Nylon/Bronze
9. Backing	Phenolic (where applicable)

## DIMENSIONS (MM)

Valve Size		Dimension							Weight Kg	Suit Flanging			
in	mm	A	B	C	D	E	H	ID		G1*	G2*	K*	N-ø
1	25	31		57	85				1.1				
1-1/4	32	32		60	100				1.8				
1-1/2	40	33		58	124		90	40	2				
2	50	43	57	55	143	30	90	52	2.3				
2-1/2	65	46	70	64	155	30	90	65	2.7				
3	80	46	82	72	162	30	90	80	3.6				
4	100	52	104	90	181	30	90	100	5				
5	125	56	127	101	197	30	90	125	6.1				
6	150	56	150	114	210	30	90	148	7.1				
8	200	60	194	145	240	35	95	194	13.6				
10	250	68	247	178	286	35	110	247	21.3				
12	300	78	298	204	309	35	120	297	32.2				
14	350	76	330	266	355	55	125	327	85				
15	375	86	387	300	380	55	175	385					
16	400	86	390	300	380	55	175	387	106				

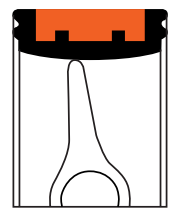
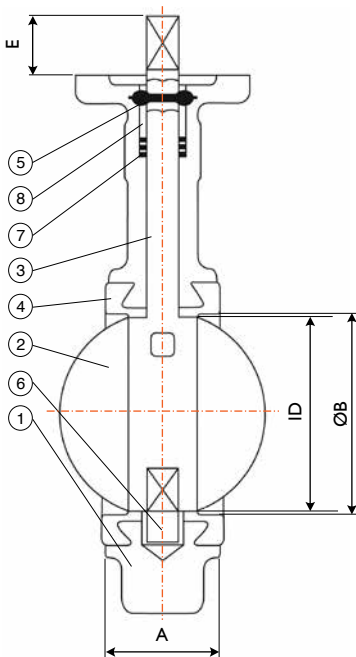
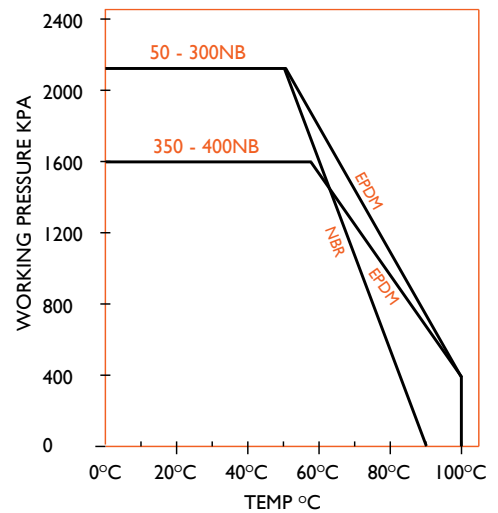
\*G1, G2 & K & N-ø available to fit any flanging i.e. AS/BS E, F, ASA 125, PN16, JIS etc.  
 Sizes shown are subject to variation at any time.

## OPERATING TORQUE (NM)

Valve Size		Δ kPa (psi)		
in	mm	1700(200)	2040(250)	2468(300)
2	50	30	37	45
2-1/2	65	35	43	55
3	80	55	67	75
4	100	70	90	105
5	125	100	150	180
6	150	170	225	240
8	200	300	416	490

• Torque (NM) shown is break/reseating (same)

## SEAT PRESSURE / TEMPERATURE



Hard Backed Liner



### Hard backed bonded liner design.

The composite seat design provides the advantages of a flexible liner for tight shut off with a hard bonded backing for rigidity to prevent distortion at higher pressure ensures compression between the precision profile disc and seat. The rolling action of the disc coupled with the stability of the seat eliminates any tearing or bunching thus minimising seat damage.

By bonding the elastomer liner face material to a hard backing ring core, the design ensures complete support and increased stability to the seat to withstand higher pressures.

This guarantees positive control against distortion, particularly in the stem seal area, eliminating all risks of leakage.

The seat design only has a small volume of elastomer swelling hence the torque is reduced and longer life is assured.

## TORQUE

Torques based on clean, wet fluids. 20% safety factor recommended. For oil/lubricated fluids torque can reduce from 20% to 50%. For non lubricating dry gases torque will increase 35% to 80%.

Also, dry or abrasive/dirty service, temperature variations as well as infrequent use can all dramatically increase torque.

This brochure is general in it's nature and details shown are subject to change at any time without notice.

# PTFE / FEP / PFA / ETFE & ELASTOMER LINED BUTTERFLY VALVE 2 PIECE BODY MODEL 2014-2P



**Service**

Hygienic, Chemical, Industrial, Mining, Oil & Gas, High Temperature

**Design**

Centric, Wafer & Lugged API 609, BS/EN 593, BS/EN 558

**Size Range**

50 to 600mm

**Pressure Rating**

PN 3.5, PN10, PN16

500 kPa max rating on dead end service

1600 kPa rating available up to 600NB

**Temperature Rating**

Minus 20°C to 110°C EPDM liner & seals

Minus 8°C to 90°C Buna N liner & seals

Minus 5°C to 110°C Teflon liner, NBR backed

Minus 20°C to 130°C Teflon liner, EPDM backed

Minus 10°C to 100°C Urethane liner

Minus 20°C to 150°C solid Teflon liner & seals

**Standard Materials**

Body: Cast Iron, 316SS etc

Disc: 316 S/S EPDM encapsulated, Teflon (PFA) encapsulated

Stem: 316 S/S, EPDM or Teflon (PFA) encapsulated

Seat: EPDM or Buna N

Teflon - Buna N backed

Teflon - EPDM backed

Urethane

Teflon - solid

**Flanging**

AS 2129 Table D, E

AS 4087 PN14, PN16, ANSI Class 125/150

EN 1092-2, PN10, PN16

**Retaining System**

The shaft is retained in the body with retaining ring, a thrust washer and two C-Rings, providing a 'blow-out proof' shaft assembly. The retaining ring may be easily removed with a standard hand tool on field disassembly.

**Shaft**

One-piece through shaft ensures dependability and positive disc positioning.

**Bushings**

Shaft bushings reduce torque and isolate the shaft from the valve body, preventing seizure of the shaft due to corrosion in the shaft journal.

**PTFE Seat**

Solid PTFE or EPDM with phenolic-backed seat provides resilient support for the molded PTFE, thus maximising the shut-off and cycle life of the seat.

**Disc and Shaft Connection**

The square connection eliminates shaft retention components being exposed to the line media. Maximum flow is achieved.

**Mounting Flange**

ISO 5211 mounting flange accommodates direct mounting of all types of actuators, including: handles, gear operators, electric and pneumatic.

**O-Ring**

Shaft seal provides further assurance against stem leakage.

**Flats Seal**

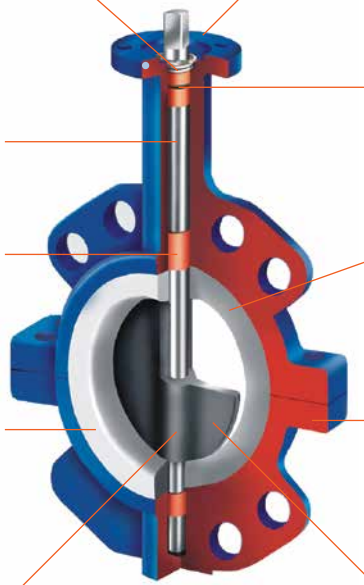
Smooth finished disc flats mate with seat flats to give a highly efficient primary seal that prevents leakage into the shaft area.

**Two Piece Body**

Two piece body allows for ease of assembly and maintenance.

**Disc**

Stainless steel or stainless steel PFA (min. thickness 0.1mm) coated disc prevents chemical corrosion from flow media. Precision profile provides bubble-tight shut-off, assures minimum torque and longer seat life.

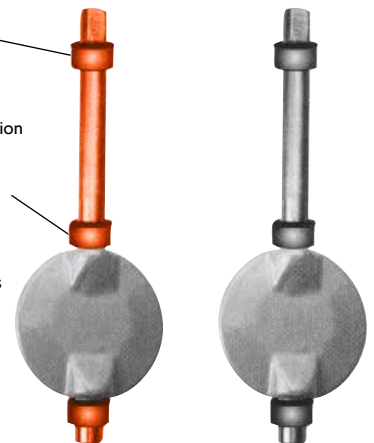


**Atmospheric seal (O-Ring)**

Providing external corrosion protection

**Triple stem bearing**

Maintenance free, with SS + PTFE / Polyacetal bearings



Separate Disc and Stem

One Piece Fully Coated Disc and Stem

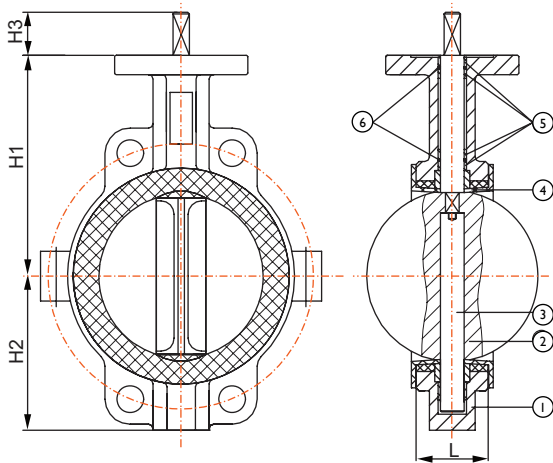
# MODEL 2014-2P

## MATERIALS

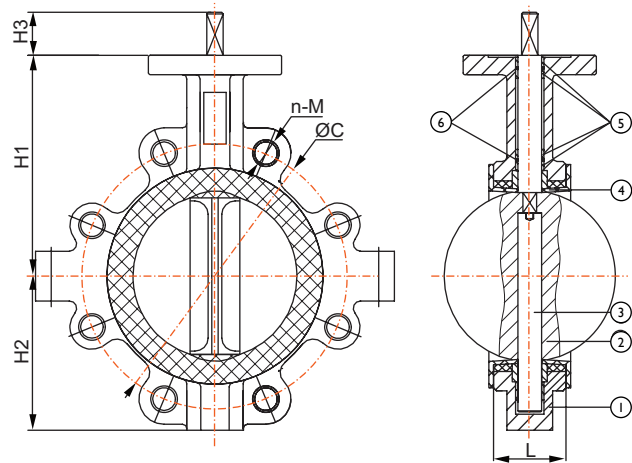
Component	Material Options Available
Body (1)	Cast Iron FS220 Ductile Iron GGG40 Carbon Steel ASTM A216 WCB Stainless Steel ASTM A351 CF8 Stainless Steel ASTM A351 CF8M
Disc (2) & Stem (3)	Carbon Steel ASTM A105/WCB + Nylon Coating or PTFE Coated Stainless Steel ASM A351 CF8/CF8M/316L/CF3M Aluminium Bronze Nickel Titanium Hastalloy
Liner (4)	PTFE (Solid) FEP (Solid) PFA (Solid) ETFE (Solid) Buna N (Nitrile) EPDM Silicon Viton PTFE (EPDM Backed) White food grade Buna N White food grade EPDM



WAFER



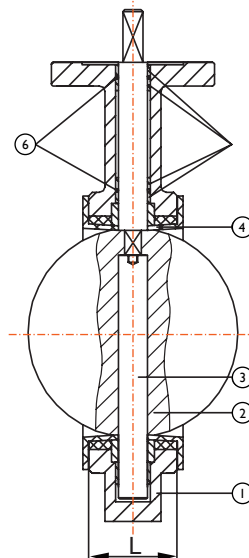
LUG



## DIMENSIONS (MM)

SIZE		L	H1	H2	H3	ISO 5211				EN 1098 PN16			ØZ	ØF	H
DN	NPS					No.	ØN	Øc1	n1-Ød1	ØC	n-Ød	n-M			
40	1.5"	33	128	73	29	F05	65	50	4-Ø8	110	4-Ø18	4-M16	12.6	12.1	9
50	2"	43	135	73	29	F05	65	50	4-Ø8	125	4-Ø18	4-M16	12.6	12.1	9
65	2-1/2"	46	135	80	29	F05	65	50	4-Ø8	145	4-Ø18	4-M16	12.6	12.1	9
80	3"	46	138	90	29	F05	65	50	4-Ø8	160	8-Ø18	8-M16	12.6	12.1	9
100	4"	52	158	116	29	F07	90	70	4-Ø10	180	8-Ø18	8-M16	15.77	14.1	11
125	5"	56	175	130	29	F07	90	70	4-Ø10	210	8-Ø18	8-M16	18.92	18.1	14
150	6"	56	188	148	29	F07	90	70	4-Ø10	240	8-Ø22	8-M20	18.92	18.1	14
200	8"	60	230	180	35	F10	125	102	4-Ø12	295	12-Ø22	12-M20	22.1	22.1	17
250	10"	68	270	220	35	F10	125	102	4-Ø12	355	12-Ø26	12-M24	28.45	28.1	22
300	12"	78	300	255	35	F10	125	102	4-Ø12	410	12-Ø26	12-M24	31.6	28.1	22

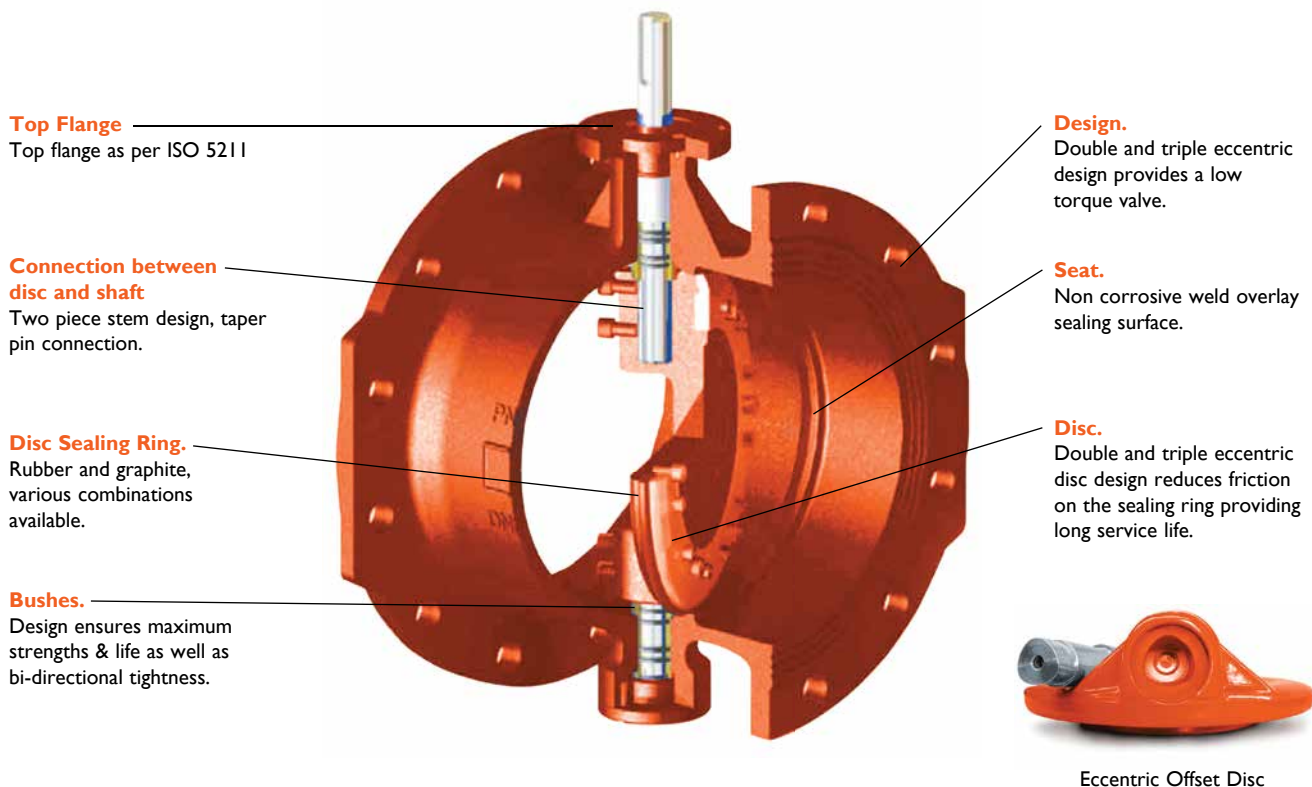
350NB to 400NB refer to drawing.



## PARTS LIST

Parts	Description
1	Body
2	Disc
3	Stem
4	Seat
5	Bushing
6	O Ring

# LARGE DIAMETER FLANGED BUTTERFLY VALVE RESILIENT SEAT DOUBLE / TRIPLE OFFSET MODEL HU-B60~63W PN10~25



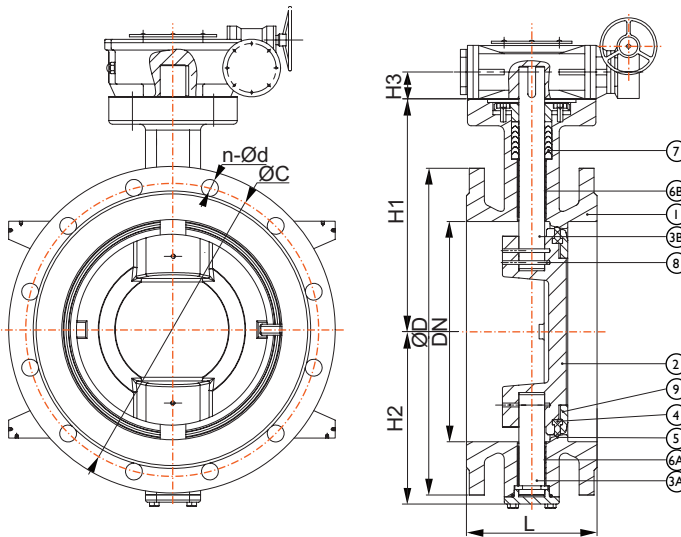
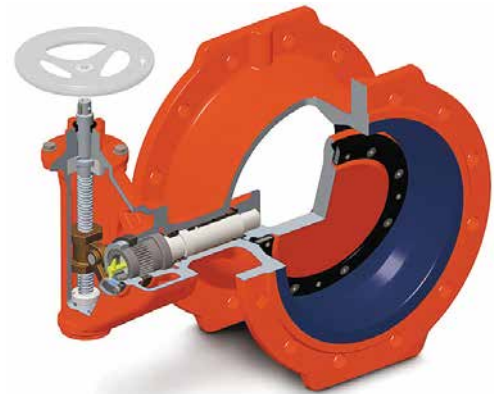
## MATERIALS

Name	Material	Specification				Remark
		ASTM	DIN	EN	JIS	
Body	Cast Iron	ASTM A126B	GG25	EN-GJS-250	FC200	
	Ductile Iron	ASTM A536	GGG40	EN-GJS-400	FCD450	
	Carbon Steel	A216 WCB	GS-C25	GP 240 GH+N	SCPH 2	
	Stainless Steel	A351 CF8M	1.4408	BS 970 304 S15	SCS14	
		A351 CF8	1.4301	BS 970 316 S15	SCS13	
Disc	Plated Ductile Iron	ASTM A536	GGG40	EN-GJS-400	FCD450	PTFE or Nylon Coated Disc also available
	Aluminium Bronze	B148-954	C954	EN 1982 CC491K	ABL2	
	Stainless Steel	A351 CF8M	1.4408	BS 970 304 S15	SCS14	
	Carbon Steel	A351 CF8	1.4301	BS 970 316 S15	SCS13	
		A216 WCB	GS-C25	GP 240 GH+N	SCPH 2	
Stem	Carbon Steel	A216 WCB	GS-C25	GP 240 GH+N	SCPH 2	
	Stainless Steel	A276-410	1.4201	BS 970 410-S21	SUS410	
		A276-304	1.4301	BS 970 304 S15	SCS13	
		A276-316	1.4408	BS 970 316 S15	SCS14	
A276-316L		1.4401	BS 970 316L	SCS14A		
Seat	NBR (Nitrile)					-20°C~80°C
	EPDM					-25°C~110°C
	Heat Resistant EPDM					-25°C~130°C
	Neoprene (CR)					-25°C~110°C
	Hypalon (CSM)					-30°C~120°C
	Viton (FKM)					-20°C~200°C
	Natural Rubber (NR)					-30°C~70°C
	PTFE Cover NBR					-20°C~150°C
Full PTFE					-20°C~180°C	
Silicon (Q)					-60°C~250°C	
Pin	Stainless Steel	A182 F6A	1.4201	BS 970 410-S21	SUS410	
		A182 F304	1.4301	BS 970 304 S15	SCS13	
		A182 F316	1.4408	BS 970 316 S15	SCS14	
Bushing	PTFE					
	Bronze	B62			BC62	
O-Ring	NBR					-20°C~80°C
	EPDM					-25°C~110°C
	Viton					-20°C~100°C

# MODEL HU-B62

Size	DN100-DN2000
General	EN 593, EN 1092
Mounting Pad	ISO 5211
Face to Face	EN 558-1 14 Series, ISO 5752, DIN 3202-F4
Flange Drilling	EN 1092-2PN10/PN16/PN25

Check with APV for available seat ratings on larger sizes.  
 Flange drilling according to ASME B16.1, ASME B16.5, ASA 150, BS 4504  
 PN10/PN16, BS10 Table D/E, EN 1092 PN2.5~PN25, AS 2129  
 Table D/E, AS 4087 PN14, PN16, PN21, JIS10K, ISO 7005.

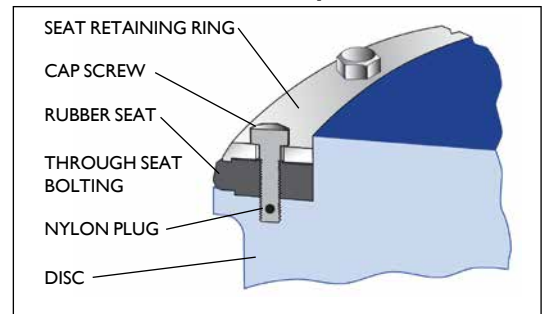


## MATERIALS

Parts	Description	Material	Specification
1	Body	Ductile Iron	GGG40
2	Disc	Ductile Iron	GGG40
3	Stem	Stainless Steel	SS420
4	Disc Sealing	EPDM	
5	Body Sealing	Stainless Steel	AISI304
6	Bushing	PTFE+Non-ferrous metal	
7	Packing	EPDM	
8	Pin	Stainless Steel	SS420
9	Retaining Ring	Stainless Steel	AISI304

Typical example only, refer as built drawing.

## On Disc - Seat Retention System



## DIMENSIONS (MM)

Size		L	H1	H2	H3	EN 1092-2 PN10			EN 1092-2 PN16			EN 1092-2 PN25		
DN	NPS					ØD	ØC	n-Ød	ØD	ØC	n-Ød	ØD	ØC	n-Ød
100	4"	190	140	115	38	220	180	8-19	220	180	8-19	235	190	8-23
125	5"	200	150	130	38	250	210	8-19	250	210	8-19	270	220	8-28
150	6"	210	160	150	38	285	240	8-23	285	240	8-23	300	250	8-28
200	8"	230	200	187	42	340	295	8-23	340	295	12-23	360	310	12-28
250	10"	250	235	215	42	395	350	12-23	405	355	12-28	425	370	12-31
300	12"	270	264	237	42	445	400	12-23	460	410	12-28	485	430	16-31
350	14"	290	300	270	51	505	460	16-23	520	470	16-28	555	490	16-34
400	16"	310	335	305	51	565	515	16-28	580	525	16-31	620	550	16-37
450	18"	330	360	335	51	615	565	20-28	640	585	20-31	670	600	20-37
500	20"	350	395	370	136	670	620	20-28	715	650	20-34	730	660	20-37
600	24"	390	460	425	136	780	725	20-31	840	770	20-37	845	770	20-41
700	28"	430	535	505	149	895	840	24-31	910	840	24-37	960	875	24-44
800	32"	470	590	560	149	1015	950	24-34	1020	950	24-41	1085	990	24-50
900	36"	510	660	630	185	1115	1050	28-34	1125	1050	28-41	1185	1090	28-50
1000	40"	550	735	705	216	1230	1160	28-37	1255	1170	28-44	1320	1210	28-57
1200	48"	630	840	815	216	1455	1380	32-41	1485	1390	32-50	1530	1420	32-57
1400	56"	710	1010	985	267	1675	1590	36-44	1685	1590	36-50	/	/	/
1600	64"	790	1130	1120	312	1915	1820	40-50	1930	1820	40-57	/	/	/
1800	72"	870	1280	1270	312	2115	2020	44-50	/	/	/	/	/	/
2000	80"	950	1405	1380	326	2325	2230	48-50	/	/	/	/	/	/

Flange drilling according to ASME B16.1, ASME B16.5, ASA 150, DIN2501 PN6/PN10/PN16, BS 4504 PN10/PN16, BS10 Table D/E, EN 1092, AS2129 Table D/E, JIS10K, ISO 7005 etc.



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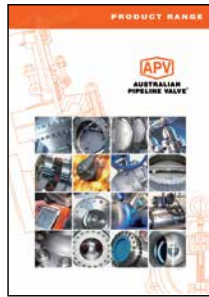
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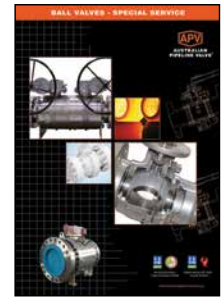
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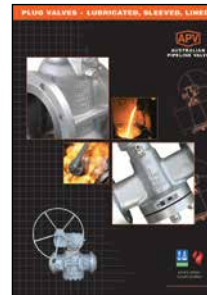
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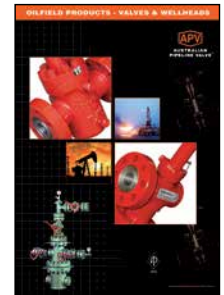
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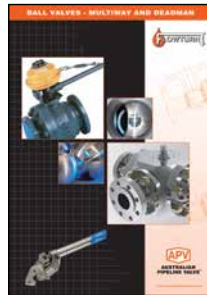


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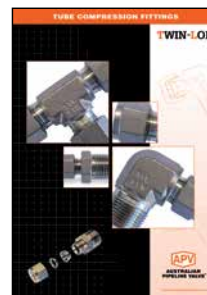
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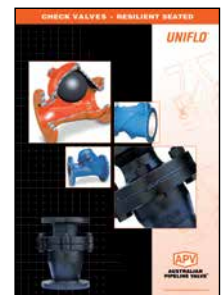
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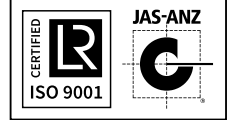


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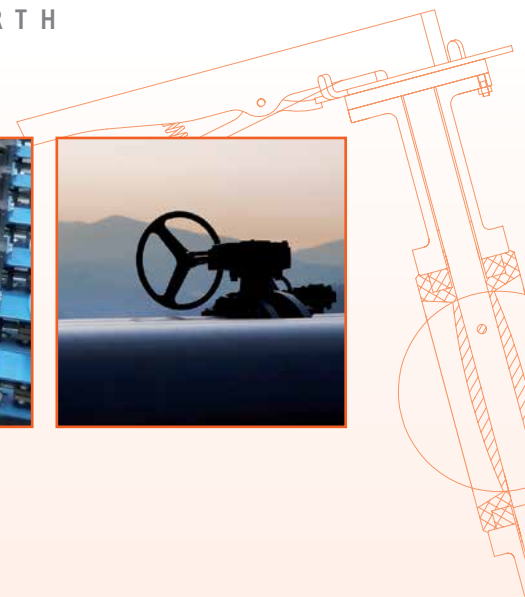
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