

# TRICENTRIC®

Triple Offset, Metal Seated, Extended Performance Butterfly Valves



Excellent  
Engineering  
Solutions

**WEIR**  
VALVES & CONTROLS

**WEIR VALVES & CONTROLS**

Weir Valves & Controls brings competitive unity to a group of specialist valve manufacturing companies located across the globe. Combining and maximizing the strategic aims of the member companies, Weir Valves & Controls develops a versatile, comprehensive and proactive relationship with customers, contractors and end users.

A rigorous program of information management ensures each member company is aware of new developments on a worldwide basis. This means that the group is able to take a more anticipatory role in defining the future needs and expectations of the market by fully utilizing the organization’s critical resources to create and add value to its customers while generating a real competitive advantage for Weir Valves & Controls.

Weir Valves & Controls is a leading world renowned OEM of isolation and control valve products for the global Energy sector.

The division continually meets market demands with proven reliability and flexibility by utilizing engineered product configuration systems and a continuous program of IT development in the move towards eBusiness.

With a comprehensive range of engineered valve products, Weir Valves & Controls has developed an extensive global installed base and expertise across a wide range of industry sectors:

- Power Generation
- General Industrial
- Oil & Gas Production
- Refining
- Petrochemical
- Chemical
- Pulp & Paper
- Desalination



WEIR Valves & Controls supplies major valves and flow control equipment to the Power Generation and Process Industries.

Specializing in large, high pressure and special application valves, its products are found in Nuclear Power, Fossil Power, Hydrocarbon Processing, Pulp & Paper and Marine applications. WVC USA holds an ASME 'N' and 'NPT' stamp, an ISO 9001 certificate and is an approved supplier to many large customers.

Meeting the customer specifications is simply the first step in delivering whole lifecycle performance. Weir Valves & Controls can offer ongoing process enhancement, with tailored maintenance, repair and operational support.



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## The Proven Performer

Today's demanding projects require a quality valve that is reliable, cost-effective, true to specifications and most importantly, proven in the field – over a wide range of applications and conditions.

Throughout the world, today's engineers, as well as project and maintenance managers, specify TRICENTRIC® Valves for their Power, Processing, Refinery and most critical applications worldwide.

WEIR Valves & Controls designs, manufactures and services engineered, high-specification valves in accordance with a comprehensive quality assurance program. The design standard is ANSI B16.34 with international and customer standards invoked as required.

### Pulp & Paper Mills

- Isolation and check valves for steam
- Alcohol reduction process applications
- Green, Red and Black liquors
- Oxygen systems
- Lime mud slurries
- Boiler water
- Stock solutions

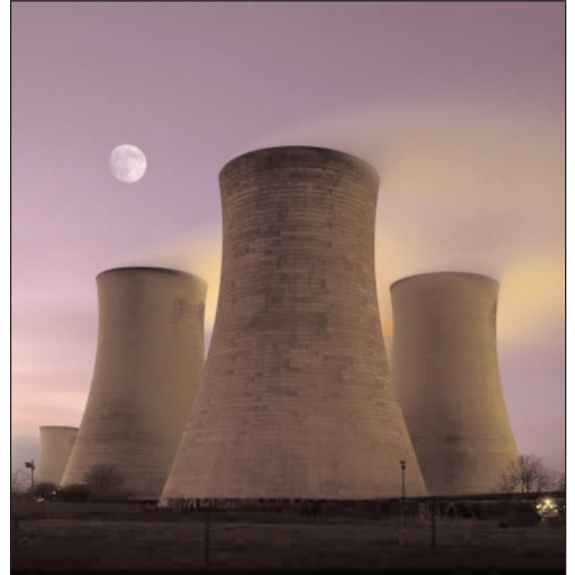
### Refineries

- Fuel oil storage isolation valves
- Steam supply stop and control valves
- Sulphur condenser switch valves
- Flare gas hydrogen and sour gas control and isolation
- Refinery Desulphurization cooling water
- Dirty hot cracking gas stop and control
- Fluidized catalytic cracker, stop and control valves

### Nuclear Power Plants

- Containment isolation
- Pump discharge isolation
- Core spray system
- Brackish cooling water
- Service water system

Tricentric® Valves for nuclear power plants meet or exceed ASME III, 10CFR50 App. B and B31.1 requirements.



Nuclear



Refinery



Combined Cycle Power Plant

### Power Plants

- Pump isolation
- Condenser cooling
- Extraction steam isolation
- High temperature quarter turn valves
- Heat exchanger, suppression system and condenser cooling water isolation valves

### Steel Mills

- Blast furnace gas isolation control and check valves
- Coke battery stop valves
- Recirculation pump discharge
- Compressor discharge
- Expander inlet and bypass control valves

### Chemical Plants

- Hydrogen gas
- CO<sub>2</sub> Vapor
- Brine
- Liquid or Gaseous oxygen
- Propylene
- Steam
- Ethylene
- Cooling water
- Emergency closure valves to isolate in 1 second or less
- Flare inlet control and manifold isolation



Chemical

### Special Applications and Options

- Special Body, shaft and disc materials for high temperature gases and heated slurries such as SO<sub>2</sub> and lime kiln feed.
- Steam turbine generation stop and control valves
- Geothermal plant applications
- Molten sulphur
- CO<sub>2</sub> recovery
- Steam jackets
- Large sizes
- Propane gas
- High cycling applications
- NACE trim materials
- Cryogenic

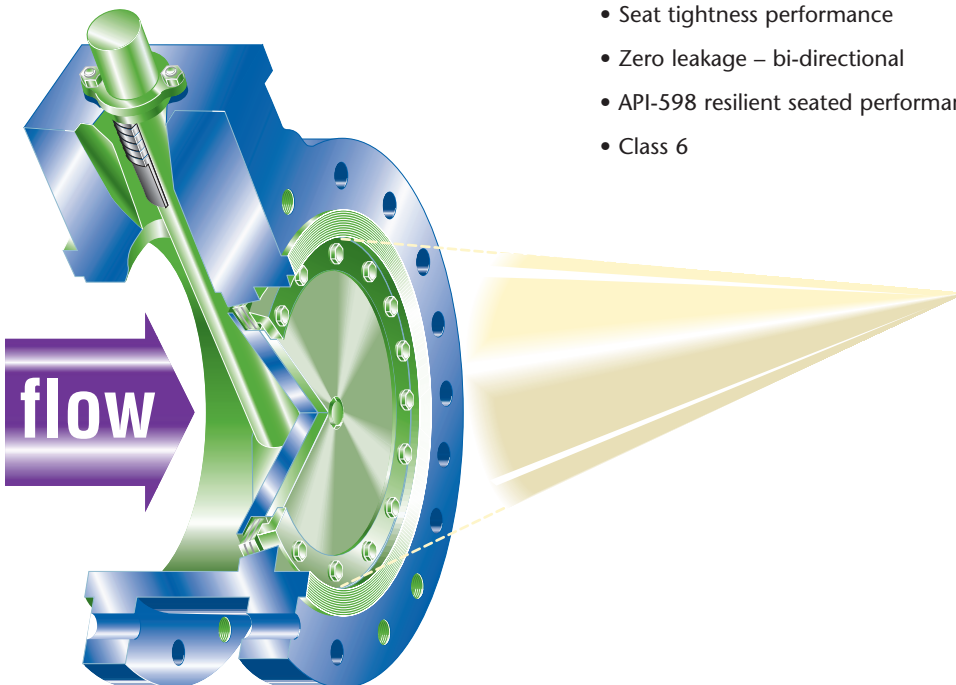
## Features

### Tricentric® Extended Performance Butterfly Valve

The unique triple offset metal - seat design of the Tricentric® Valve provides exceptional performance and dependability over a broad range of applications and service conditions. Designed and built to the applicable requirements of ASME B16.34 and API STD 609, Tricentric® valves provide positive sealing performance from vacuum to 1500 PSI (103 Bar) and at temperatures from -425°F (254°C) to + 1500°F (816°C).

### Advantages

- Quarter turn convenience
- A tight metal-to-metal sealing system
- Long Life Seats  
Tricentric geometry prevents seat or seal wear by eliminating interference between the body seat and disc mounted seal.
- Torque seated, self-compensating for temperature differences.
- Available in a wide range of materials including advanced alloys capable of resisting micro-geological corrosion.
- Fire-safe, tested to API 607
- Cryogenic proven – zero leakage at -425°F
- Shell tested to ASME and MSS standards
- Blowout proof shaft per API-609
- Non binding/sticking seats
- Excellent flow and control characteristics
- Reliable service at conditions more severe than other valves can endure.
- Seat tightness performance
- Zero leakage – bi-directional
- API-598 resilient seated performance
- Class 6



*Dye Test showing no wear or rubbing*

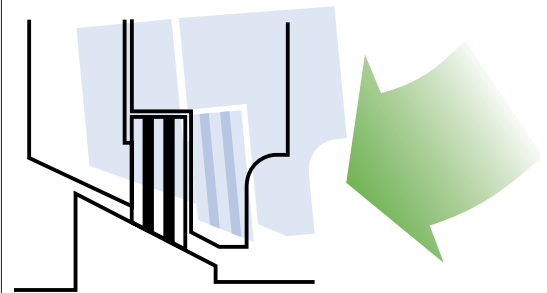


**Tricentric® Guarantees a “Tight” Seal**

The Prussian Blue Seat Test clearly demonstrates TRICENTRIC®’s superior, leak-tight, positive seal. Dye applied to the disc produces seating line contacts only-with absolutely no rubbing or wear. The non-jamming seating of TRICENTRIC® valves remains bubble tight after thousands of cycles.

Designed to never rub or gall, TRICENTRIC® Valves remain bubble tight after more than 50,000 cycles.

**Seat Contact**



Seat contact does not occur until the disc is seated closed.

On opening the seal lifts cleanly off the seat at all points allowing long life and quality sealing for many cycles.

## Principle of Operation

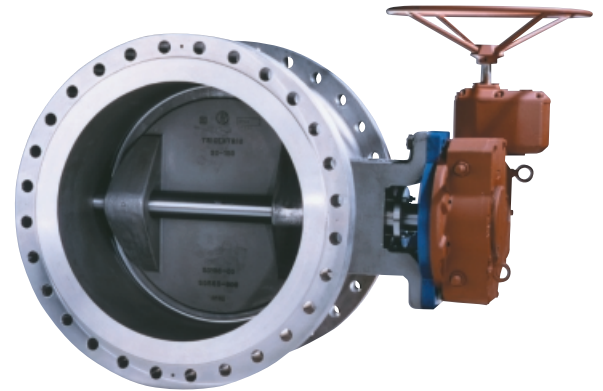
### Tricentric® Operation

The TRICENTRIC® principle of operation is geometry in motion. Both the seat in the body and the seal on the disc are surfaces of a cone which is sectioned at an angle. The valve shaft is located slightly to one side of the seat center and a little bit above the plane of the seat. Its center of rotation is also somewhat offset from the axis of the imaginary cone which extends from the surface of the seat.

When the valve is closed, the surface of the seal and the seat are in full contact at all points. Any effort to try to further close the disc (rotate it into the seat) increases the sealing force and tightens the valve. This allows the valve to be bi-directionally tight.

Opening the valve, or rotating the disc away from its seat, results in the seal moving away from the seat at all points. This action eliminates rubbing or sliding of the seating surfaces thus avoiding wear.

Tricentric features true non-rubbing seating surfaces for long life and tight shutoff.



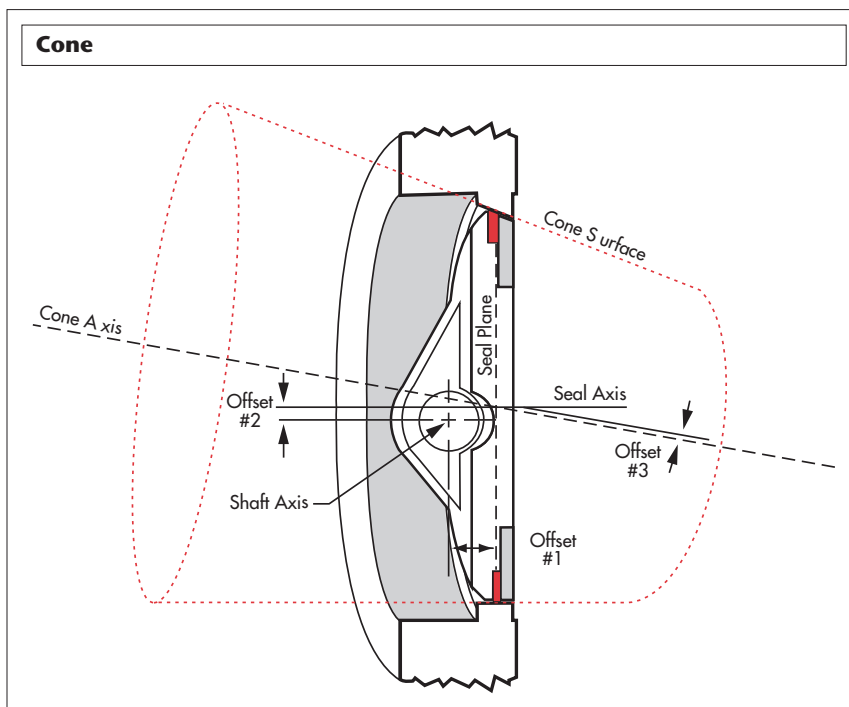
### Tricentric® Sealing System

#### TRIPLE OFFSET

Offset #1 The shaft is positioned forward of the valve seat providing an uninterrupted seating surface.

Offset #2 Centerline of disc rotation is located away from the centerline of the seat allowing the seal to lift off and away from the seat on opening.

Offset #3 The cone axis is offset from the centerline of the seal to provide a conical sealing surface that allows the seal to rotate in and out of the seat without interference, sliding or jamming.





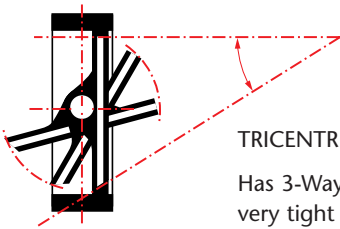
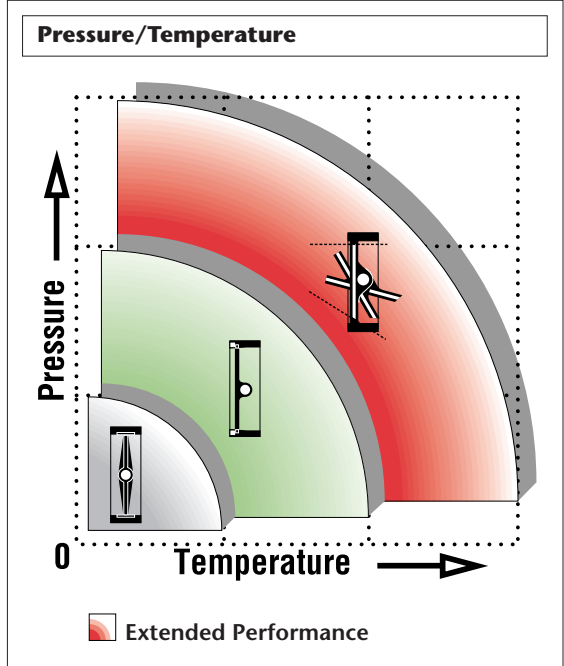
# Performance

## Pressure/Temperature

TRICENTRIC® Metal Seated Valves outperform resilient seated and high performance butterfly valves at high pressure and temperature levels.

### SERVICE RANGES

TRICENTRIC® Valves outperform conventional and high performance butterfly valves over all service ranges.



## TRICENTRIC®

Has 3-Way eccentricity. The metal seat is capable of very tight shut off at temperatures up to 1200°F or higher.

## vs.

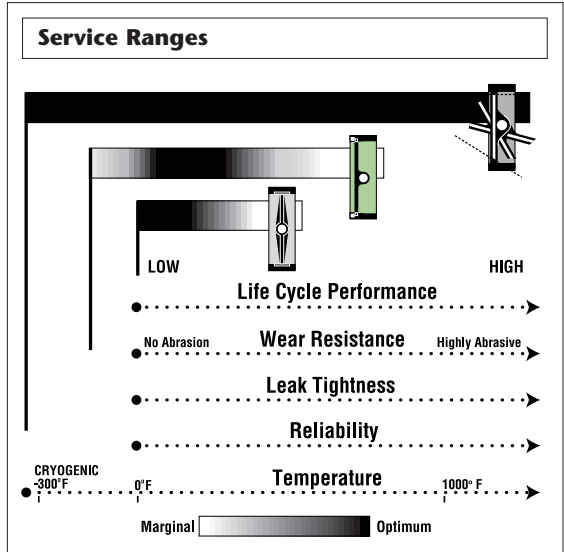
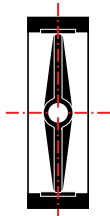
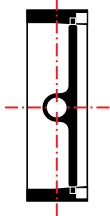
### HIGH-PERFORMANCE

The eccentric shaft results in an uninterrupted seal which can be used at higher pressures and temperatures. However, the resilient seats wear and can plug with solids.

## or

### CONVENTIONAL

Center shaft which penetrates a resilient seal. Suitable for low temperature, low pressure services only.

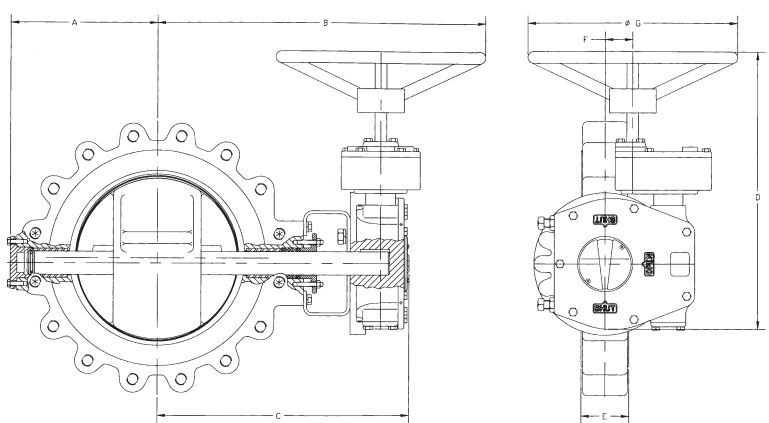


## Valve Body Styles

### Lug

Compact light weight design. May be used for dead end service.

**Lug Valve**

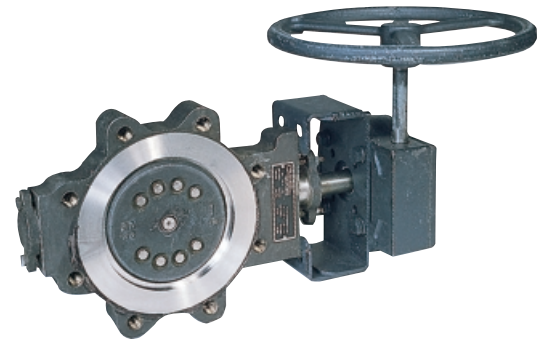


**API 609 Category B Tricentric Class 150 Dimensions**

SIZE	A	B	C	D	E	F	G
3	4.50	13.13	10.25	8.00	1.88	1.95	8.00
4	5.50	13.38	10.68	7.50	2.13	2.36	8.00
6	6.50	13.88	18.25	11.38	2.25	2.63	12.00
8	7.75	21.25	13.88	12.13	2.50	2.63	18.00
10	9.00	23.25	15.93	13.63	2.81	3.38	18.00
12	10.50	28.44	18.38	15.88	3.19	4.38	24.00
14	11.50	25.88	20.50	23.68	3.63	2.36	14.00
16	12.81	28.88	21.50	23.81	4.00	2.36	18.00
18	13.56	33.25	23.88	25.68	4.50	2.36	24.00
20	14.87	37.63	24.25	31.68	5.00	2.36	30.00
24	17.50	40.63	28.50	30.03	6.06	4.06	30.00

**API 609 Category B Tricentric Class 300 Dimensions**

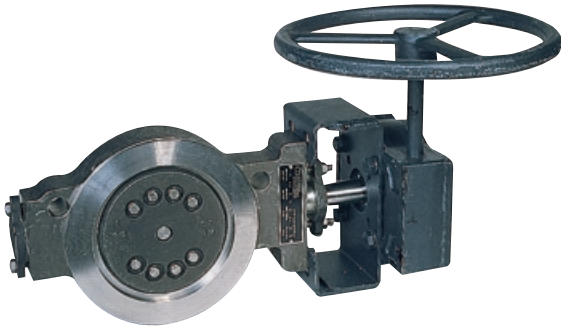
SIZE	A	B	C	D	E	F	G
3	6.75	15.13	9.50	8.00	1.88	1.95	8.00
4	7.88	16.50	12.81	8.88	2.13	2.36	10.00
6	9.19	22.50	15.31	13.63	2.31	3.38	18.00
8	10.00	24.88	17.88	14.56	2.88	4.38	18.00
10	11.63	29.25	19.13	15.88	3.25	4.38	24.00
12	12.13	19.44	20.63	22.68	3.63	2.36	14.00
14	17.56	33.56	23.25	25.63	4.63	2.36	24.00
16	19.00	34.88	24.50	23.68	5.25	2.36	18.00
18	21.38	42.75	26.44	27.81	5.88	2.11	36.00
20	21.63	43.18	27.88	29.63	6.25	4.06	36.00
24	25.56	46.81	31.63	40.68	7.13	3.81	36.00



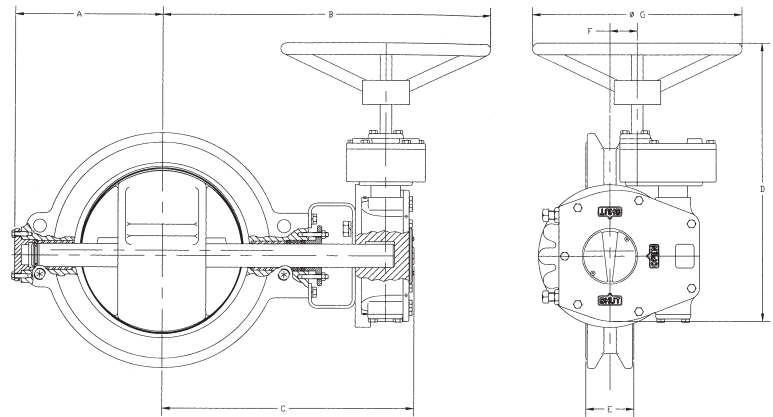
## Valve Body Styles

### Wafer

Light weight and compact body dimensions



Wafer Valve



API 609 Category B Tricentric Class 150 Dimensions

SIZE	A	B	C	D	E	F	G
3	4.50	13.13	10.25	8.00	1.88	1.95	8.00
4	5.50	13.38	10.68	7.50	2.13	2.36	8.00
6	6.50	13.88	18.25	11.38	2.25	2.63	12.00
8	7.75	21.25	13.88	12.13	2.50	2.63	18.00
10	9.00	23.25	15.93	13.63	2.81	3.38	18.00
12	10.50	28.44	18.38	15.88	3.19	4.38	24.00
14	11.50	25.88	20.50	23.68	3.63	2.36	14.00
16	12.81	28.88	21.50	23.81	4.00	2.36	18.00
18	13.56	33.25	23.88	25.68	4.50	2.36	24.00
20	14.87	37.63	24.25	31.68	5.00	2.36	30.00
24	17.50	40.63	28.50	30.03	6.06	4.06	30.00

API 609 Category B Tricentric Class 300 Dimensions

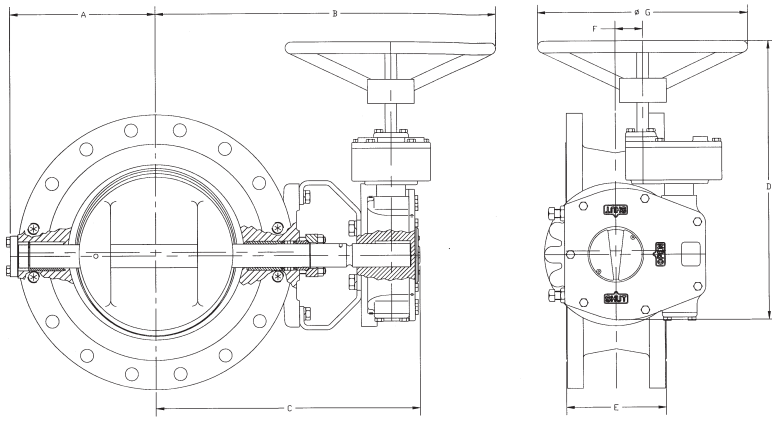
SIZE	A	B	C	D	E	F	G
3	6.75	15.13	9.50	8.00	1.88	1.95	8.00
4	7.88	16.50	12.81	8.88	2.13	2.36	10.00
6	9.19	22.50	15.31	13.63	2.31	3.38	18.00
8	10.00	24.88	17.88	14.56	2.88	4.38	18.00
10	11.63	29.25	19.13	15.88	3.25	4.38	24.00
12	12.13	19.44	20.63	22.68	3.63	2.36	14.00
14	17.56	33.56	23.25	25.63	4.63	2.36	24.00
16	19.00	34.88	24.50	26.68	5.25	2.36	18.00
18	21.38	42.75	26.44	27.81	5.88	2.11	36.00
20	21.63	43.18	27.88	29.63	6.25	4.06	36.00
24	25.56	46.81	31.63	40.68	7.13	3.81	36.00

## Valve Body Styles

### ISO 5752 Double Flanged

Meets API 609 5th Edition, Blowout Proof Stem, Bearing Protectors, Shaft Retention Ring. Allows for bolt through installations for greater safety.

**ISO 5752 Double Flanged Valve**



**ISO 5752 Short Series Tricentric Class 150 Dimensions**

SIZE	A	B	C	D	E	F	G
3	4.80	12.95	10.00	8.00	4.44	1.95	8.00
4	5.25	13.88	11.09	7.50	5.00	2.36	8.00
6	7.00	17.63	13.20	11.38	5.51	2.63	12.00
8	8.19	23.12	15.68	12.13	6.00	2.63	18.00
10	9.47	24.78	17.56	13.63	6.50	3.38	18.00
12	10.94	29.13	19.03	15.88	7.00	4.38	24.00
14	11.18	25.75	21.03	23.68	7.50	2.36	14.00
16	12.44	29.13	22.42	23.81	8.50	2.36	18.00
18	13.44	13.50	23.81	25.68	8.75	2.36	24.00
20	14.88	37.88	25.19	31.68	9.00	2.36	30.00
24	17.50	41.13	29.88	30.03	10.50	4.06	30.00

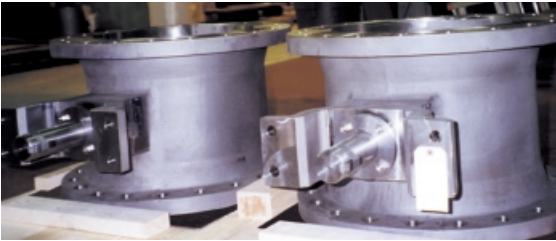
**ISO 5752 Short Series Tricentric Class 300 Dimensions**

SIZE	A	B	C	D	E	F	G
3	4.80	12.95	10.00	8.00	4.44	1.95	8.00
4	5.25	14.88	11.08	8.88	5.00	2.36	10.00
6	7.00	20.78	13.44	13.63	5.51	3.38	18.00
8	8.19	23.38	16.25	14.56	6.00	4.38	18.00
10	9.47	28.00	17.88	15.88	6.50	4.38	24.00
12	10.94	24.94	20.25	22.68	7.00	2.36	14.00
14	12.81	31.56	21.84	25.63	7.50	2.36	24.00
16	14.13	29.88	23.28	23.68	8.50	2.36	18.00
18	15.63	40.19	24.94	27.81	8.75	2.11	36.00
20	16.94	42.19	27.81	29.63	9.00	4.06	36.00
24	20.19	44.81	29.94	40.68	10.50	3.81	36.00

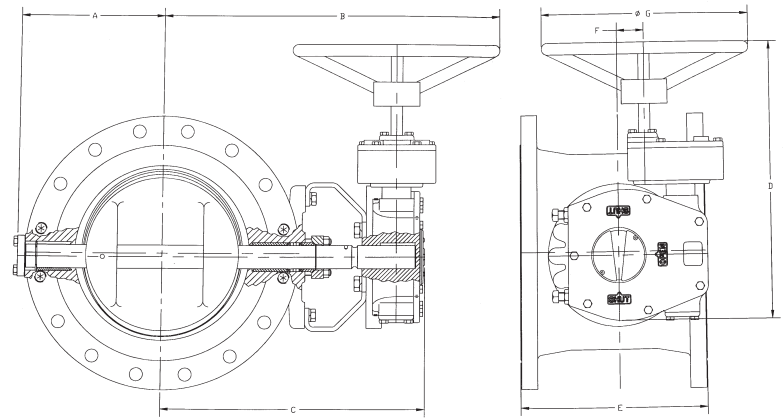
## Valve Body Styles

### Gate Valve Face to Face

- Dimensions to ANSI B16.10
- Can directly replace Gate Valves in line
  - Less weight
  - Lower cost
  - Easily automated



Gate Valve



**B16.10 Tricentric Class 150 Dimensions**

SIZE	A	B	C	D	E	F	G
3	4.80	12.95	10.00	8.00	8.00	1.95	8.00
4	5.25	13.88	11.09	7.50	9.00	2.36	8.00
6	7.00	17.63	13.20	11.38	10.50	2.63	12.00
8	8.19	23.12	15.68	12.13	11.50	2.63	18.00
10	9.47	24.78	17.56	13.63	13.00	3.38	18.00
12	10.94	29.13	19.03	15.88	14.00	4.38	24.00
14	11.18	25.75	21.03	23.68	15.00	2.36	14.00
16	12.44	29.13	22.42	23.81	16.00	2.36	18.00
18	13.44	13.50	23.81	25.68	17.00	2.36	24.00
20	14.88	37.88	25.19	31.68	18.00	2.36	30.00
24	17.50	41.13	29.88	30.03	20.00	4.06	30.00

**B16.10 Tricentric Class 300 Dimensions**

SIZE	A	B	C	D	E	F	G
3	4.80	12.95	10.00	8.00	11.12	1.95	8.00
4	5.25	14.88	11.08	8.88	12.00	2.36	10.00
6	7.00	20.78	13.44	13.63	15.88	3.38	18.00
8	8.19	23.38	16.25	14.56	16.50	4.38	18.00
10	9.47	28.00	17.88	15.88	18.00	4.38	24.00
12	10.94	24.94	20.25	22.68	19.75	2.36	14.00
14	12.81	31.56	21.84	25.63	30.00	2.36	24.00
16	14.31	29.88	23.28	23.68	33.00	2.36	18.00
18	15.63	40.19	24.94	27.81	36.00	2.11	36.00
20	16.94	42.19	27.81	29.63	39.00	4.06	36.00
24	20.19	44.81	29.94	40.68	45.00	3.81	36.00

## Testing



### Cryogenic Tested

TRICENTRIC® Valves have proven seal reliability for liquid oxygen, liquid nitrogen, liquid and natural gas services as required by NASA, aerospace industry and oil field recovery services.

In an independent laboratory test, a TRICENTRIC® Valve measured zero leakage with Helium. After more than three hours submerged in liquid Nitrogen at -321°F and 145 psig the TRICENTRIC® Valve then met all specification requirements!

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



### Fire Tested

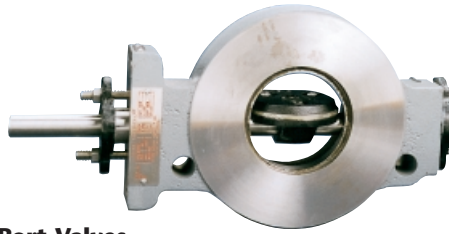
TRICENTRIC® Valves meet or exceed API 607, Fourth Addition.



### Sulphur Tested

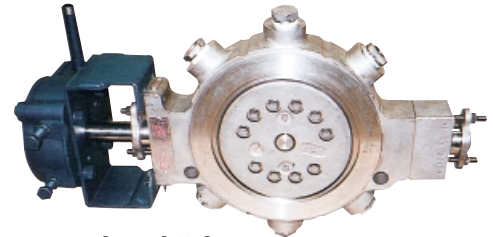
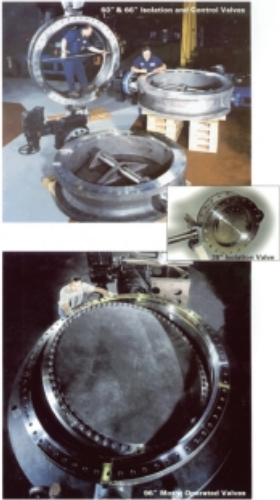
TRICENTRIC® breaks through solidified sulphur in seating and bearing areas with no seal damage nor interruption of service. Make cheater bars obsolete.

## Special Applications



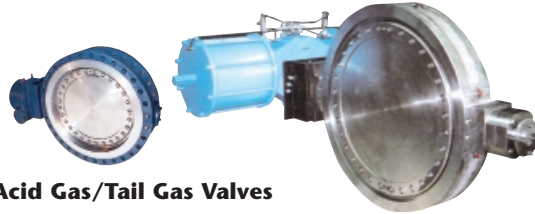
### Reduced Port Valves

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.



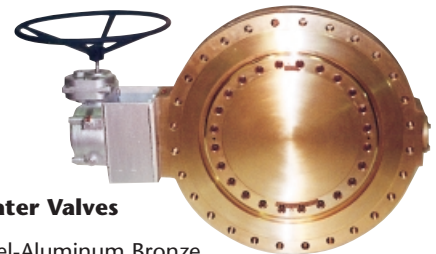
### Steam Jacketed Valves

Steam Jacketed Valves with steam traced shafts for molten sulphur and pitch applications.



### Acid Gas/Tail 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.



### Seawater Valves

- Nickel-Aluminum Bronze
- Monel
- Duplex

### Size & Materials

#### Complete Product Range

Sizes 3" – 96"

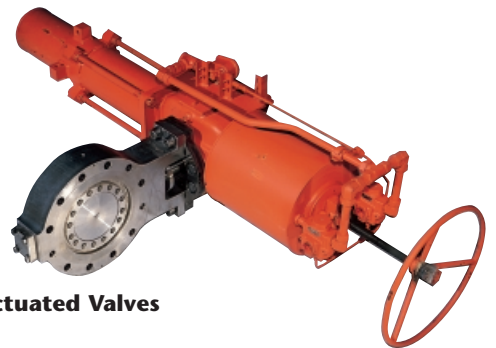
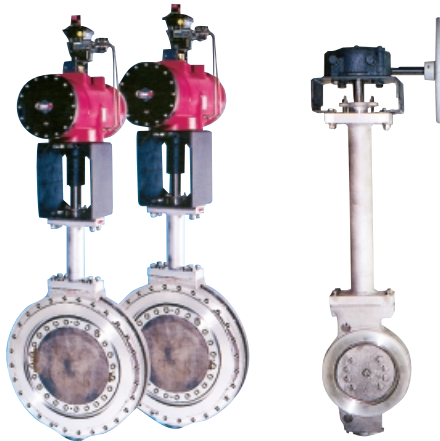
ANSI Classes  
150 – 600

#### Materials

- Carbon Steel
- Stainless Steel
- Duplex Steels
- Aluminum Bronze
- High Performance Alloys

### Cryogenic Valves

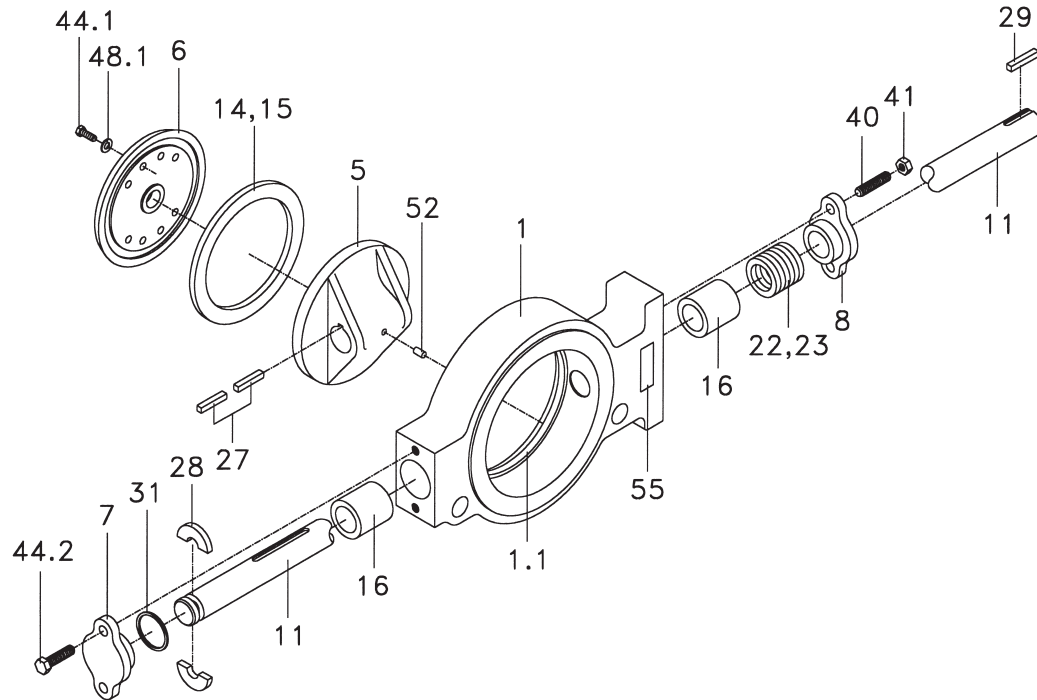
Tight shut-off, zero leakage at temperatures as low as -425°F. Liquid oxygen, nitrogen and liquid natural gas.



### Air Actuated Valves

## Plain Wafer, Lugged 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/Graphite	Carbon/Graphite	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

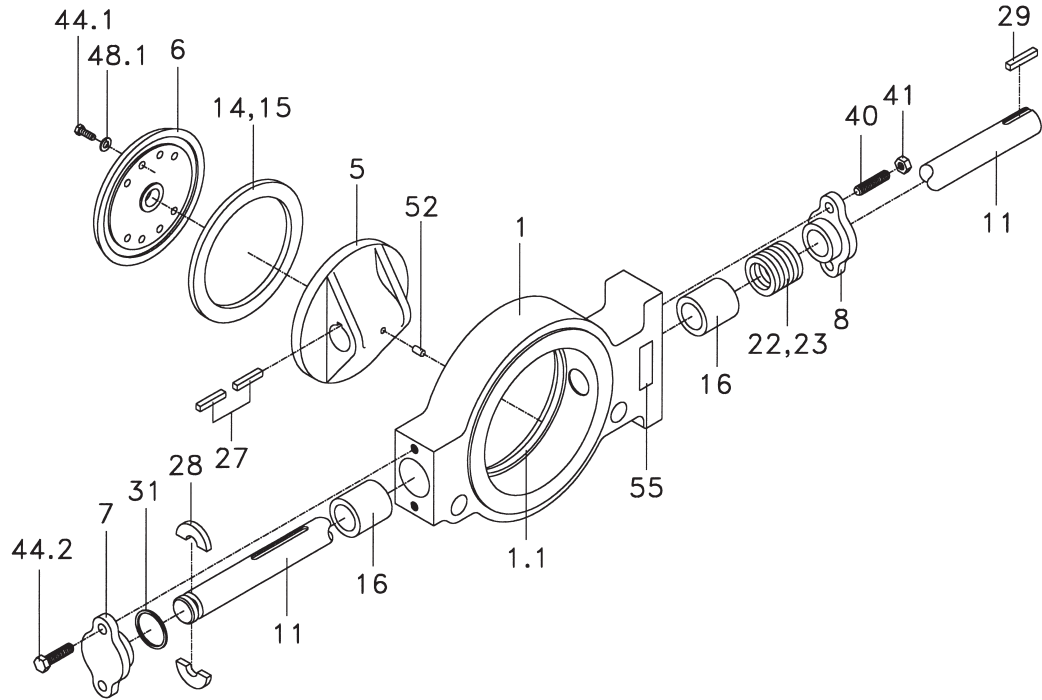
**Note:**

Please contact Weir Valves & Controls for the many optional materials that are available to meet your specific application.



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

**ANSI Class  
300 / 40 Bar –  
3" thru 24"**



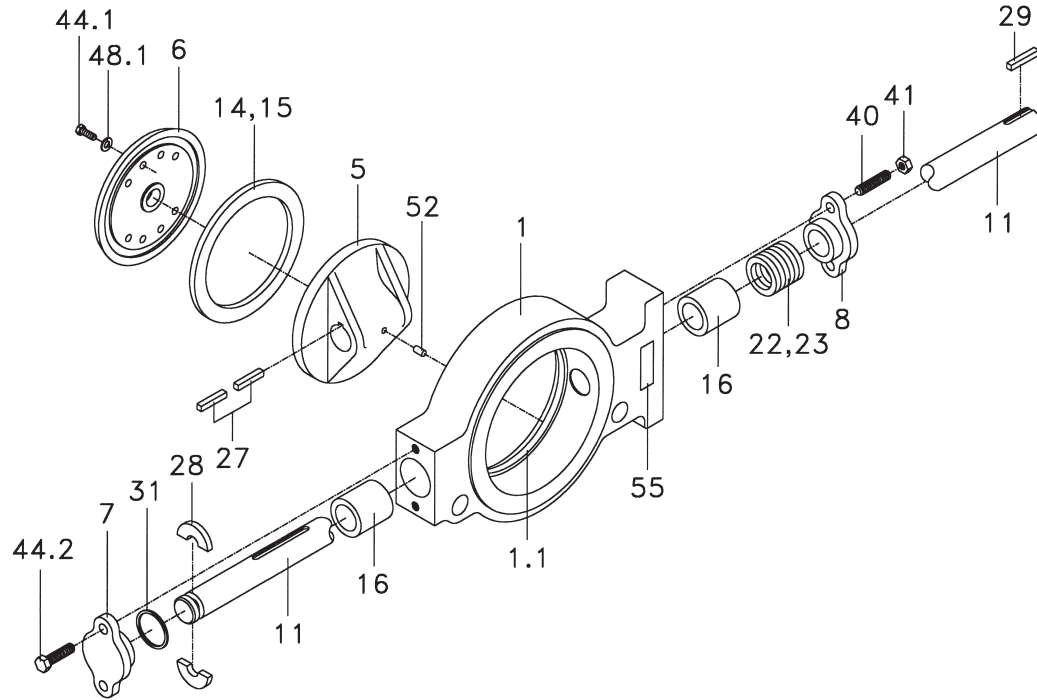
Item #	Description	Carbon Steel	316 Stainless Steel	Item #	Description	Carbon Steel	316 Stainless Steel
1	Body	Carbon Steel/A216 GR WCB with Integral Seat	316 SST/A351 GR CF8M with Integral Seat	23	Braided End Ring	John Crane 387-I	John Crane 387-I
1.1	Seat	Integral w/body, w/316 overlay	Integral w/body	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 Weir Valves & Controls for the many optional materials that are available to meet your specific application.

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

**ANSI Class  
300 / 40 Bar –  
30" thru 42"**



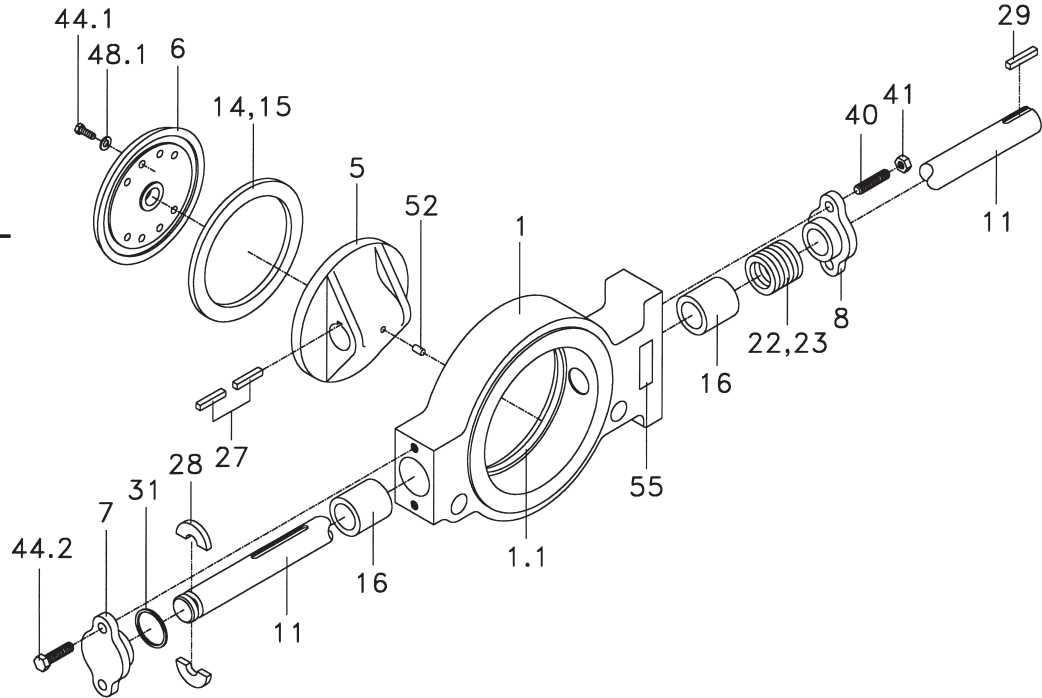
Item #	Description	Carbon Steel	316 Stainless Steel	Item #	Description	Carbon Steel	316 Stainless Steel
1	Body	Carbon Steel/A216 GR WCB with Integral Seat	316 SST/A351 GR CF8M with Integral Seat	23	Braided End Ring	John Crane 387-I	John Crane 387-I
1.1	Seat	Integral w/body, w/316 overlay	Integral w/body	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 Weir Valves & Controls for the many optional materials that are available to meet your specific application.

## Plain Wafer, Lugged 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 387-1	John Crane 387-1
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 Weir Valves & Controls for the many optional materials that are available to meet your specific application.

## Tricentric® Valve – Material Pressure Temperature Ratings

Component		Material	Temperature range (°F)	Maximum body pressure rating at 100 °F (psig)			Note
				CL150	CL300	CL600	
BODY & DISC	STANDARD	WCB - ASTM A216 (carbon steel)	-20 to 800	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 Tricentric Sales Rep.			
		GRADE 3 TITANIUM	-75 to 600	Contact Tricentric 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)			Note
				CL150	CL300	CL600	
SEAL STACK	STANDARD	316SST Laminated w/Grafoil	-400 to 1200				(9)
	OPTIONAL						
		316 SST Solid	-400 to 1200				
		316 SST 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)
BEARING	STANDARD WAFER & LUG	CL150 - Graphite	-400 to 1700				(10)
		CL300 and CL600 - Nitronic 60	-325 to 1500				
	OPTIONAL STANDARD FLANGED	Graphite (CL150 and CL300)	-400 to 1700				(10)
		Nitronic 60 (CL600)	-325 to 1500				
	OPTIONAL	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 sales representative.
9. Upper temperature limit reduced to 850°F in oxidizing media
10. Upper temperature limit reduced to 850°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 Weir sales or engineering representative for specific application material evaluation.

## ANSI and DIN Valve Data

### Weights (pounds)

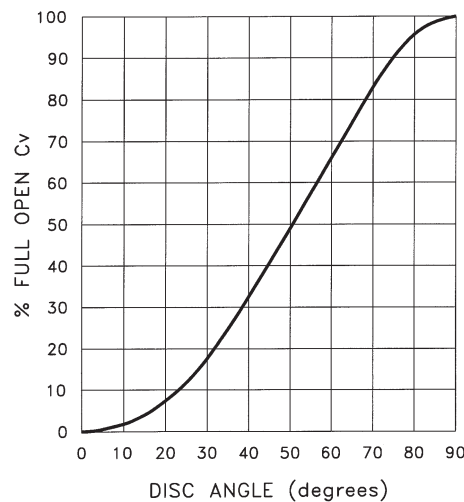
ANSI CLASS/BAR	STYLE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	40"	42"	46"	48"	54"	60"
150/16	Wafer	20	24	37	56	88	135	181	270	330	450	662	1,110	1,780	2,250	2,900	3,300	3,900	5,500	7,100
150/16	Lugged	20	31	44	68	107	175	235	330	404	560	878	1,350	2,250	3,200	3,600	4,550	5,000	7,000	9,200
150/16	FLG ISO	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	FLG ISO	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	FLG ISO			150	250	340	550	750	950	1,300	1,640	2,450								

### Flow Coefficient (Cv)

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	868	1678	2500	3510	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 Characteristics

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°.





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