



## Sure Seal Tri-Set Rotary Process Valve

Sure Seal Tri-Set Triple Offset Rotary Process Valves offer dependable, economic service for demanding applications in the power, process and wastewater industry. Tri-Set valves are designed and manufactured with the highest standards in the industry and are guaranteed to exceed your application expectations. Sure Seal, part of OPW Fluid Transfer Group, stands behind all of the industrial valve products sold and serviced.

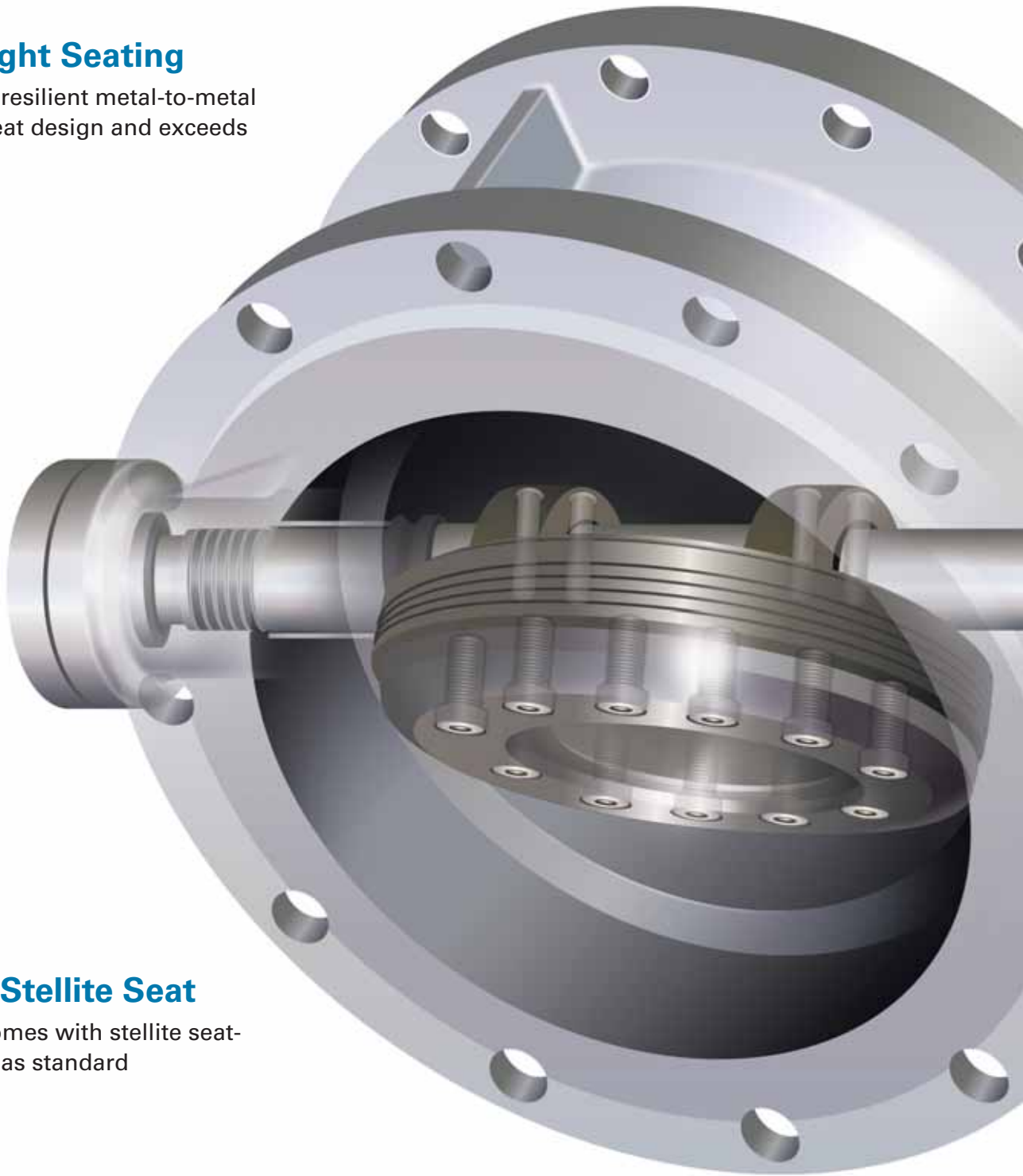
# Sure Seal Tri-Set Rotary Process Valve Features and Benefits

## Easily Repaired Seat Design

Disc seat rings can be replaced with minimum effort while the valve is still in line

## Bubble-Tight Seating

TriSet offers resilient metal-to-metal leak-proof seat design and exceeds Class VI



## Standard Stellite Seat

Body seat comes with stellite seating surfaces as standard

## Self-Centering Disc

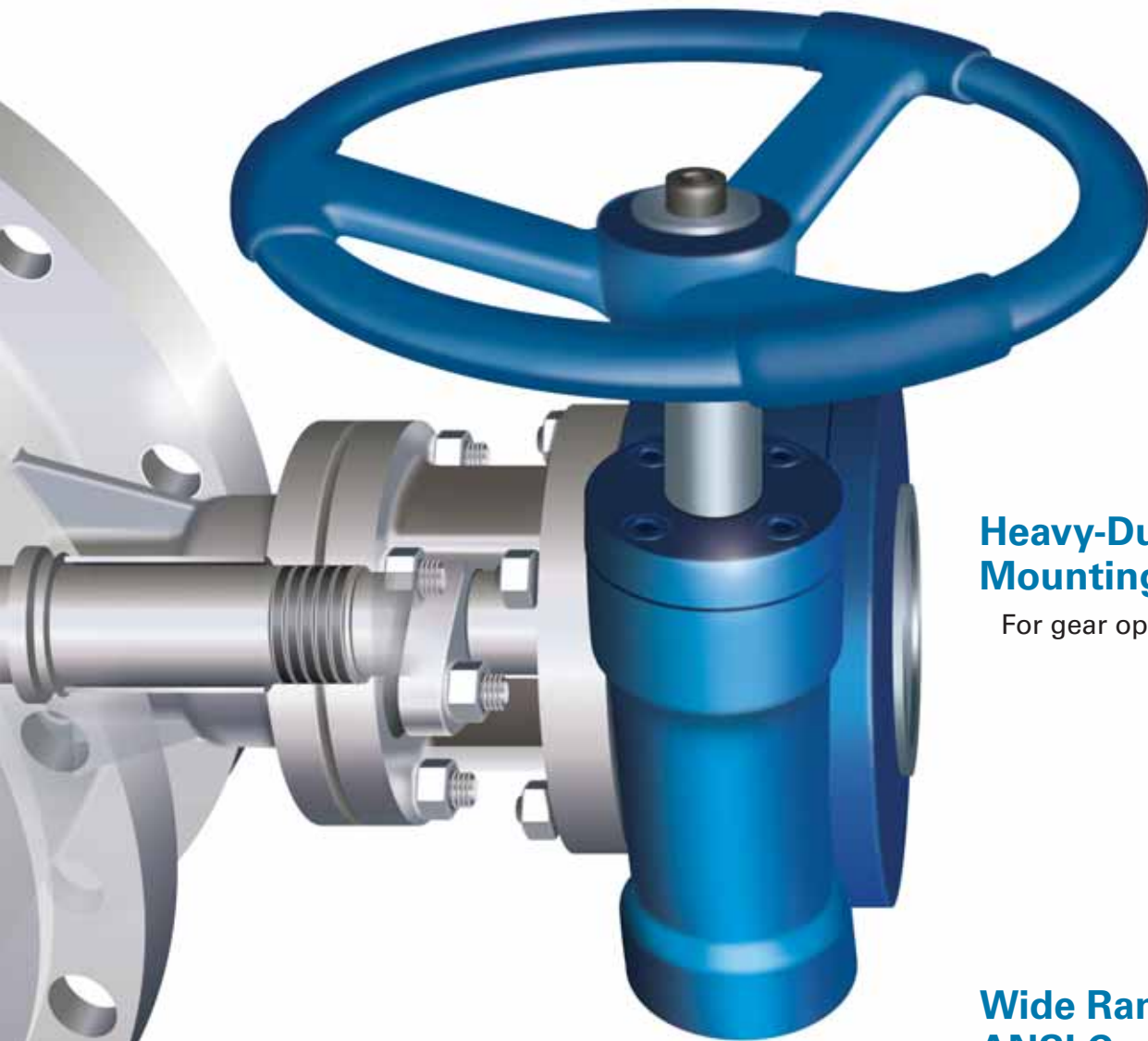
Allows for non-binding thermal expansion and contraction

## Larger Stem Bearings

Large stem bearings provide superior stem alignment

## Inherently Fire Safe

No polymers or elastomers



## Heavy-Duty Cast Mounting Pad

For gear operators and actuation

## High temp graphoil packing is standard

Adjustable packing gland allows in line adjustability.

## Wide Range of DIN and ANSI Configurations

Lug, Wafer, ISO 5752 Flanged, ASME B16.10 Gate Valve and Butt Weld

## Single-Piece Robust Stem

Promotes minimum stem deflection

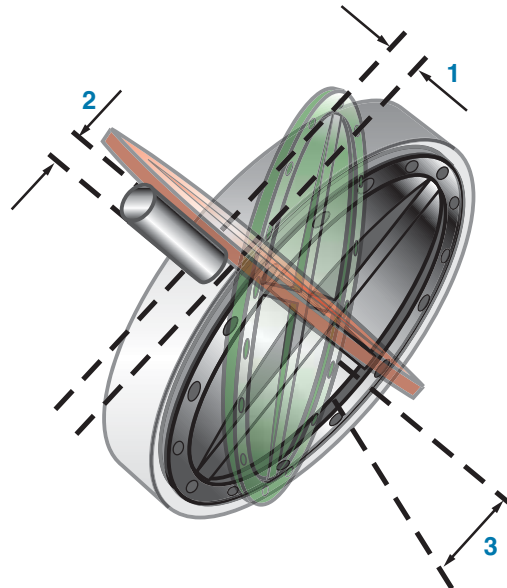
# Seat Sealing Principles



Sure Seal's Tri-Set Triple Offset Rotary Process Valves are designed with three separate offsets. Well known for its excellent sealing ability with minimal friction at the interfaces during engagement and disengagement, Sure Seal's Triple Offset design ensures minimal operating torque, increased temperature capabilities and provides a longer life cycle than competitive valves.

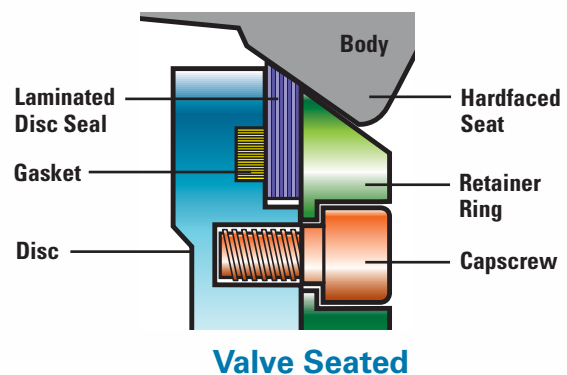
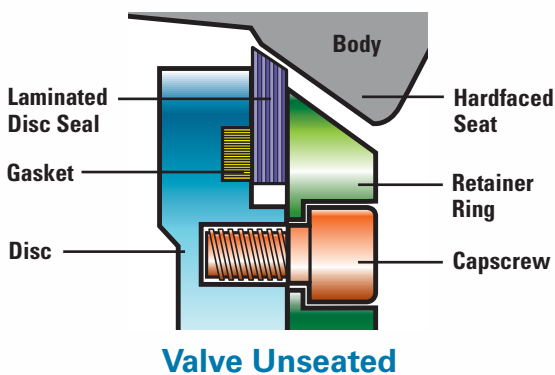
The design of Sure Seal's Tri-Set Triple Offset valve refers to the three offsets located on the butterfly valve. Two of the offsets (**1 and 2**) relate to the position of the shaft to the centerline of the bore and the centerline of

the disc/seat sealing surfaces. In addition, the third offset (**3**) relates to the axis of the seat cone angle that is offset from the center line of the valve.



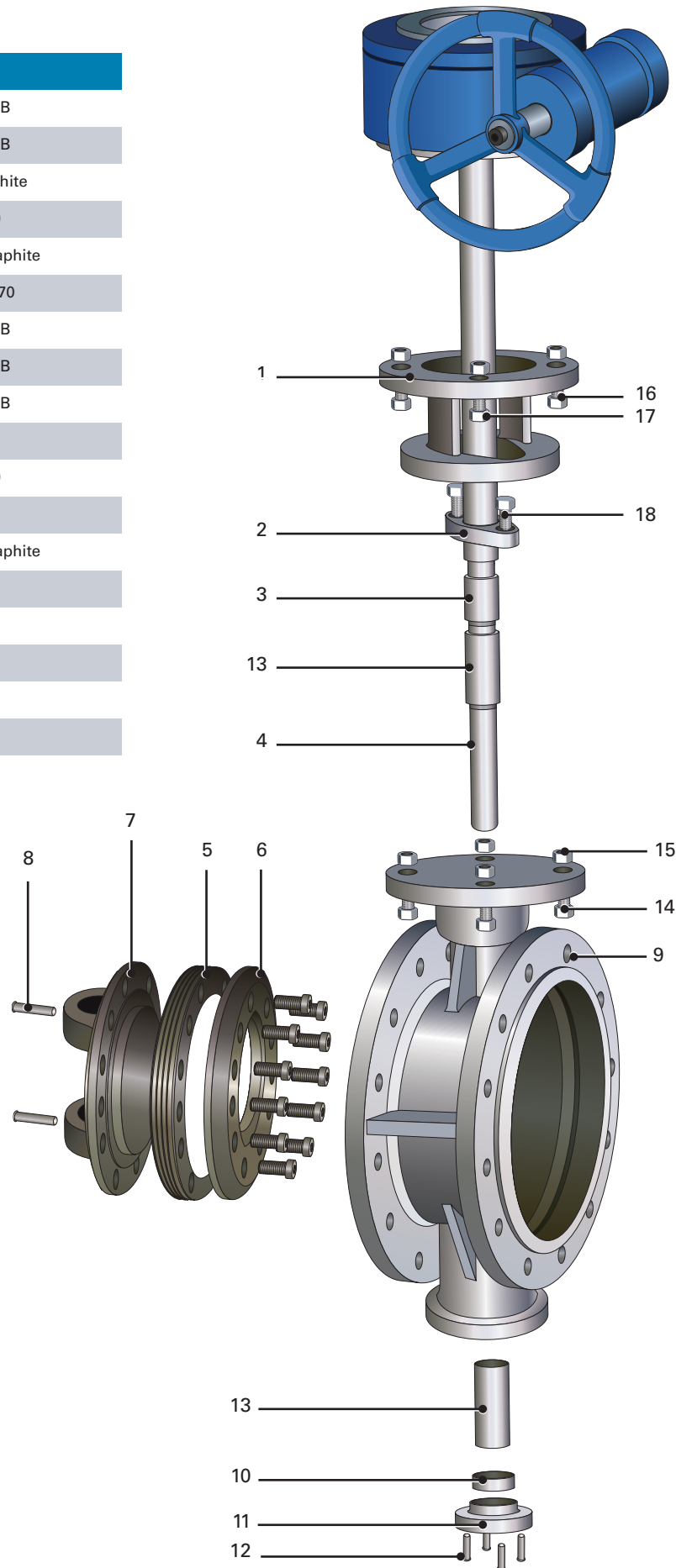
The distinct feature of Sure Seal's Tri-Set Triple Offset design is the unique manner in which it achieves sealing between the disc element and its seat within the valve housing. The airtight seal of the Tri-Set is created when the disc element forms a conical 'wedge' at a pre-defined angle relative to the axis formed by the cone. The seat interface is generated by slicing a matching conical hole at the same angle relative to the cone axis and is incorporated into the valve body of the unit.

Zero leakage results from the unique design of the disc element and meticulously machined seat to create a perfectly matched disc/seat fit. This design also ensures that the metal seat and metal laminate seal are never in contact with each other while the valve is stroking. Contact is made between seat and seal only as final shut off position is reached.

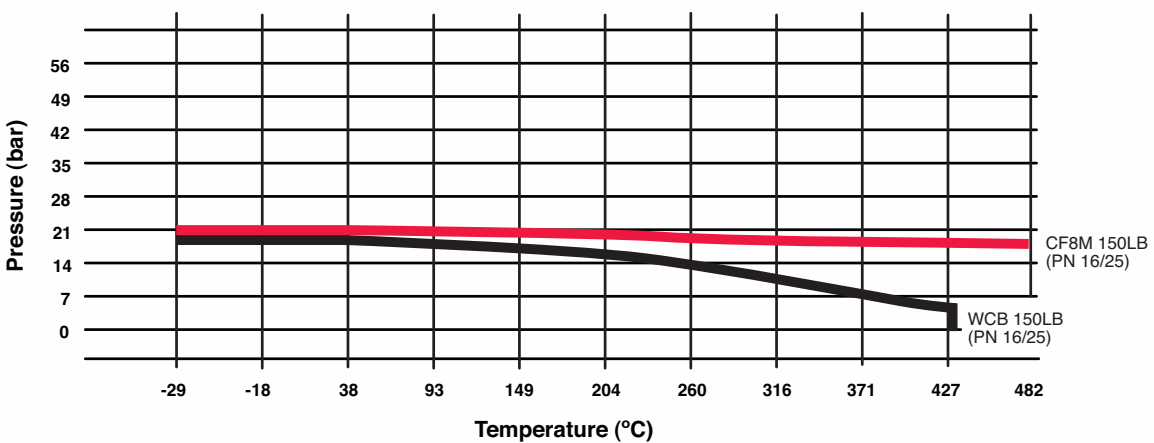
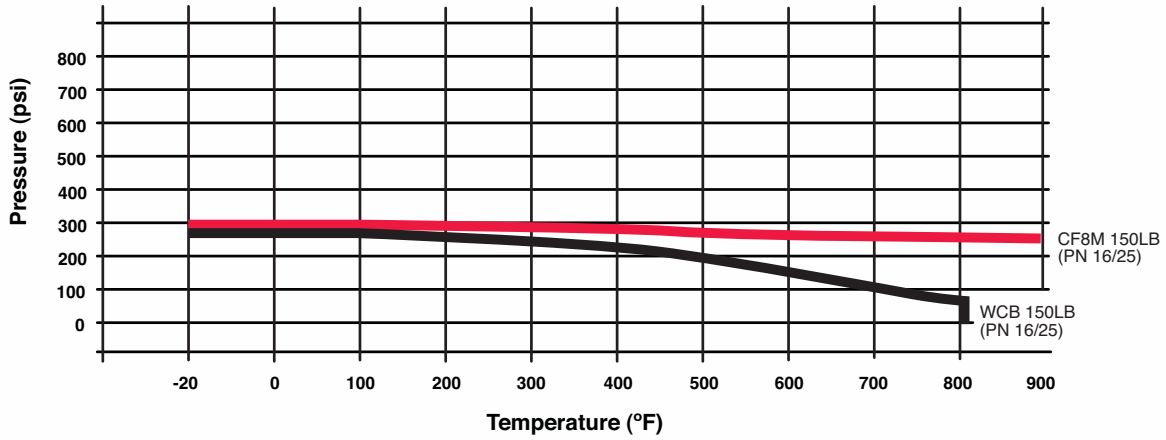
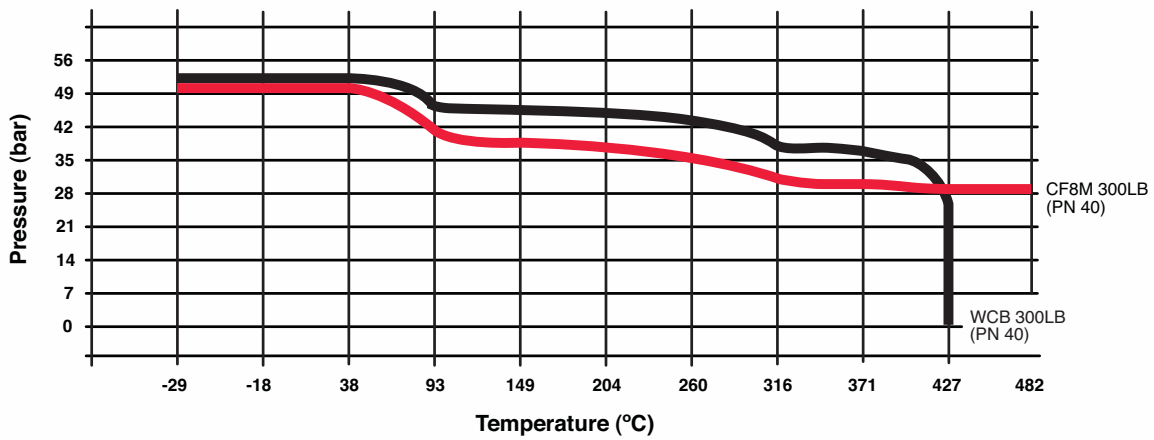
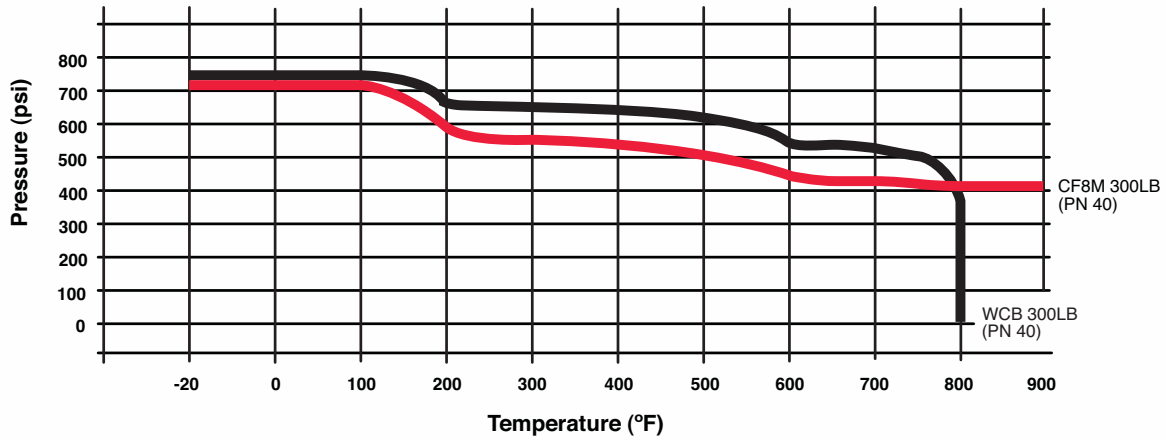


# Materials and Parts

Description	Material
1 yoke	ASTM A216 WCB
2 gland flange	ASTM A216 WCB
3 packing	SS/carbon graphite
4 stem	ASTM A276 420
5 seat ring	stainless SS/graphite
6 seat ring retainer	ASTM A576 GR70
7 disc	ASTM A216 WCB
8 pin	ASTM A216 WCB
9 body	ASTM A216 WCB
10 gasket	SS304/graphite
11 bottom cover	ASTM A29 1030
12 bolt	ASTM A193 B7
13 bearing	stainless SS/graphite
14 bolt	ASTM A193 B7
15 nut	ASTM A194 2H
16 bolt	ASTM A193 B7
17 nut	ASTM A194 2H
18 packing gland bolt	

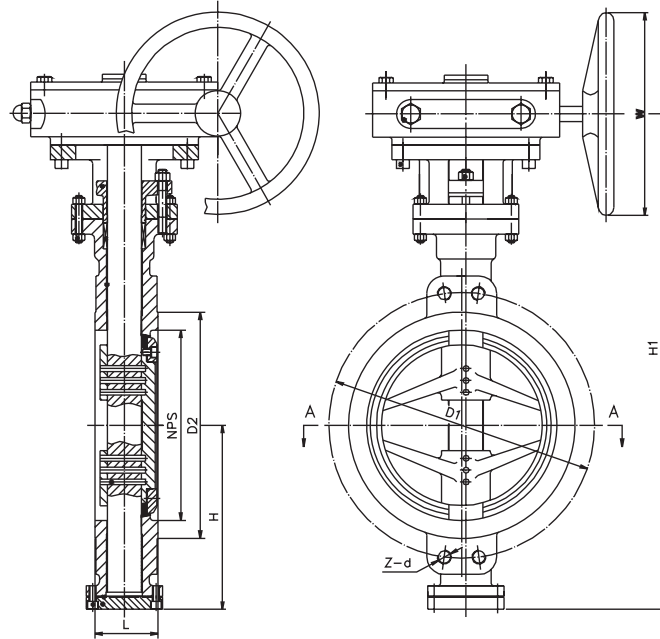


# Pressure Temperature Curves



NOTE: consult factory for temperatures above 900°F or 420°C

# Wafer Dimensional Data



PN 16/25							
DN	D1	D2	H	H1	L	W	Z-d
80	152	127	125	380	49	160	4-ø19
100	190	157	145	415	55	160	8-ø19
125	216	186	165	455	63	240	8-ø22
150	241	216	175	545	70	240	8-ø22
200	298	270	210	645	71	280	8-ø22
250	362	324	250	695	76	280	12-ø25
300	432	381	285	830	82	320	12-ø25
350	476	413	320	900	92	320	12-ø29
400	540	470	355	980	101	350	16-ø29
450	578	533	380	1030	114	350	16-ø32
500	635	584	415	1110	127	400	20-ø32
600	749	692	475	1305	154	400	20-ø35
750	914	857	580	1525	165	500	28-ø35
900	1086	1022	680	1765	201	500	32-ø41.5

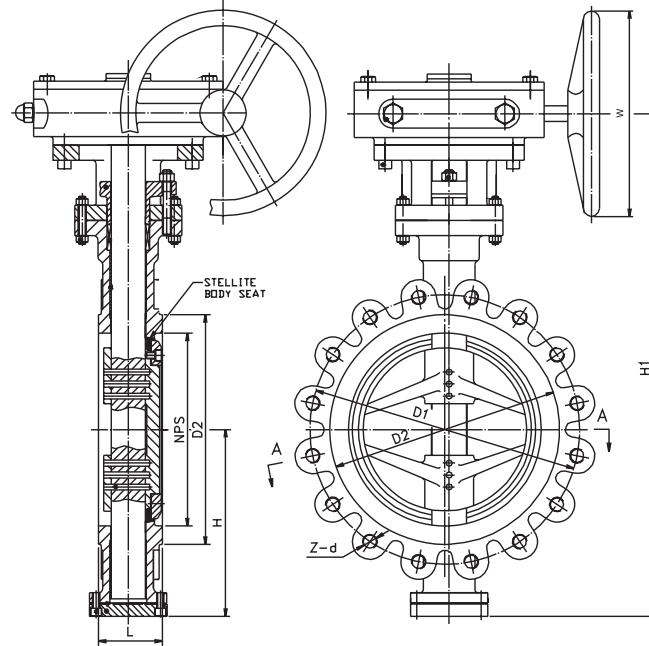
ANSI 150*							
NPS	D1	D2	H	H1	L	W	Z-d
3"	5.98"	5"	4.92"	14.96"	2"	6.29"	4-ø19
4"	7.48"	6.18"	5.70"	16.33"	1.92"	6.29"	8-ø19
5"	8.50"	7.32"	6.49"	17.91"	2.16"	9.44"	8-ø22
6"	9.48"	8.50"	6.88"	21.45"	2.48"	9.44"	8-ø22
8"	11.73"	10.62"	8.26"	25.39"	2.75"	11.02"	8-ø22
10"	14.25"	12.75"	9.84"	27.36"	2.79"	11.02"	12-ø25
12"	17"	15"	11.22"	32.67"	2.99"	12.59"	12-ø25
14"	18.74"	16.25"	12.59"	35.43"	3.62"	12.59"	12-ø29
16"	21.25"	18.50"	13.97"	38.58"	3.97"	13.77"	16-ø29
18"	22.75"	20.98"	14.96"	40.55"	4.48"	13.77"	16-ø32
20"	25"	22.99"	16.33"	43.70"	5"	15.74"	20-ø32
24"	29.48"	27.24"	18.70"	51.37"	6.06"	15.74"	20-ø35
30"	35.98"	33.74"	22.83"	60.03"	6.49"	19.68"	28-ø35
36"	42.75"	40.23"	26.77"	69.48"	7.91"	19.68"	32-ø41.5

PN 40							
DN	D1	D2	H	H1	L	W	Z-d
80	168	127	125	380	49	160	8-ø22
100	200	157	145	415	55	160	8-ø22
125	235	186	165	455	63	240	8-ø22
150	270	216	175	545	70	240	12-ø22
200	330	270	210	645	71	280	12-ø26
250	387	324	250	695	76	280	16-ø29
300	451	381	285	830	82	320	16-ø32
350	514	413	320	900	92	320	20-ø32
400	571	470	355	980	101	350	20-ø35
450	628	533	380	1030	114	350	24-ø35
500	686	584	415	1110	127	400	24-ø35
600	813	692	475	1305	154	400	24-ø41
750	997	857	580	1525	165	500	28-048
900	1168	1022	680	1765	201	500	32-ø54

ANSI 300*							
NPS	D1	D2	H	H1	L	W	Z-d
3"	6.61"	5"	4.92"	14.96"	2"	6.29"	8-ø22
4"	7.87"	6.18"	5.70"	16.33"	1.92"	6.29"	8-ø22
5"	9.25"	7.32"	6.49"	17.91"	2.16"	9.44"	8-ø22
6"	10.62"	8.50"	6.88"	21.45"	2.48"	9.44"	12-ø22
8"	12.99"	10.62"	8.26"	25.39"	2.75"	11.02"	12-ø26
10"	15.23"	12.75"	9.84"	27.36"	2.79"	11.02"	16-ø29
12"	17.75"	15"	11.22"	32.67"	2.99"	12.59"	16-ø32
14"	20.23"	16.25"	12.59"	35.43"	3.62"	12.59"	20-ø32
16"	22.48"	18.50"	13.97"	38.58"	3.97"	13.77"	20-ø35
18"	24.72"	20.98"	14.96"	40.55"	4.48"	13.77"	24-ø35
20"	27"	22.99"	16.33"	43.70"	5"	15.74"	24-ø35
24"	32"	27.24"	18.70"	51.37"	6.06"	15.74"	24-ø41
30"	39.25"	33.74"	22.83"	60.03"	6.49"	19.68"	28-048
36"	45.98"	40.23"	26.77"	69.48"	7.91"	19.68"	32-ø54

\* per API 609

# Lug Dimensional Data



PN 16/25							
DN	D1	D2	H	H1	L	W	Z-d
80	152	127	125	380	49	160	4-5/8"-11UNC
100	190	157	145	415	55	160	4-4/8"-11UNC
125	216	186	165	455	63	240	8-3/4"-10UNC
150	241	216	175	545	70	240	8-3/4"-10UNC
200	298	270	210	645	71	280	8-3/4"-10UNC
250	362	324	250	695	76	280	12-7/8"-9UNC
300	432	381	285	830	82	320	12-7/8"-9UNC
350	476	413	320	900	92	320	12-1"-8UNC
400	540	470	355	980	101	350	16-1"-8UNC
450	578	533	380	1030	114	350	16-1 1/8"-8UN
500	635	584	415	1110	127	400	20-1 1/8"-8UN
600	749	692	475	1305	154	400	20-1 1/4"-8UN
750	914	857	580	1525	165	500	28-1 1/4"-8UN
900	1086	1022	680	1765	201	500	32-1 1/2"-8UN

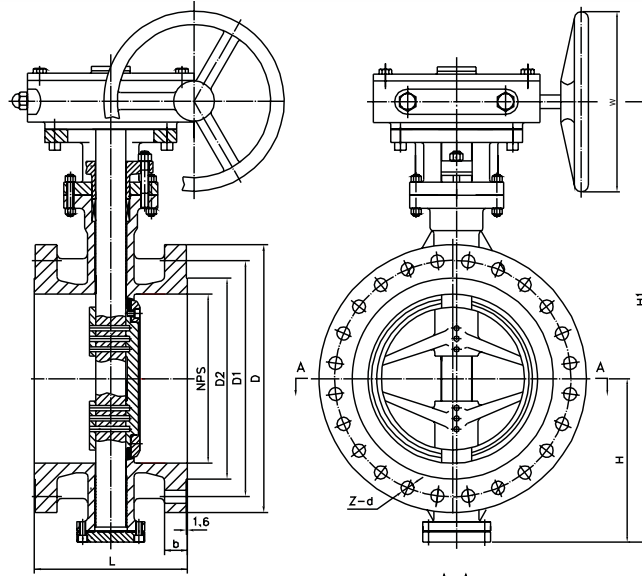
ANSI 150*							
NPS	D1	D2	H	H1	L	W	Z-d
3"	5.98"	5"	4.92"	14.96"	2"	6.29"	4-5/8"-11UNC
4"	7.48"	6.18"	5.70"	16.33"	1.92"	6.29"	4-4/8"-11UNC
5"	8.50"	7.32"	6.49"	17.91"	2.16"	9.44"	8-3/4"-10UNC
6"	9.48"	8.50"	6.88"	21.45"	2.48"	9.44"	8-3/4"-10UNC
8"	11.73"	10.62"	8.26"	25.39"	2.75"	11.02"	8-3/4"-10UNC
10"	14.25"	12.75"	9.84"	27.36"	2.79"	11.02"	12-7/8"-9UNC
12"	17"	15"	11.22"	32.67"	2.99"	12.59"	12-7/8"-9UNC
14"	18.74"	16.25"	12.59"	35.43"	3.62"	12.59"	12-1"-8UNC
16"	21.25"	18.50"	13.97"	38.58"	3.97"	13.77"	16-1"-8UNC
18"	22.75"	20.98"	14.96"	40.55"	4.48"	13.77"	16-1 1/8"-8UN
20"	25"	22.99"	16.33"	43.70"	5"	15.74"	20-1 1/8"-8UN
24"	29.48"	27.24"	18.70"	51.37"	6.06"	15.74"	20-1 1/4"-8UN
30"	35.98"	33.74"	22.83"	60.03"	6.49"	19.68"	28-1 1/4"-8UN
36"	42.75"	40.23"	26.77"	69.48"	7.91"	19.68"	32-1 1/2"-8UN

PN 40							
DN	D1	D2	H	H1	L	W	Z-d
80	168	127	125	380	49	160	8-3/4"-10UNC
100	200	157	145	415	55	160	8-3/4"-10UNC
125	235	186	165	455	63	240	8-3/4"-10UNC
150	270	216	175	545	70	240	12-3/4"-10UNC
200	330	270	210	645	71	280	12-7/8"-9UNC
250	387	324	250	695	76	280	6-1"-8UNC
300	451	381	285	830	82	320	16-1 1/8"-8UN
350	514	413	320	900	92	320	20-1 1/8"-8UN
400	571	470	355	980	101	350	20-1 1/4"-8UN
450	628	533	380	1030	114	350	24-1 1/4"-8UN
500	686	584	415	1110	127	400	24-1 1/4"-8UN
600	813	692	475	1305	154	400	24-1 1/2"-8UN
750	997	857	580	1525	165	500	28-1 3/4"-8UN
900	1168	1022	680	1765	201	500	32-2"-8UN

ANSI 300*							
NPS	D1	D2	H	H1	L	W	Z-d
3"	6.61"	5"	4.92"	14.96"	2"	6.29"	8-3/4"-10UNC
4"	7.87"	6.18"	5.70"	16.33"	1.92"	6.29"	8-3/4"-10UNC
5"	9.25"	7.32"	6.49"	17.91"	2.16"	9.44"	8-3/4"-10UNC
6"	10.62"	8.50"	6.88"	21.45"	2.48"	9.44"	12-3/4"-10UNC
8"	12.99"	10.62"	8.26"	25.39"	2.75"	11.02"	12-7/8"-9UNC
10"	15.23"	12.75"	9.84"	27.36"	2.79"	11.02"	6-1"-8UNC
12"	17.75"	15"	11.22"	32.67"	2.99"	12.59"	16-1 1/8"-8UN
14"	20.23"	16.25"	12.59"	35.43"	3.62"	12.59"	20-1 1/8"-8UN
16"	22.48"	18.50"	13.97"	38.58"	3.97"	13.77"	20-1 1/4"-8UN
18"	24.72"	20.98"	14.96"	40.55"	4.48"	13.77"	24-1 1/4"-8UN
20"	27"	22.99"	16.33"	43.70"	5"	15.74"	24-1 1/4"-8UN
24"	32"	27.24"	18.70"	51.37"	6.06"	15.74"	24-1 1/2"-8UN
30"	39.25"	33.74"	22.83"	60.03"	6.49"	19.68"	28-1 3/4"-8UN
36"	45.98"	40.23"	26.77"	69.48"	7.91"	19.68"	32-2"-8UN

\* per API 609

# Double-Flanged Dimensional Data per ISO 5752\*



PN 16/25									
DN	b	D	D1	D2	H	H1	L	W	Z-d
50	16	152	120	92	110	345	108	160	4-ø19
65	18	178	139	105	115	350	112	160	4-ø19
80	19	190	152	127	125	380	127	160	4-ø19
100	24	229	190	157	145	415	127	160	8-ø19
125	24	254	216	186	165	455	127	240	8-ø22
150	26	279	241	216	175	545	127	240	8-ø22
200	29	343	298	270	210	645	152	280	8-ø22
250	31	406	362	324	250	695	203	280	12-ø25
300	32	483	432	381	285	830	203	320	12-ø25
350	35	533	476	413	320	900	203	320	12-ø29
400	37	597	540	470	355	980	203	350	16-ø29
450	40	635	578	533	380	1030	203	350	16-ø32
500	43	699	635	584	415	1110	203	400	20-ø32
600	48	813	749	692	475	1305	203	400	20-ø35
750	75	984	914	857	580	1525	304	500	28-ø35
900	90	1168	1086	1022	680	1765	304	500	32-ø41.5

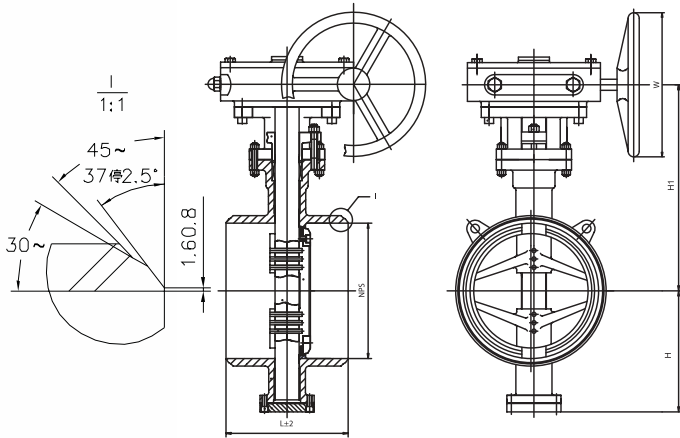
ANSI 150*									
NPS	b	D	D1	D2	H	H1	L	W	Z-d
2"	.62"	5.98"	4.72"	3.62"	4.33"	13.58"	4.25"	6.29"	4-ø19
2.5"	.70"	7"	5.47"	4.13"	4.52"	13.77"	4.40"	6.29"	4-ø19
3"	.74"	7.48"	5.98"	5"	4.92"	14.96"	5"	6.29"	4-ø19
4"	.94"	9.01"	7.48"	6.18"	5.70"	16.33"	5"	6.29"	8-ø19
5"	.94"	10"	8.50"	7.32"	6.49"	17.91"	5"	9.44"	8-ø22
6"	1.02"	10.98"	9.48"	8.50"	6.88"	21.45"	5"	9.44"	8-ø22
8"	1.14"	13.50"	11.73"	10.62"	8.26"	25.39"	5.98"	11.02"	8-ø22
10"	1.22"	15.98"	14.25"	12.75"	9.84"	27.36"	7.99"	11.02"	12-ø25
12"	1.25"	19.01"	17"	15"	11.22"	32.67"	7.99"	12.59"	12-ø25
14"	1.37"	20.98"	18.74"	16.25"	12.59"	35.43"	7.99"	12.59"	12-ø29
16"	1.45"	23.50"	21.25"	18.50"	13.97"	38.58"	7.99"	13.77"	16-ø29
18"	1.57"	25"	22.75"	20.98"	14.96"	40.55"	7.99"	13.77"	16-ø32
20"	1.69"	27.51"	25"	22.99"	16.33"	43.70"	7.99"	15.74"	20-ø32
24"	1.88"	32"	29.48"	27.24"	18.70"	51.37"	7.99"	15.74"	20-ø35
30"	2.95"	38.74"	35.98"	33.74"	22.83"	60.03"	11.96"	19.68"	28-ø35
36"	3.54"	45.98"	42.75"	40.23"	26.77"	69.48"	11.96"	19.68"	32-ø41.5

PN 40									
DN	b	D	D1	D2	H	H1	L	W	Z-d
50	23	165	127	92	110	345	108	160	8-ø19
65	26	190	149	105	115	350	112	160	8-ø22
80	29	210	168	127	125	380	114	160	8-ø22
100	32	254	200	157	145	415	178	160	8-ø22
125	35	279	235	186	165	455	190	240	8-ø22
150	37	318	270	216	175	545	203	240	12-ø22
200	42	381	330	270	210	645	216	280	12-ø26
250	48	445	387	324	250	695	381	280	16-ø29
300	51	521	451	381	285	830	381	320	16-ø32
350	54	584	514	413	320	900	406	320	20-ø32
400	58	648	571	470	355	980	406	350	20-ø35
450	61	711	628	533	380	1030	406	350	24-ø35
500	64	775	686	584	415	1110	457	400	24-ø35
600	70	914	813	692	475	1305	457	400	24-ø41
750	92	1092	997	857	580	1525	559	500	28-ø48
900	105	1270	1168	1022	680	1765	559	500	32-ø54

ANSI 300*									
NPS	b	D	D1	D2	H	H1	L	W	Z-d
2"	.90"	6.49"	5"	3.62"	4.33"	13.58"	4.25"	6.29"	8-ø19
2.5"	1.02"	7.48"	5.86"	4.13"	4.52"	13.77"	4.40"	6.29"	8-ø22
3"	1.14"	8.26"	6.61"	5"	4.92"	14.96"	4.48"	6.29"	8-ø22
4"	1.25"	10"	7.87"	6.18"	5.70"	16.33"	7"	6.29"	8-ø22
5"	1.37"	10.98"	9.25"	7.32"	6.49"	17.91"	7.48"	9.44"	8-ø22
6"	1.45"	12.51"	10.62"	8.50"	6.88"	21.45"	7.99"	9.44"	12-ø22
8"	1.65"	15"	12.99"	10.62"	8.26"	25.39"	8.50"	11.02"	12-ø26
10"	1.88"	17.51"	15.23"	12.75"	9.84"	27.36"	15"	11.02"	16-ø29
12"	2"	20.51"	17.75"	15"	11.22"	32.67"	15"	12.59"	16-ø32
14"	2.12"	22.99"	20.23"	16.25"	12.59"	35.43"	15.98"	12.59"	20-ø32
16"	2.28"	25.51"	22.48"	18.50"	13.97"	38.58"	15.98"	13.77"	20-ø35
18"	2.40"	27.99"	24.72"	20.98"	14.96"	40.55"	15.98"	13.77"	24-ø35
20"	2.51"	30.51"	27"	22.99"	16.33"	43.70"	17.99"	15.74"	24-ø35
24"	2.75"	35.98"	32"	27.24"	18.70"	51.37"	17.99"	15.74"	24-ø41
30"	3.62"	42.99"	39.25"	33.74"	22.83"	60.03"	22"	19.68"	28-ø48
36"	4.13"	50"	45.98"	40.23"	26.77"	69.48"	22"	19.68"	32-ø54

\* contact the factory for ASME B16.10 Gate Valve dimensions

# Butt Weld Dimensional Data



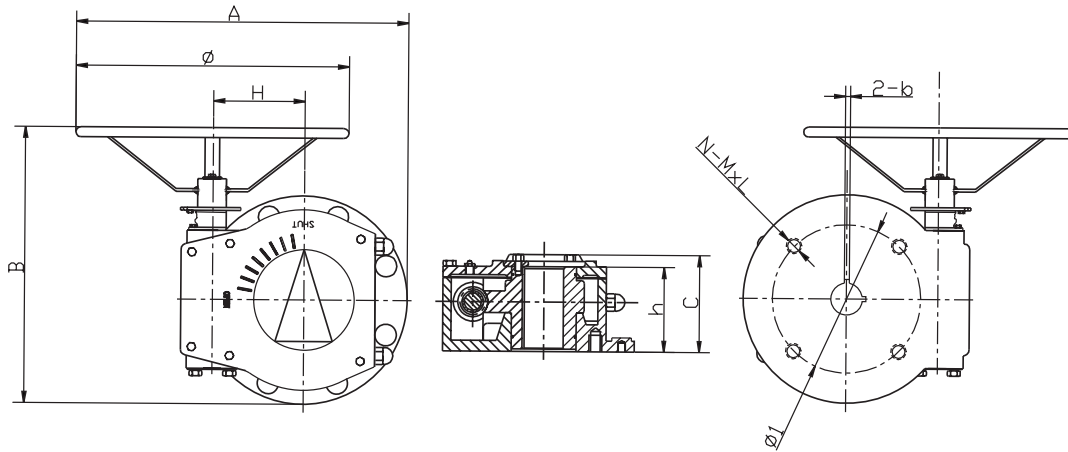
PN 16/25				
DN	H	H1	L	W
80	90	186	114	160
100	100	195	127	160
125	113	208	140	240
150	130	240	140	240
200	202	265	152	280
250	235	295	165	280
300	280	340	178	320
350	315	383	190	320
400	355	427	216	350
450	370	467	222	350
500	406	499	229	400
600	464	618	267	400
750	630	809	318	500
900	697	873	330	500

ANSI 150				
NPS	H	H1	L	W
3"	3.54"	7.32"	4.48"	6.29"
4"	3.93"	7.67"	5"	6.29"
5"	4.44"	8.18"	5.51"	9.44"
6"	5.11"	9.44"	5.51"	9.44"
8"	7.95"	10.43"	5.98"	11.02"
10"	9.25"	11.61"	6.49"	11.02"
12"	11.02"	13.38"	7"	12.59"
14"	12.40"	15.07"	7.48"	12.59"
16"	13.97"	16.81"	8.50"	13.77"
18"	14.56"	18.38"	8.74"	13.77"
20"	15.98"	19.64"	9.01"	15.74"
24"	18.26"	24.33"	10.51"	15.74"
30"	24.80"	31.85"	12.51"	19.68"
36"	27.44"	34.37"	12.99"	19.68"

PN 40				
DN	H	H1	L	W
80	108	202	180	160
100	108	204	190	160
125	120	214	200	240
150	135	259	210	240
200	202	276	230	280
250	235	313	250	280
300	280	363	270	320
350	315	406	290	320
400	355	441	310	350
450	370	523	330	350
500	420	602	350	400
600	490	695	390	400

ANSI 300				
NPS	H	H1	L	W
3"	4.25"	7.95"	7.08"	6.29"
4"	4.25"	8.03"	7.48"	6.29"
5"	4.72"	8.42"	7.87"	9.44"
6"	5.31"	10.19"	8.26"	9.44"
8"	7.95"	10.86"	9.05"	11.02"
10"	9.25"	12.32"	9.84"	11.02"
12"	11.02"	14.29"	10.62"	12.59"
14"	12.40"	15.98"	11.41"	12.59"
16"	13.97"	17.36"	12.20"	13.77"
18"	14.56"	20.59"	12.99"	13.77"
20"	16.53"	23.70"	13.77"	15.74"
24"	19.29"	27.36"	15.35"	15.74"

# Gear Operator Dimensional Data



Size	ANSI							Weight lbs	
	A	B	C	h	H	ø	ø1		
3"	8.46"	7.48"	2.67"	2.04"	1.96"	6.29"	2.75"	.19"	17.63
4"	8.46"	7.48"	2.67"	2.04"	1.96"	6.29"	2.75"	.19"	17.63
5"	10.43"	9.25"	3.38"	2.44"	2.67"	9.84"	4.05"	.31"	28.66
6"	10.43"	9.25"	3.38"	2.44"	2.67"	9.84"	4.05"	.31"	28.66
8"	12.40"	10.62"	3.18"	2.67"	3.14"	9.84"	4.88"	.39"	35.27
10"	12.40"	10.62"	3.18"	2.67"	3.14"	9.84"	4.88"	.39"	35.27
12"	15.15"	12.59"	3.70"	2.95"	3.93"	12.59"	5.11"	.47"	50.70
14"	15.15"	12.59"	3.70"	2.95"	3.93"	12.59"	5.11"	.47"	50.70
16"	16.73"	13.97"	4.76"	4.13"	4.72"	13.77"	6.53"	.47"	81.57
18"	16.73"	13.97"	4.76"	4.13"	4.72"	13.77"	6.53"	.47"	81.57
20"	18.50"	16.53"	4.29"	4.33"	5.51"	13.77"	7.87"	.62"	105.82
24"	18.50"	16.53"	4.29"	4.33"	5.51"	13.77"	7.87"	.62"	105.82
28"	24.01"	21.25"	5.90"	4.72"	6.29"	19.68"	10"	.70"	156.52
32"	26.77"	21.65"	6.29"	4.72"	7.40"	19.68"	15.66"	.86"	209.43
36"	30.70"	24.40"	7.08"	5.90"	9.05"	19.68"	14.01"	1.10"	352.73
40"	30.70"	24.40"	7.08"	5.90"	9.05"	19.68"	14.01"	1.10"	352.73

SIZE	DIN							Weight kgs	
	A	B	C	h	H	ø	ø1		
80	215	190	68	52	50	160	70	5	8
100	215	190	68	52	50	160	70	5	8
125	265	235	86	62	68	250	103	8	13
150	265	235	86	62	68	250	103	8	13
200	315	270	81	68	80	250	124	10	16
250	315	270	81	68	80	250	124	10	16
300	385	320	94	75	100	320	130	12	23
350	385	320	94	75	100	320	130	12	23
400	425	355	121	105	120	350	166	12	37
450	425	355	121	105	120	350	166	12	37
500	470	420	125	110	140	350	200	16	48
600	470	420	125	110	140	350	200	16	48
700	610	540	150	120	160	500	254	18	71
800	680	550	160	120	188	500	398	22	95
900	780	620	180	150	230	500	356	28	160
1000	780	620	180	150	230	500	356	28	160

# Ordering Information

SIZE			
004	4"	100	100mm
006	6"	150	150mm
008	8"	200	200mm
010	10"	250	250mm
012	12"	300	300mm
014	14"	350	350mm
016	16"	400	400mm
018	18"	450	450mm
020	20"	500	500mm
024	24"	600	600mm
028	28"	700	700mm
032	32"	800	800mm
036	36"	900	900mm

### SERIES

TOV
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### CLASS

1	150
3	300
16	PN16
25	PN25
40	PN40

### BODY STYLE

W	Wafer (API 609)
L	Lug (API 609)
F	Flanged (ISO 5752)
B	Butt Weld (ASME/DIN)
G	Flange Gate (ASME D16.10)

### BODY\*

C	WCB Carbon Steel
6	316 Stainless
4	304 Stainless
X	Special Alloy

\* Stellite body seat standard

### DISC

C	Carbon
6	316 Stainless
4	304 Stainless
X	Special Alloy

### SHAFT

0	410 Stainless
6	316 Stainless
4	304 Stainless
2	402 Stainless

### PACKING

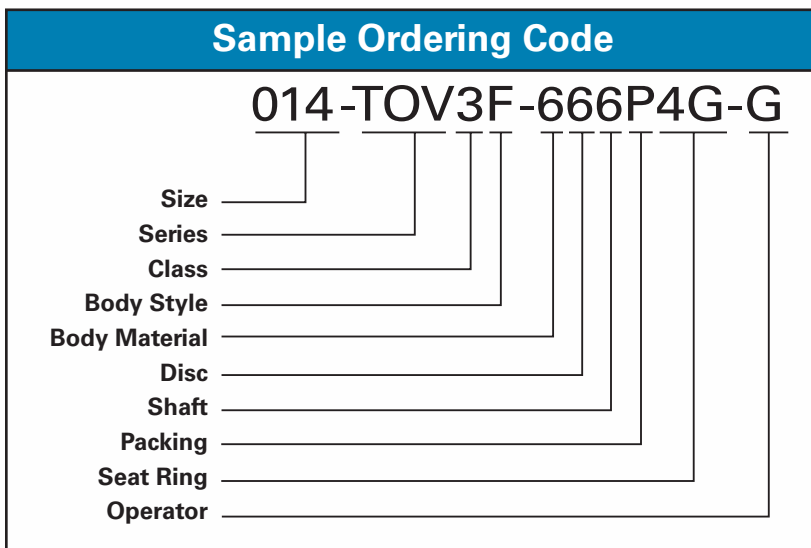
G	Graphite
P	PTFE
X	Special / Fugitive Emission

### SEAT RING

4G	304 Stainless/Graphite
6G	316 Stainless/Graphite
IG	Inconel/Graphite

### OPERATOR

G	Worm Gear
A	Actuator
B	Bare Stem



For additional options and materials contact your nearest Sure Seal representative.

## Standards

<b>Design:</b>	ASME B16.34 ASME Sec III and Sec VIII ASME B31.1 and B31.3 API 609 TRD 110, DIN 3840
<b>Face to Face Dimensions:</b>	ASME B16.10 ISO 5752 API 609 EN 558-1 (DIN 3202-3)
<b>Flange Dimensions:</b>	ASME B16.5 ASME B16.47 DIN 2501 ISO 7005
<b>Testing:</b>	API 598 API 6D FCI 70-2 Class VI
<b>Marking:</b>	MSS SP-25 EN 19
<b>Quality Assurance:</b>	ISO 9001 PED

## Valve Torque Charts\*

Valve Torque Chart				
Size	150 Lb		300 Lb	
	Torque(in-lb)	Cv Value	Torque(in-lb)	Cv Value
4"	4426	660	5753	650
6"	8851	1350	10621	1250
8"	11506	2256	14162	2100
10"	15932	3178	20357	3000
12"	20357	4942	30979	4800
14"	28323	6317	35404	6200
16"	35404	8604	46025	8500
18"	53106	11053	66383	10800
20"	79659	13850	99131	13500
24"	132765	21498	*	*
28"	221275	33866	*	*
32"	309785	47638	*	*
36"	371742	50453	*	*

\* consult factory for torque and cv values for large diameter 300 lb valves and non-standard seats

Valve Torque Chart				
Size	PN 16/25		PN 40	
	Torque(Nm)	Kv Value	Torque(Nm)	Kv Value
100	500	8080	650	7965
150	1000	16531	1200	15301
200	1300	27642	1600	25726
250	1800	38939	2300	36765
300	2300	60561	3500	58816
350	3200	77406	4000	75976
400	4000	105434	5200	121550
450	6000	135435	7500	132347
500	9000	169712	11200	165437
600	15000	263434	*	*
700	25000	414986	*	*
800	35000	583740	*	*
900	42000	617803	*	*

\* consult factory for torque and kv values over 500 mm and non-standard seats

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<b>CHEMICALS</b>	<ul style="list-style-type: none"> <li>Chlorine</li> <li>Acids &amp; Bases</li> <li>Amines</li> <li>Anhydrous Ammonia</li> <li>Propylene</li> <li>Butadiene</li> <li>Hazardous Liquids</li> </ul>	<ul style="list-style-type: none"> <li>Bellow Sealed Valves</li> <li>Sample Valves</li> <li>Lined Ball Valves</li> <li>Lined Butterfly Valves</li> <li>Industrial Valves</li> <li>ISO Rings</li> <li>Sight Flow Indicators</li> <li>Globe Valves</li> <li>Swivels</li> <li>Dry Disconnects</li> <li>Quick Disconnects</li> <li>Epsilon</li> </ul>	<ul style="list-style-type: none"> <li>Loading Arms</li> <li>Autoloks</li> <li>Kamaloks</li> <li>Dryloks</li> <li>Loading Manholes</li> <li>Valves</li> <li>Actuators</li> <li>Swivels</li> <li>Epsilon</li> </ul>	<b>Cargo Tanks</b> <ul style="list-style-type: none"> <li>Manholes</li> <li>Vapor Vents</li> <li>Electronics</li> <li>Internal Valves</li> <li>Sealed Parcel</li> <li>Epsilon</li> </ul>	<b>Rail Tank Cars</b> <ul style="list-style-type: none"> <li>Safety Valves</li> <li>Plug Valves</li> <li>Ball Valves</li> <li>Level Measurement</li> <li>Autoloks</li> <li>Kamaloks</li> <li>Dryloks</li> <li>Rupture Disc Devices</li> <li>Angle Valves</li> <li>Epsilon</li> </ul>	<ul style="list-style-type: none"> <li>Loading Arms</li> <li>Autoloks</li> <li>Kamaloks</li> <li>Dryloks</li> <li>Valves</li> <li>Actuators</li> <li>Safety Breakaways</li> <li>Swivels</li> <li>Epsilon</li> </ul>
<b>DRY BULK</b>	<ul style="list-style-type: none"> <li>Cement</li> <li>Flour/Starch</li> <li>Pharmaceuticals</li> </ul>	<ul style="list-style-type: none"> <li>Industrial Valves</li> <li>Sight Flow Indicators</li> <li>Butterfly Valves</li> <li>Swivels</li> </ul>	<ul style="list-style-type: none"> <li>Loading Arms</li> <li>Aerators</li> <li>Hatch Covers</li> <li>Swivels</li> </ul>	<b>Cargo Tanks</b> <ul style="list-style-type: none"> <li>Manholes</li> <li>Check Valves</li> <li>Hopper Tees</li> <li>Butterfly Valves</li> <li>Aerators</li> <li>Weld Rings</li> </ul>	<b>Rail Cars</b> <ul style="list-style-type: none"> <li>Manholes</li> <li>Hatches</li> <li>Access Ports</li> <li>Check Valves</li> <li>Hopper Tees</li> <li>Butterfly Valves</li> <li>Aerators</li> <li>Pressure Vacuum Valves</li> </ul>	<ul style="list-style-type: none"> <li>Aerators</li> <li>Butterfly Valves</li> <li>Tank Hatches</li> <li>Pressure Relief</li> <li>Vacuum Relief</li> <li>Temperature Monitoring</li> </ul>
<b>INDUSTRIAL/GENERAL</b>	<ul style="list-style-type: none"> <li>Food Processing</li> <li>Pharmaceuticals</li> <li>Waste Water</li> <li>High-Purity Liquids</li> <li>Breweries</li> <li>Pulp and Paper</li> <li>Steel Processing</li> </ul>	<ul style="list-style-type: none"> <li>Lined Ball Valves</li> <li>Lined Butterfly Valves</li> <li>Sample Systems</li> <li>Sight Flow Indicators</li> <li>ISO Rings</li> <li>Dry Disconnects</li> <li>Swivels</li> <li>Quick Disconnects</li> <li>High-Performance Butterfly Valves</li> <li>Epsilon</li> </ul>	<ul style="list-style-type: none"> <li>Loading Arms</li> <li>Couplers</li> <li>Rack Monitors</li> <li>Swivels</li> <li>Dry Disconnects</li> <li>Quick Disconnects</li> <li>Butterfly Valves</li> <li>Epsilon</li> </ul>	<b>Cargo Tanks</b> <ul style="list-style-type: none"> <li>Manholes</li> <li>Vapor Vents</li> <li>Electronics</li> <li>Weld Rings</li> <li>Hopper Tees</li> <li>Pneumatic Controls</li> <li>Sealed Parcel</li> <li>Dry Disconnects</li> <li>Epsilon</li> </ul>	<b>Rail Tank Cars</b> <ul style="list-style-type: none"> <li>Safety Valves</li> <li>Plug Valves</li> <li>Ball Valves</li> <li>Level Measurement</li> <li>Autoloks</li> <li>Kamaloks</li> <li>Dryloks</li> <li>Rupture Disc Devices</li> <li>Angle Valves</li> <li>Epsilon</li> </ul>	<ul style="list-style-type: none"> <li>Loading Arms</li> <li>Couplers</li> <li>Rack Monitors</li> <li>Swivels</li> <li>Dry Disconnects</li> <li>Quick Disconnects</li> <li>Butterfly Valves</li> <li>Epsilon</li> </ul>

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