KEYSTONE SERIES 36 AND 37 K-LOK® HIGH PERFORMANCE BUTTERFLY VALVES

K-LOK® Series 36 - ASME 150
K-LOK® Series 37 - ASME 300

GENERAL APPLICATIONS

- Modulating service
- Airport refueling
- Hydrocarbon processing
- Chemical/petrochemical processing
- Purified gas
- Steam and vacuum services
- Power and utilities
- Refrigeration
- HVAC
- Alumina refining

TECHNICAL DATA

Size range:	NPS 2 to NPS 24 See note below for NPS 30-36
Vacuum rating:	4 x 10^{-5} in Hg
Body style:	Wafer, lug and double flanged
Pressure rating:	Series 36 - ASME 150 Series 37 - ASME 300
Temperature rating:	-40°F to 1000°F

Full compliance to API 609 standard.

Metal seated, fire-safe and NPS 30-36 valves are available. For more information on these items see Figures 360/362 data sheet (VCTDS-00032).

Lug and double flange bodies are full rated for bidirectional dead end service.

FEATURES AND BENEFITS

- K-LOK® polymer and elastomer seats provide bi-directional, drop-tight shut-off in vacuum as well as at full rated differential pressure. Its unique design does not rely on pressure to assist sealing therefore seals at high and low pressures, as well as dirty services. A variety of materials allows optimum seat life in all applications.
- Blow-out resistant shaft is standard on all valves for increased safety.
- Unique packing design allows for use in pressure as well as vacuum without modification or special assembly.
- Disc taper pins are tangentially positioned half in disc and half in shaft, placing them in compression rather than shear, which eliminates potential for failure.
- Rocker-shaped gland bridge compensates for uneven adjustment of gland nuts reducing packing leaks.
- Integrally cast disc position stop perfectly locates the disc in seat, achieving maximum seat and seal life.
- Extended neck allows for two inches of pipeline insulation.
- Integrally cast mounting pad provides direct mounting of actuators eliminating the need for costly brackets and couplings.
- Flattened body bore at shaft journal ports positions shaft bearings near disc, providing maximum shaft support resulting in reduced wear and longer life.

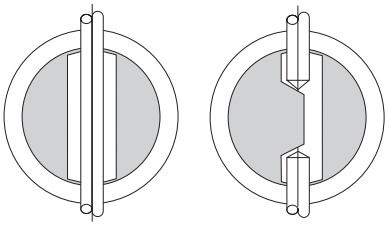
PRINCIPLES OF OPERATION

Double offset disc/shaft
K-LOK®'s unique two-piece shaft and double-offset disc/shaft design allows for high cycling and creates a lower disc profile with increased capacity and a rangeability of 33:1.
In addition to increasing the flow area across the disc, this design minimizes wear points between seat and disc.
The first offset is achieved by locating the shafts downstream of the center-line of the seat. This allows for a totally unobstructed 360° sealing surface.
The second offset locates the shafts off-center of the vertical axis of the seat.
The combination of these two offsets creates a camming effect as the disc swings into and out of the seat. The disc lifts quickly out of the seat in the first few degrees of travel and does not contact the seat again until it is nearly closed.
There are no wear points between the seat and disc, while operating torques are reduced and seat life is extended.

Adjustable shaft packaging (polymer seated valves)
The K-LOK®'s unique shaft packing is composed of 3 rings of braided PTFE rope between one PTFE-ring at the top and bottom. The packing operates on an interference fit with the body and therefore will seal in pressure and vacuum. Many other manufacturers' designs will require special packing for vacuum services.
This packing is easily field adjustable without the need to remove actuation due to its unique inverted packing adjustment bolts. Another important feature is the use of a rocker shaped packing gland bridge that compensates for uneven tightening of the packing gland bolts eliminating packing leaks due to uneven packing compression.

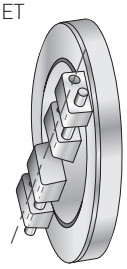
Blow-out resistant shaft (BOR)
The Keystone K-LOK® high performance butterfly valve contains a blow-out resistant shaft as a standard. This is achieved by machining a groove in the shaft that allows a snap ring to lock into the shaft groove.
The packing gland follower is provided with an undercut on its lower surface which encapsulates the locked in snap ring. This design provides positive retention of the shaft in the unlikely event of a shaft breakage.

Two-piece shaft vs. one-piece shaft
K-LOK®'s disc geometry maximizes flow capacity by increasing the available flow area through the valve. This increase in disc efficiency results in a higher valve C_v.



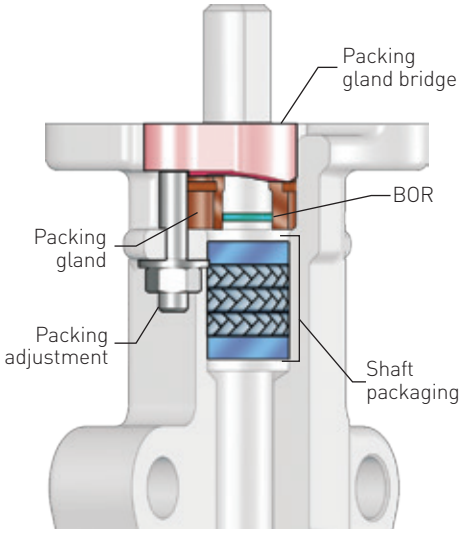
Aspect ratio = open area ÷ disc area

DOUBLE OFFSET



FIRST OFFSET

SECOND OFFSET



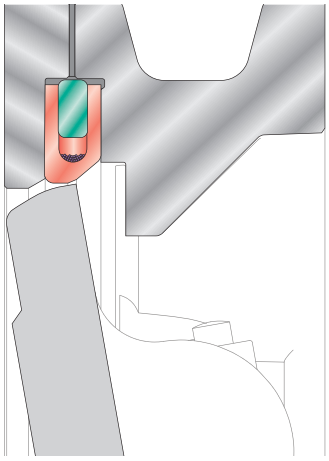
Standards and specifications applicable for K-LOK®		
ASME	B16.34	Steel valves
	B31.3	Chemical plant and petroleum refinery piping
	B16.5	Steel pipe flanges and flange fittings
MSS	SP-6	Standard finishes for pipe flanges
	SP-25	Standard marking systems for valves
	SP-55	Quality standard for steel casting
	SP-61	Pressure testing of steel valves
	SP-68	High pressure offset disc butterfly valves
API	609	Butterfly valves (most models)
	607	Fire-test for soft seated quarter-turn valves
	598	Valve inspection and test, upon request
NSF/ANSI Standard 61		Potable water, upon request
PED/CE		European directive, upon request

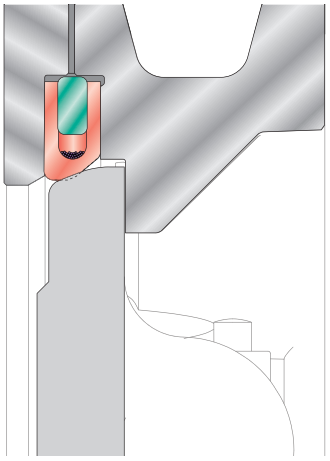
SEAT DESIGN

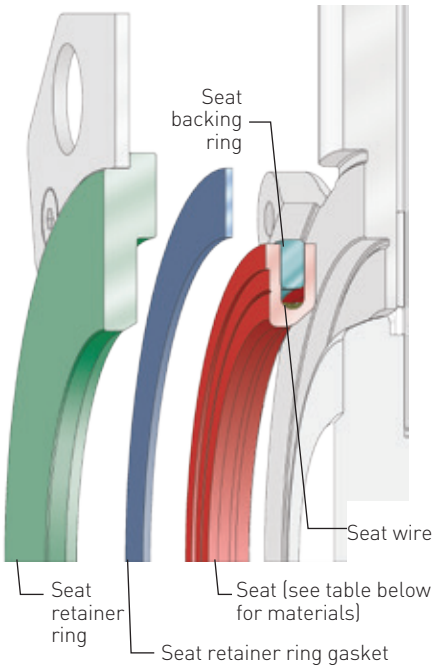
The K-LOK® seat is a true interference seat design and unlike most other manufactures does not rely on line pressure to assist in sealing. All seats seal drop-tight bi-directionally at low and high pressure as well as vacuum. Given the interference seat design the K-LOK® will also operate in dirty services where most pressure assist valves fail. Polymer (PTFE, RTFE and UHMWPE) seats incorporate a unique design consisting of a stainless steel braided wire winding, enclosed in a U-shape envelope to provide seating energy and memory. This wire winding allows axial flexibility in both directions of flow. The winding also allows radial flexibility when the disc is not fully closed, reducing seat/disc interference, seat wear and shaft torque. When the disc closes, it provides circumferential stiffness and assures the required disc/seat seals tight in both vacuum and pressure.
Elastomer seats are molded around a stack of V-shaped steel rings that provide the same stability, support and flexure as the wire windings in polymer seats.

SEAT REPLACEMENT

All seats for the Keystone K-LOK® are easily field replaceable. Simply remove seat retainer ring, rotate disc to fully closed position and replace seat assembly and gasket. Dis-assembly of the disc and shaft is not required. Seat retaining ring gaskets are not used with elastomer seats.

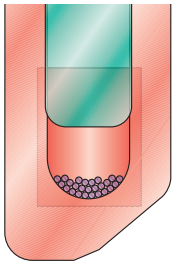




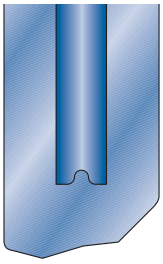


SEAT MATERIALS

Seat	Material	Typical applications
1. RTFE	Reinforced polytetrafluoroethylene	HVAC, steam, chlorine, ammonia, nitrogen, water, gasoline, vacuum
2. PTFE	Polytetrafluoroethylene	Pharmaceuticals, air, potable water, dyes, white mediums
3. UHMWPE	Ultra high molecular weight polyethylene	Abrasives, suspended solids, scaling mediums
For seats 1 thru 3		
Wire wrap	Stainless steel braided wire	
Seat backing ring	Polyester or phenolic Stainless steel	General purpose services up to 93°C Steam, ammonia, elevated temperature services



Seat	Material	Typical applications
4. EPDM	–	Water based mediums, slurry applications, abrasives
5. NBR	–	Oil based mediums, slurry applications, abrasives
6. Fluoroelastomer (FKM)	–	Elevated temperatures, slurry applications, abrasives
For seats 4 thru 6		
Metal insert	Carbon steel	



SEAT TIGHTNESS

All polymer seated valves are factory tested for bi-directional drop tight shut-off at 10% above the rated pressure. This exceeds the ANSI FCI 70-2 standard which establishes a service of six leakage classes for control valves as per below:

ANSI/FCI 70-2 CONTROL VALVE SEAT LEAKAGE, TOLERANCES, AND TEST SPECIFICATIONS

ANSI B16.104-1976	Maximum leakage			Test medium	Pressure and temperature
Class VI	Nominal port diameter (NPS)	Bubbles per minute[3]	ml. per minute	Air or nitrogen	Service ΔP or 50 psig, whichever is lower, at 50°F to 125°F
	2	3	0.45		
	2½	4	0.60		
	3	6	0.90		
	4	11	1.70		
	6	27	4.00		
	8	45	6.75		
Class V	5 x 10^{-4} ml/min/psig/in. port dia.			Water	Service ΔP at 50°F to 125°F
Class IV	0.01% valve capacity at full travel			Air or water	Service ΔP or 50 psig, whichever is lower, at 50°F to 125°F

NOTES

1. K-LOK® polymer and elastomer seats meet or exceeds ANSI Class VI shut-off.
2. K-LOK® metal seats and fire-safe seats (post fire exposure) meet or exceeds ANSI Class IV shut-off.
3. Using the ANSI/FCI specified calibrated measuring device.

Reference ANSI/FCI 70-2 for further information.

ABRASION RESISTANT TRIMS (UP TO 200°F)

Body	Disc	Shaft	Seat/backing ring	Gasket	Packing
Carbon steel	316 SS/ENP	17-4PH SS	UHMWPE/polyester	Non asbestos fiber	PTFE
316 SS	316 SS/ENP	17-4PH SS	UHMWPE/polyester	Non asbestos fiber	PTFE

GENERAL PURPOSE TRIMS (UP TO 500°F)

Body	Disc	Shaft	Seat/backing ring	Gasket	Packing
Carbon steel	316 SS	17-4PH SS	RTFE/SS	Graphite	PTFE
316 SS	316 SS	17-4PH SS	RTFE/SS	Graphite	PTFE

STEAM TRIMS

Body	Disc	Shaft	Seat/backing ring	Gasket	Packing
Carbon steel	316 SS/ENP	17-4PH SS	RTFE/SS	Graphite	PTFE
316 SS	316 SS/ENP	17-4PH SS	RTFE/SS	Graphite	PTFE

CORROSION RESISTANT TRIMS

Body	Disc	Shaft	Seat/backing ring	Gasket	Packing
316 SS	316 SS	316 SS Cond. B	RTFE/SS	Graphite	PTFE
316 SS	316 SS	NITRONIC 50®	RTFE/SS	Graphite	PTFE
2205 Duplex	2205 Duplex	2205 Duplex	RTFE/SS	Graphite	PTFE
2507 Super Duplex	2507 Super Duplex	2507 Super Duplex	RTFE/SS	Graphite	PTFE

Note: other trims are available; please contact your sales representative.

SPECIAL SERVICE VALVES AVAILABLE

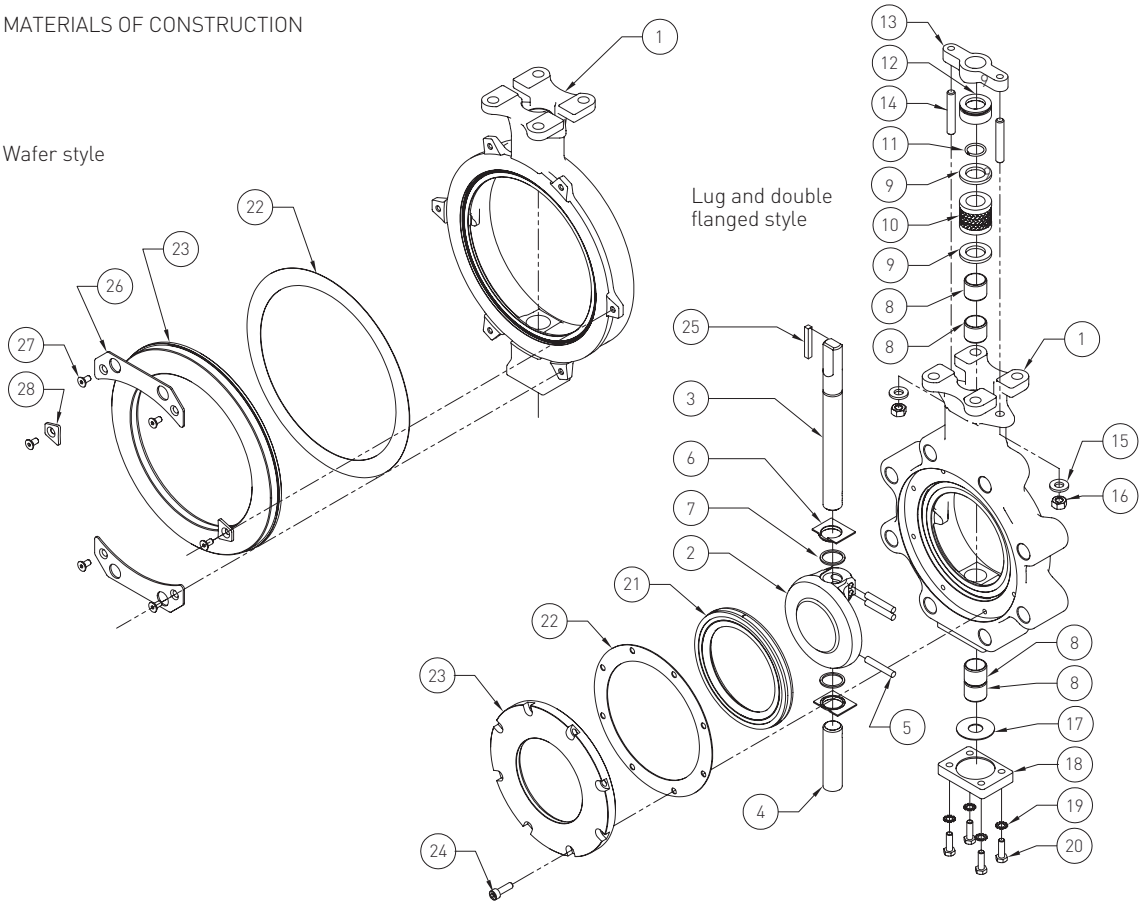
- Oxygen cleaned valves
- NSF-61 certified valves
- Chlorine cleaned valves
- Seawater valves
- Alloy trimmed valves
- PED/CE certified valves

Please contact your local sales representative for other requests.

MATERIALS OF CONSTRUCTION

Wafer style

Lug and double flanged style



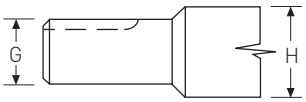
STANDARD MATERIALS OF CONSTRUCTION

Pos	Description	Material	Material standard
1	Body	Carbon steel	ASTM A216-WCB
		Stainless steel	ASTM A351-CF8M
2	Disc	316 SS	ASTM A351-CF8M
		316 SS/ENP	ASTM A351-CF8M / Electroless nickel plated
3	Upper stem	316B SS	ASTM A276-316 Condition B
		17-4PH SS	ASTM A564- Condition H1075 or H1100
		Nitronic 50	ASTM A276-XM19
4	Lower stem	316B SS	ASTM A276-316 Condition B
		17-4PH SS	ASTM A564- Condition H1075 or H1100
		Nitronic 50	ASTM A276-XM19
5	Taper pin	316B SS	ASTM A276-316 Condition B
		17-4PH SS	ASTM A564- Condition H1075 or H1100
		Nitronic 50	ASTM A276-XM19
6	Spacer	316 SS	
7	Thrust washer	316 SS / BRZ / PTFE	
8	Bushing	316 SS / BRZ / PTFE	
		RTFE / Composite	
		316SS / Nitrited	
9	Anti-extrusion ring	316 SS	
10	Stem packing	PTFE , Graphite	
11	Ring, stem retention	316 SS	
12	Gland	316 SS	

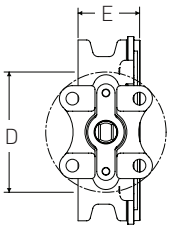
Pos	Description	Material	Material standard
13	Gland bridge	17-4PH SS	
14	Stud	Stainless steel 18.8	
15	Washer, split lock	Stainless steel 18.8	
16	Hex nut	Stainless steel 18.8	
17	Bottom cover gasket	Graphite	
		Non-asbestos fiber	
18	Bottom cover	Carbon steel	ASTM A216-WCB
		Stainless steel	ASTM A351-CF8M
19	Washer, ext. Tooth lock	Stainless steel 18.8	
20	Screw, hex hd cap	Stainless steel 18.8	
21	Seat assembly		
21.1	Seat	Polymer	PTFE , RTFE, UHMWPE
		Elastomer	NBR, EPDM, FKM
21.2	Wire structure	Stainless steel	
21.3	Seat backing ring	316 SS	
22	Gasket seat retaining ring	Graphite	Not used with
		Non-asbestos fiber	Elastomer seats
23	Seat retaining ring	Carbon steel	ASTM A216-WCB
		Stainless steel	ASTM A351-CF8M
24	Screw, socket hd cap	Stainless steel	
25	Key	Carbon steel	
26	Retainer plate	Stainless steel	
		Carbon steel / zinc plated	
27	Retainer plate/clip screw	Stainless steel 18.8	
28	Clip	Stainless steel	
		Carbon steel / zinc plated	

All fasteners are 18-8 SS

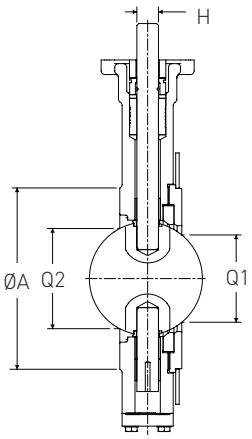
DIMENSIONS – WAFER STYLE

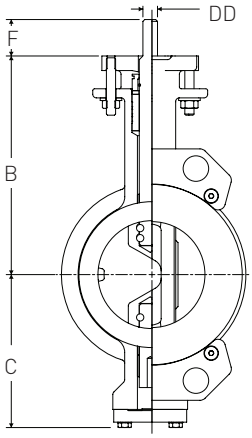


Upper shaft/keyway
NPS 8 to NPS 24



Top plate view





SERIES 36, ASME CLASS 150, WAFER STYLE, DIMENSIONS (inch)

Size											Top plate drilling					Weight	
											DD or keyway						
(NPS)	A	B	C	D	E	F	G	H	Q1	Q2	(inch)	(mm)	PCD	No. holes	Hole dia.	lbs.	Act. code
2	4 5/16	6	4	4 5/32	2 3/8	1 1/4	N/A	9/16	1 3/8	1 7/8	3/8	9.53	3 1/4	4	7/16	10	BAB
2 1/2	4 1/8	6	4 1/2	4 5/32	1 7/8	1 1/4	N/A	9/16	2 3/16	2 1/4	3/8	9.53	3 1/4	4	7/16	8	BAB
3	5	6 5/8	4 7/8	4 5/32	1 7/8	1 1/4	N/A	5/8	2 1/8	2 5/8	7/16	11.11	3 1/4	4	7/16	11	BAC
4	6 3/16	7 1/2	5 1/4	4 5/32	2 1/8	1 1/4	N/A	3/4	3 3/16	3 5/8	1/2	12.70	3 1/4	4	7/16	18	BAD
5	7 5/16	7 9/16	5 3/4	4 5/32	2 1/4	1 1/4	N/A	3/4	4 3/8	4 3/4	1/2	12.70	3 1/4	4	7/16	23	BAD
6	8 1/2	8 3/4	7 1/16	6 1/16	2 1/4	1 1/4	3/4	7/8	5 1/4	5 9/16	1/2	12.70	5	4	9/16	30	CAD
6*	8 1/2	8 3/4	7 1/16	6 1/16	2 1/4	1 1/4	N/A	7/8	5 1/4	5 9/16	5/8	15.88	5	4	9/16	31	CAE
8	10 5/8	10 1/8	8 5/16	6 1/16	2 1/2	2	N/A	1 1/8	7	7 3/8	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	46	CAF
10	12 3/4	11 3/8	9 5/8	6 1/16	2 13/16	2	1 1/8	1 3/8	9 1/8	9 5/16	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	74	CAF
10*	12 3/4	11 3/8	9 5/8	6 1/16	2 13/16	3	N/A	1 3/8	9 1/8	9 5/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	5	4	9/16	75	CAG
12	15	13	11 5/16	8 5/32	3 3/16	3	1 3/8	1 1/2	10 15/16	11 3/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	6 1/2	4	13/16	116	DAG
14	16 1/4	13 1/4	12 7/8	8 5/32	3 5/8	3	N/A	1 5/8	11 3/4	12 1/4	3/8 x 3/8 x 2 5/8	9.53 x 9.53 x 67	6 1/2	4	13/16	133	DAH
16	18 1/2	14 1/2	12 3/4	8 5/32	4	3	1 5/8	1 3/4	13 3/8	13 1/8	3/8 x 3/8 x 2 5/8	9.53 x 9.53 x 67	6 1/2	4	13/16	185	DAH
18	21	16	13 3/4	8 5/32	4 1/2	4 1/16	N/A	1 7/8	15 5/16	15 15/16	1/2 x 3/8 x 4 1/8	12.70 x 9.53 x 105	6 1/2	4	13/16	288	DAJ
20	23	17 7/16	15 3/16	8 7/32	5	4 5/16	N/A	2 1/4	17 5/16	17 11/16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	376	DAK
24	27 1/4	19 11/16	17 9/16	8 7/32	6 1/16	4 1/4	2 1/4	2 1/2	20 5/8	21 1/16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	592	DAK

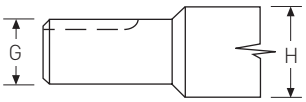
* E.N.P. discs require larger upper shaft connection diameters on NPS 6 and NPS 10 valve sizes for UHMWPE seat trims.
N/A = not applicable

SERIES 37, ASME CLASS 300, WAFER STYLE, DIMENSIONS (inch)

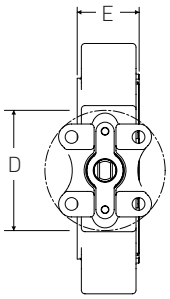
Size											Top plate drilling					Tapped lug data			Weight	Act.
											DD or keyway			No.	Holes	No.				
(NPS)	A	B	C	D	E	F	G	H	Q1	Q2	(inch)	(mm)	PCD	holes	dia.	holes	PCD	Tap	lbs.	code
2	4 5/16	6	4	4 5/32	2 3/8	1 1/4	N/A	9/16	1 3/8	1 7/8	3/8	9.53	3 1/4	4	7/16	–	–	–	10	BAB
2 1/2	4 1/8	6	4 1/2	4 5/32	1 7/8	1 1/4	N/A	9/16	2 3/16	2 1/4	3/8	9.53	3 1/4	4	7/16	–	–	–	9	BAB
3	5	6 5/8	4 7/8	4 5/32	1 7/8	1 1/4	N/A	5/8	1 1/16	2 5/8	7/16	11.11	3 1/4	4	7/16	–	–	–	11	BAC
4	6 3/16	7 1/2	5 7/32	4 5/32	2 1/8	1 1/4	N/A	3/4	3 3/16	3 5/8	1/2	12.70	3 1/4	4	7/16	–	–	–	18	BAD
5	7 5/16	7 9/16	5 3/4	4 5/32	2 5/16	1 1/4	N/A	3/4	4 5/16	4 3/4	1/2	12.70	3 1/4	4	7/16	–	–	–	23	BAD
6	8 1/2	8 3/4	7 1/16	6 1/16	2 5/16	1 1/4	N/A	7/8	5 1/4	5 9/16	5/8	15.88	5	4	9/16	–	–	–	30	CAE
8	10 5/8	10 1/8	8 3/8	6 1/16	2 7/8	2	N/A	1 1/8	6 3/4	7 3/8	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	–	–	–	55	CAF
10	12 3/4	11 3/8	9 5/8	6 1/16	3 1/4	3	N/A	1 3/8	8 13/16	9 5/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	5	4	9/16	4	15 1/4	1-8UNC	93	CAG
12	15	13	11 5/16	8 5/32	3 5/8	3	1 3/8	1 1/2	10 5/8	11 3/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	6 1/2	4	13/16	–	–	–	127	DAG
14	16 1/4	14 3/8	12 11/16	8 5/32	4 5/8	4 1/4	N/A	1 7/8	11 13/16	11 15/16	1/2 x 3/8 x 4 1/8	12.70 x 9.53 x 105	6 1/2	4	13/16	4	20 1/4	1 1/8-8UN	202	DAJ
16	18 1/2	16 1/16	13 7/8	8 5/32	5 1/4	4 1/8	N/A	2 1/4	13 9/16	13 11/16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	4	22 1/2	1 1/4-8UN	270	DAK
18	21	17	15 1/16	8 5/32	5 7/8	4 7/32	N/A	2 1/2	15 7/8	15 1/2	5/8 x 5/8 x 4	15.88 x 15.88 x 102	6 1/2	4	13/16	4	24 3/4	1 1/4-8UN	373	DBA
20	23	20 3/16	16 3/8	7 1/2	6 1/4	6 1/2	N/A	2 3/4	17 1/4	17 3/8	5/8 x 5/8 x 6 3/8	15.88 x 15.88 x 162	8	4	13/16	4	27	1 1/4-8UN	482	LAX
24	27 1/4	23 3/8	19 1/8	9 1/2	7 1/8	6 13/16	N/A	3 1/2	20 11/16	20 13/16	7/8 x 7/8 x 5 11/16	22.23 x 22.23 x 144	9 3/4	4	1 1/16	4	32	1 1/2-8UN	800	MAY

N/A = not applicable

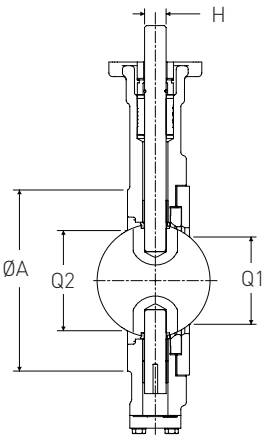
DIMENSIONS – LUG STYLE

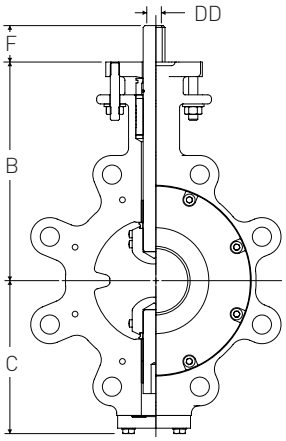


Upper shaft/keyway
NPS 8 to NPS 24



Top plate view





SERIES 36, ASME CLASS 150, LUG STYLE, DIMENSIONS (inch)

Size											Top plate drilling					Tapped lug data			Weight	Act.
											DD or keyway			No.	Holes	No.				
(NPS)	A	B	C	D	E	F	G	H	Q1	Q2	(inch)	(mm)	PCD	holes	dia.	holes	PCD	Tap	lbs.	code
2	4 15/32	6	4	4 5/32	2 3/8	1 1/4	N/A	9/16	1 3/8	1 7/8	3/8	9.53	3 1/4	4	7/16	4	4 3/4	5/8-11UNC	12	BAB
2 1/2	4 3/4	6	4 11/32	4 5/32	1 7/8	1 1/4	N/A	9/16	2 3/16	2 1/4	3/8	9.53	3 1/4	4	7/16	4	5 1/2	5/8-11UNC	12	BAB
3	5 9/32	6 5/8	4 31/32	4 5/32	1 7/8	1 1/4	N/A	5/8	2 1/8	2 5/8	7/16	11.11	3 1/4	4	7/16	4	6	5/8-11UNC	15	BAC
4	6 15/32	7 1/2	5 1/4	4 5/32	2 1/8	1 1/4	N/A	3/4	3 3/16	3 5/8	1/2	12.70	3 1/4	4	7/16	8	7 1/2	5/8-11UNC	23	BAD
5	7 19/32	7 9/16	5 3/4	4 5/32	2 1/4	1 1/4	N/A	3/4	4 3/8	4 3/4	1/2	12.70	3 1/4	4	7/16	8	8 1/2	3/4-10UNC	30	BAD
6	8 7/8	8 3/4	5 7/8	6 1/16	2 1/4	1 1/4	3/4	7/8	5 1/4	5 9/16	1/2	12.70	5	4	9/16	8	9 1/2	3/4-10UNC	40	CAD
6*	8 7/8	8 3/4	5 7/8	6 1/16	2 1/4	1 1/4	N/A	7/8	5 1/4	5 9/16	5/8	15.88	5	4	9/16	8	9 1/2	3/4-10UNC	40	CAE
8	10 5/8	10 1/8	8 5/16	6 1/16	2 1/2	2	N/A	1 1/8	7	7 3/8	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	8	11 3/4	3/4-10UNC	60	CAF
10	12 3/4	11 3/8	9 5/8	6 1/16	2 13/16	2	1 1/8	1 3/8	9 1/8	9 5/16	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	12	14 1/4	7/8-9UNC	89	CAF
10*	12 3/4	11 3/8	9 5/8	6 1/16	2 13/16	3	N/A	1 3/8	9 1/8	9 5/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	5	4	9/16	12	14 1/4	7/8-9UNC	90	CAG
12	15	13	10 19/32	8 5/32	3 3/16	3	1 3/8	1 1/2	10 15/16	11 3/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	6 1/2	4	13/16	12	17	7/8-9UNC	147	DAG
14	16 1/4	13 1/4	11 27/32	8 5/32	3 5/8	3	N/A	1 5/8	11 3/4	12 1/4	3/8 x 3/8 x 2 5/8	9.53 x 9.53 x 67	6 1/2	4	13/16	12	18 3/4	1-8UNC	162	DAH
16	18 1/2	14 1/2	12 31/32	8 5/32	4	3	1 5/8	1 3/4	13 3/8	14 1/8	3/8 x 3/8 x 2 5/8	9.53 x 9.53 x 67	6 1/2	4	13/16	16	21 1/4	1-8UNC	213	DAH
18	21	16	13 3/4	8 5/32	4 1/2	4 1/16	N/A	1 7/8	15 9/16	15 15/16	1/2 x 3/8 x 4 1/8	12.70 x 9.53 x 105	6 1/2	4	13/16	16	22 3/4	1 1/8-8UN	350	DAJ
20	23	17 7/16	15 3/16	8 7/32	5	4 5/16	N/A	2 1/4	17 5/16	17 11/16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	20	25	1 1/8-8UN	458	DAK
24	27 1/4	19 11/16	17 9/16	8 7/32	6 1/16	4 1/4	2 1/4	2 1/2	20 5/8	21 1/16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	20	29 1/2	1 1/4-8UN	704	DAK

* E.N.P. discs require larger upper shaft connection diameters on NPS 6 and NPS 10 valve sizes for UHMWPE seat trims.

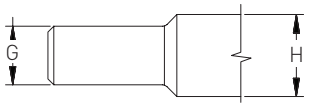
N/A = not applicable

SERIES 37, ASME CLASS 300, LUG STYLE, DIMENSIONS (inch)

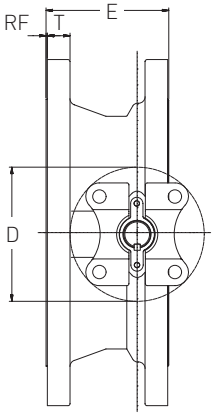
Size											Top plate drilling					Tapped lug data			Weight	Act.
											DD or keyway			No.	Holes	No.				
(NPS)	A	B	C	D	E	F	G	H	Q1	Q2	(inch)	(mm)	PCD	holes	dia.	holes	PCD	Tap	lbs.	code
2	4 15/32	6	3 31/32	4 5/32	2 3/8	1 1/4	N/A	9/16	1 3/8	1 7/8	3/8	9.53	3 1/4	4	7/16	8	5	5/8-11UNC	13	BAB
2 1/2	4 13/16	6	4 11/32	4 5/32	1 7/8	1 1/4	N/A	9/16	2 3/16	2 1/4	3/8	9.53	3 1/4	4	7/16	8	5 7/8	3/4-10UNC	16	BAB
3	5 5/16	6 5/8	4 21/32	4 5/32	1 7/8	1 1/4	N/A	5/8	2 1/16	2 5/8	7/16	11.11	3 1/4	4	7/16	8	6 5/8	3/4-10UNC	18	BAC
4	6 15/32	7 1/2	5 1/4	4 5/32	2 1/8	1 1/4	N/A	3/4	3 3/16	3 5/8	1/2	12.70	3 1/4	4	7/16	8	7 7/8	3/4-10UNC	25	BAD
5	7 5/8	7 9/16	5 3/4	4 5/32	2 5/16	1 1/4	N/A	3/4	4 5/16	4 3/4	1/2	12.70	3 1/4	4	7/16	8	9 1/4	3/4-10UNC	34	BAD
6	8 7/8	8 3/4	6 7/8	6 1/16	2 5/16	1 1/4	N/A	7/8	5 1/4	5 9/16	5/8	15.88	5	4	9/16	12	10 5/8	3/4-10UNC	45	CAE
8	11 5/32	10 1/8	8 5/16	6 1/16	2 7/8	2	N/A	1 1/8	6 3/4	7 3/8	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	12	13	7/8-9UNC	80	CAF
10	12 3/4	11 3/8	9 5/8	6 1/16	3 1/4	3	N/A	1 3/8	8 13/16	9 5/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	5	4	9/16	16	15 1/4	1-8UNC	120	CAG
12	15	13	11 3/32	8 5/32	3 5/8	3	1 3/8	1 1/2	10 5/8	11 3/16	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	6 1/2	4	13/16	16	17 3/4	1 1/8-8UN	179	DAG
14	16 1/4	14 3/8	12 21/32	8 5/32	4 5/8	4 1/4	N/A	1 7/8	11 13/16	11 15/16	1/2 x 3/8 x 4 1/8	12.70 x 9.53 x 105	6 1/2	4	13/16	20	20 1/4	1 1/8-8UN	293	DAJ
16	18 1/2	16 1/16	13 27/32	8 5/32	5 1/4	4 1/8	N/A	2 1/4	13 9/16	13 11/16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	20	22 1/2	1 1/4-8UN	390	DAK
18	21	17	15 1/32	8 5/32	5 7/8	4 7/32	N/A	2 1/2	15 7/16	15 1/2	5/8 x 5/8 x 4	15.88 x 15.88 x 102	6 1/2	4	13/16	24	24 3/4	1 1/4-8UN	524	DBA
20	23	20 3/16	16 11/32	7 1/2	6 1/4	6 1/2	N/A	2 3/4	17 1/4	17 3/8	5/8 x 5/8 x 6 3/8	15.88 x 15.88 x 162	8	4	13/16	24	27	1 1/4-8UN	657	LAX
24	27 1/4	23 3/8	19 3/32	9 1/2	7 1/8	6 13/16	N/A	3 1/2	20 11/16	20 13/16	7/8 x 7/8 x 5 11/16	22.23 x 22.23 x 144	9 3/4	4	1 1/16	24	32	1 1/2-8UN	1076	MAY

N/A = not applicable

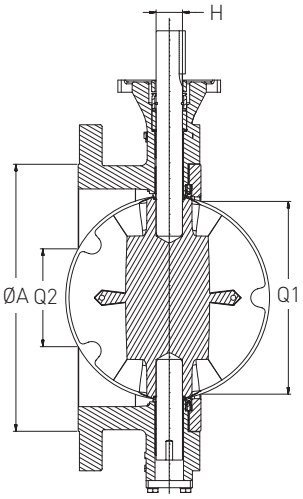
DIMENSIONS – DOUBLE FLANGE STYLE

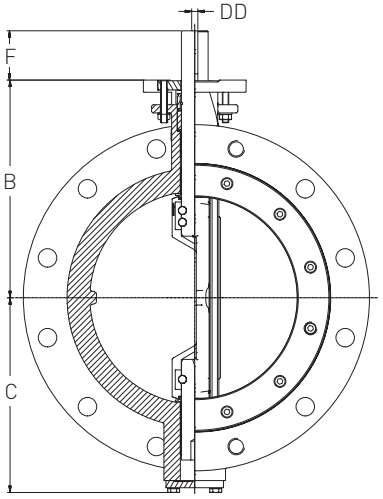


Upper shaft/keyway
NPS 8 to NPS 24



Top plate view





SERIES 36F, ASME CLASS 150, DOUBLE FLANGED STYLE, DIMENSIONS (inch)

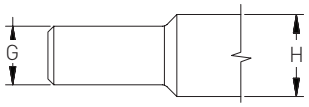
Size (NPS)	A	B	C	D	E	F	G	H	Q1	Q2	T	RF
3	5.00	6 5/8	5 31/32	4.15	4.50	1 1/4	N/A	5/8	2.13	N/A	0.75	0.06
4	6.19	7 1/2	5 1/4	4.15	5.00	1 1/4	N/A	3/4	3.23	N/A	0.94	0.06
6	8.50	8 3/4	6 5/16	6.07	5.50	1 1/4	3/4	7/8	5.24	N/A	1.00	0.06
6*	8.50	8 3/4	6 5/16	6.07	5.50	1 1/4	N/A	7/8	5.24	N/A	1.00	0.06
8	10.62	10 1/8	8 5/16	6.07	6.00	2	N/A	1 1/8	7.06	N/A	1.12	0.06
10	12.75	11 3/8	9 5/8	6.07	6.50	2	1 1/8	1 3/8	9.13	79.00	1.18	0.06
10*	12.75	11 3/8	9 5/8	6.07	6.50	3	N/A	1 3/8	9.13	79.00	1.18	0.06
12	15.00	13	10 19/32	8.17	7.00	3	1 3/8	1 1/2	10.91	4.84	1.24	0.06
14	16.25	13 1/4	11 27/32	8.17	7.50	3	N/A	1 5/8	11.93	5.98	1.38	0.06
16	18.50	14 1/2	12 31/32	8.17	8.50	3	1 5/8	1 3/4	13.70	6.25	1.44	0.06
18	21.00	16	13 3/4	8.17	8.75	4 1/16	N/A	1 7/8	15.51	10.67	1.56	0.06
20	23.00	17 7/16	15 3/16	8.22	9.00	4 5/16	N/A	2 1/4	17.32	13.12	1.69	0.06
24	27.25	19 11/16	17 9/16	8.22	10.50	4 1/4	2 1/4	2 1/2	20.79	15.71	1.87	0.06

SERIES 36F, ASME, CLASS 150, DOUBLE FLANGED STYLE, DIMENSIONS (inch) (CONTINUED)

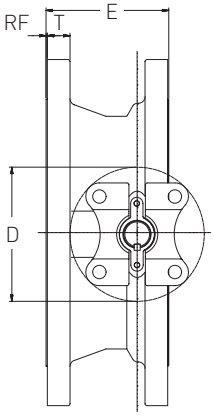
	Top plate drilling					Flange drilling data				
Size (NPS)	DD or Keyway (inch)	DD or Keyway (mm)	PCD	No. holes	Holes dia.	Number of bolts	Diameter of bolt holes	Diameter of bolt circle	Diameter of bolts (imperial)	Act. code
3	7/16	11.11	3 1/4	4	7/16	4	3/4	6.00	5/8 - 11UNC	BAC
4	1/2	12.70	3 1/4	4	7/16	8	3/4	7.50	5/8 - 11UNC	BAD
6	1/2	12.70	5	4	9/16	8	7/8	9.50	3/4 - 10UNC	CAD
6*	5/8	15.88	5	4	9/16	8	7/8	9.50	3/4 - 10UNC	CAE
8	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	8	7/8	11.75	3/4 - 10UNC	CAF
10	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	12	1	14.25	7/8 - 9UNC	CAF
10*	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	5	4	9/16	12	1	14.25	7/8 - 9UNC	CAG
12	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	6 1/2	4	13/16	12	1	17.00	7/8 - 9UNC	DAG
14	3/8 x 3/8 x 2 5/8	9.53 x 9.53 x 67	6 1/2	4	13/16	12	1 1/8	18.75	1 - 8UNC	DAH
16	3/8 x 3/8 x 2 5/8	9.53 x 9.53 x 67	6 1/2	4	13/16	16	1 1/8	21.25	1 - 8UNC	DAH
18	1/2 x 3/8 x 4 1/8	12.70 x 9.53 x 105	6 1/2	4	13/16	16	1 1/4	22.75	1 1/8 - 8UN	DAJ
20	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	20	1 1/4	25.00	1 1/8 - 8UN	DAK
24	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	20	1 3/8	29.50	1 1/4 - 8UN	DAK

* E.N.P. discs require larger upper shaft connection diameters on NPS 6 and NPS 10 valve sizes for UHMWPE seat trims.
N/A = not applicable

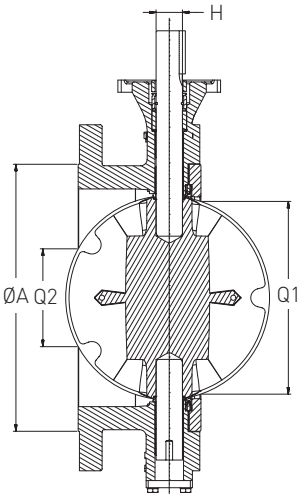
DIMENSIONS – DOUBLE FLANGE STYLE

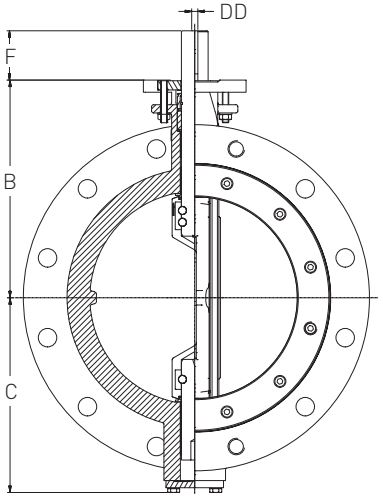


Upper shaft/keyway
NPS 8 to NPS 24



Top plate view





SERIES 37F, ASME, CLASS 300, DOUBLE FLANGED STYLE, DIMENSIONS (inch)

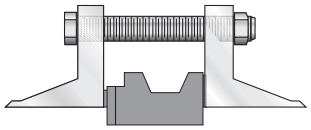
Size (NPS)	A	B	C	D	E	F	G	H	Q1	Q2	T	RF
3	5.00	6 5/8	4 21/32	4.15	4.50	1 1/4	N/A	5/8	2.13	N/A	1.12	0.06
4	6.19	7 1/2	5 1/4	4.15	5.00	1 1/4	N/A	3/4	3.15	N/A	1.24	0.06
6	8.50	8 3/4	6 7/8	6.07	5.50	1 1/4	N/A	7/8	5.20	N/A	1.44	0.06
8	10.62	10 1/8	8 5/16	6.07	6.00	2	N/A	1 1/8	6.69	N/A	1.61	0.06
10	12.75	11 3/8	9 5/8	6.07	6.50	3	N/A	1 3/8	8.78	3.11	1.87	0.06
12	15.00	13	11 3/32	8.17	7.00	3	1 3/8	1 1/2	10.59	6.36	2.01	0.06
14	16.25	14 3/8	12 21/32	8.17	7.50	4 1/4	N/A	1 7/8	11.81	7.24	2.13	0.06
16	18.50	16 1/16	13 27/32	8.17	8.50	4 1/8	N/A	2 1/4	13.58	8.29	2.24	0.06
18	21.00	17	15 1/32	8.17	8.75	4 7/32	N/A	2 1/2	15.43	11.50	2.38	0.06
20	23.00	20 3/16	16 11/32	7.50	9.00	6 1/2	N/A	2 3/4	17.20	13.85	2.50	0.06
24	27.25	23 3/8	19 3/32	9.50	10.50	6 13/16	N/A	3 1/2	20.67	16.62	2.76	0.06

SERIES 37F, ASME, CLASS 300, DOUBLE FLANGED STYLE, DIMENSIONS (inch) (CONTINUED)

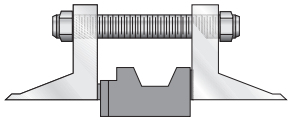
	Top plate drilling					Flange drilling data				
Size (NPS)	DD or Keyway (inch)	DD or Keyway (mm)	PCD	No. holes	Holes dia.	Number of bolts	Diameter of bolt holes	Diameter of bolt circle	Diameter of bolts (imperial)	Act. code
3	7/16	11.11	3 1/4	4	7/16	8	7/8	6.63	3/4 - 10UNC	BAC
4	1/2	12.70	3 1/4	4	7/16	8	7/8	7.88	3/4 - 10UNC	BAD
6	5/8	15.88	5	4	9/16	12	7/8	10.63	3/4 - 10UNC	CAE
8	1/4 x 1/4 x 1 5/8	6.35 x 6.35 x 41	5	4	9/16	12	1	13.00	7/8 - 9UNC	CAF
10	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	5	4	9/16	16	1 1/8	15.25	1 - 8UNC	CAG
12	5/16 x 5/16 x 2 5/8	7.94 x 7.94 x 67	6 1/2	4	13/16	16	1 1/4	17.75	1 1/8 - 8UN	DAG
14	1/2 x 3/8 x 4 1/8	12.70 x 9.53 x 105	6 1/2	4	13/16	20	1 1/4	20.25	1 1/8 - 8UN	DAJ
16	1/2 x 3/8 x 4	12.70 x 9.53 x 102	6 1/2	4	13/16	20	1 3/8	22.50	1 1/4 - 8UN	DAK
18	5/8 x 5/8 x 4	15.88 X 15.88 X 102	6 1/2	4	13/16	24	1 3/8	24.75	1 1/4 - 8UN	DBA
20	5/8 x 5/8 x 6 3/8	15.88 x 15.88 x 162	8	4	13/16	24	1 3/8	27.00	1 1/4 - 8UN	LAX
24	7/8 x 7/8 x 5 11/16	22.23 x 22.23 x 144	9 3/4	4	1 1/16	24	1 5/8	32.00	1 1/2 - 8UN	MAY

N/A = not applicable

RECOMMENDED FLANGE BOLT LENGTHS



Type 1



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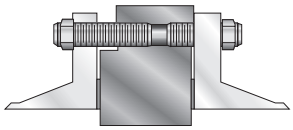
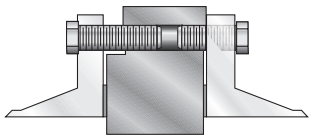


Type 3



Type 4

SERIES 36 ASME CLASS 150

WAFER STYLE

Valve size		Type 1 (flange bolt)		Type 2 (threaded rod)
NPS	Qty	(HEX head)	Qty	(all thread)
2	4	5/8 - 11UNC x 5	4	5/8 - 11UNC x 5 3/4
2 1/2	4	5/8 - 11UNC x 4 5/8	4	5/8 - 11UNC x 5 5/8
3	4	5/8 - 11UNC x 5	4	5/8 - 11UNC x 5 5/8
4	8	5/8 - 11UNC x 5	8	5/8 - 11UNC x 5 7/8
5	8	3/4 - 10UNC x 5 1/4	8	3/4 - 10UNC x 6 1/4
6	8	3/4 - 10UNC x 5 3/8	8	3/4 - 10UNC x 6 3/8
8	8	3/4 - 10UNC x 5 7/8	8	3/4 - 10UNC x 6 7/8
10	12	7/8 - 9UNC x 6 1/2	12	7/8 - 9UNC x 7 5/8
12	12	7/8 - 9UNC x 7	12	7/8 - 9UNC x 8
14	12	1 - 8UNC x 7 3/4	12	1 - 8UNC x 9
16	16	1 - 8UNC x 8 1/2	16	1 - 8UNC x 9 5/8
18	16	1 1/8 - 8UN x 9 1/2	16	1 1/8 - 8UN x 10 5/8
20	16	1 1/8 - 8UN x 10	16	1 1/8 - 8UN x 11 3/8
	4	1 1/8 - 8UN x 3 1/2	8	1 1/8 - 8UN x 4 7/8
	4	1 1/8 - 8UN x 3 1/4		
24	16	1 1/4 - 8UN x 11 1/2	16	1 1/4 - 8UN x 13
	8	1 1/4 - 8UN x 4 3/4	8	1 1/4 - 8UN x 6 3/8

LUG STYLE

Valve size		Type 3 (threaded studs)		Type 4 (flange bolt)
(NPS)	Qty	(full thread)	Qty	(HEX head)
2	8	5/8 - 11UNC x 2 7/8	8	5/8 - 11UNC x 2
2 1/2	8	5/8 - 11UNC x 2 5/8	8	5/8 - 11UNC x 1 3/4
3	8	5/8 - 11UNC x 2 5/8	8	5/8 -11UNC x 1 3/4
4	16	5/8 - 11UNC x 2 3/4	16	5/8 - 11UNC x 2
5	16	3/4 - 10UNC x 3	16	3/4 - 10UNC x 2
6	8	3/4 - 10UNC x 3	8	3/4 - 10UNC x 2
	8	3/4 - 10UNC x 3 1/4	8	3/4 - 10UNC x 2 1/4
8	16	3/4 - 10UNC x 3 3/8	16	3/4 - 10UNC x 2 1/4
10	24	7/8 - 9UNC x 3 5/8	24	7/8 - 9UNC x 2 1/2
12	24	7/8 - 9UNC x 3 7/8	24	7/8 - 9UNC x 2 3/4
14	24	1 - 8UNC x 4 1/2	24	1 - 8UNC x 3 1/4
16	32	1 - 8UNC x 4 3/4	32	1 - 8UNC x 3 1/2
18	32	1 1/8 - 8UN x 5 1/4	32	1 1/8 - 8UN x 3 3/4
20	32	1 1/8 - 8UN x 5 1/2	4	1 1/8 - 8UN x 3 1/2 (FF)
	8	1 1/8 - 8UN x 4 7/8	4	1 1/8 - 8UN x 3 1/4 (BF)
			32	1 1/8 - 8UN x 4
24	40	1 1/4 - 8UN x 6 3/8	40	1 1/4 - 8UN x 4 3/4

SERIES 37 ASME CLASS 300

WAFER STYLE

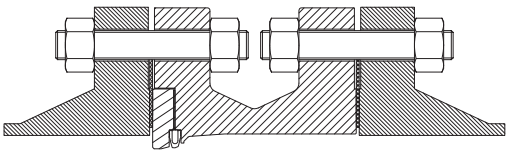
Valve size		Type 1 (flange bolt)		Type 2 (threaded rod)
(NPS)	Qty	(HEX head)	Qty	(all thread)
2	8	5/8 - UNC x 5 1/4	8	5/8 - 11UNC x 6 1/4
2 1/2	8	3/4 - 10UNC x 5	8	3/4 - 10UNC x 6
3	8	3/4 - 10UNC x 5 1/4	8	3/4 - 10UNC x 6 1/4
4	8	3/4 - 11UNC x 5 3/4	8	3/4 - 11UNC x 6 3/4
5	8	3/4 - 11UNC x 6 1/4	8	3/4 - 11UNC x 7 1/4
6	12	3/4 - 11UNC x 6 3/8	12	3/4 - 11UNC x 7 3/8
8	12	7/8 - 10UNC x 7 1/2	12	7/8 - 10UNC x 8 1/2
10	12	1 - 8UNC x 8 1/2	12	1 - 8UNC x 9 1/2
	8	1 - 8UNC x 3	8	1 - 8UNC x 4 3/4
12	16	1 1/8 - 8UN x 9 1/4	16	1 1/8 - 8UN x 10 1/2
14	16	1 1/8 - 8UN x 10 1/2	16	1 1/8 - 8UN x 11 3/4
	8	1 1/8 - 8UN x 3 1/4	8	1 1/8 - 8UN x 4 5/8
16	16	1 1/4 - 8UN x 11 1/2	16	1 1/4 - 8UN x 12 5/8
	8	1 1/4 - 8UN x 3 1/2	8	1 1/4 - 8UN x 5
18	20	1 1/4 - 8UN x 12 1/4	20	1 1/4 - 8UN x 13 3/4
	8	1 1/4 - 8UN x 3 3/4	8	1 1/4 - 8UN x 5 1/4
20	20	1 1/4 - 8UN x 12 7/8	20	1 1/4 - 8UN x 14 5/16
	8	1 1/4 - 8UN x 4	8	1 1/4 - 8UN x 5 1/2
24	20	1 1/2 - 8UN x 14 1/2	20	1 1/2 - 8UN x 16 1/4
	8	1 1/2 - 8UN x 4 1/2	8	1 1/2 - 8UN x 6 1/4

LUG STYLE

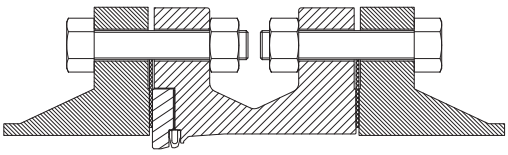
Valve size		Type 3 (threaded studs)		Type 4 (flange bolt)
(NPS)	Qty	(all thread)	Qty	(HEX head)
2	16	5/8 - 11UNC x 2 7/8	16	5/8 - 11UNC x 2
2 1/2	16	3/4 - 10UNC x 3	16	3/4 - 10UNC x 2
3	16	3/4 - 10UNC x 3	16	3/4 - 10UNC x 2
4	16	3/4 - 10UNC x 3 1/4	16	3/4 - 10UNC x 2 1/4
5	16	3/4 - 10UNC x 3 1/2	16	3/4 - 10UNC x 2 1/2
6	24	3/4 - 10UNC x 3 5/8	24	3/4 - 10UNC x 2 1/2
8	24	7/8 - 9UNC x 4 1/8	24	7/8 - 9UNC x 3
10	32	1 - 8UNC x 4 3/4	32	1 - 8UNC x 3 1/2
12	32	1 1/8 - 8UN x 5 1/8	32	1 1/8 - 8UN x 3 3/4
14	32	1 1/8 - 8UN x 5 3/4	32	1 1/8 - 8UN x 4 1/4
	8	1 1/8 - 8UN x 4 5/8	8	1 1/8 - 8UN x 3 1/4
16	32	1 1/4 - 8UN x 6 1/4	32	1 1/4 - 8UN x 4 3/4
	8	1 1/4 - 8UN x 5	8	1 1/4 - 8UN x 3 1/2
18	40	1 1/4 - 8UN x 6 3/4	40	1 1/4 - 8UN x 5 1/4
	8	1 1/4 - 8UN x 5 1/4	8	1 1/4 - 8UN x 3 3/4
20	40	1 1/4 - 8UN x 7 1/8	40	1 1/4 - 8UN x 5 1/2
	8	1 1/4 - 8UN x 5 1/2	8	1 1/4 - 8UN x 4
24	40	1 1/2 - 8UN x 8	40	1 1/2 - 8UN x 6 1/4
	8	1 1/2 - 8UN x 6 1/4	8	1 1/2 - 8UN x 4 1/2

RECOMMENDED FLANGE BOLT LENGTHS

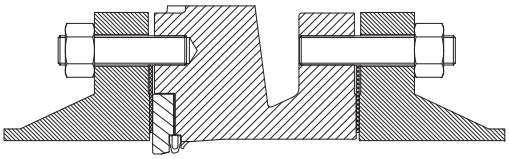
Type 5 drilled holes



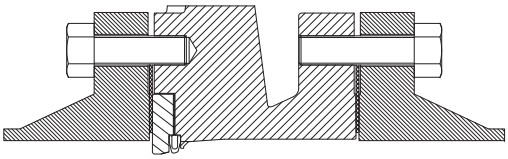
Type 6 drilled holes



Type 5 tapped holes



Type 6 tapped holes



SERIES 36 ASME CLASS 150

DOUBLE FLANGED STYLE

	Type 5 (full threaded rod)			
Valve size (NPS)	Drilled holes Qty	Stud sizes	Tapped holes Qty	Stud sizes
3	4	5/8 - 11UNC - 3 1/2	4	5/8 - 11UNC - 2 3/4
4	8	5/8 - 11UNC - 3 3/4	8	5/8 - 11UNC - 3
6	8	3/4 - 10UNC - 4 1/8	8	3/4 - 10UNC - 3 1/4
8	12	3/4 - 10UNC - 4 3/8	4	3/4 - 10UNC - 3 1/2
10	20	7/8 - 9UNC - 4 3/4	4	7/8 - 9UNC - 3 3/4
12	20	7/8 - 9UNC - 4 7/8	4	7/8 - 9UNC - 3 1/2
14	20	1 - 8UNC - 5 1/2	4	1 - 8UNC - 3 7/8
16	28	1 - 8UNC - 5 5/8	4	1 - 8UNC - 4 1/8
18	28	1 1/8 - 8UN - 6 1/8	4	1 1/8 - 8UN - 4 3/4
20	36	1 1/8 - 8UN - 6 3/8	4	1 1/8 - 8UN - 4 1/2
24	36	1 1/4 - 8UN - 7	4	1 1/4 - 8UN - 4 7/8

DOUBLE FLANGED STYLE

	Type 6 (hex head)			
Valve size (NPS)	Drilled holes Qty	Bolt sizes	Tapped holes Qty	Bolt sizes
3	4	5/8 - 11UNC - 2 3/4	4	5/8 - 11UNC - 1 7/8
4	8	5/8 - 11UNC - 3	8	5/8 - 11UNC - 2 1/8
6	8	3/4 - 10UNC - 3 1/4	8	3/4 - 10UNC - 2 1/4
8	12	3/4 - 10UNC - 3 1/2	4	3/4 - 10UNC - 2 1/2
10	20	7/8 - 9UNC - 3 3/4	4	7/8 - 9UNC - 2 5/8
12	20	7/8 - 9UNC - 3 7/8	4	7/8 - 9UNC - 2 3/8
14	20	1 - 8UNC - 4 1/4	4	1 - 8UNC - 2 5/8
16	28	1 - 8UNC - 4 3/8	4	1 - 8UNC - 2 7/8
18	28	1 1/8 - 8UN - 4 3/4	4	1 1/8 - 8UN - 3 3/8
20	36	1 1/8 - 8UN - 5	4	1 1/8 - 8UN - 3 1/8
24	36	1 1/4 - 8UN - 5 1/2	4	1 1/4 - 8UN - 3 3/8

SERIES 37 ASME CLASS 300

DOUBLE FLANGED STYLE

	Type 5 (full threaded rod)			
Size (DN)	Drilled holes Qty	Bolt sizes	Tapped holes Qty	Bolt sizes
3	8	3/4 - 10UNC - 4 3/8	8	3/4 - 10UNC - 3 1/2
4	8	3/4 - 10UNC - 4 5/8	8	3/4 - 10UNC - 3 3/4
6	20	3/4 - 10UNC - 5	4	3/4 - 10UNC - 4 1/8
8	20	7/8 - 9UNC - 5 5/8	4	7/8 - 9UNC - 4 1/2
10	24	1 - 8UNC - 6 3/8	8	1 - 8UNC - 4 3/8
12	24	1 1/8 - 8UN - 6 7/8	8	1 1/8 - 8UN - 4 3/4
14	32	1 1/8 - 8UN - 7 1/4	8	1 1/8 - 8UN - 5
16	32	1 1/4 - 8UN - 7 3/4	8	1 1/4 - 8UN - 5 3/8
18	40	1 1/4- 8UN - 8	8	1 1/4- 8UN - 5 1/2
20	40	1 1/4 - 8UN - 8 1/4	8	1 1/4 - 8UN - 5 1/2
24	40	1 1/2 - 8UN - 9 1/4	8	1 1/2 - 8UN - 6 1/4

DOUBLE FLANGED STYLE

	Type 6 (hex head)			
Size (DN)	Drilled holes Qty	Bolt sizes	Tapped holes Qty	Bolt sizes
3	8	3/4 - 10UNC - 3 3/8	8	3/4 - 10UNC - 2 1/2
4	8	3/4 - 10UNC - 3 5/8	8	3/4 - 10UNC - 2 3/4
6	20	3/4 - 10UNC - 4	4	3/4 - 10UNC - 3 1/8
8	20	7/8 - 9UNC - 4 1/2	4	7/8 - 9UNC - 3 3/8
10	24	1 - 8UNC - 5 1/8	8	1 - 8UNC - 3 1/8
12	24	1 1/8 - 8UN - 5 1/2	8	1 1/8 - 8UN - 3 3/8
14	32	1 1/8 - 8UN - 5 7/8	8	1 1/8 - 8UN - 3 1/2
16	32	1 1/4 - 8UN - 6 1/4	8	1 1/4 - 8UN - 3 7/8
18	40	1 1/4- 8UN - 6 1/2	8	1 1/4- 8UN - 4
20	40	1 1/4 - 8UN - 6 3/4	8	1 1/4 - 8UN - 4
24	40	1 1/2 - 8UN - 7 1/2	8	1 1/2 - 8UN - 4 1/2

EXTENSION BRACKETS FOR VARIOUS TEMPERATURES

Pipeline fluid	Required extension lengths (inches)				
temperature	Handle	Gear	Std. F79U/MRP	High temp. F79U/MRP	Standard F777
-100°F - 375°F	–	–	–	–	–
376°F - 460°F	4	–	–	–	4
461°F - 560°F	6	4	4	–	4
561°F - 650°F	6	4	4	–	4
651°F - 725°F	6	6	6	4	6
726°F - 825°F	8	8	8	6	8
826°F - 925°F	10	8	8	6	8
926°F - 1000°F	10	10	10	8	10

NOTES

1. Surrounding air temperature is assumed to be 70°F. For every degree over 100°F of the surrounding air, deduct 2 degrees from the maximum temperature ranges shown under the Pipeline fluid temperature column. (Example: 125°F external temperature reduces maximum temperature values under the Pipeline fluid temperature column to 325, 410, 510, 600, etc.)
2. Valves may be insulated or uninsulated.
3. Brackets may be open rectangular tubes or the standard closed Keystone tubular shaft extensions.
4. All actuators have a maximum service temperature (outside atmosphere). These temperature limitations apply regardless of K-LOK® extension lengths.

VACUUM RATING

The combination of interference fit seats and bi-directional packing makes the K-LOK® especially well suited for vacuum service.
Standard K-LOK® high performance valves are rated to an absolute pressure of 4 x 10^{-5} inch Hg.
Higher vacuum applications are available.

C_V VALUES VS. TRAVEL POSITION

	Angle of opening									
Size									ASME 150	ASME 300
(NPS)	10°	20°	30°	40°	50°	60°	70°	80°	90°	90°
2	6	10	19	34	51	78	105	134	163	160
2½	6	10	19	34	53	80	111	148	175	170
3	8	12	24	43	67	100	139	186	220	215
4	16	23	44	80	130	194	269	360	425	413
5	30	44	83	149	242	366	504	673	795	785
6	50	70	130	230	370	550	760	1010	1195	1140
8	83	117	251	437	695	1052	1496	2001	2440	2300
10	144	202	454	754	1185	1821	2611	3541	4540	4333
12	208	304	678	1051	1625	2766	3838	5325	6915	6600
14	257	360	747	1186	1909	3121	4416	6225	8300	7920
16	308	432	803	1422	2289	3614	5251	7530	10040	9580
18	373	548	1121	1869	2990	4735	6728	9845	12460	11890
20	463	680	1390	2315	4010	6175	8795	12655	15430	14720
24	650	991	2076	3803	6060	9091	13301	18466	21660	20665

SEATING AND UN-SEATING TORQUE

Seating and un-seating torques are a function of the size of the valve and the shutoff pressure of the system.
Specific torque ratings can be found in the seating/un-seating chart at the intersection of the 'size' row and the 'shutoff pressure' column.
Torques listed are for PTFE and RTFE seated valves. For different seat materials, specific multipliers are to be used as stated.
All torques listed are for normal service conditions (i.e. operating frequency is a minimum of once per month; disc corrosion is expected to be mild or minor, the media is a clean gas, liquid or steam, and is non-abrasive) and chemical effects upon the seat are minor.

PTFE AND RTFE BI-DIRECTIONAL SEATING AND UN-SEATING TORQUE VALUES

Valve size	Shaft mounting code		Seating and un-seating torque (lbs in) System shutoff pressure (psig)					
(NPS)	ASME 150	ASME 300	150	200	285	400	500	740
2	BAB	BAB	220	280	380	460	520	580
2½	BAB	BAB	220	280	380	460	520	580
3	BAC	BAC	250	320	430	520	590	650
4	BAD	BAD	475	600	820	995	1120	1235
5	BAD	BAD	925	1125	1350	1570	1750	1900
6	CAD/CAE*	CAE	1370	1600	1850	2150	2390	2900
8	CAF	CAF	2060	2330	3200	4020	4870	6720
10	CAF/CAG*	CAG	3340	3650	4700	6250	7450	9850
12	DAG	DAG	4590	5250	6400	8160	9690	12940
14	DAH	DAJ	6750	7560	9150	11450	13300	17200
16	DAH	DAK	9350	10450	12600	15000	17500	22200
18	DAJ	DBA	11900	13300	15800	19500	21900	28500
20	DAK	LAX	15600	17500	21000	25200	28700	36140
24	DAK	MAY	21700	25340	30600	36900	42100	54000

* CAE and CAG mounting codes apply for shaft mounting of UHMWPE seats.

NOTES

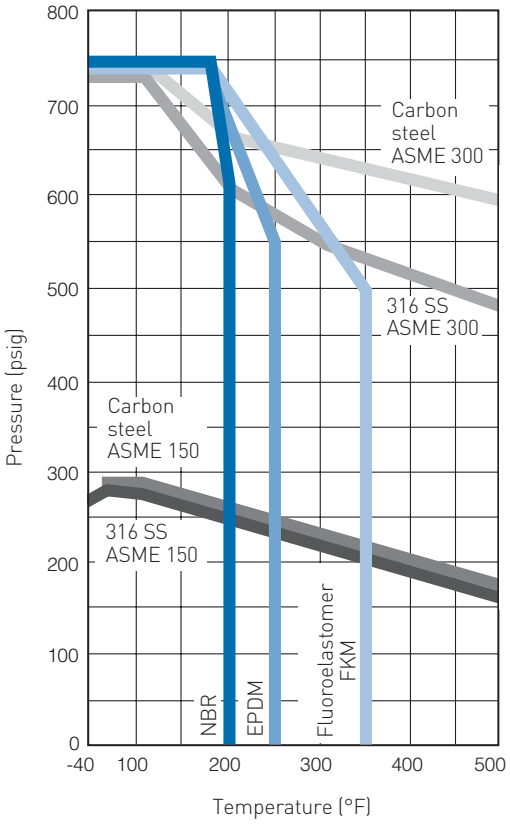
1. Torques are applicable only to PTFE and RTFE seats in noncorrosive or non-abrasive services such as water.
2. For other seat materials, select the torque applicable for the maximum differential pressure and multiply by the following factor:
   EPDM/NBR/Fluoroelastomer (FKM): x 1.4
   UHMWPE (clean service): x 1.3
3. For corrosive, abrasive or other services than water, multiply by the following factor:
   High solids slurry: x 1.5
   Dry gas: x 2.0
   Dry powders: x 2.7
   Liquids other than water: x 1.2
   Lubricating fluids: x 0.8
   For services that combine unfriendly conditions such as extreme temperatures and high solids, or corrosive with high temperatures, contact your sales representative.

PRESSURE/TEMPERATURE RATINGS FOR BODIES, DISCS AND SEATS

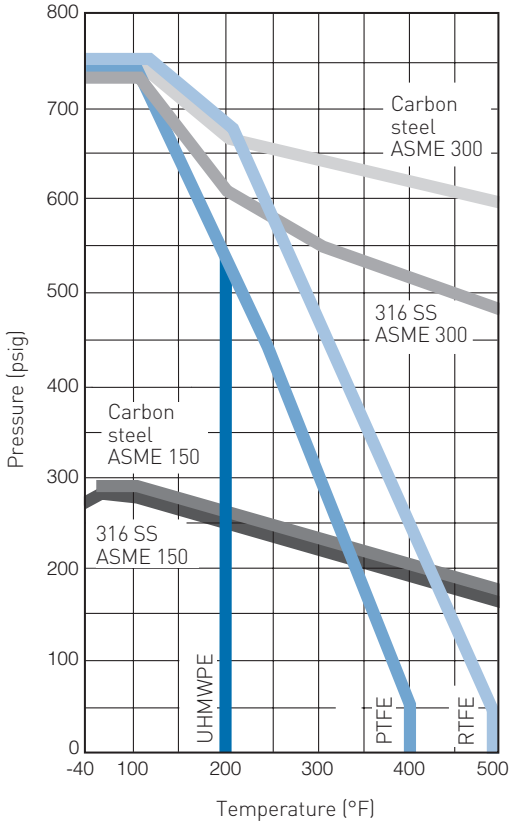
	Temperature (°F)															
Pressure (psi)	**-40**	**-20**	**0**	**100**	**180**	**200**	**250**	**300**	**400**	**450**	**500**	**600**	**700**	**800**	**900**	**1000**
ASME Class 150 body (Series 36)																
Carbon steel		285	285	285	270	260	245	230	200	185	170	140	110	80		
Stainless steel	275	275	275	275	250	240	227	215	195	182	170	140	110	80	50	20
Nickel aluminum bronze	250	250	250	250	240	235	222	210	180	170	160	150				
Ductile iron		250	250	250	240	235	225	215	200	185	170	140				
ASME Class 300 body (Series 37)																
Carbon steel		740	740	740	700	675	665	655	635	617	600	550	535	410		
Stainless steel	720	720	720	720	645	620	590	560	515	497	480	450	430	415	395	365
Nickel aluminum bronze	700	700	700	700	625	600	675	550	500	475	450	400				
Ductile iron		640	640	640	610	600	583	565	525	510	495	465				
ASME Class 150 disc																
Stainless steel	275	285	285	285	270	260	245	230	200	185	170	140	110	80	50	20
Nickel aluminum bronze	250	250	250	250	240	235	222	210	180	170	160	150				
Monel	230	230	230	230	210	200	195	190	185	182	170	140	110	80		
Ductile iron		250	250	250	240	235	225	215	200	185	170	140				
ASME Class 300 disc																
Stainless steel	720	740	740	740	700	675	665	655	635	617	600	550	535	410	395	365
Nickel aluminum bronze	700	700	700	700	625	600	575	500	500	475	450	400				
Monel	600	600	600	600	580	530	520	495	480	475	475	475	475	460		
Ductile iron		640	640	640	610	600	583	565	525	510	495	465				
K-LOK seats																
PTFE (TFE)	740	740	740	740	600	565	450	325								
Reinforced TFE (RTFE)	740	740	740	740	700	680	550	450	225	100						
UHMWPE	740	740	740	740	575	555										
NBR			740	740	740	625										
EPDM	740	740	740	740	740	675	550									

PRESSURE/TEMPERATURE RATINGS FOR SEAT MATERIALS

ELASTOMER SEATS



POLYMER SEATS



SELECTION GUIDE

Example:	040	36	2	C	S	S	1	T	S	G	0	N
NPS 4 150 ASME lug style carbon steel body, SS disc, 17-4 PH SS shaft, RTFE seat, bare shaft, NACE **040 362 CSS1TSG 0 N**												

Size (NPS)

020	**050**	**120**	**200**
025	**060**	**140**	**240**
030	**080**	**160**	
040	**100**	**180**	

Series

36	150 ASME
37	300 ASME

Body style

0	Wafer
2	Lug[1]
F	Double flanged[1]

Body material

C	Carbon steel	**D**	Duplex 2205	**E**	Duplex 2507
S	316 stainless steel	**X**	Other		

Disc material

S	316 stainless steel	**D**	Duplex 2205	**F**	Duplex 2507
E	316/SS/ENP	**X**	Other		

Shaft

S	17-4 PH SS	**M**	K-500 Monel®	**D**	Duplex 2205	**E**	Duplex 2507
P	316 stainless steel[2]	**N**	Nitronic® 50	**X**	Other		

Seat material

1	RTFE/SS	**6**	UHMWPE[3]	**9**	Fluoroelastomer (FKM)
2	RTFE/polymer	**7**	NBR	**X**	Other
3	PTFE/SS	**8**	EPDM		

Packing material

T	PTFE	**R**	Garlock 2012
G	Graphite		

Bearings

S	SS/DU/BRZ	**U**	SS/Nitrided
R	RTFE/composite		

Body gaskets[3]

G	Graphite (standard)	**P**	PTFE
F	Fiber (optional)	**N**	None

Actuation

0	None	**2**	Gear	**4**	Pneumatic DA	**6**	Electric
1	10 pos handle	**3**	Chainwheel	**5**	Pneumatic SR	**X**	Other

Special

N	NACE	**C**	Oxygen clean	**W**	NSF/ANSI standard 61 tagging	**X**	Other
L	Chlorine cleaning	**P**	PED/CE	**B7**	B7 bolting		

NOTES

1. All lug and double flange valves have bolted seat retainers for full rated bi-directional dead end service.
2. 316 SS shafts are de-rated in some sizes and pressures. Consult factory.
3. UHMWPE seats must use ENP coated disc.
4. Standard body gasket is graphite. Fiber is provided for special applications. Consult factory.

Chart size	Valve size (NPS)
020	2
025	2½
030	3
040	4
050	5
060	6
080	8
100	10
120	12
140	14
160	16
180	18
200	20
240	24