

SC VALVES CORE TRICENTRIC®



HIGH PERFORMANCE BUTTERFLY VALVES

Score-TRICENTRIC® Valves Metal-to-Metal Seated



PLAIN WAFER



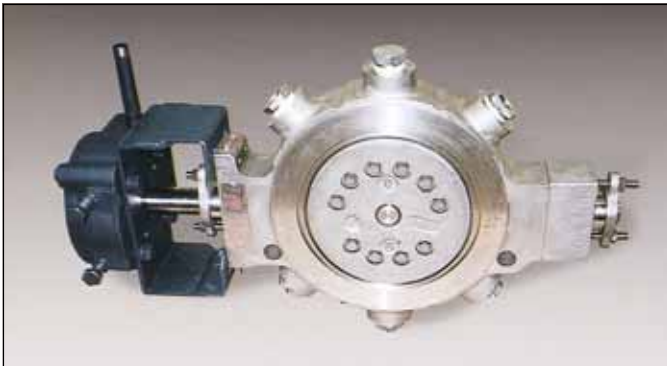
TAPPED LUGGED WAFER



DOUBLE FLANGED



Score-TRICENTRIC® Reduced Port Valves to match reducing flanges where jacketed piping systems are required. Valves can be steam jacketed and equipped with steam traced shafts, if required.

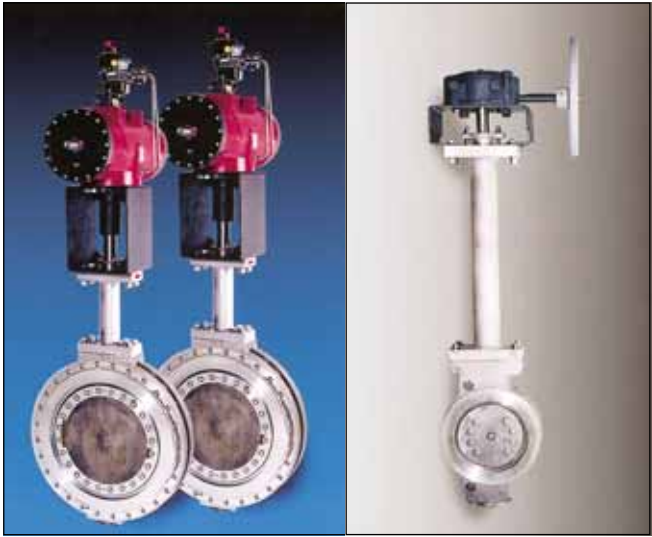


Score-TRICENTRIC® Steam Jacketed Valves with steam traced shafts for molten sulphur and pitch applications

Score-TRICENTRIC® Acid Gas/Tail Gas/Flow Gas Valves. Triple offset seat design assures a

frictionless seal for high cycle and extended valve life. Torque seated design assures tight shut-off at low and high pressures. Steam jacketed and steam traced shafts when required by application. No elastomers or teflon.





Score-TRICENTRIC® Cryogenic Valves. Tight shut-off, zero leakage at temperatures as low as -425° F. Liquid oxygen, nitrogen and liquid natural gas



Score-TRICENTRIC® Valves for Sea Water Service.

- Nickel-Aluminum Bronze
- Monel
- Duplex
- Zeron - 100

Score-TRICENTRIC® Valves for High Temperatures.

- High temperature materials
- Bonnet extensions
- Cooling Fins on bonnet



Score-TRICENTRIC® Control Valves

- Swing thru disc
- Designed for flow control
- Liquids
- High temperature gases
- Excellent flow and throttling characteristics in a wide range of applications.



Score-TRICENTRIC®

The valve that outperforms any other valve. Proven as an industry leader in:

- | | |
|--------------------------|---------------------------------|
| ➡ Chemical Plants | ➡ Aluminum Smelters |
| ➡ Refineries | ➡ Power Plants |
| ➡ Gas Plants | ➡ Pulp & Paper Mills |
| ➡ Oxygen Plants | ➡ Steel Mills |

The Score-TRICENTRIC® valves are proven in many applications:

- | | |
|-----------------------------------|---|
| • Hydrogen gas | • Blast furnace isolation |
| • Dirty hot cracking gas | • Coke service |
| • Acid gas & Tail gas | • Pump isolation |
| • Sulphur service | • Heat exchangers |
| • CO₂ Vapours | • Pitch |
| • Ethylene service | • Gas pipeline switching valves |
| • Liquid or gaseous oxygen | • Cryogenics |
| • Fuel oil storage | • Service water |
| • Hot oil service | • Sea water |
| • Steam service | • Control & throttling service |
| • Brine | • Cooling water |
| • Black Liquor | • Green Liquor |
| • Red Liquor | • Pulp Stock |



Score-TRICENTRIC® valves are manufactured to the highest quality and standards. Built to customer requirements for special applications and severe service conditions.

DESIGN

- **ASME B16.34 (ANSI B16.34)**
- **Fire safe (tested) API 607 4th Edition**
- **Fully complies with API 609 5th Edition**
- **Body Flange Bolting B16.5, B16.47 Series A, B16.47 Series B**
- **Testing API 598 0-Leakage or ANSI FCI-70.2 Class VI**
- **Boilers Safety Association Approved (CRN-OC0765-2)**
- **Face-to-face dimension API609, ISO5752 and B16.10**



Disc Seal

Valve closure is always positive. This unique metal disc seal design allows the seal to move clear of the seat at all points without jamming and is particularly good for frequent cycling operations. There are no elastomeric seal parts, thus the Score-TRICENTRIC® seal is inherently firesafe and can handle continuous temperatures of -425° F to 1200° F.



Introduction	7
Standard Options Available	7
Score-TRICENTRIC® High Performance Butterfly Valves	8
Off-the Shelf Features That Mean Reliable Service	8
Score-TRICENTRIC® Sealing System	8
The Score-TRICENTRIC® Seal	9
The Score-TRICENTRIC® Standard of Quality	9
CLASS 150	
Sizes 3" - 24", Dimensions	10
Sizes 30" - 60", Dimensions	11
Standard Materials of Construction, 3" thru 60"	12
Design Characteristics	13
CLASS 300	
Sizes 3" - 24", Dimensions	14
Sizes 30" - 42", Dimensions	15
Standard Materials of Construction, 3" thru 24"	16
Standard Materials of Construction, 30" thru 42"	17
Design Characteristics	18
CLASS 600	
Sizes 6" - 24", Dimensions	19
Standard Materials of Construction, 6" thru 24"	20
Design Characteristics	21
ANSI AND DIN VALVE DATA	
Weights	22
Cv Values	22
Typical Flow Characteristics	22
TORQUE REQUIREMENTS	23
ACTUATOR MOUNTING DATA	
ANSI CLASS 150	24
ANSI CLASS 300	25
ANSI CLASS 600	26
MATERIAL PRESSURE AND TEMPERATURE RATINGS	27
GENERAL CORROSION DATA	29
REQUEST FOR QUOTATION	31
VALUE MODEL NUMBERING SYSTEM	32

The Score-TRICENTRIC® High Performance Butterfly Valve has been a leader in performance and reliable service since it was originally designed in 1975. Its unique high quality design, dependable service in sensitive situations, and positive non-binding patented sealing system have enabled the Score-TRICENTRIC® valve to cover a broad range of applications in nearly every industry.

Built for dependability and severe service, Score-TRICENTRIC® valves have proven themselves time and time again, to become the first choice on many approved vendor lists across the continent.

SCORE ENERGY PRODUCTS INC., manufactures the Score-TRICENTRIC® valve in Alberta, Canada. The Score-TRICENTRIC® valve is built to exacting standards, and exciting new designs have increased the opportunities for use of Score-TRICENTRIC® design. Standard 3" to 60" 150 ANSI, 3" to 42" 300 ANSI, and 6" to 24" 600 ANSI class valves are now being built in Alberta, with many optional features for custom applications. Unique and sensitive applications are a specialty for the Score-TRICENTRIC® team, and we can build custom specialty valves where required.

STANDARD OPTIONS AVAILABLE

Cryogenic service	see Score Bulletin 101
High temperature service	see Score Bulletin 102
Reduced port applications	see Score Bulletin 103
Reduced pressure classes (EG/CL900x300, CL900x600)	see Score Bulletin 104
Steam jacketed body, steam traced shaft or disc.....	see Score Bulletin 105
Standard gear operator dimensions and data	see Score Bulletin 106
Live loaded packing/Fugitive emission control	see Score Bulletin 107
Special Bearing Designs - Seal, purge, and lubrication	see Score Bulletin 108
Blow out proof design per API 609 - 5 th Edition	see Score Bulletin 109
Block and bleed service.....	see Score Bulletin 110

Score-TRICENTRIC® High Performance Butterfly Valves

A primary consideration in the selection of high performance valves is the ability to provide tight shutoff. Because of the unique design, Score-TRICENTRIC® valves are able to cover a broad range of applications in nearly every industry. Built for services that demand performance in the chemical processing, petroleum, pulp and paper, refinery, steel and utility industries, Score-TRICENTRIC® as a standard combines performance and dependability. As a precision machined valve, it is able to provide positive shutoff in vacuum services and pressures to 1480 psi (100 BAR). The patented sealing system has been the subject of extensive testing under carefully controlled conditions in our testing lab and at independent labs.*

* For copies of test reports, contact SCORE's Sales Department.

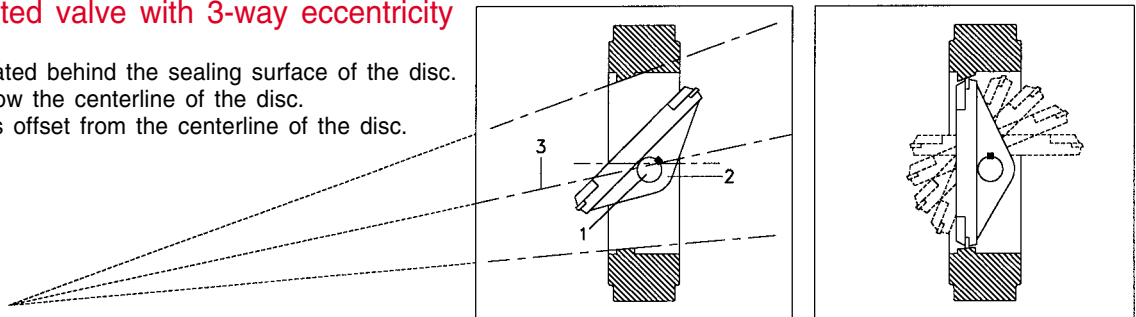
Off-the shelf features that mean reliable service . . .

1. A metal to metal sealing system so unique it's patented.
2. Standard valve is of API 607 fire tested design and constructed of NACE MR0175 compliant materials.
3. Seal stack is stainless steel laminated with non-asbestos gasketing material in disc.
4. The shaft is keyed to the disc and operator for improved operational reliability.
5. Annular key is connected to the shaft and locked in place, preventing stem blowout.
6. Torque seated, self compensating for temperature variances and no chance of override no matter how fast the closure rate.
7. Score-TRICENTRIC® geometry minimizes seat wear by eliminating interference.
8. Lugged, plain wafer and double flanged styles sizes 3" - 60" ANSI Class 150, 300 & 600. 80 - 1500 mm, 16 - 100 BAR. Larger sizes and pressures as noted or per applications.
9. Excellent flow, throttling and shut off characteristics, covering a wide range of applications, cryogenic to high temperature.
10. Meets API-609, MSS-SP-68 and ISO 5752 face to face dimensions.
11. Score-TRICENTRIC® valves are designed for bi-directional service at full body rating.
12. Shell tested to ANSI, MSS & API standards. Seat leakage tested to: API 598 zero leakage, ANSI/FCI 70-2, API 6D.
13. Efficient operation with worm gear, electric, pneumatic or hydraulic actuators.
14. Gasket surface is uninterrupted by seat/seal retainer bolt holes.
15. Canadian Boiler Safety Association registered valve design CRN 0C0765.2
16. All valves manufactured under an ISO registered quality assurance program.

Score-TRICENTRIC® Sealing System

The only patented valve with 3-way eccentricity

1. The shaft is located behind the sealing surface of the disc.
2. The shaft is below the centerline of the disc.
3. The cone axis is offset from the centerline of the disc.



The Score-TRICENTRIC® Seal

Various disc seals are available for different temperature and service applications for Score-TRICENTRIC® valves. Solid metal seals are often used for temperatures above 950° F and up to 1500° F. Most frequently used is the laminated stainless steel seal, which consists of thin, stainless metal laminations with an intermediate gasketing material. Grafoil or Klingsil C4401 are used for laminating. The laminated seal is secured to the disc with a bolt-on steel clamp ring, and is easily accessible for replacement, if required. The Grafoil laminated seal stack is suitable for temperatures of -40° F and up to 1200° F (depending on application). Klingsil C4401 laminated seal stacks are also available, when required, by application.

The ultimate benefit of the Score-TRICENTRIC® seal is a tight shut-off. The Score-TRICENTRIC® seal leakage meets or exceeds ANSI FCI-70-2-1991, API 598 or API 6D and the Score-TRICENTRIC® valve is designed for bi-directional tight shut-off.

Under some severe and extreme conditions involving foreign matter in the line the seal stack may become damaged, but will still exhibit a very good sealing result. Unlike rubber-seated valves, any damage to the seal would not tend to worsen and cause the valve to fail completely. Any minor leakage problems can be rectified during the next scheduled shutdown by simply replacing the seal stack. From a maintenance standpoint, the cost of unscheduled shut-downs can be drastically reduced.

These features coupled with its unique sealing system allow for the use of the Score-TRICENTRIC® valve in many varied applications.

The Score-TRICENTRIC® Standard of Quality

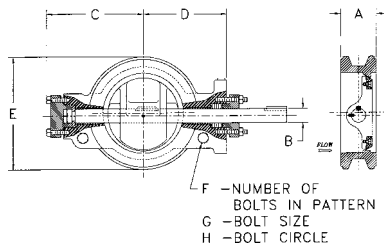
Score Energy Products Inc. manufactures the Score-TRICENTRIC® valve under a quality assurance program registered to the ISO 9000 series. Fire tested and approved to API 607 4th Edition, registered and approved by Boilers Safety Association (CRNOCO765-2).

In addition to standard dimensional inspection, visual inspection and pressure tests, supplementary examinations can be performed by qualified personnel for liquid penetrant and magnetic particle testing. Standard traceability of parts includes pressure retaining components and the valve shaft, with complete traceability available by request.

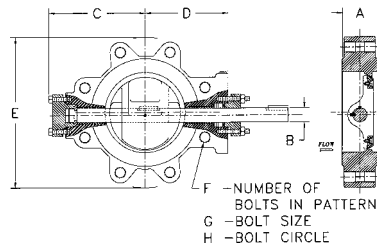
Score-TRICENTRIC®

Metal Seated High Performance Butterfly Valves

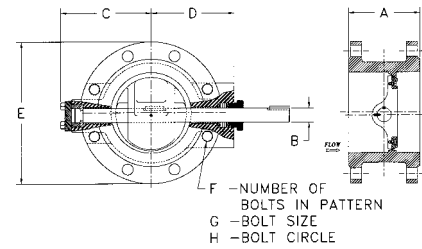
Class 150 - Sizes 3" - 24"



WAFER



LUGGED



DOUBLE FLANGE

DIMENSIONS

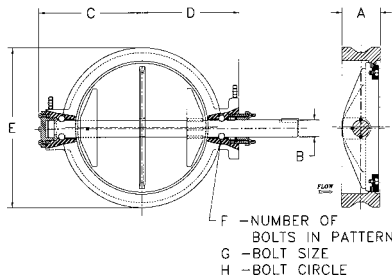
Valve Size	Style	A in.	B in.	C in.	D in.	E in.	F no.	G size.	H in.	Approximate Weight lbs.	Cv
3	Wafer	1 7/8	3/4	4 1/2	4 3/8	7 1/2	4	5/8"-11	6	20	188
	Lugged	1 7/8								20	
	Double Flange	4 1/2								34	
4	Wafer	2 1/8	7/8	5 1/2	5 1/8	6 3/4	8	5/8"-11	7 1/2	24	343
	Lugged	2 1/8				9				31	
	Double Flange	5				9				50	
6	Wafer	2 1/4	1 1/8	6 1/2	6 1/2	8 5/8	8	3/4"- 10	9 1/2	37	930
	Lugged	2 1/4				11				44	
	Double Flange	5 1/2				11				72	
8	Wafer	2 1/2	1 1/4	7 3/4	7 5/8	10 7/8	8	3/4"- 10	11 3/4	56	1,812
	Lugged	2 1/2				13 1/2				68	
	Double Flange	6				13 1/2				111	
10	Wafer	2 13/16	1 1/2	9	9 3/8	13 1/4	12	7/8"- 9	14 1/4	88	2,750
	Lugged	2 13/16				16				107	
	Double Flange	6 1/2				16				161	
12	Wafer	3 3/16	1 5/8	10 1/2	10 1/2	16	12	7/8"- 9	17	135	3,900
	Lugged	3 3/16				19				175	
	Double Flange	7				19				238	
14	Wafer	3 5/8	1 3/4	11 1/2	11 5/16	17 5/8	12	1"- 8	18 3/4	181	5,515
	Lugged	3 5/8				21				235	
	Double Flange	7 1/2				21				315	
16	Wafer	4	2	12 13/16	12 1/2	20 1/8	16	1"- 8	21 1/4	270	8,440
	Lugged	4				23 1/2				330	
	Double Flange	8 1/2				23 1/2				410	
18	Wafer	4 1/2	2 1/4	13 9/16	13 13/16	21 1/2	16	1 1/8"- 8	22 3/4	330	11,285
	Lugged	4 1/2				25				404	
	Double Flange	8 3/4				25				515	
20	Wafer	5	2 1/2	14 7/8	15 3/16	23 3/4	20	1 1/8"- 8	25	450	14,092
	Lugged	5				27 1/2				560	
	Double Flange	9				27 1/2				610	
24	Wafer	6 1/16	3	17 1/2	18 3/16	28 1/8	20	1 1/4"- 8	29 1/2	662	20,587
	Lugged	6 1/16				32				878	
	Double Flange	10 1/2				32				900	

Dimensions & Weights subject to change without notice. Consult Score Energy Products for confirmation.

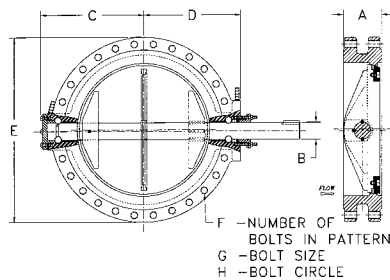
Score-TRICENTRIC®

Metal Seated High Performance Butterfly Valves

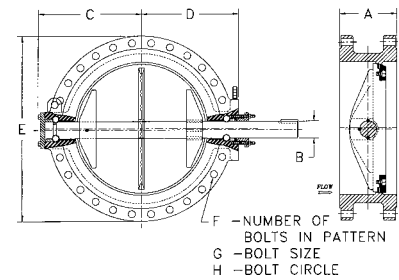
Class 150 - Sizes 30" - 60"



WAFER



LUGGED



DOUBLE FLANGE

DIMENSIONS

Valve Size	Style	A in.	B in.	C in.	D in.	Series A					Series B					Cv
						E in.	F no.	G size.	H in.	Approximate Weight lbs.	E in.	F no.	G size.	H in.	Approximate Weight lbs.	
30	Wafer Lug	6 5/8	3	20 7/8	20 5/16	33 3/4	28	1 1/4	36	1110	32	44	3/4	33 5/16	1000	33,700
	Double ISO	12 1/2				38 3/4				1350	34 15/16				1080	
	Flange Opt.	15				38 3/4				1800	34 15/16				*	
36	Wafer Lug	8	3 1/2	24 7/16	24 7/16	40 1/4	32	1 1/2	42 3/4	1780	38 1/4	44	7/8	39 3/4	1680	50,470
	Double ISO	13				46				2250	41 5/8				1700	
	Flange Opt.	13				46				2550	41 5/8				*	
40	Wafer Lug	8 9/16	3 3/4	27 3/4	27 1/4	44 1/4	36	1 1/2	47 1/4	2250	42 1/2	44	1	44 1/8	2150	64,000
	Double ISO	16 3/16				50 3/4				3200	46 1/4				2600	
	Flange Opt.	15				50 3/4				3500	46 1/4				*	
42	Wafer Lug	8 5/8	4	27 15/16	27 11/16	47 53	36	1 1/2	49 1/2	2900	44 1/2	48	1	46 1/8	2720	71,100
	Double ISO	16 3/16				53				3600	48 1/4				2950	
	Flange Opt.	15				53				3900	48 1/4				*	
46	Wafer Lug	10	4 3/4	31 5/16	32	51	40	1 1/2	53 3/4	3300	48 5/8	40	1 1/8	50 9/16	3200	87,300
	Double ISO	18 9/16				57 1/4				4550	52 13/16				3800	
	Flange Opt.	15				57 1/4				4700	52 13/16				*	
48	Wafer Lug	9 5/8	4 1/2	31 1/4	31 1/8	53 1/2	44	1 1/2	56	3900	50 3/4	44	1 1/8	52 9/16	3700	95,740
	Double ISO	18 9/16				59 1/2				5000	54 13/16				4250	
	Flange Opt.	15				59 1/2				5200	54 13/16				*	
54	Wafer Lug	12	4 1/4	35 5/8	36 1/2	59 1/2	44	1 3/4	62 3/4	5500	56 3/4	56	1 1/8	58 3/4	4900	120,750
	Double ISO	20 3/4				66 1/4				7000	61				5800	
	Flange Opt.	15				66 1/4				6500	61				*	
60	Wafer Lug	13 1/8	6	42 3/8	41 5/8	66	52	1 3/4	69 1/4	7100	63	52	1 1/4	65 7/16	6400	147,000
	Double ISO	21				73				9200	67 15/16				7600	
	Flange Opt.	15				73				8000	67 15/16				*	

ISO = represents ISO 5752 short face-to-face

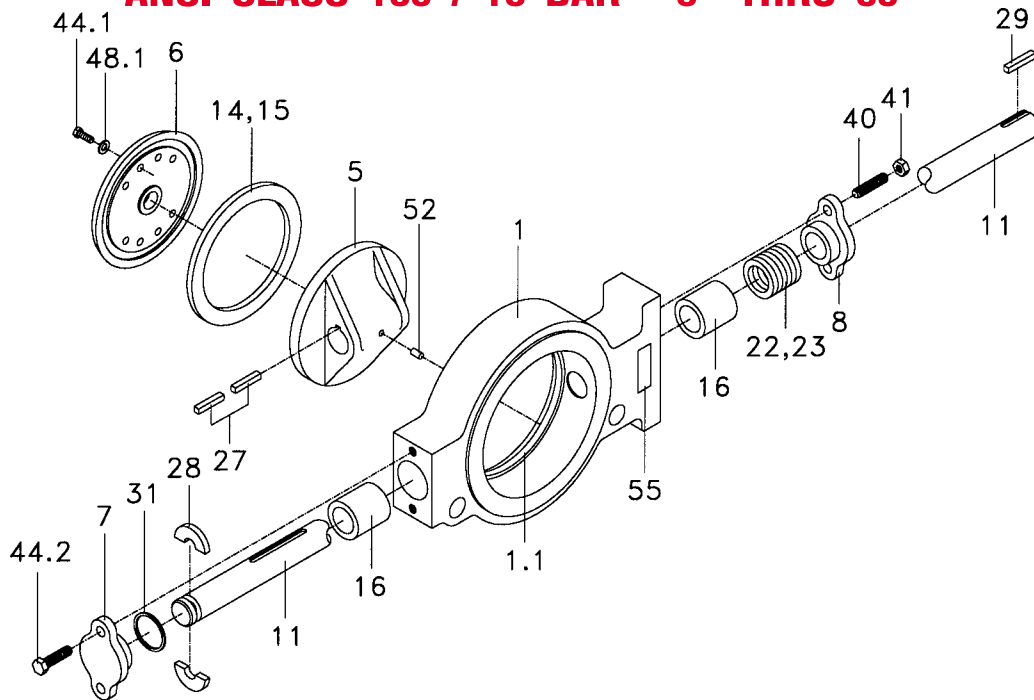
Opt = represents Manufacturers optional face-to-face

*Consult Score Energy Products Inc.

Dimensions & Weights subject to change without notice. Consult Score Energy Products for confirmation.

Plain Wafer, Lugged Wafer and Double Flanged Standard Materials of Construction

ANSI CLASS 150 / 16 BAR - 3" THRU 60"



Item #	Description	Carbon Steel	316 Stainless Steel	Item #	Description	Carbon Steel	316 Stainless Steel
1	Body	Carbon Steel/A216 GR WCB with Integral Seat	316 SST/A351 GR CF8M with Integral Seat	23	Braided End Ring	John Crane 387-I	John Crane 387-I
1.1	Seat	Integral w/body, w/316 overlay	Integral w/body	27	Disc Key	316 SST	316 SST
5	Disc	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	28	Annular Key	A312 TP 316/Nitronic 60	A312 TP 316/Nitronic 60
6	Clamp Ring	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	29	Actuator Key	C1045	C1045
7	Cover Plate	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	31	Metal O'Ring/Flex Gasket	Inconel 600 w/silver plate/316 SST w/Grafoil	Inconel 600 w/silver plate/316 SST w/Grafoil
8	Packing Gland	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	40	Stud	316 SST	316 SST
11	Shaft	17-4PH Double H1150 A564 T 630	17-4PH Double H1150 A564 T 630	41	Hex Nut	316 SST	316 SST
14	Seal Stack	316 SST/Grafoil	316 SST/Grafoil	44.1	Disc Hex Head Cap Screw	316 SST	316 SST
15	Bottom Gasket	Grafoil	Grafoil	44.2	Cover Hex Head Cap Screw	B8M	B8M
16	Bearing	Carbon	Carbon	48.1	Disc Lock Washer	316 SST	316 SST
22	Packing Grafoil	John Crane 235/Grafoil	John Crane 235/Grafoil	52	Pin	316 SST	316 SST
				55	Serial Plate	304 SST	304 SST

Note:

Please contact Score Energy Products Inc. for the many optional materials that are available to meet your specific application.

Design Characteristics - Class 150

PRESSURE/TEMPERATURE RATING		
Maximum Temperature Of	Working Pressure, psig	
	Carbon Steel	316SS
-20 to 100	285	275
200	260	235
300	230	215
400	200	195
500	170	170
600	140	140
650	125	125
700	110	110
750	95	95
800	80	80
850	Note A	65
900	—	50
950	—	35
1000	—	20

See Note A, B, C

Note:

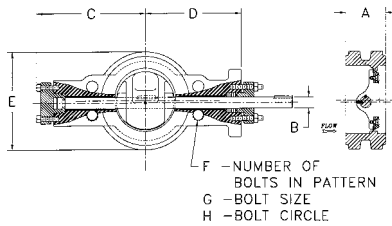
- A. Permissible, but not recommended for prolonged usage above about 800° F.
- B. These values may be interpolated on a linear scale for shut-off pressures between 150 psi and 285 psi.
- C. Values shown are for preferred direction of shut-off under static differential pressure conditions

VALVE SEATING/UNSEATING TORQUES		
Valve Size	Half-Rated at 150 psi	Full-Rated at 285 psi
	in.-lb.	in.-lb.
3	812	1540
4	1165	2210
6	2209	4190
8	3144	5965
10	4585	8700
12	9434	17900
14	11753	22300
16	14809	28100
18	19773	37520
20	25797	48950
24	28037	53200
30	70000	112000
36	100000	160000
40	122000	214000
42	135000	220000
46	173000	303000
48	182000	320000
54	193000	—
60	320000	—

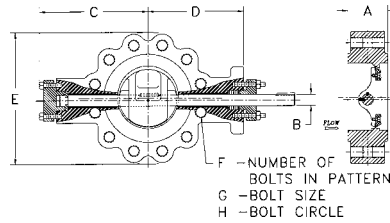
Score-TRICENTRIC®

Metal Seated High Performance Butterfly Valves

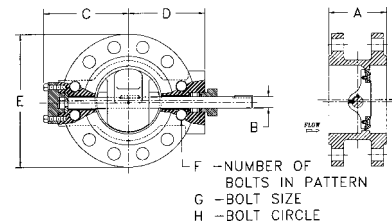
Class 300 - Sizes 3" - 24"



WAFER



LUGGED



DOUBLE FLANGE

DIMENSIONS

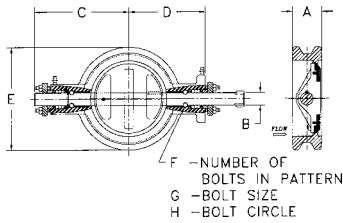
Valve Size	Style	A in.	B in.	C in.	D in.	E in.	F no.	G size.	H in.	Approximate Weight lbs.	Cv
3	Wafer	1 7/8		6 3/4	6 3/8	5 3/4	8	3/4" - 10	6 5/8	30	188
	Lugged	1 7/8	3/4	6 3/4	6 3/8	8 1/8				34	
	Double Flange	4 1/2		5	5	8 1/8				65	
4	Wafer	2 1/8		7 7/8	7 1/4	7	8	3/4" - 10	7 7/8	40	343
	Lugged	2 1/8	7/8	7 7/8	7 1/4	9 3/8				47	
	Double Flange	5		5 7/8	5 5/8	9 3/8				85	
6	Wafer	2 5/16		9 3/16	8 3/4	9 3/4	12	3/4" - 10	10 5/8	62	868
	Lugged	2 5/16	1 1/4	9 3/16	8 3/4	12 1/8				76	
	Double Flange	5 1/2		7 1/8	7 1/8	12 1/8				120	
8	Wafer	2 7/8		10	10	12	12	7/8" - 9	13	108	1,678
	Lugged	2 7/8	1 1/2	10	10	14 3/4				133	
	Double Flange	6		8 9/16	8 7/8	14 3/4				186	
10	Wafer	3 1/4		11 5/8	11 1/4	14 1/8	16	1" - 8	15 1/4	151	2,500
	Lugged	3 1/4	1 5/8	11 5/8	11 1/4	17 1/4				193	
	Double Flange	6 1/2		9 1/8	9 3/4	17 1/4				260	
12	Wafer	3 5/8		12 1/8	11 9/16	16 1/2	16	1 1/8" - 8	17 3/4	240	3,510
	Lugged	3 5/8	1 3/4	12 1/8	11 9/16	20				258	
	Double Flange	7		11 5/16	11 1/16	20				375	
14	Wafer	4 5/8		13 5/8	14 3/16	18 7/8	20	1 1/8" - 8	20 1/4	360	4,942
	Lugged	4 5/8	2 1/4	13 5/8	14 3/16	23				456	
	Double Flange	7 1/2		12 7/8	13 9/16	23				600	
16	Wafer	5 1/4		14 13/16	15 1/2	21	20	1 1/4" - 8	22 1/2	420	7,596
	Lugged	5 1/4	2 1/2	14 13/16	15 1/2	25 1/4				610	
	Double Flange	8 1/2		14 1/16	15	25 1/4				770	
18	Wafer	5 7/8		16 5/8	17 3/8	23 1/8	24	1 1/4" - 8	24 3/4	556	10,394
	Lugged	5 7/8	2 3/4	16 5/8	17 3/8	27 3/8				900	
	Double Flange	8 3/4		15 1/4	16 3/8	27 3/8				1000	
20	Wafer	6 1/4		17 3/16	17 5/8	25 1/2	24	1 1/4" - 8	27	700	12,965
	Lugged	6 1/4	3	17 3/16	17 5/8	30				1032	
	Double Flange	9		16 3/4	17 3/8	30				1175	
24	Wafer	7 1/8		19 15/16	21 3/8	30 1/4	24	1 1/2" - 8	32	1000	18,962
	Lugged	7 1/8	3 1/2	19 15/16	21 3/8	36				1650	
	Double Flange	10 1/2		19 11/16	21 1/8	36				1775	

Dimensions & Weights subject to change without notice. Consult Score Energy Products for confirmation

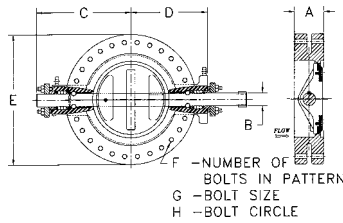
Score-TRICENTRIC®

Metal Seated High Performance Butterfly Valves

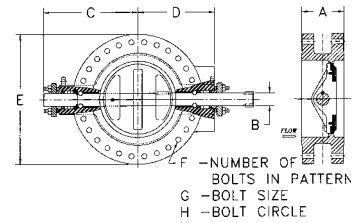
Class 300 - Sizes 30" - 42"



WAFER



LUGGED



DOUBLE FLANGE

DIMENSIONS

Valve Size	Style		A in.	B in.	C in.	D in.	ASME B16.47 Series A					ASME B16.47 Series B					Cv
							E in.	F no.	G size.	H in.	Approximate Weight lbs.	E in.	F no.	G size.	H in.	Approximate Weight lbs.	
30	Wafer		10	4	29 ¹³ / ₁₆	24 ¹³ / ₁₆	33 ³ / ₄	28	1 ³ / ₄	39 ¹ / ₄	1800	33 ¹ / ₄	36	1 ³ / ₈	36 ¹ / ₄	*	29,600
	Lugged						43				2950	39				*	
	Double Flange		12 ¹ / ₂				43				3150	39				*	
36	Wafer		12	5	35 ⁷ / ₁₆	29 ⁷ / ₁₆	40 ¹ / ₄	32	2	46	3150	39 ³ / ₄	32	1 ⁵ / ₈	42 ⁷ / ₈	*	42,700
	Lugged						50				4750	46 ¹ / ₈				*	
	Double Flange		13				50				4900	46 ¹ / ₈				*	
42	Wafer		12 ³ / ₄	5	37 ¹³ / ₁₆	31 ¹³ / ₁₆	44 ³ / ₄	32	1 ⁵ / ₈	47 ¹ / ₂	4150	46	36	1 ³ / ₄	49	*	58,100
	Lugged						50 ³ / ₄				5350	52 ¹ / ₂				*	
	Double Flange	ISO	16 ³ / ₁₆				50 ³ / ₄				5600	52 ¹ / ₂				*	
		OPT	14 ³ / ₄														

ISO = represents ISO 5752 short face-to-face

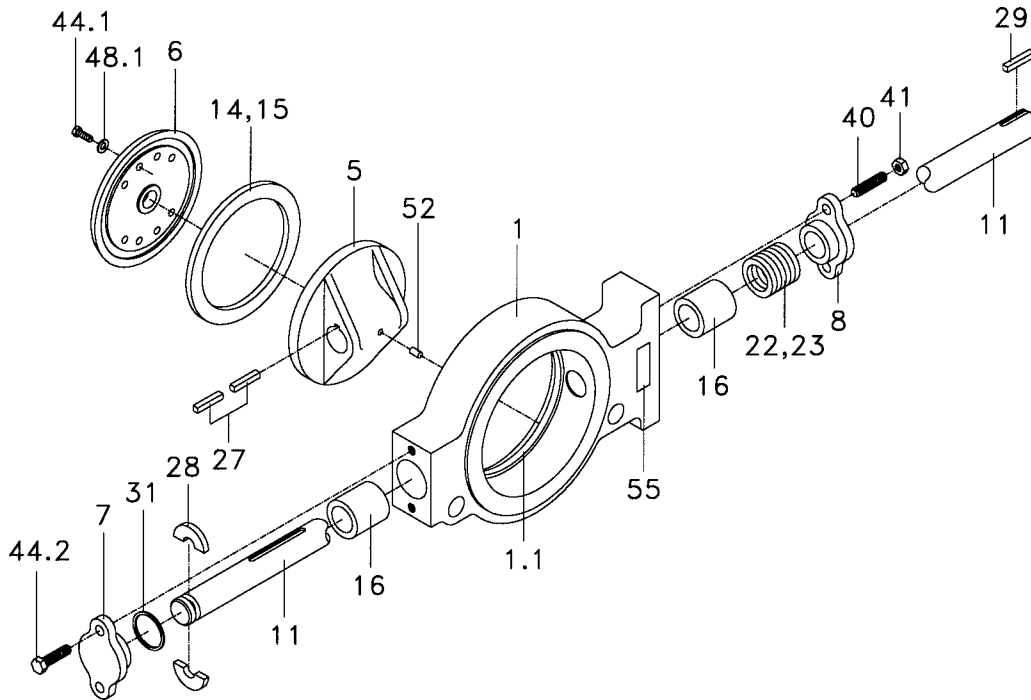
Opt = represents Manufacturers optional face-to-face

* Consult Score Energy Products Inc.

Dimensions & Weights subject to change without notice. Consult Score Energy Products for confirmation

Plain Wafer, Lugged Wafer and Double Flanged Standard Materials of Construction

ANSI CLASS 300 / 40 BAR - 3" THRU 24"

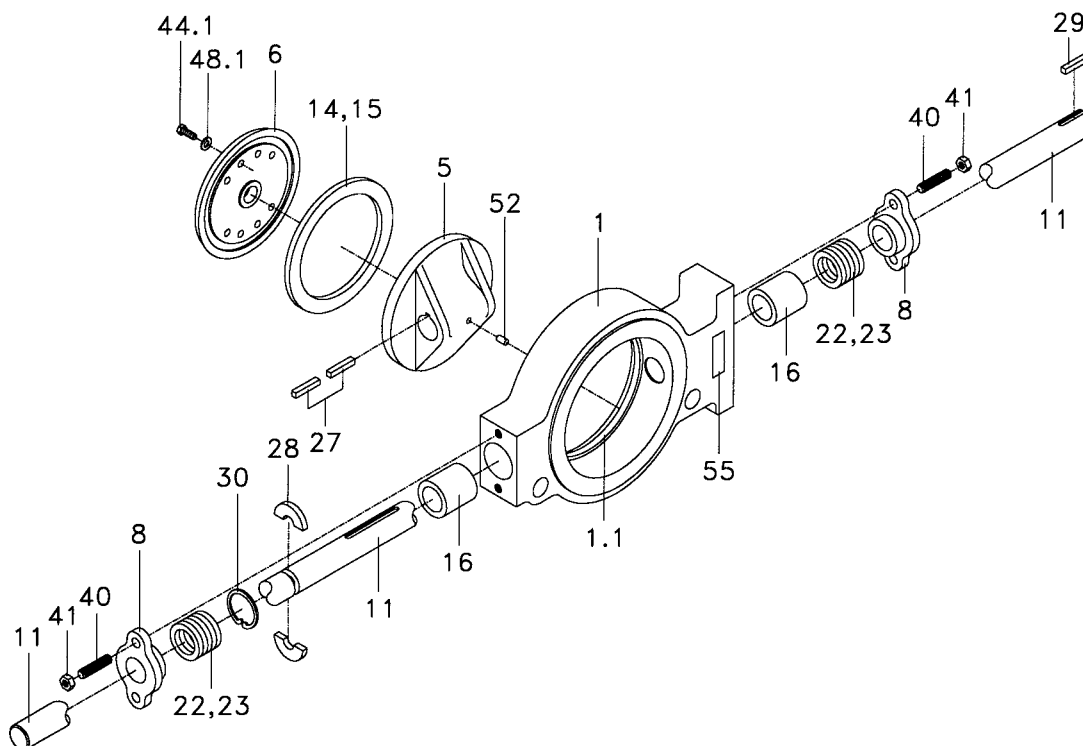


Item #	Description	Carbon Steel	316 Stainless Steel	Item #	Description	Carbon Steel	316 Stainless Steel
1	Body	Carbon Steel/A216 GR WCB with Integral Seat	316 SST/A351 GR CF8M with Integral Seat	23	Braided End Ring	John Crane 387-I	John Crane 387-I
1.1	Seat	Integral w/body, w/316 overlay	Integral w/body	27	Disc Key	316 SST	316 SST
5	Disc	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	28	Annular Key	316 SST/Nitronic 60	316 SST/Nitronic 60
6	Clamp Ring	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	29	Actuator Key	C1045	C1045
7	Cover Plate	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	31	Metal O'Ring/Flex Gasket	Inconel 600 w/silver plate/316 SST w/Grafoil	Inconel 600 w/silver plate/316 SST w/Grafoil
8	Packing Gland	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	40	Stud	316 SST	316 SST
11	Shaft	17-4PH Double H1150 A564 T 630	17-4PH Double H1150 A564 T 630	41	Hex Nut	316 SST	316 SST
14	Seal Stack	316 SST/Grafoil	316 SST/Grafoil	44.1	Disc Hex Head Cap Screw	316 SST	316 SST
15	Bottom Gasket	Grafoil	Grafoil	44.2	Cover Hex Head Cap Screw	B8M	B8M
16	Bearing	Nitronic 60	Nitronic 60	48.1	Disc Lock Washer	316 SST	316 SST
22	Packing Grafoil	John Crane 235/Grafoil	John Crane 235/Grafoil	52	Pin	316 SST	316 SST
				55	Serial Plate	304 SST	304 SST

Note: Please contact Score Energy Products Inc. for the many optional materials that are available to meet your specific application.

Plain Wafer, Lugged Wafer and Double Flanged Standard Materials of Construction

ANSI CLASS 300 / 40 BAR - 30" THRU 42"



Item #	Description	Carbon Steel	316 Stainless Steel	Item #	Description	Carbon Steel	316 Stainless Steel
1	Body	Carbon Steel/A216 GR WCB with Integral Seat	316 SST/A351 GR CF8M with Integral Seat	23	Braided End Ring	John Crane 387-I	John Crane 387-I
1.1	Seat	Integral w/body, w/316 overlay	Integral w/body	27	Disc Key	316 SST	316 SST
5	Disc	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	28	Annular Key	Nitronic 60	Nitronic 60
6	Clamp Ring	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	29	Actuator Key	C1045	C1045
8	Packing Gland	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	30	Retaining Ring	Alloy Steel	Stainless Steel
11	Shaft	17-4PH Double H1150 A564 T 630	17-4PH Double H1150 A564 T 630	40	Stud	316 SST	316 SST
14	Seal Stack	316 SST/Grafoil	316 SST/Grafoil	41	Hex Nut	316 SST	316 SST
15	Bottom Gasket	Grafoil	Grafoil	44.1	Disc Hex Head Cap Screw	316 SST	316 SST
16	Bearing	Nitronic 60	Nitronic 60	48.1	Disc Lock Washer	316 SST	316 SST
22	Packing Grafoil	John Crane 235/Grafoil	John Crane 235/Grafoil	52	Pin	316 SST	316 SST
				55	Serial Plate	304 SST	304 SST

Note: Please contact Score Energy Products Inc. for the many optional materials that are available to meet your specific application.

Design Characteristics - Class 300

PRESSURE/TEMPERATURE RATING		
Maximum Temperature Of	Working Pressure, psig	
	Carbon Steel	316SS
-20 to 100	740	720
200	675	620
300	655	560
400	635	515
500	600	480
600	550	450
650	535	445
700	535	430
750	505	425
800	410	420
850	Note A	420
900	—	415
950	—	385
1000	—	350
1050	—	345
1100	—	305
1150	—	235
1200	—	185
1250	—	145
1300	—	115
1350	—	95
1400	—	75
1450	—	60
1500	—	40

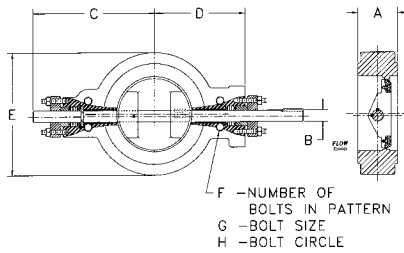
VALVE SEATING/UNSEATING TORQUES		
Valve Size	Half-Rated at 370 psi	Full-Rated at 740 psi
	in.-lb.	in.-lb.
3	1200	2400
4	1750	3500
6	3650	7300
8	6650	13300
10	8350	16700
12	11100	22200
14	18400	36800
16	27750	55500
18	34800	69600
20	45850	91700
24	77705	155410
30	146500	293000
36	234000	468000
42	355000	710000

See Note A, B, C

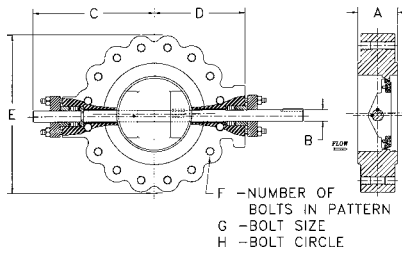
Note:

- A. Permissible, but not recommended for prolonged usage above about 800° F.
- B. These values may be interpolated on a linear scale for shut-off pressures between 370 psi and 740 psi.
- C. Values shown are for preferred direction of shut-off under static differential pressure conditions

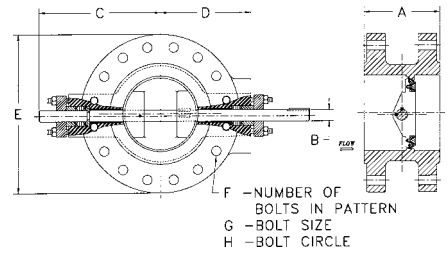
Score-TRICENTRIC®
Metal Seated High Performance Butterfly Valves
Class 600 - Sizes 6"-24"



WAFER



LUGGED



DOUBLE FLANGE

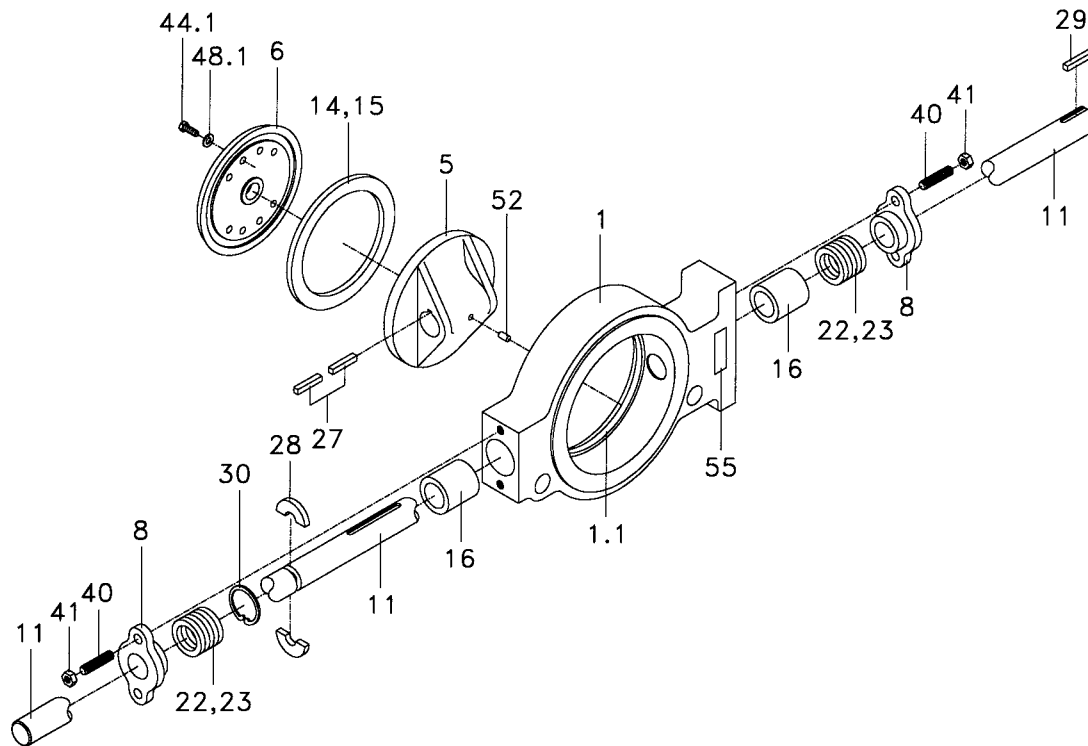
DIMENSIONS

Valve Size	Style	A in.	B in.	C in.	D in.	E in.	F no.	G size.	H in.	Approximate Weight lbs.	Cv
6	Wafer	3 ⁹ / ₃₂	1½	11 ³ / ₁₆	8 ⁵ / ₈	10	12	1"- 8	11½	100	744
	Lugged	3 ⁹ / ₃₂				14				124	
	Double Flange	8 ⁵ / ₁₆				14				150	
8	Wafer	4	1 ⁷ / ₈	12 ³ / ₈	9¼	12 ½	12	1 ¹ / ₈ "- 8	13¾	154	1,450
	Lugged	4				16½				208	
	Double Flange	9 ¹ / ₁₆				16½				250	
10	Wafer	4 ⁵ / ₈	2 ¹ / ₈	14 ¹ / ₈	11½	15 ½	16	1 ¹ / ₄ "- 8	17	226	2,125
	Lugged	4 ⁵ / ₈				20				311	
	Double Flange	9 ⁷ / ₈				20				340	
12	Wafer	6½	2¾	15 ¹¹ / ₁₆	12 ¹³ / ₁₆	17 ¾	20	1 ¹ / ₄ "- 8	19¼	328	2,730
	Lugged	6½				22				443	
	Double Flange	10 ⁵ / ₈				22				550	
14	Wafer	6 ⁷ / ₈	3	16 ⁵ / ₈	13¾	19 ¹ / ₈	20	1 ³ / ₈ "- 8	20¾	535	4,217
	Lugged	6 ⁷ / ₈				23¾				735	
	Double Flange	11 ⁷ / ₁₆				23¾				750	
16	Wafer	7	3 ³ / ₈	17 ⁷ / ₈	14 ⁵ / ₈	22	20	1½"- 8	23¾	700	6,487
	Lugged	7				27				885	
	Double Flange	12¼				27				950	
18	Wafer	7 ⁷ / ₈	3¼	20 ⁷ / ₁₆	17 ¹ / ₁₆	23 ⁷ / ₈	20	1 ⁵ / ₈ "- 8	25¾	950	8,874
	Lugged	7 ⁷ / ₈				29¼				1268	
	Double Flange	13				29¼				1300	
20	Wafer	8½	3½	21 ⁷ / ₈	18 ³ / ₈	26½	24	1 ⁵ / ₈ "- 8	28½	1040	11,071
	Lugged	8½				32				1560	
	Double Flange	13 ¹³ / ₁₆				32				1640	
24	Wafer	9 ¹ / ₈	4	23 ³ / ₈	20 ¹ / ₈	30¾	24	1 ⁷ / ₈ "- 8	33	1820	16,188
	Lugged	9 ¹ / ₈				37				2340	
	Double Flange	15 ³ / ₈				37				2450	

Dimensions and weights subject to change without notice; consult SCORE Energy Products for confirmation.

Plain Wafer, Lugged Wafer and Double Flanged Standard Materials of Construction

ANSI CLASS 600 / 100 BAR - 6" THRU 24"



Item #	Description	Carbon Steel	316 Stainless Steel	Item #	Description	Carbon Steel	316 Stainless Steel
1	Body	Carbon Steel/A216 GR WCB with Integral Seat	316 SST/A351 GR CF8M with Integral Seat	23	Braided End Ring	John Crane 387-I	John Crane 387-I
1.1	Seat	Integral w/body, w/316 overlay	Integral w/body	27	Disc Key	316 SST	316 SST
5	Disc	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	28	Annular Key	Nitronic 60	Nitronic 60
6	Clamp Ring	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	29	Actuator Key	C1045	C1045
8	Packing Gland	Carbon Steel/A216 GR WCB	316 SST/A351 GR CF8M	30	Retaining Ring	Alloy Steel	Stainless Steel
11	Shaft	17-4PH Double H1150 A564 T 630	17-4PH Double H1150 A564 T 630	40	Stud	316 SST	316 SST
14	Seal Stack	316 SST/Grafoil	316 SST/Grafoil	41	Hex Nut	316 SST	316 SST
15	Bottom Gasket	Grafoil	Grafoil	44.1	Disc Hex Head Cap Screw	316 SST	316 SST
16	Bearing	Nitronic 60	Nitronic 60	48.1	Disc Lock Washer	316 SST	316 SST
22	Packing Grafoil	John Crane 235/Grafoil	John Crane 235/Grafoil	52	Pin	316 SST	316 SST

Note: Please contact Score Energy Products Inc. for the many optional materials that are available to meet your specific application.

Design Characteristics - Class 600

PRESSURE/TEMPERATURE RATING		
Maximum Temperature Of	Working Pressure, psig	
	Carbon Steel	316SS
-20 to 100	1480	1440
200	1350	1240
300	1315	1120
400	1270	1025
500	1200	955
600	1095	900
650	1075	890
700	1065	870
750	1010	855
800	825	845
850	Note A	835
900	—	830
950	—	775
1000	—	700
1050	—	685
1100	—	610
1150	—	475
1200	—	370
1250	—	295
1300	—	235
1350	—	190
1400	—	150
1450	—	115
1500	—	85

VALVE SEATING/UNSEATING TORQUES		
Valve Size	Half-Rated at 740 psi	Full-Rated at 1480 psi
	in.-lb.	in.-lb.
6	13000	26000
8	16000	32000
10	25000	50000
12	52500	105000
14	62500	125000
16	75500	151000
18	93000	186000
20	118000	235000
24	170000	340000

See Note A, B, C

Note:

- A. Permissible, but not recommended for prolonged usage above about 800° F.
- B. These values may be interpolated on a linear scale for shut-off pressures between 740 psi and 1480 psi.
- C. Values shown are for preferred direction of shut-off under static differential pressure conditions.

ANSI and DIN VALVE DATA

Weights (pounds)

Valve Size:

ANSI CLASS/BAR	STYLE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	40"	42"	46"	48"	54"	60"
150/16	Wafer	20	24	37	56	88	135	181	270	330	450	662	1,110	1,780	2,250	2,900	3,300	3,900	5,500	7,100
150/16	Lugged	20	31	44	68	107	175	235	330	404	560	878	1,350	2,250	3,200	3,600	4,550	5,000	7,000	9,200
150/16	Double	34	50	72	111	161	238	315	410	515	610	900	1,800	2,550	3,500	3,900	4,700	5,200	6,500	8,000
300/40	Wafer	30	40	62	108	151	240	410	581	556	800	1,400	1,800	3,150		4,150				
300/40	Lugged	34	47	76	133	193	258	456	680	900	1,032	1,160	2,950	4,750		5,350				
300/40	Double	65	85	120	186	260	375	510	660	860	1,100	1,600	3,150	4,900		5,600				
600/100	Wafer			100	154	226	328	535	700	950	1,040	1,820								
600/100	Lugged			124	208	311	443	735	885	1,268	1,560	2,340								
600/100	Double			150	250	340	550	750	950	1,300	1,640	2,450								

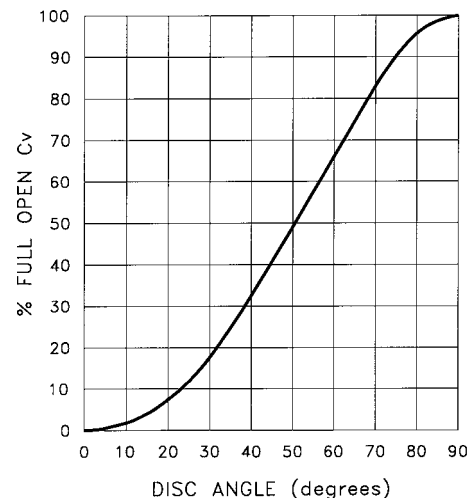
Cv Values

Valve Size:

ANSI CLASS/BAR	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	40"	42"	46"	48"	54"	60"
150/16	188	343	930	1,812	2,750	3,900	5,515	8,440	11,285	14,092	20,587	33,700	50,470	64,000	71,100	87,300	95,740	120,750	147,000
300/40	188	343	868	1,678	2,500	3,510	4,942	7,596	10,394	12,965	18,962	29,600	42,700		58,100				
600/100			744	1,450	2,125	2,730	4,217	6,487	8,874	11,071	16,188								

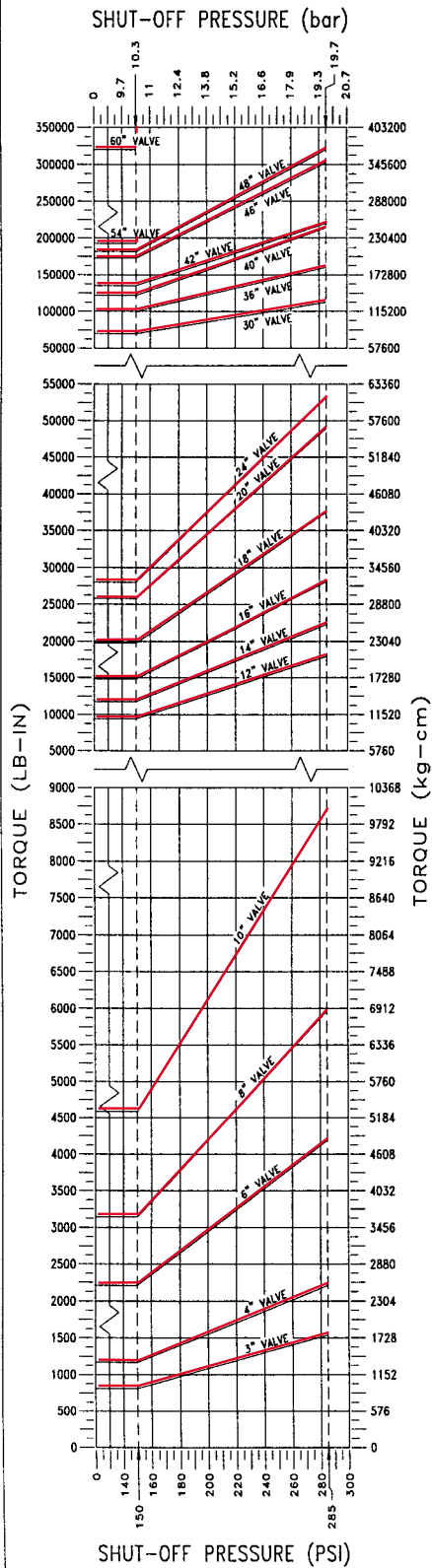
Typical Flow Characteristic

For control applications a wide variety of actuators and accessories can be provided. At moderate pressure drop conditions, turndown approaching 100 to 1 can be achieved because of the camming action of the disc opening. The disc lifts off the seat very quickly and an equal percentage control curve is produced between 15° to 75°.

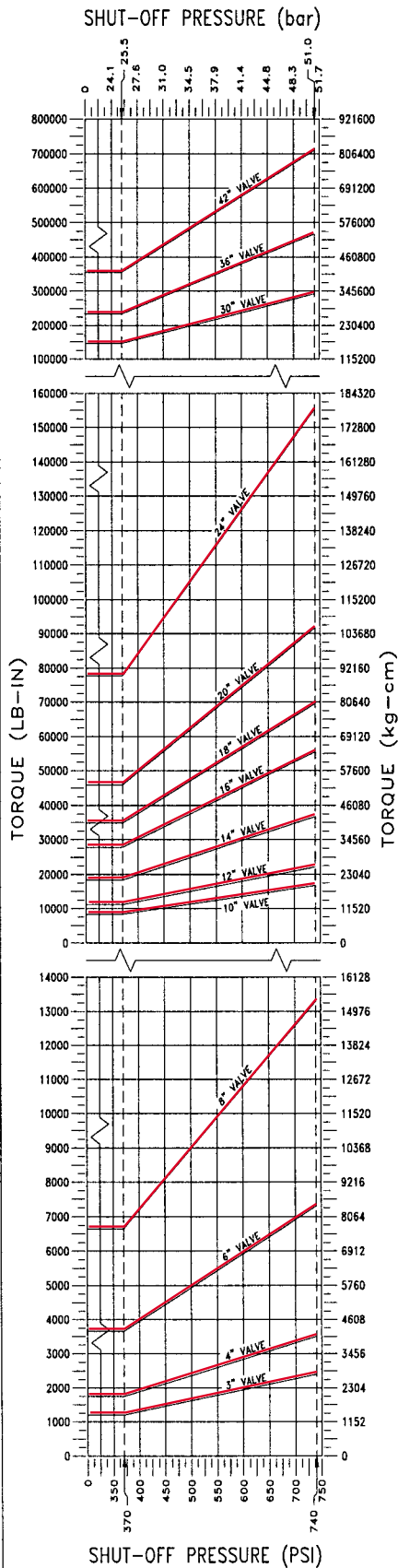


Torque Requirements

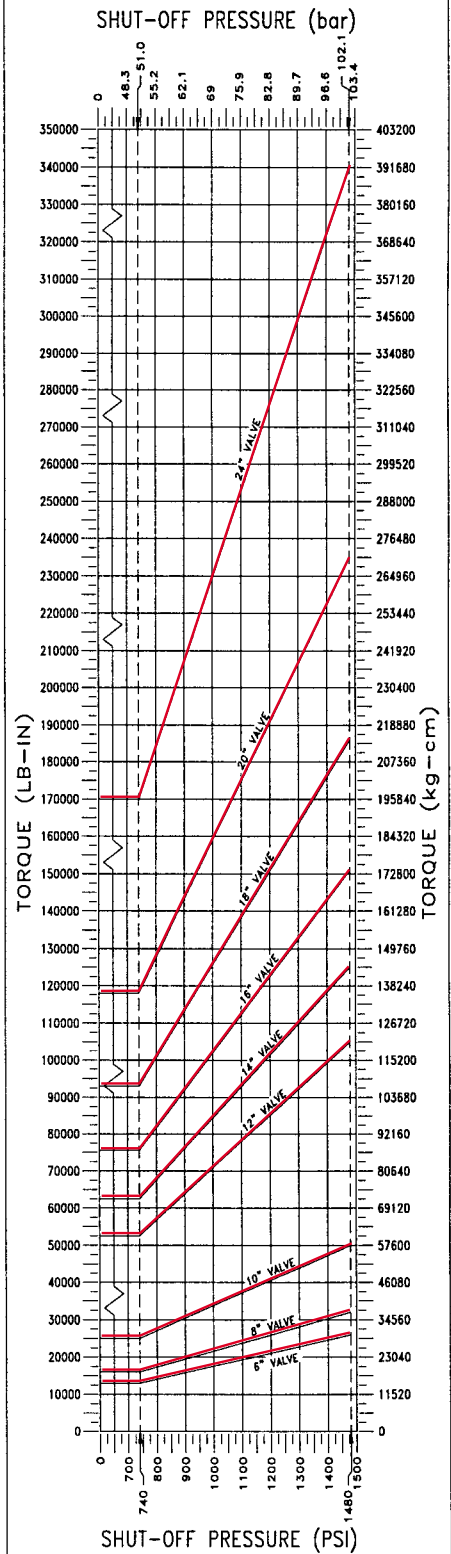
ANSI CLASS 150/16 BAR



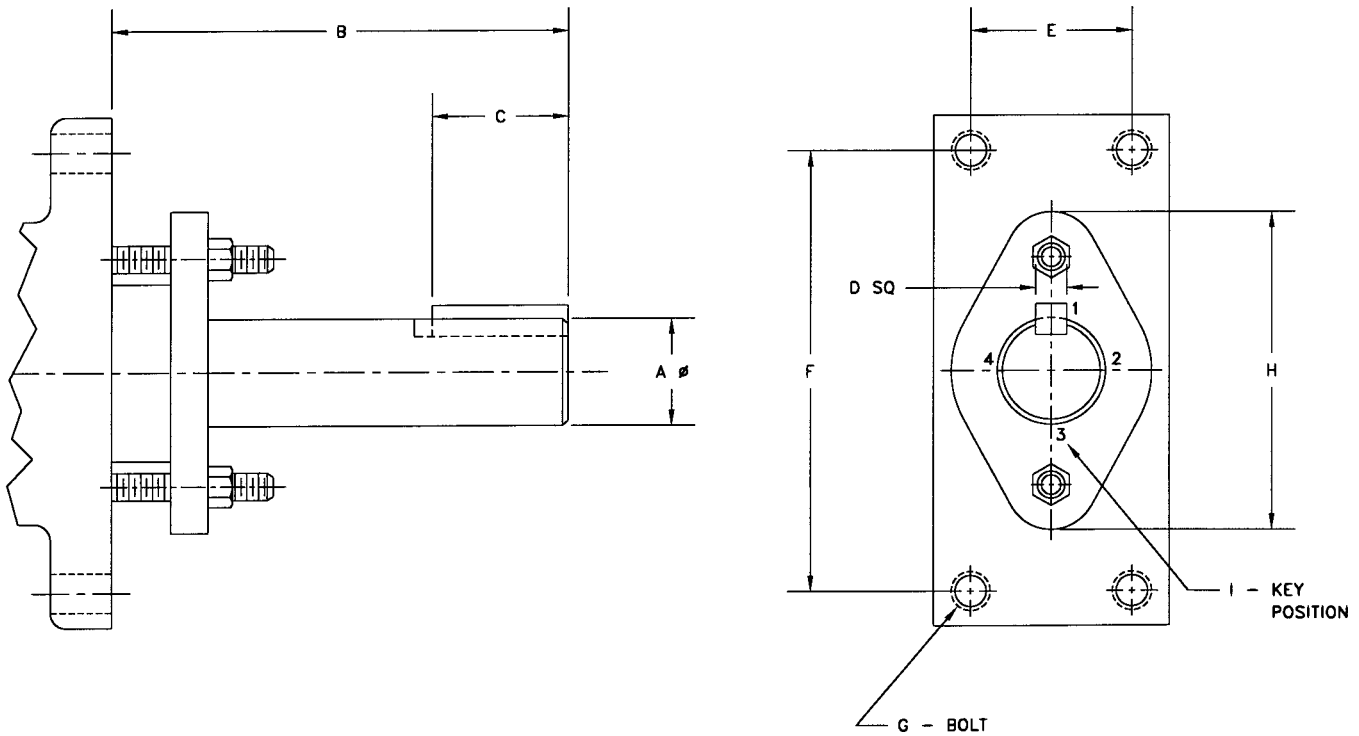
ANSI CLASS 300/40 BAR



ANSI CLASS 600/100 BAR



Actuator Mounting Data



ANSI CLASS 150/16 BAR

		3"	4"	6"	8"	10"	12"	14"	16"	18"
A	Lug/Wafer Double Flange	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$
B	Lug/Wafer Double Flange	$4\frac{1}{2}$	$4\frac{1}{2}$	5	$5\frac{1}{2}$	$5\frac{1}{2}$	$7\frac{3}{8}$	$7\frac{3}{8}$	$7\frac{3}{8}$	$7\frac{3}{8}$
C	Lug/Wafer Double Flange	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{7}{16}$	$1\frac{7}{8}$	$1\frac{13}{16}$	$2\frac{5}{8}$	$2\frac{5}{8}$	$2\frac{1}{2}$	$2\frac{9}{16}$
D	Lug/Wafer Double Flange	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
E	Lug/Wafer	1	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	2	2	2	$3\frac{1}{8}$
	Double Flange	$3\frac{1}{2}$	4	4	4	3	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	4
F	Lug/Wafer	5	5	5	5	5	$6\frac{1}{4}$	$6\frac{1}{4}$	$6\frac{1}{4}$	$6\frac{3}{4}$
	Double Flange	$3\frac{1}{2}$	4	4	4	$4\frac{7}{8}$	$6\frac{1}{4}$	$6\frac{1}{4}$	$6\frac{1}{4}$	$6\frac{3}{4}$
G	Lug/Wafer	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{1}{2}$ " - 13	$\frac{1}{2}$ " - 13	$\frac{1}{2}$ " - 13	$\frac{5}{8}$ " - 11
	Double Flange	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{3}{8}$ " - 16	$\frac{1}{2}$ " - 13	$\frac{1}{2}$ " - 13	$\frac{5}{8}$ " - 11	$\frac{3}{4}$ " - 10
H	Lug/Wafer	$3\frac{23}{32}$	$3\frac{23}{32}$	$3\frac{23}{32}$	$3\frac{23}{32}$	$4\frac{11}{32}$	$4\frac{11}{32}$	$4\frac{11}{32}$	$5\frac{3}{32}$	$5\frac{3}{32}$
I	Lug/Wafer Double Flange	1	1	1	1	1	1	1	1	1

ANSI CLASS 150/16 BAR CONTINUED

		20"	24"	30"	36"	40"	42"	46"	48"	54"	60"
A	Lug/Wafer Double Flange	2½	3	3	3½	3¾	4	4¾	4½	4¼	6
B	Lug/Wafer Double Flange	7¾	7¾	12	12	12	12	12	12	14¼	14½
C	Lug/Wafer Double Flange	2¾	3 ⁵ / ₁₆	4¾	4 ⁵ / ₈	4½	4 ⁷ / ₈	5	5¾	4½	5 ⁷ / ₁₆
D	Lug/Wafer Double Flange	⅝	¾	¾	⅞	⅞	1	1¼	1	1	1½
E	Lug/Wafer	3⅛	3⅛	3½	4½	4½	4½	4½	4½	6½	7
	Double Flange	4	5	3½	4	4½	4½	4½	4½	6½	7
F	Lug/Wafer	6¾	6¾	11	12¼	14	12¼	12¼	12¼	13¼	15
	Double Flange	6¾	6¾	11	12¼	14	12¼	12¼	12¼	13¼	15
G	Lug/Wafer	⅝" - 11	⅝" - 11	1" - 8	1" - 8	1" - 8	1" - 8	1" - 8	1" - 8	1¼" - 8	1¼" - 8
	Double Flange	¾" - 10	¾" - 10	1" - 8	1" - 8	1" - 8	1" - 8	1" - 8	1" - 8	1¼" - 8	1¼" - 8
H	Lug/Wafer	5 ³ / ₃₂	5 ¹⁵ / ₁₆	6	7	7½	7½	8	8	7¾	10¼
I	Lug/Wafer Double Flange	1	1	1	1	1&4	1	1&3	1	1&3	1&3

ANSI CLASS 300/40 BAR

		3"	4"	6"	8"	10"	12"	14"	16"	18"
A	Lug/Wafer Double Flange	¾	⅞	1¼	1½	1⅝	1¾	2¼	2½	2¾
B	Lug/Wafer Double Flange	5 ⁵ / ₁₆	5 ⁵ / ₁₆	5 ¹¹ / ₁₆	7⅛	7⅛	7⅛	7	7	7
C	Lug/Wafer Double Flange	2 ³ / ₁₆	1 ¹⁵ / ₁₆	2¾	2 ⁹ / ₁₆	2 ¹ / ₁₆	2 ⁵ / ₈	1½	1 ¹¹ / ₁₆	1 ⁹ / ₁₆
D	Lug/Wafer Double Flange	⅜	¼	¼	⅜	⅜	⅜	½	⅝	⅝
E	Lug/Wafer	1	1	1	1¾	2	2	3	3	4
	Double Flange	3¾	4	3¼	4½	4½	3½	5½	5½	5½
F	Lug/Wafer	5	5	5	6¼	6¼	6¼	9¾	9¾	9¾
	Double Flange	3¾	4	5	4½	4½	6¼	9¾	9¾	9¾
G	Lug/Wafer	⅜" - 16	⅜" - 16	⅜" - 16	⅜" - 16	½" - 13	½" - 13	⅝" - 11	⅝" - 11	¾" - 10
	Double Flange	⅜" - 16	⅜" - 16	⅜" - 16	½" - 13	½" - 13	⅝" - 11	⅝" - 11	¾" - 10	⅞" - 9
H	Lug/Wafer Double Flange	4⅛	4⅛	4⅛	5¼	5¼	5¼	6⅞	6⅞	7⅞
I	Lug/Wafer Double Flange	1	1	1	1	1	1	1	1	1

ANSI CLASS 300/40 BAR CONTINUED

		20"	24"	30"	36"	42"
A	Lug/Wafer Double Flange	3	3½	4	5	5
B	Lug/Wafer Double Flange	7	7	12	12	14
C	Lug/Wafer Double Flange	1½	1¾	3⅞	4	5⅛ ₁₆
D	Lug/Wafer Double Flange	¾	⅞	1	1¼	1¼
E	Lug/Wafer	4	4	6	8	8
	Double Flange	5½	6¾	8	8	8
F	Lug/Wafer	9¾	9¾	12	12	12
	Double Flange	9¾	9¾	12	12	12
G	Lug/Wafer	¾" - 10	¾" - 10	1¼" - 8	1⅜" - 8	1⅝" - 8
	Double Flange	⅞" - 9	1" - 8	1¼" - 8	1⅜" - 8	1⅝" - 8
H	Lug/Wafer Double Flange	7⅞	8½	8½	10½	10½
I	Lug/Wafer Double Flange	1	1&3	1&3	1&3	1&3

ANSI CLASS 600/100 BAR

		6"	8"	10"	12"	14"	16"	18"	20"	24"
A	Lug/Wafer	1½	1⅞	2⅞	2¾	3	3⅞	3¼	3½	4
B	Lug/Wafer	7⅛ ₁₆	7⅛ ₁₆	8¼	8⅜ ₃₂	9⅜ ₁₆	10½	10½	10½	10½
C	Lug/Wafer	3⅛ ₁₆	3⅜	2¾	2¼	3⅞	3⅞	5⅜ ₁₆	2¼	3⅝ ₁₆
D	Lug/Wafer	⅜	½	½	⅝	¾	¾	¾	⅞	1
E	Lug/Wafer	2	2	2¾	3⅞	4⅝	4¾	5	5	6
F	Lug/Wafer	6¼	6¼	6	7⅞ ₁₆	7½	9½	11	12	14
G	Lug/Wafer	½" - 13	½" - 13	¾" - 10	¾" - 10	1" - 8	1" - 8	1" - 8	1" - 8	1" - 8
H	Lug/Wafer	4¼	5	5	6½	6¾	6⅝	7	8¼	8⅞
I	Lug/Wafer	1	1	1	1&3	1	1	1	1	1

Consult SCORE Energy Products Inc. for CL600 Double Flange mounting dimensions.

Score-TRICENTRIC® Valve - Material Pressure and Temperature Ratings

Component		Material	Temperature range (°F)	Maximum body pressure rating at 100 °F (psig) CL150 CL300 CL600			Note
BODY & DISC	STANDARD	WCB - ASTM A216 (carbon steel)	-20 to 1000	285	740	1480	(1)
		CF8M - ASTM A351 (316SST)	-425 to 1500	275	720	1440	(3)(4)
	OPTIONAL	LCB - ASTM A352 (carbon steel low temp.)	-50 to 650	265	695	1390	
		LCC - ASTM A352(carbon steel low temp.)	-50 to 650	290	750	1500	
		LC3 - ASTM A352 (carbon steel low temp.)	-150 to 650	290	750	1500	
		WC6 - ASTM A217 (Cr-Mo steel)	-20 to 1050	290	750	1500	(2)(3)
		WC9- ASTM A217 (Cr-Mo steel)	-20 to 1100	290	750	1500	(2)(3)
		CF8 - ASTM A351 (304SST)	-425 to 1500	275	720	1440	(3)(4)
		CF8C - ASTM A35 (347SST)	-325 to 1500	275	720	1440	(3)(4)
		CG8M - ASTM A351 (317 SST)	-425 to 1000	275	720	1440	(3)
		CN7M - ASTM A351 (ALLOY 20)	-325 to 600	230	600	1200	(5)
		CD4MCu - ASTM A351 (Duplex)	-425 to 600	290	750	1500	
		CZ100 - ASTM A494 (Nickel)	-325 to 600	140	360	720	(6)
		CY40 - ASTM A494 (Inconel 600)	-325 to 1200	290	750	1500	(6)(3)
		M30C - ASTM A494 (Monel 400)	-325 to 900	230	600	1200	(6)
		CW12MW - ASTM A494 (Hastelloy C)	-325 to 1000	230	600	1200	(5)
		C95500 - ASTM B148 (Ni-Al-Bz)	-425 to 600	Contact Score Sales Rep.			
		GRADE 3 TITANIUM	-75 to 600	Contact Score Sales Rep.			
SEAT	STANDARD	316L SST overlay on carbon steel	per body material				
		Integral cast on stainless and exotic	per body material				
	OPTIONAL	ALLOY 6	-425 to 1500				
		ALLOY 21	-425 to 800				
		INCOLLOY 825	-20 to 1200				
SHAFT	STANDARD	S17400 (17.4 PH DH1150) - Full Rated	-325 to 850				(7)
	OPTIONAL	316SST- Reduced Rated	-425 to 600				(8) (11)
		ALLOY 20- Reduced Rated	-325 to 800				(8) (11)
		INCONEL 600- Reduced Rated	-325 to 900				(8) (11)
		INCONEL 625- Reduced Rated	-325 to 1200				(8) (11)
		MONEL K500 - Full Rated	-325 to 900				(11)
		INCONEL 718/750 - Full Rated	-20 to 1500				(11)
		Stainless or Exotic equal to body grade	per body material				(8) (11)

Component		Material	Temperature range (°F)	Maximum body pressure rating at 100 °F (psig) CL150 CL300 CL600	Note
SEAL STACK	STANDARD	316SST Laminated w/Grafoil	-400 to 1200		(9)
	OPTIONAL	316SST Laminated w/Klinger C4401	-100 to 750		
		316SST Solid	-400 to 1200		
		316SST Solid w/Stellite overlay	-400 to 1500		
		INCONEL 600 Laminated w/Grafoil	-20 to 1200		(9)
		INCONEL 625 Laminated w/Grafoil	-20 to 1000		
		MONEL 400 Laminated w/Grafoil	-400 to 900		(9)
		MONEL 400 Laminated w/Klinger C4401	-100 to 750		
BEARING	STANDARD	CL150 - Graphite	-400 to 1700		(10)
		CL300 and CL600 - Nitronic 60	-325 to 1500		
	OPTIONAL	Nitronic 60 (CL150)	-325 to 1500		
		Graphite (CL300 and CL600)	-400 to 1700		(10)(8)
		PTFE composition	-425 to 325		(8)
		Stellite #6	-425 to 1500		
		Bronze	-425 to 600		(8)
		Ceramic composition	-20 to 2500		(8)
PACKING	STANDARD	J.C. 387I and Grafoil	-400 to 1200		(9)
	OPTIONAL	PTFE Chevron	-425 to 450		
		PTFE Braided	-425 to 450		

NOTE:

1. Per ASME B16.34 - Permissible but not recommended for prolonged use above 800° F.
2. Per ASME B16.34 - Use normalized and tempered material only.
3. Per ASME B16.34 - Use of a flanged valve in CL150 ANSI above 1000° F not recommended.
4. Per ASME B16.34 - At temperatures over 1000° F, use only when the carbon content is 0.04% or higher.
5. Per ASME B16.34 - Use solution annealed material only.
6. Per ASME B16.34 - Use annealed material only.
7. Long exposure above 600° F may cause embrittlement.
8. Use of this material may result in a reduced differential pressure rating. Contact Score sales representative.
9. Upper temperature limit reduced to 850° F in oxidizing media.
10. Upper temperature limit reduced to 650° F in oxidizing atmosphere.
11. Upper temperature limit is specified as a general guide based on code, specification and minimum torsional seating requirements. Use of material above this limit may violate these requirements. Contact a Score Sales or Engineering representative for specific application material evaluation.

General Corrosion Data

This corrosion table is only intended to give a general indication of how various materials will react when in contact with certain fluids at ambient temperature. The data cannot be absolute because concentration, temperature, pressure and other conditions may alter the suitability of a particular material. There are also economic considerations that may influence material selection. Use this table as a guide only.

A - Minimal corrosion

B - Minor to moderate effect, proceed with caution

C - Unsatisfactory

Al	Aluminum	254 SMO	Includes S31254 (Avesta® 254 SMO) and CK3MCuN
Br	Brass	20	Includes Carpenter 20Cb-3® and CN7M
Steel	Carbon steel, WCB, WCC, LCB, LCC, WC9 and C5	400	Includes Monel® 400, R405, M35-1, K500
Cl	Cast iron	C276	Includes Hastelloy® C276, CW2M, C22 and C4
416 & 440C	Also includes 410, CA15 and CA6NM	B2	Includes Hastelloy® B2 and N7M
17-4	Includes 17-4 PH®, CB7Cu-1 and CB7Cu-2	6	Cobalt-base Stellite® Alloy 6 and CoCr-A
304	Includes 304L, CF3 and CF8	Ti	Titanium
316	Includes 316L, CF3M, CF8M, 317 and CG8M	Zr	Zirconium
Duplex	Includes 2205, CD3MN, Ferralium® 255, CD7MCuN, CD4MCu and others		

FLUID	AL	Br.	Cl & Steel	416 & 440C	17-4 SST	304 SST	316 SST	Duplex SST	254 SMO	Alloy 20	Alloy 400	Alloy C276	Alloy B2	Alloy 6	Ti.	Zr.
Acetaldehyde	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A
Acetic Acid, Air Free	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A
Acetic Acid, Aerated	C	C	C	C	B	B	A	A	A	A	C	A	A	A	A	A
Acetone	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Acetylene	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Alcohols	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Aluminum Sulfate	C	C	C	C	B	A	A	A	A	A	B	A	A	A	A	A
Ammonia	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Chloride	C	C	C	C	C	C	B	A	A	A	B	A	A	B	A	A
Ammonium Hydroxide	A	C	A	A	A	A	A	A	A	A	C	A	A	A	A	B
Ammonium Nitrate	B	C	B	B	A	A	A	A	A	A	C	A	A	A	C	A
Ammonium Phosphate (Mono-Basic)	B	B	C	B	B	A	A	A	A	A	B	A	A	A	A	A
Ammonium Sulfate	C	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A
Ammonium Sulfite	C	C	C	C	A	A	A	A	A	A	C	A	A	A	A	A
Aniline	C	C	C	C	A	A	A	A	A	A	B	A	A	A	A	A
Asphalt	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Beer	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A
Benzene (Benzol)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Benzoic Acid	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Boric Acid	C	B	C	C	A	A	A	A	A	A	B	A	A	A	A	A
Bromine, Dry	C	C	C	C	B	B	B	A	A	A	A	A	A	A	C	C
Bromine, Wet	C	C	C	C	C	C	C	C	C	C	A	A	A	C	C	C
Butane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Calcium Chloride	C	C	B	C	C	B	B	A	A	A	A	A	A	A	A	A
Calcium Hypochlorite	C	C	C	C	C	C	C	A	A	A	C	A	B	B	A	A
Carbon Dioxide, Dry	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Carbon Dioxide, Wet	A	B	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Carbon Disulfide	C	C	A	B	B	A	A	A	A	A	B	A	A	A	A	A
Carbonic Acid	A	B	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Carbon Tetrachloride	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A
Caustic Potash (see Potassium Hydroxide)																
Caustic Soda (see Sodium Hydroxide)																
Chlorine, Dry	C	C	A	C	B	B	B	A	A	A	A	A	A	A	C	A
Chlorine, Wet	C	C	C	C	C	C	C	C	C	C	B	B	B	C	A	A
Chromic Acid	C	C	C	C	C	C	C	B	A	C	C	A	B	C	A	A
Citric Acid	B	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A
Coke Oven Acid	C	B	A	A	A	A	A	A	A	A	B	A	A	A	A	A
Copper Sulfate	C	C	C	C	C	C	B	A	A	A	C	A	A	C	A	A
Cottonseed Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Creosote	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Dowtherm	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ether	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethyl Chloride	C	B	C	C	B	B	B	A	A	A	A	A	A	A	A	A
Ethylene	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethylene Glycol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ferric Chloride	C	C	C	C	C	C	C	C	B	C	C	A	C	C	A	A
Fluorine, Dry	B	B	A	C	B	B	B	A	A	A	A	A	A	A	C	C

FLUID	AL	Br.	Cl & Steel	416 & 440C	17-4 SST	304 SST	316 SST	Duplex SST	254 SM0	Alloy 20	Alloy 400	Alloy C276	Alloy B2	Alloy 6	Ti.	Zr.
Fluorine, Wet	C	C	C	C	C	C	C	C	C	C	B	B	B	C	C	C
Formaldehyde	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Formic Acid	B	C	C	C	C	C	B	A	A	A	C	A	B	B	C	A
Freon, Wet	C	C	B	C	B	B	A	A	A	A	A	A	A	A	A	A
Freon, Dry	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Furfural	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A
Gasoline, Refined	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Glucose	A	A	A	A	A	A	A	C	A	A	A	A	A	A	A	A
Hydrochloric Acid (Aerated)	C	C	C	C	C	C	C	C	C	C	C	B	A	C	C	A
Hydrochloric Acid (Air Free)	C	C	C	C	C	C	C	C	C	C	C	B	A	C	C	A
Hydrofluoric Acid (Aerated)	C	C	C	C	C	C	C	C	C	C	B	B	B	C	C	C
Hydrofluoric Acid (Air Free)	C	C	C	C	C	C	C	C	C	C	A	B	B	C	C	C
Hydrogen	A	A	A	C	B	A	A	A	A	A	A	A	A	A	C	A
Hydrogen Peroxide	A	C	C	C	B	A	A	A	A	A	C	A	C	A	A	A
Hydrogen Sulfide	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A
Iodine	C	C	C	C	A	A	A	A	A	A	C	A	A	A	C	B
Magnesium Hydroxide	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Mercury	C	C	A	A	A	A	A	A	A	A	B	A	A	A	C	A
Methanol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Methyl Ethyl Ketone	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Milk	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A
Natural Gas	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Nitric Acid	C	C	C	C	A	A	A	A	A	A	C	B	C	C	A	A
Oleic Acid	C	C	C	B	B	B	A	A	A	A	A	A	A	A	A	A
Oxalic Acid	C	C	C	C	B	B	B	A	A	A	B	A	A	B	C	A
Oxygen	C	A	C	C	B	B	B	B	B	B	A	B	B	B	C	C
Petroleum Oils, Refined	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Phosphoric Acid (Aerated)	C	C	C	C	B	A	A	A	A	A	C	A	A	A	C	A
Phosphoric Acid (Air Free)	C	C	C	C	B	B	B	A	A	A	B	A	A	B	C	A
Picnic Acid	C	C	C	C	B	B	A	A	A	A	C	A	A	A	A	A
Potash (see Potassium Carbonate)																
Potassium Carbonate	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Chloride	C	C	B	C	C	B	B	A	A	A	A	A	A	A	A	A
Potassium Hydroxide	C	C	B	B	A	A	A	A	A	A	A	A	A	A	A	A
Propane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Rosin	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Silver Nitrate	C	C	C	C	B	A	A	A	A	A	C	A	A	A	A	A
Soda Ash (see Sodium Carbonate)																
Sodium Acetate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Carbonate	C	C	A	B	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Chloride	C	A	C	C	B	B	B	A	A	A	A	A	A	A	A	A
Sodium Chromate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Hydroxide	C	C	A	B	B	B	A	A	A	A	A	A	A	A	A	A
Sodium Hypochlorite	C	C	C	C	C	C	C	C	C	C	C	A	B	C	A	A
Sodium Thiosulfate	C	C	C	C	B	B	A	A	A	A	A	A	A	A	A	A
Stannous Chloride	C	C	C	C	C	C	B	A	A	A	C	A	A	B	A	A
Steam	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Stearic Acid	C	B	B	B	B	A	A	A	A	A	A	A	A	B	A	A
Sulfate Liquor (Black)	C	C	A	C	C	B	A	A	A	A	A	A	A	A	A	A
Sulfur	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sulfur Dioxide, Dry	C	C	C	C	C	C	B	A	A	A	C	A	A	B	A	A
Sulfur Trioxide, Dry	C	C	C	C	C	C	B	A	A	A	B	A	A	B	A	A
Sulfuric Acid (Aerated)	C	C	C	C	C	C	C	A	A	A	C	A	C	B	C	A
Sulfuric Acid (Air Free)	C	C	C	C	C	C	C	A	A	A	B	A	A	B	C	A
Sulfurous Acid	C	C	C	C	C	B	B	A	A	A	C	A	A	B	A	A
Tar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Trichloroethylene	B	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A
Turpentine	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A
Vinegar	B	B	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Water, Boiler feed, Amine Treated	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A
Water, Distilled	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Water, Sea	C	A	C	C	C	C	B	A	A	A	A	A	A	A	A	A
Whiskey and Wines	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A	A
Zinc Chloride	C	C	C	C	C	C	C	B	B	B	A	A	A	B	A	A
Zinc Sulfate	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	A

REQUEST FOR QUOTATION

When requesting a quotation, please fill in the following input form as completely as possible, and submit.



DESIGN SPECIFICATION

DESIGN INPUTS (to be completed by sales/engineering)

General Info:

Sales Order No. _____ Item No. _____ Customer P.O. No. _____ Customer Item/Tag No. _____

Customer Design Specification No. _____ Valve Type: ☐ Butterfly ☐ Other _____

Model No. _____ Quantity _____ Nominal Size _____ Pressure Class _____ Design Code _____

FACE TO FACE: ☐ API 609 CAT. B ☐ ISO 5752 ☐ Other _____

END CONNECTION: ☐ Wafer ☐ Lugged ☐ Flanged ☐ Weld-end - Pipe Schedule _____

FLANGE DRILLING: ☐ ANSI B16.5 ☐ ANSI B16.47 series A ☐ ANSI B16.47 series B ☐ Other _____

Process Info:

Operating Pressure _____ Operating Differential Pressure _____ Operating Temperature _____

Design Pressure: ☐ Full ANSI Rating ☐ Other _____

Design Differential Pressure: ☐ Full ANSI Rating ☐ Other _____

Design Temperature _____ Media _____ Flow Rate _____

Intended Service: ☐ Stop ☐ Control/Throttling ☐ ESDV ☐ Other _____

Materials Info:

BODY MATERIAL: ☐ A216 WCB ☐ A351 CF8M ☐ Other _____

DISC MATERIAL: ☐ A216 WCB ☐ A351 CF8M ☐ Other _____

DISC SEAL MATERIAL: ☐ 316/Klinger ☐ 316/Grafoil ☐ 316/Solid ☐ Other _____

SEAT MATERIAL: ☐ 316L SST ☐ Stellite 21 ☐ Stellite 6 ☐ Other _____

SHAFT MATERIAL: ☐ 17-4 Ph DH1150 (NACE) ☐ 17.4 Ph H1025 ☐ 316 SST ☐ Other _____

BEARING MATERIAL: ☐ Carbon Graphite ☐ Nitronic 60 ☐ Other _____

PACKING MATERIAL: ☐ Graphite ☐ PTFE Chevron ☐ PTFE Braided ☐ Other _____

INTERNAL FASTENERS: ☐ 316 SST ☐ Other _____ EXTERNAL FASTENERS: ☐ B8M CL1 ☐ Other _____

EXTERIOR FINISH: ☐ Primed (WCB only) ☐ A&M Std. Paint (WCB only) ☐ Other _____

SPECIAL CLEANING OR SURFACE PREPARATION: ☐ Degreasing for O2 Service ☐ Other _____

Options Info:

☐ Bearing Protector ☐ Bearing Purge ☐ Steam Jacket - Steam Pressure/Temp. _____

☐ Steam Traced Shaft ☐ Steam Traced Disc - Steam Pressure/Temp. _____

☐ Block and Bleed ☐ High Temperature ☐ Cryogenic Temperature ☐ Double Stuffing Box

☐ Packing Lubrication ☐ Live Loading ☐ Secondary Cover Seal ☐ Other _____

REMARKS: _____

Actuation Info:

ACTUATOR MANUFACTURER: ☐ Bettis ☐ Rotork ☐ Remote ☐ Mastergear ☐ Other _____

ACTUATOR POSITION: ☐ 1 ☐ 2 ☐ 3 ☐ 4

☐ Worm Gear ☐ Handwheel ☐ Chainwheel

☐ Pneumatic Actuator - Air Supply (PSIG). _____ ☐ Double Acting ☐ Spring Return ☐ Fail Last ☐ Fail Open ☐ Fail Closed

☐ Hydraulic Actuator - Hydraulic Pressure (PSIG). _____ ☐ Double Acting ☐ Spring Return ☐ Fail Last ☐ Fail Open ☐ Fail Closed

☐ Electric Actuator - Power Source (Volts). _____ Phase _____ Frequency (Hz) _____

☐ Other Actuator _____

REMARKS: _____

Inspection and Testing Info:

Customer Release Needed: ☐ None ☐ Before Material Purchase ☐ Before Fabrication ☐ Before Shipment

Customer Inspection: ☐ No ☐ Yes - Notice Required _____

NONDESTRUCTIVE EXAMINATION: ☐ MPI ☐ LPI ☐ UT ☐ Radiography

Area: ☐ Casting ☐ Machined Surfaces ☐ Fabrication and Repair Welds ☐ Seat Overlay ☐ Critical Areas

Test Method _____ Acceptance Criteria _____

Score Energy Products, Inc.- VALVE MODEL NUMBERING SYSTEM

VALVE BODY				-	INTERNAL COMPONENTS					-	ADDITIONAL FEATURES	-	OPERATOR
ANSI CLASS	VALVE SIZE	TYPE	MATERIAL		DISC MATERIAL	SEAL STACK LAMINATION MATERIAL	BEARING MATERIAL	SHAFT MATERIAL	PACKING MATERIAL/STYLE		SEE LIST BELOW; SECTION OMITTED IF NO ADDITIONAL FEATURES		OPERATOR

Standard valves: Features noted in bold italic print are standard design. Where the standard design differs between CL150 and CL300, this is noted by 3 asterisks (*) for CL150 and 4 asterisks (****) for CL300/600.**

NOTES

- * - or equivalent
- ** - Score standard
- *** - Score standard for CL150
- **** - Score standard for CL300, CL600

ANSI CLASS (2 digits)

- 15 = 150
- 30 = 300
- 60 = 600
- 31 = 300 x 150
- 61 = 600 x 150
- 63 = 600 x 300
- 96 = 900 x 600
- 93 = 900 x 300
- XX = Other

VALVE SIZE (2 digits)

- Indicates nominal valve size in inches. Reduced port valves indicate size of internals assuming the external dimensions to be one size larger (12 refers to 14 x 12).
- Typical sizes:
- 03 04 06 08 10 12 14 16 18 20 24 30
- 36 42 48 54 60

TYPE (1 digit)

- B = Butt weld (cast only)
- D = Double flange
- L = Lugged wafer
- R = Reduced-port wafer
- S = Reduced-port lug wafer
- T = Reduced-port double flange
- W = Plain wafer
- X = Other

BODY MATERIAL (1 digit)

- A = A216 Gr. WCB* w/ 316L SST seat**
- B = A352 Gr. LCB* w/ 316L SST seat
- C = A351 Gr. CF8M* - integral seat**
- D = A494 Gr. M-30-C Monel* - integral seat
- E = B148 Gr. C95500 Nickel - Aluminum - Bronze* - integral seat
- F = A494 Gr. CW2M Hastelloy C* - integral seat
- G = A351 Gr. CN7M Alloy 20* w/ integral seat
- H = A352 Gr. LCC* w/ 316L SST
- J = Grade 2 Titanium
- K = A216 Gr. WCB* w/ Stellite #21 seat
- L = A352 Gr. LCB* w/ Stellite #21 seat
- M = A351 Gr. CF8M* w/ Stellite #21 seat
- N = Duplex CD3MN
- P = A217 Gr. C5 Chrome- Moly
- S = A217 Gr. WC6 w/ 316L SST seat
- X = material not listed above

DISC (1 digit)

- A = A216 Gr. WCB***
- B = A352 Gr. LCB*
- C = A351 Gr. CF8M***
- D = A494 Gr. M-30-C Monel*
- E = B148 Gr. C95500 Nickel- Aluminum - Bronze*
- F = A494 Gr. CW2M Hastelloy C*
- G = A351 Gr. CN7M Alloy 20*
- H = A352 Gr. LCC*
- J = Grade 2 Titanium*
- N = Duplex CD3MN
- P = A217 Gr. C5 Chrome - Moly
- S = A217 Gr. WC6
- X = Other

SEAL STACK (2 digits)

- First digit – Lamination**
- G = Grafoil laminated****
- K = Klingersil C4401 laminated
- S = Solid
- X = Other lamination
- Second digit – Material**
- 1 = 316 SST****
- 2 = Monel 400
- 3 = Inconel 600
- 4 = Duplex 2205
- X = Other

BEARING (1 digit)

- 1 = Carbon Metcar M10 or Speer Grade H*****
- 2 = Nitronic 60******
- X = Other

SHAFT (1 digit)

- 1 = 17.4 PH DH1150****
- 2 = 17.4 PH H1025 (full-rated CL150, 30"+ valves - non-NACE compliant)
- 3 = 316 SST
- 4 = Inconel 600
- 5 = Monel K500
- 6 = Titanium Grade 5
- 7 = Alloy 20
- 8 = Inconel 625
- 9 = Duplex 2205
- X = Other

PACKING (1 digit)

- 1 = Grafoil (die-formed & Inconel braided combination)****
- 2 = PTFE Teflon Chevron type
- 3 = PTFE Teflon braided
- 4 = Grafoil Low Emission
- X = Other

ADDITIONAL FEATURES (As many digits as required; list as required in alphabetical order)

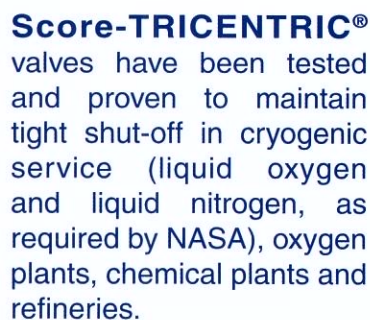
- B = Bearing seals
- C = Cryogenic extension (does NOT include degreasing)
- D = Degreased for oxygen service
- H = Heat extension
- J = Steam jacket
- L = Live loaded packing
- N = NACE MR0103 or 0175 compliant (specify which spec)
- P = Special paint, plating or coating
- S = Secondary cover plate seal (GHE grafoil gasket in addition to metal O-ring)
- T = Steam-traced shaft
- X = Other special feature

OPERATOR (1 digit)

- A = Actuator
- B = Bare stem
- G = Manual gear w/ handwheel

For example, valve with model number 1512WA-AG1111-BLS-B would be a 12" ANSI Class 150 valve with A216 Gr. WCB body and disc, 316SST/Grafoil laminated seal stack, carbon bearings with bearing seals, 17-4 PH DH1150 shaft, grafoil live-loaded packing and a secondary cover plate seal; no gear operator or actuator would be included.

Quality & Performance Tested



Registered and certified by ABSA (Alberta Boilers Safety Association)

- Certificate No. 3514
- Registration No. AQP-5044

FIRE TESTED
Score-TRICENTRIC®
valves meet or exceed
API 607 4th Edition.

QUALITY MANAGEMENT
Registered with Quality Certification Bureau (QCB)

- Registration No. 00-1102
- ISO 9002

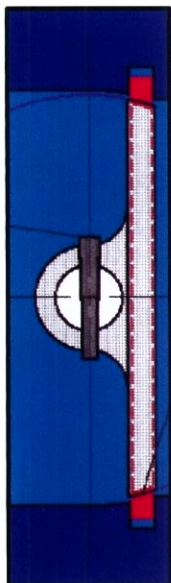


Score-TRICENTRIC® valves have been tested and approved for liquid sulphur, solidified sulphur and sulphuric acid gas services.



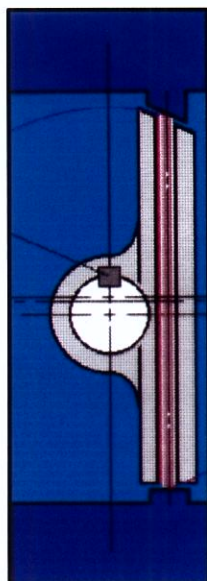
Resilient Seated

Original butterfly valve had shaft penetration through the seal plane. Dowel pin through disc and shaft often leaked. Note the interference between the seal and the disc which is needed to effect a tight seal. This will wear with use and eventually leak.



Resilient Seated

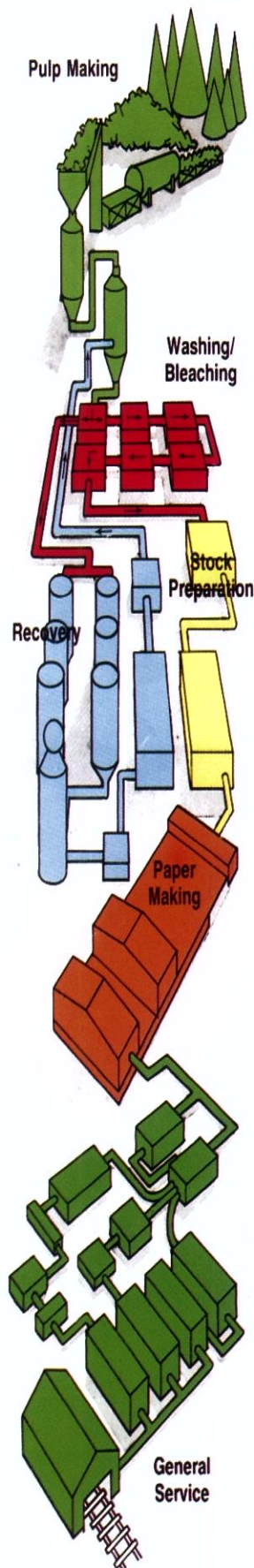
The next step in butterfly valve evolution was to move the shaft from the seal plane. Dowel pin parallel to disc does not leak. Note that this design also relies upon interference for sealing and will also eventually leak.



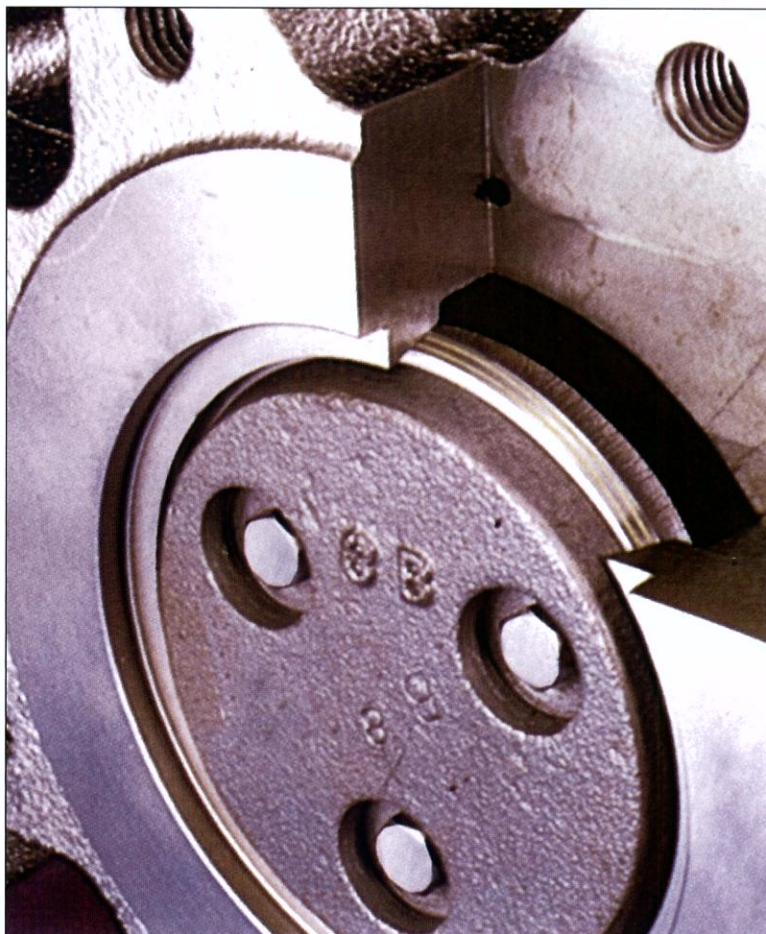
Score-TRICENTRIC® Metal Seal

The triple eccentricity with the metal seal is the final step in the evolution. Square keys are utilized for torque transmission. Since there is no interference between mating parts during closure, seal wear is eliminated and the seal actually becomes tighter with use. Tight shut-off up to 1200°F.

Score-TRICENTRIC® High Performance Pulp and Paper Valves



A primary consideration in the selection of high performance valves is the ability to provide tight shutoff. Because of their unique design, Score TRICENTRIC® valves are able to cover a broad range of applications in nearly every industry. Built for services that demand performance in the chemical processing, petroleum, pulp and paper, refinery, steel and utility industries, the Score TRICENTRIC® valve, as a standard combines performance and dependability. As a precision machined valve, it is able to provide



positive shutoff in vacuum services and pressures to 1440 psi (100 bar). The patented sealing system has been the subject of extensive testing under carefully controlled conditions in our testing lab and at independent labs.

APPLICATIONS				
Recovery	Washing/Bleaching	Stock Preparation	Paper Making	General Service
<ul style="list-style-type: none"> - Black Liquor - Soap - Tall Oil - Evaporator vapor switching valves - Weak & heavy red liquor - Green liquor - Magnesium oxide slurry - Washer valving - Dissolving tank - Causticizers - Blow heat recovery - Soap skimmer - Sulphur dioxide service 	<ul style="list-style-type: none"> - Chlorination process ins. - Chlorine dioxide - Filtrate - Dilution water stock - Dilution liquor - Caustic soda - Oxygen systems - White water lines - Elemental chlorine - Sodium or calcium hypochlorite - Chlorine dioxide - Hydrogen peroxide - Chlorine (wet) - Sulphuric acid 	<ul style="list-style-type: none"> - 7% stock control - Stock shut-off valves - Recirculation valves - Level control - Clay filler - Large water lines - Stock sampling - Dilution controls - Dyes 	<ul style="list-style-type: none"> - Pulp stock control - Dryer steam & condensate - Stock blending & recirculation - Head box (air padding) - Sizing - Coating - Saturated steam - Wash down lines - Vacuum services - Consistency & level controls 	<ul style="list-style-type: none"> - Saturated steam - Water treatment - Black liquor gasses - Boiler water - Mill water - Demineralized water - Digester gas off



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