



# FORGED TRUNNION MOUNTED BALL VALVE

*Trident Series*





## ABOUT CNC FLOW CONTROL

CNC Flow Control is headquartered in Houston, Texas with multiple other locations in the U.S. and Canada. Our company unifies several trusted valve and flow line brands that have been serving numerous industries in North America for nearly three decades. From long range projects to same-day delivery, our diverse team is dedicated to understanding customers' needs in order to ensure exceptional service and the best solutions. Our extensive product portfolio ranges from commodity products like hammer unions and needle valves, to highly engineered products like API 6D trunnion mounted ball valves.

Quality assurance is critical to CNC Flow Control's process and we hold multiple internationally recognized quality standards certifications and management system. We are dedicated to understanding our customers' needs to ensure exceptional service by offering an in-house engineering and product management team, an extremely large product portfolio and extensive inventory to support same day shipments.



## ABOUT OUR C&C BRAND

C&C's breadth of available products is extremely diverse. From hammer unions to ball valves, C&C products complement most any stocking portfolio. C&C has provided the market with quality valves and fittings for nearly three decades. Today, C&C products are seen in almost all upstream oil and gas applications throughout North America.

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ABOUT OUR COMPANY

# FLOW CONTROL SOLUTIONS FOR THE PETROLEUM & NATURAL GAS INDUSTRIES



## Industry Specific Solutions

Production, transportation, storage and processing of oil and gas require the highest quality piping components. This is our world.

In conjunction with our sister companies we supply customers with valves, hammer unions, couplings, connectors, actuators and other valve accessories for high pressure process and piping at oil and gas facilities, both above ground and offshore.

## World Class and Worldwide Service

We are dedicated to providing our customers with the best — the best brands, the best service and the best quality. Whether you require an automated valve for a highly engineered project or a replacement valve delivered same day, we are here to help. Our industry experience, product selection and access to a global network of partners enable us to tailor a solution to solve your most difficult problem.

## Expanding Our Product Portfolio

While others are collapsing their portfolios and cutting costs, we have an aggressive strategy to supply complimentary products to served markets and increase service levels to establish ourselves as your single source provider for valve and flow control solutions.

## STANDARDS

- Design/Materials: API 6D 24th Edition, ASME B16.34
- Fugitive Emissions: API 641
- Fire Safe: API 6FA/API 607 7th Edition
- End to End: ASME B16.10
- Flanged End: ASME B16.5
- Mounting: ISO 5211
- Testing: API 598/API 6D, CSA Z245.15-17
- API 6D Monogrammed
- PED 2014/68/EU Annex III, Module H
- Canadian Registration Number approved

## SPECIFICATIONS

- Sizes 2" – 48"
- ASME Class 150 – 2500
- Available with DBB, DIB-1, & DIB-2 seat configurations
- Full Material Traceability
- ISO 5211 Actuator Adaption
- Large Material Selection
- Low Operating Torques
- Anti-Static Design & Blowout Proof Stem
- 100% Factory Testing
- Conforms to NACE MR0175/ISO 15156-1

## APPLICATIONS

- Transmission Pipelines
- Metering Skids
- Gas Gathering
- Terminals & Storage
- Natural Gas Plants
- Compression Stations



# HOW TO ORDER



## EXAMPLE:

A 6", Class 600, 3 Piece, Full Port Trunnion Ball Valve with Raised Face End Connections, Carbon Steel Body and 3mil Ball and Stem with Self-Relieving Devlon® Seats, LT HNBR 90 Durometer Seals and Lockable Worm Gear Operated is written as 606T3FRC3DHG.

A	B	C	D	E	F	G	H	I	J	K
6	06	T3	F	R	C	3	D	H	G	

A	Size	
	INCHES	DN
2	2"	50
3	3"	80
4	4"	100
6	6"	150
8	8"	200
10	10"	250
12	12"	300
14	14"	350
16	16"	400
18	18"	450
20	20"	500
24	24"	600
30	30"	750
36	36"	900

B	Pressure Class
01	Class 150
03	Class 300
06	Class 600
09	Class 900
15	Class 1500
25	Class 2500

C	Valve Type
T3	3 Piece Trunnion Ball Valve

D	Port
F	Full
R	Reduced

E	End Connection
R	RF Flange
J	RTJ Flange

\*Butt-weld ends available. Contact CNC Flow Control for information.

F	Body Material	
C	Carbon Steel	ASTM A105N
L	Low Temperature Carbon Steel	ASTM A350 LF2, CL 1
S	Stainless Steel	ASTM A182 F316
D	Duplex Steel	ASTM A182 F51

G	Trim Material	
3	Carbon Steel	See Trim Table (pg 17)
4	Low Temperature Carbon Steel	See Trim Table (pg 17)
5	Stainless Steel	See Trim Table (pg 17)

H	Seat Material	
D	Devlon®	
P	PEEK	
T	TFM 1600	
M	Metal + TCC (consult CNC Flow Control)	

I	Seal Material	
H	LT HNBR 90	
V	Viton® GLT 90	
A	AFLAS® 90	

J	Operator	
B	Bare Stem	
L	Lockable Wrench	
G	Lockable Worm Gear	

K	Seat Design	
(BLANK)	Self-Relieving Seats (DBB)	
-DPE	Dual Piston Effect Seats (DIB-1)	
-DPE2	Self-Relieving Seat x Dual Piston Effect Seat (DIB-2)	

\*Additional materials available upon request.

Warning: Metallic materials selected using ANSI/NACE MR0175/ISO 15156 are resistant to cracking in defined H2S containing environments in oil and gas production but not necessarily immune to cracking under all service conditions. It is the equipment user's responsibility to select materials suitable for the intended service.

Inconel® is a registered trademark of Special Materials Corporation, USA. Devlon® is a registered trademark of Devol Engineering, Ltd. Viton® and Teflon® is a registered trademark of The Chemours Company. AFLAS® is a registered trademark of the Asahi Glass Co., Ltd.

# DESIGN HIGHLIGHTS



- 1 BLOWOUT PROOF STEM**  
Positive stem retention is achieved with integral T-type shoulder retained by the gland retainer.
- 2 ANTI-STATIC DESIGN**  
Positive anti-static grounding between the ball, stem and trunnion is a standard feature on the Trident Series. Valves sizes 16" and above are equipped with an additional anti-static spring on the trunnion shaft for added safety and reliability.
- 3 BODY SEALING**  
The double sealing design of the O-Rings and fire safe graphite gaskets ensure zero leakage at the body and closure connections.
- 4 EMERGENCY SEALANT INJECTION**  
Valves are equipped with sealant injection fittings at the stem and seat area. The seat injection fittings have an integral buried check valve to provide backup sealing. Should leakage occur at either the seat or gland packing area, leakage can temporarily be stopped by injecting sealant into the secondary sealing system.

- 5 FIRE SAFE CERTIFIED**  
Fire safe construction is standard on all trunnion mounted ball valves. In the event of a fire, secondary graphite seals and gaskets prevent leakage to atmosphere and seat ring to ball contact minimizes through leakage.

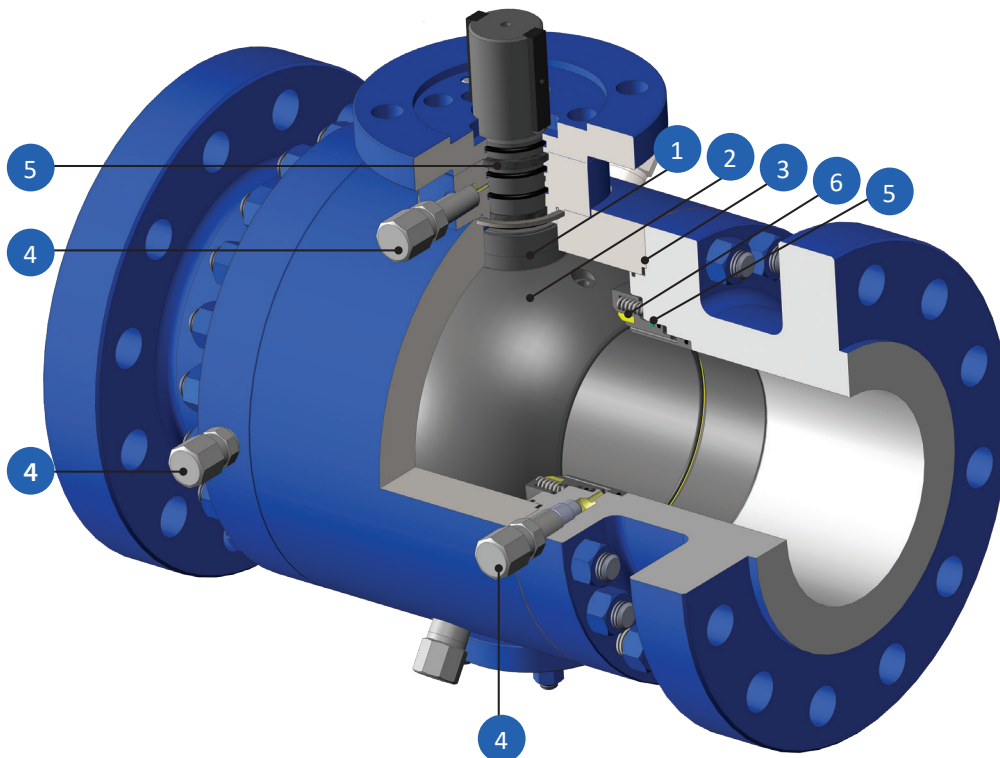
- 6 SEAT DESIGNS**  
In very low line pressure applications, sealing between the seats and ball is achieved by seat springs forcing the seat into the ball, resulting in a seal. In high line pressure applications, the line pressure, in conjunction with the spring load, forces the upstream seat ring against the ball resulting in tighter sealing.

### SELF-RELIEVING SEATS:

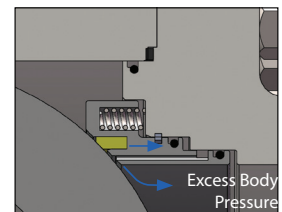
Prevents cavity pressure buildup by automatically relieving the cavity when the pressure becomes too high.

### DOUBLE PISTON EFFECT SEATS:

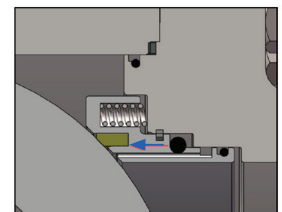
Provides double isolation from pressure at both ends by seating on both the upstream and downstream sides of the valve.



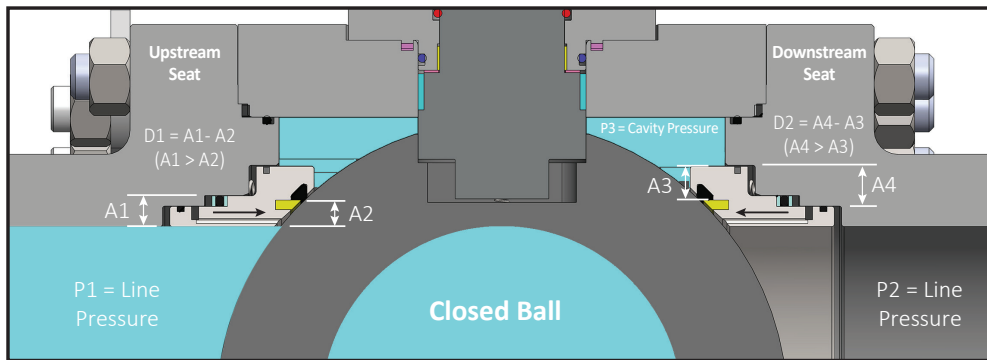
STANDARD  
Self-Relieving Seats



OPTIONAL  
Double Piston  
Effect Seats



# DOUBLE ISOLATION AND BLEED DESIGN FEATURE

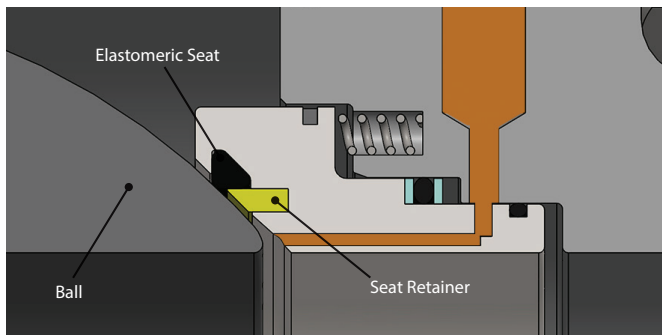


The Double Isolation and Bleed Design (DIB-1) is the standard configuration of all C&C Trident Series DPE valves. This design features double piston effect seats on both the upstream and downstream sides of the valve, which in the closed position, provides double isolation from pressure at both ends.

A DIB valve cannot relieve body cavity pressure past the seats, meaning its seats are not self-relieving. This is why we provide our DIB valves with an external relief system to relieve built up pressure.

When pressure is applied from the upstream seat, the difference in area ( $D1 = A1 - A2$ ) multiplied by the line pressure ( $P1$ ) forces the upstream seat against the ball surface and springs behind the seat, also adding force to the seat which keeps the seat in contact with the ball.

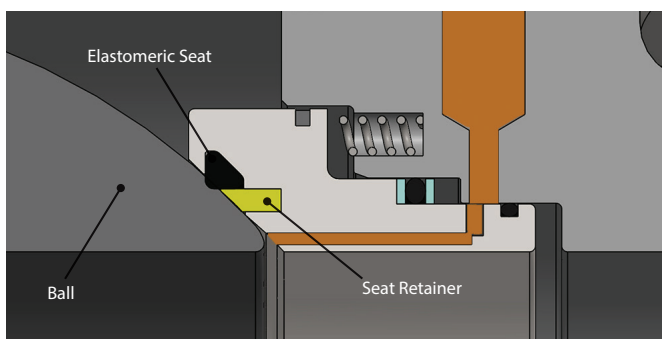
When the body cavity pressure is greater than the downstream line pressure, the difference in area ( $D2 = A4 - A3$ ) multiplied by the cavity pressure ( $P3$ ) forces the downstream seat against the ball surface, creating a positive seal.



## DPE SEAT DESIGN:

The DPE seat design is engineered with a primary elastomeric seat that is retained by a high performance polyamide insert. This design protects the primary seat from wear in erosive applications.

The elastomeric seat is always in full contact with the ball and at high pressures, provides a positive seat to ball shut off at all times.



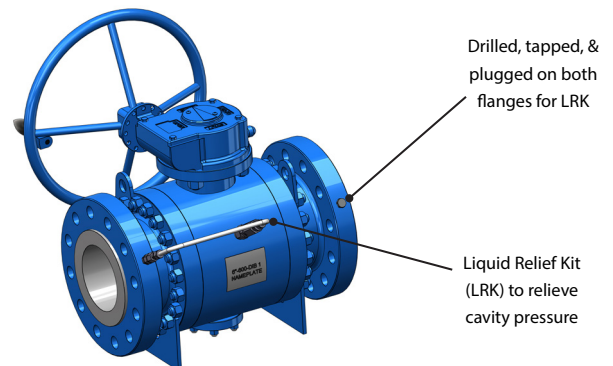
## SEAT RETAINER CONTACT:

As process pressures increase, the seat assembly is forced into the ball surface, causing the primary seat to compress and the polyamide insert to contact the ball surface.

During operation, the polyamide insert removes debris from the ball surface ahead of the primary seat, extending the valve's longevity.

C&C Trident Series DPE (DIB-1) valves come standard with a cavity pressure safety relief valve to prevent any overpressure of fluids trapped in the body cavity. Both end flanges are also drilled, tapped, and plugged to enable a liquid relief kit installation as requested by the customer.

C&C Trident Series DPE (DIB-2) valves are also available. This configuration includes a double piston effect seat and a self-relieving seat.

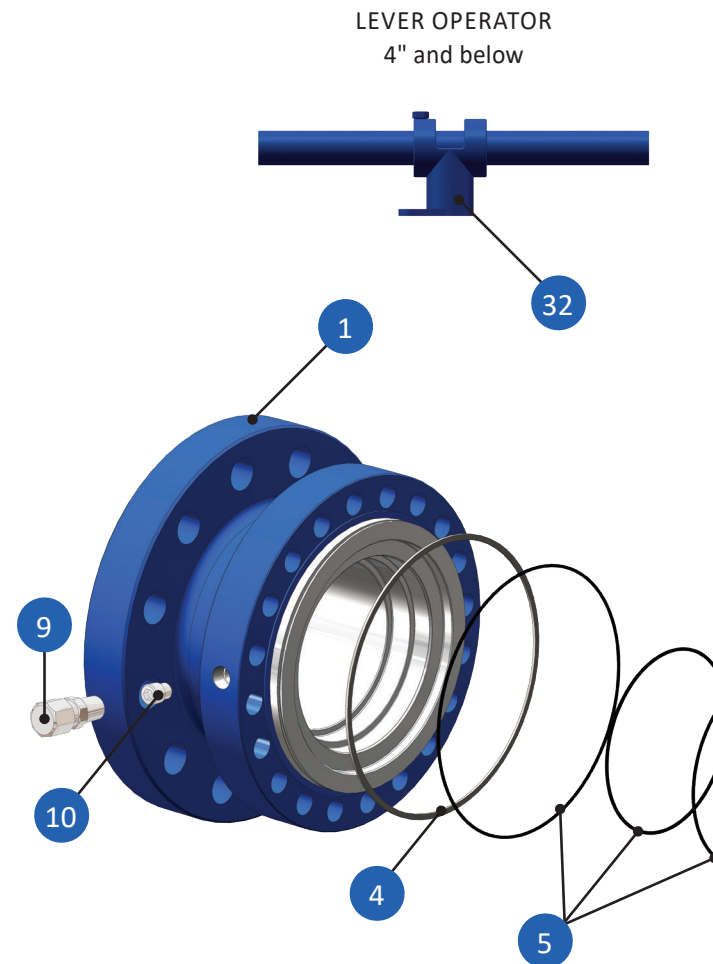


# STANDARD MATERIALS OF CONSTRUCTION

ITEM	COMPONENT	MATERIAL	SPECIFICATION
1	Closure	Carbon Steel	ASTM A105N
2	Body	Carbon Steel	ASTM A105N
3	Ball <sup>1</sup>	Carbon Steel	ASTM A105N + 3 mil ENP
4	Gasket	316 + Graphite	316 + Graphite
5	O-Ring	Rubber	LT HNBR 90
6	Trunnion/Internal Trunnion Support	Low Alloy Steel	AISI 4140 + 3 mil ENP
7	Thrust Washer	RPTFE	RPTFE
8	Bearing	316 + PTFE	316 + PTFE
9	Injection Fitting	Stainless Steel	ASTM A276 316
10	Check Valve	Stainless Steel	ASTM A276 316L
11	Anti-Static Plunger	Stainless Steel	ASTM A276 316
12	Anti-Static Spring	Stainless Steel	ASTM A276 316
13	Stud	Carbon Steel	ASTM A193 B7M
14	Nut	Carbon Steel	ASTM A194 2HM
15	Stem Fire Safe Seal	Graphite	Graphite
16	Spring	Inconel® X-750	UNS N07750
17	Vent Valve	Stainless Steel	ASTM A276 316
18	Actuator Mounting Pad	Carbon Steel	ASTM A105N
19	Pin	Stainless Steel	ASTM A276 304
20	Key	Carbon Steel	AISI 1045
21	Seat Ring	Carbon Steel	ASTM A105N + 3 mil ENP
22	Stem	Low Alloy Steel	AISI 4140 + 3 mil ENP
23	Screw	Carbon Steel	ASTM A193 B7M
24	Seat Insert	Plastic	Devlon®
25	Gland Flange	Carbon Steel	ASTM A105N
26	Seat Fire Safe Seal	Flexible Graphite	Flexible Graphite
27	Hex Head Block & Bleed Fitting	Stainless Steel	ASTM A276 304
28	Upper Gland Dowel Pin	Carbon Steel	AISI 1045
29	Trunnion Bearing Pin	Stainless Steel	ASTM A276 410
30	Gear Stud	Carbon Steel	AISI 1035
31	Gear Nut	Carbon Steel	AISI 1035
32	Handle Guide	Carbon Steel	ASTM A216 WCB

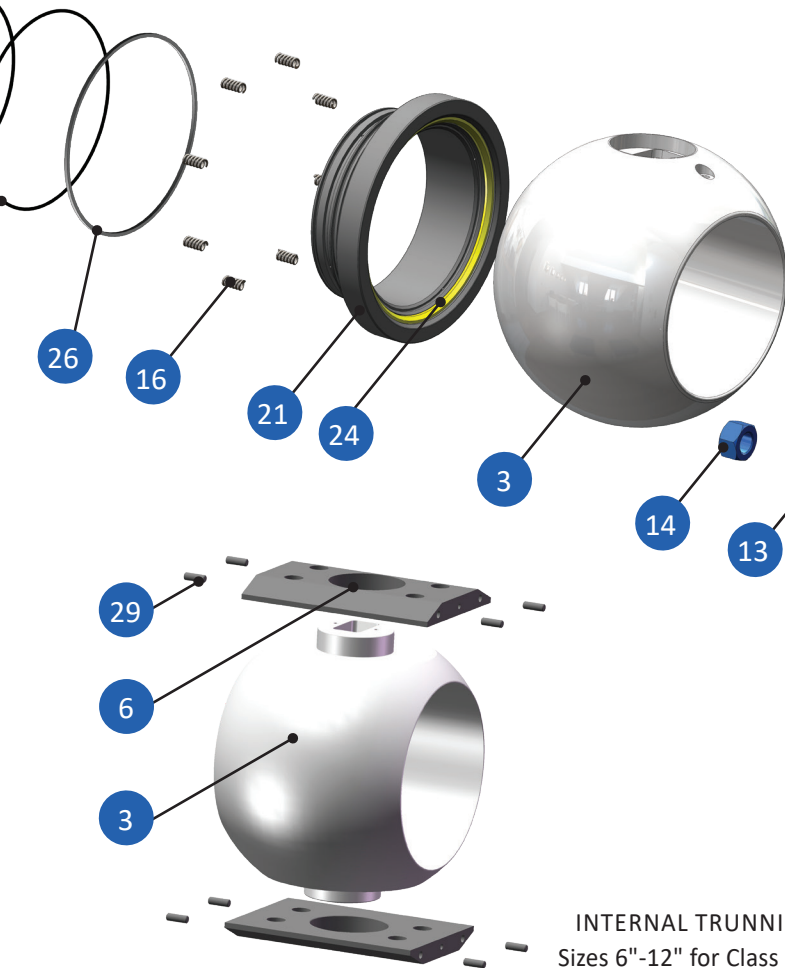
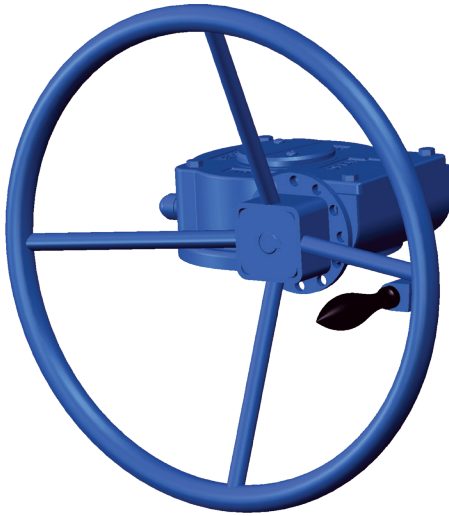
1. For Classes 1500 and 2500, Ball is made of Low Alloy Steel (AISI 4140 + 3 mil ENP)

Consult CNC Flow Control for a full list of material options per valve size and pressure class, as components may vary according to design.

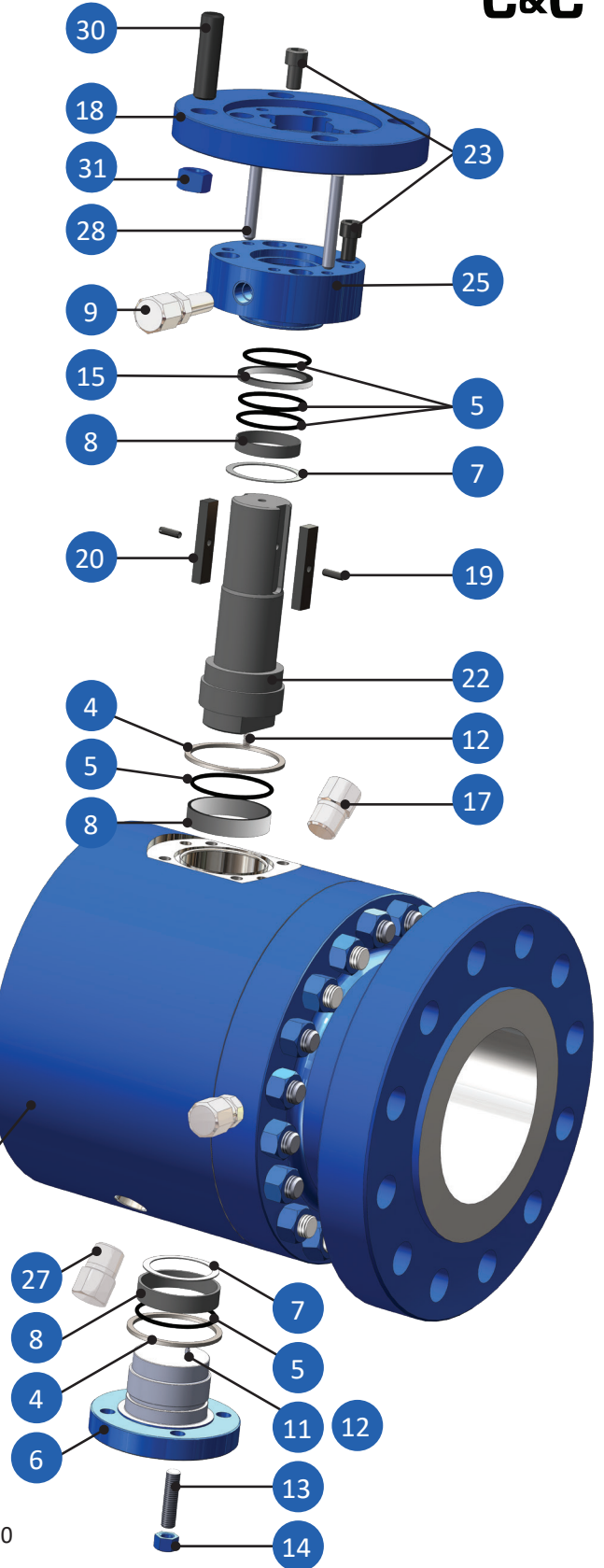




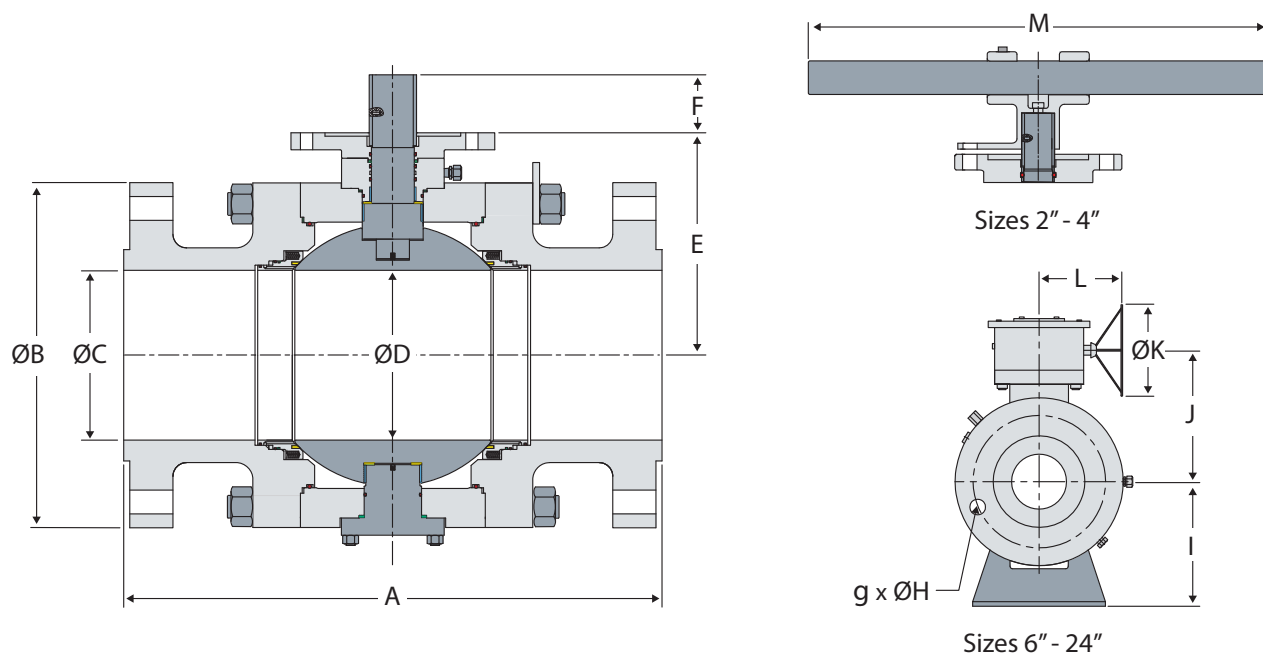
GEAR OPERATOR  
4" and above



INTERNAL TRUNNION DESIGN  
 Sizes 6"-12" for Class 900 and 1500  
 Size 14" and larger for all classes



# FULL PORT DIMENSIONS IMPERIAL UNITS



## CLASS 150

FULL PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
2"	7.00	6.00	1.94	1.94	4.57	1.57	4 x 3/4	3.86	5.71	-	8.66	14.1	55
3"	8.00	7.50	2.94	2.94	5.79	1.57	4 x 3/4	4.88	7.13	-	8.66	20.0	75
4"	9.00	9.00	3.94	3.94	6.69	1.57	8 x 3/4	5.67	8.03	-	8.66	23.9	115
6"	15.50	11.00	5.94	5.94	8.66	2.20	8 x 7/8	8.07	10.87	23.62	10.83	-	331
8"	18.00	13.50	7.94	7.94	10.04	2.20	8 x 7/8	9.45	12.24	23.62	10.83	-	728
10"	21.00	16.00	9.94	9.94	11.81	2.56	12 x 1	11.02	13.66	23.62	18.11	-	983
12"	24.00	19.00	11.94	11.94	13.23	2.56	12 x 1	12.40	15.47	23.62	18.11	-	1228
14"	27.00	21.00	13.19	13.19	14.41	3.43	12 x 1-1/8	15.16	20.55	23.62	22.05	-	1830
16"	30.00	23.50	15.19	15.19	15.94	3.43	16 x 1-1/8	16.54	22.01	23.62	22.05	-	2522
18"	34.00	25.00	17.19	17.19	17.36	3.43	16 x 1-1/4	18.04	23.50	29.52	22.05	-	3175
20"	36.00	27.50	19.19	19.19	18.90	3.43	20 x 1-1/4	19.53	25.04	29.52	22.05	-	4286
24"	42.00	32.00	23.19	23.19	22.32	4.25	20 x 1-3/8	23.27	30.04	29.52	22.05	-	6180

## CLASS 300

FULL PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
2"	8.50	6.50	1.94	1.94	4.57	1.57	8 x 3/4	3.86	5.71	-	8.66	14.1	64
3"	11.12	8.25	2.94	2.94	5.79	1.57	8 x 7/8	4.88	7.13	-	8.66	20.0	121
4"	12.00	10.00	3.94	3.94	7.76	1.57	8 x 7/8	5.83	9.09	-	8.66	23.9	201
6"	15.88	12.50	5.94	5.94	8.66	2.20	12 x 7/8	8.07	10.87	23.62	10.83	-	377
8"	19.75	15.00	7.94	7.94	10.24	2.20	12 x 1	9.65	12.44	23.62	16.54	-	710
10"	22.38	17.50	9.94	9.94	12.01	2.56	16 x 1-1/8	11.22	14.25	23.62	18.11	-	1190
12"	25.50	20.50	11.94	11.94	13.58	2.56	16 x 1-1/4	12.80	15.83	23.62	18.11	-	1682
14"	30.00	23.00	13.19	13.19	14.57	3.43	20 x 1-1/4	15.36	16.81	23.62	18.11	-	2150
16"	33.00	25.50	15.19	15.19	16.34	3.43	20 x 1-3/8	16.93	18.58	23.62	18.11	-	3086
18"	36.00	28.00	17.19	17.19	17.91	3.43	24 x 1-3/8	18.58	24.06	29.52	22.05	-	3781
20"	39.00	30.50	19.19	19.19	19.69	3.43	24 x 1-3/8	20.67	27.40	29.52	22.05	-	5465
24"	45.00	36.00	23.19	23.19	22.83	4.25	24 x 1-5/8	23.82	26.18	29.52	25.59	-	6371

## CLASS 600

FULL PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
2"	11.50	6.50	1.94	1.94	5.73	1.57	8 x 3/4	4.11	7.07	-	8.66	23.5	99
3"	14.00	8.25	2.94	2.94	6.81	2.13	8 x 7/8	5.20	8.86	-	9.02	27.8	176
4"	17.00	10.75	3.94	3.94	7.72	2.20	8 x 1	6.30	9.76	18.11	9.02	33.7	308
6"	22.00	14.00	5.94	5.94	8.86	2.20	12 x 1-1/8	8.46	11.06	23.62	10.83	-	573
8"	26.00	16.50	7.94	7.94	10.70	2.20	12 x 1-1/4	10.04	12.83	23.62	16.54	-	877
10"	31.00	20.00	9.94	9.94	12.60	2.56	16 x 1-3/8	11.81	14.84	23.62	18.11	-	1500
12"	33.00	22.00	11.94	11.94	14.17	3.43	20 x 1-3/8	13.39	16.42	23.62	18.11	-	2161
14"	35.00	23.75	13.19	13.19	15.55	3.43	20 x 1-1/2	16.18	21.69	23.62	22.05	-	2930
16"	39.00	27.00	15.19	15.19	17.13	3.43	20 x 1-5/8	17.84	23.27	29.52	22.05	-	4321
18"	43.00	29.25	17.19	17.19	19.09	4.25	20 x 1-3/4	20.08	26.81	29.52	22.05	-	5038
20"	47.00	32.00	19.19	19.19	20.87	4.25	24 x 1-3/4	21.81	24.21	29.52	25.59	-	6834
24"	55.00	37.00	23.19	23.19	25.47	5.24	24 x 2	25.59	29.76	29.52	25.59	-	9811

## CLASS 900

FULL PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
2"	14.50	8.50	1.94	1.94	6.02	1.59	8 x 1	4.61	-	-	-	25.6	132
3"	15.00	9.50	2.94	2.94	7.17	2.19	8 x 1	5.55	-	-	-	29.5	192
4"	18.00	11.50	3.94	3.94	8.07	2.20	8 x 1-1/4	6.65	10.12	18.11	9.02	-	353
6"	24.00	15.00	5.94	5.94	8.92	2.95	12 x 1-1/4	10.04	10.93	23.62	15.83	-	860
8"	29.00	18.50	7.94	7.94	11.12	3.54	12 x 1-1/2	11.81	13.68	23.62	20.47	-	1543
10"	33.00	21.50	9.94	9.94	12.78	4.33	16 x 1-1/2	14.17	15.69	29.52	21.38	-	2425
12"	38.00	24.00	11.94	11.94	14.80	4.72	20 x 1-1/2	16.14	18.15	29.52	23.78	-	3858
14"	40.50	25.25	12.69	12.69	16.10	5.51	20 x 1-5/8	17.72	19.45	29.52	23.78	-	5071
16"	44.50	27.75	14.69	14.69	17.91	5.51	20 x 1-3/4	19.69	21.26	29.52	23.78	-	7716
18"	48.00	31.00	16.69	16.69	20.20	7.09	20 x 2	21.65	23.48	29.52	25.31	-	10421
20"	52.00	33.75	18.56	18.56	22.05	7.09	20 x 2-1/8	23.62	25.33	29.52	25.98	-	12218
24"	61.00	41.00	22.44	22.44	26.26	7.87	20 x 2-5/8	27.56	30.75	33.46	29.69	-	21484

## CLASS 1500

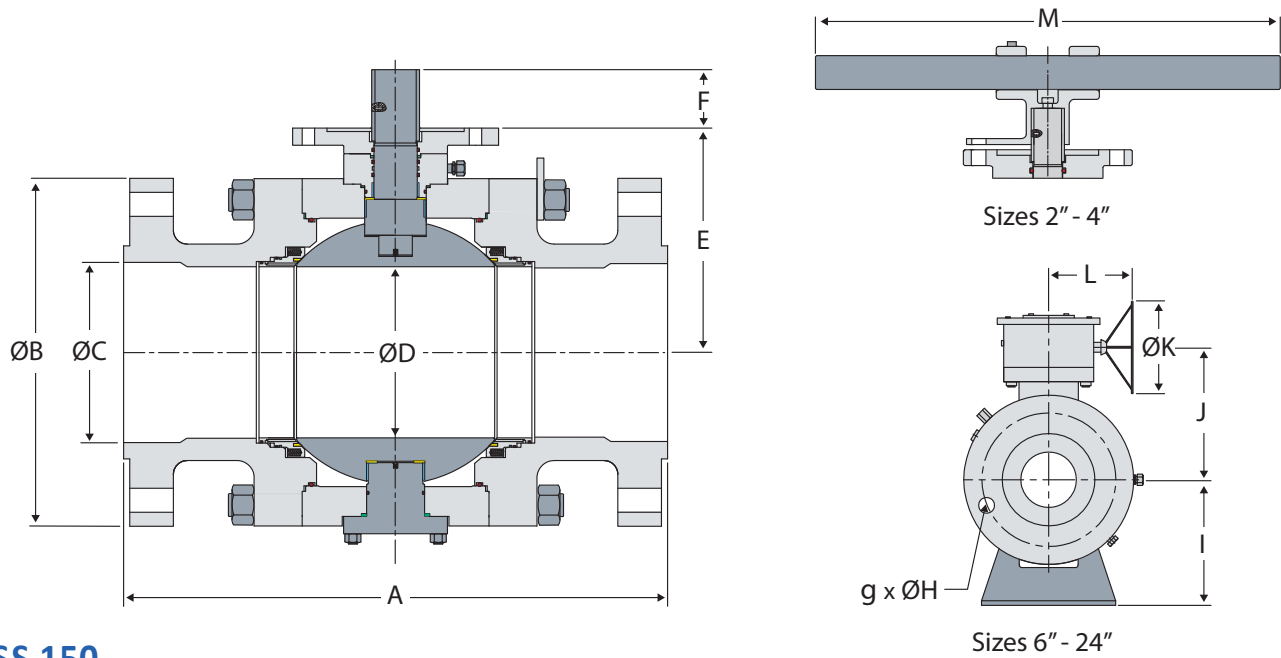
FULL PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
2"	14.50	8.50	1.94	1.94	6.02	1.59	8 x 1	4.61	-	-	-	25.59	132
3"	18.50	10.50	2.94	2.94	7.40	2.15	8 x 1-1/4	5.79	-	-	-	35.43	254
4"	21.50	12.25	3.94	3.94	8.50	2.20	8 x 1-3/8	7.28	10.55	23.62	14.17	-	428
6"	27.75	15.50	5.69	5.69	10.10	3.54	12 x 1-1/2	10.63	12.66	23.62	20.47	-	1305
8"	32.75	19.00	7.56	7.56	12.24	4.33	12 x 1-3/4	12.80	15.16	29.52	21.38	-	2061
10"	39.00	23.00	9.44	9.44	14.63	4.72	12 x 2	15.94	17.97	29.52	23.78	-	4189
12"	44.50	26.50	11.31	11.31	16.93	5.51	16 x 2-1/8	18.31	20.28	29.52	23.78	-	5038
14"	49.50	29.50	12.44	12.44	18.17	5.51	16 x 2-3/8	19.49	21.46	29.52	25.31	-	8686
16"	54.50	32.50	14.19	14.19	20.75	7.09	16 x 2-5/8	22.05	24.04	29.52	25.98	-	11971
18"	60.50	36.00	16.00	16.00	23.62	7.48	16 x 2-7/8	24.80	28.11	29.52	29.69	-	13644
20"	65.50	38.75	17.88	17.88	25.98	7.87	16 x 3-1/8	27.17	30.59	31.49	33.66	-	20007
24"	77.60	46.00	21.50	21.50	31.18	10.63	16 x 3-5/8	31.50	36.30	36.02	35.47	-	31482

## CLASS 2500

FULL PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
2"	17.75	9.25	1.69	1.69	6.32	2.17	8 x 1-1/8	4.53	8.37	18.11	9.02	-	194
3"	22.75	12.00	2.44	2.44	7.80	2.56	8 x 1-3/8	5.87	9.84	23.62	14.17	-	412
4"	26.50	14.00	3.44	3.44	9.41	2.95	8 x 1-5/8	7.66	11.46	23.62	15.83	-	838
6"	36.00	19.00	5.19	5.19	12.20	4.33	8 x 2-1/8	12.60	15.12	29.53	21.38	-	1698

1. Weights are estimated and may vary slightly.  
 2. RTJ end connections are available. Contact CNC Flow Control for dimensions.

# REDUCED PORT DIMENSIONS IMPERIAL UNITS



## CLASS 150

REDUCED PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
3 x 2	8.00	7.50	2.94	1.94	4.57	1.57	4 x 3/4	3.86	5.71	-	8.66	14.06	66
4 x 3	9.00	9.00	3.94	2.94	5.79	1.57	8 x 3/4	4.88	7.13	-	8.66	19.96	132
6 x 4	15.50	11.00	5.94	3.94	6.69	1.57	8 x 7/8	5.67	8.03	-	8.66	23.90	220
8 x 6	18.00	13.50	7.94	5.94	8.66	2.20	8 x 7/8	8.07	10.87	23.62	10.83	-	408
10 x 8	21.00	16.00	9.94	7.94	10.04	2.20	12 x 1	9.45	12.24	23.62	10.83	-	642
12 x 10	24.00	19.00	11.94	9.94	11.81	2.56	12 x 1	11.02	13.66	23.62	18.11	-	1019
14 x 10	27.00	21.00	13.19	9.94	11.81	2.56	12 x 1-1/8	11.02	13.66	23.62	18.11	-	1142
16 x 12	30.00	23.50	15.19	11.94	13.23	2.56	16 x 1-1/8	12.40	15.47	23.62	18.11	-	1539
18 x 14	34.00	25.00	17.19	13.19	14.41	3.43	16 x 1-1/4	15.16	20.55	23.62	22.05	-	2183
20 x 16	36.00	27.50	19.19	15.19	15.94	3.43	20 x 1-1/4	16.54	22.05	23.62	22.05	-	2425
24 x 20	42.00	32.00	23.19	19.19	18.90	3.43	20 x 1-3/8	19.33	25.04	29.52	22.05	-	4343

## CLASS 300

REDUCED PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
3 x 2	11.12	8.25	2.94	1.94	4.57	1.57	8 x 7/8	3.86	5.71	-	8.66	14.06	71
4 x 3	12.00	10.00	3.94	2.94	5.79	1.57	8 x 7/8	4.88	7.13	-	8.66	19.96	143
6 x 4	15.88	12.50	5.94	3.94	7.76	1.57	12 x 7/8	5.83	9.09	-	8.66	23.90	254
8 x 6	19.75	15.00	7.94	5.94	8.66	2.20	12 x 1	8.07	10.87	23.62	10.83	-	483
10 x 8	22.38	17.50	9.94	7.94	10.24	2.20	16 x 1-1/8	9.65	12.44	23.62	16.54	-	705
12 x 10	25.50	20.50	11.94	9.94	12.01	2.56	16 x 1-1/4	11.22	14.25	23.62	18.11	-	1310
14 x 10	30.00	23.00	13.19	9.94	12.01	2.56	20 x 1-1/4	11.22	14.25	23.62	18.11	-	1418
16 x 12	33.00	25.50	15.19	11.94	13.58	2.56	20 x 1-3/8	12.80	15.83	23.62	18.11	-	1799
18 x 14	36.00	28.00	17.19	13.19	14.57	3.43	24 x 1-3/8	15.35	16.81	23.62	18.11	-	2535
20 x 16	39.00	30.50	19.19	15.19	16.34	3.43	24 x 1-3/8	16.93	18.58	23.62	18.11	-	3666
24 x 20	45.00	36.00	23.19	19.19	19.69	3.43	24 x 1-5/8	20.63	27.40	29.52	22.05	-	5866

# REDUCED PORT DIMENSIONS IMPERIAL UNITS



## CLASS 600

REDUCED PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
3 x 2	14.00	8.25	2.94	1.94	5.73	1.57	8 x 7/8	4.11	7.07	-	8.66	23.50	86
4 x 3	17.00	10.75	3.94	2.94	6.81	2.13	8 x 1	5.20	8.86	-	9.02	27.83	172
6 x 4	22.00	14.00	5.94	3.94	7.72	2.20	12 x 1-1/8	6.30	9.76	18.11	9.02	33.74	331
8 x 6	26.00	16.50	7.94	5.94	8.86	2.20	12 x 1-1/4	8.46	11.06	23.62	10.83	-	644
10 x 8	31.00	20.00	9.94	7.94	10.63	2.20	16 x 1-3/8	10.04	12.83	23.62	16.54	-	1213
12 x 10	33.00	22.00	11.94	9.94	12.60	2.56	20 x 1-3/8	11.81	14.84	23.62	18.11	-	1788
14 x 10	35.00	23.75	13.19	9.94	12.60	2.56	20 x 1-1/2	11.81	14.84	23.62	18.11	-	2011
16 x 12	39.00	27.00	15.19	11.94	14.17	3.43	20 x 1-5/8	13.39	16.42	23.62	18.11	-	2972
18 x 14	43.00	29.25	17.19	13.19	15.55	3.43	20 x 1-3/4	16.18	21.69	23.62	22.05	-	3704
20 x 16	47.00	32.00	19.19	15.19	17.13	3.43	24 x 1-3/4	17.84	23.27	29.52	22.05	-	4597
24 x 20	55.00	37.00	23.19	19.19	20.87	4.25	24 x 2	21.81	24.21	29.52	25.59	-	7161

## CLASS 900

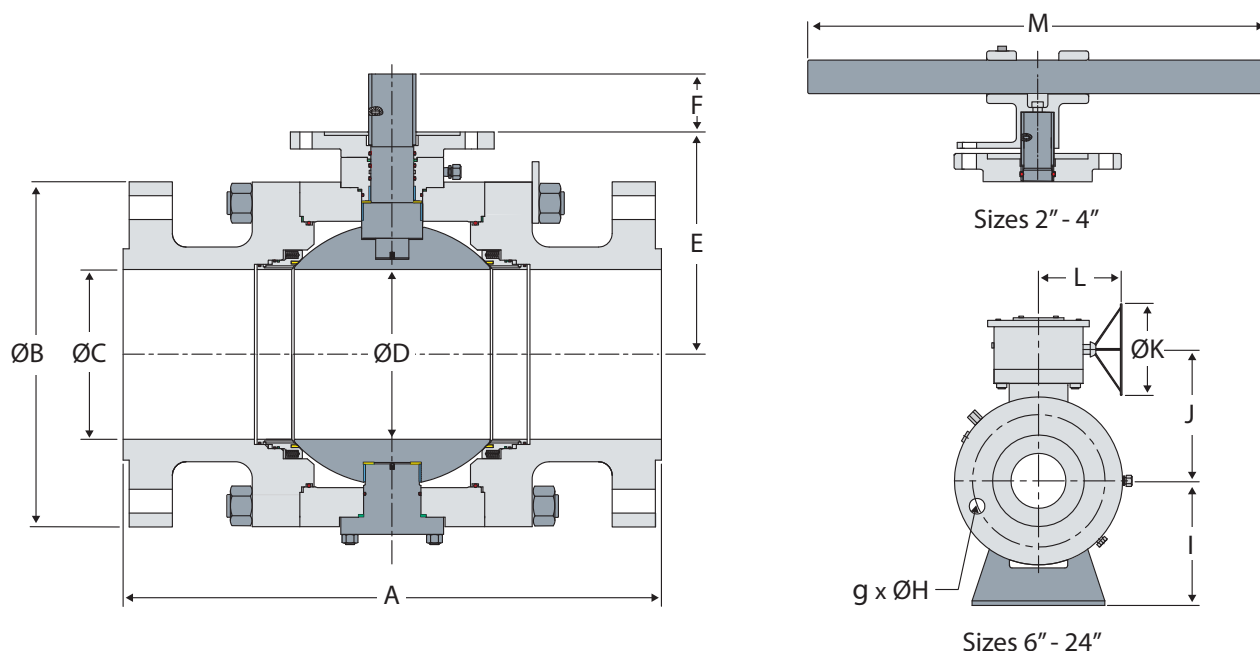
REDUCED PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
3 x 2	15.00	9.50	2.94	1.94	6.02	1.59	8 x 1	4.61	-	-	-	25.59	115
4 x 3	18.00	11.50	3.94	2.94	7.17	2.19	8 x 1-1/4	5.55	-	-	-	29.53	209
6 x 4	24.00	15.00	5.94	3.94	8.07	2.20	12 x 1-1/4	6.65	10.12	18.11	9.02	-	452
8 x 6	29.00	18.50	7.94	5.94	8.92	2.95	12 x 1-1/2	10.04	10.93	23.62	15.83	-	970
10 x 8	33.00	21.50	9.94	7.94	11.12	3.54	16 x 1-1/2	11.81	13.68	23.62	20.47	-	1521
12 x 10	38.00	24.00	11.94	9.94	12.78	4.33	20 x 1-1/2	14.17	15.69	29.52	21.38	-	2546
14 x 10	40.50	25.25	12.69	9.94	12.78	4.33	20 x 1-5/8	14.17	15.69	29.52	21.38	-	2734
16 x 12	44.50	27.75	14.69	11.94	14.80	4.72	20 x 1-3/4	16.14	18.15	29.52	23.78	-	3814
18 x 14	48.00	31.00	16.69	12.69	16.10	5.51	20 x 2	17.72	19.45	29.52	23.78	-	4189
20 x 16	52.00	33.75	18.56	14.69	17.91	5.51	20 x 2-1/8	19.69	21.26	29.52	23.78	-	6338
24 x 20	61.00	41.00	22.44	18.56	22.05	7.09	20 x 2-5/8	23.62	25.33	29.52	25.98	-	11905

## CLASS 1500

REDUCED PORT VALVE - DIMENSIONS IN INCHES (IN)													
SIZE	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (LB)
3 x 2	18.50	10.50	2.94	1.94	6.02	1.59	8 x 1-1/4	4.61	-	-	-	25.59	150
4 x 3	21.50	12.25	3.94	2.94	7.40	2.15	8 x 1-3/8	5.79	-	-	-	35.43	269
6 x 4	27.75	15.50	5.69	3.94	8.50	2.20	12 x 1-1/2	7.28	10.55	23.62	14.17	-	628
8 x 6	32.75	19.00	7.56	5.69	10.10	3.54	12 x 1-3/4	10.63	12.66	23.62	20.47	-	1248
10 x 8	39.00	23.00	9.44	7.56	12.24	4.33	12 x 2	12.80	15.16	29.52	21.38	-	2253
12 x 10	44.50	26.50	11.31	9.44	14.63	4.72	16 x 2-1/8	15.94	17.97	29.52	23.78	-	3880
14 x 10	49.50	29.50	12.44	9.44	14.63	4.72	16 x 2-3/8	15.94	17.97	29.52	23.78	-	4729
16 x 12	54.50	32.50	14.19	11.31	16.93	5.51	16 x 2-5/8	18.31	20.28	29.52	23.78	-	6173
18 x 14	60.50	36.00	16.00	12.44	18.17	5.51	16 x 2-7/8	19.49	21.46	29.52	25.31	-	10141
20 x 16	65.50	38.75	17.88	14.19	20.75	7.09	16 x 3-1/8	22.05	24.04	29.52	25.98	-	11321
24 x 20	77.60	46.00	21.50	17.88	25.98	7.87	16 x 3-5/8	27.17	30.59	31.49	33.66	-	23975

1. Weights are estimated and may vary slightly.  
2. RTJ end connections are available. Contact CNC Flow Control for dimensions.

# FULL PORT DIMENSIONS METRIC UNITS



## CLASS 150

FULL PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)

SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
50	178	150	49	49	116	40	4 x 19	98	145	-	220	357	25
80	203	190	74	74	147	40	4 x 19	124	181	-	220	507	34
100	229	230	100	100	170	40	8 x 19	144	204	-	220	607	52
150	394	280	150	150	220	56	8 x 22	205	276	600	275	-	150
200	457	345	201	201	255	56	8 x 22	240	311	600	275	-	330
250	533	405	252	252	300	65	12 x 25	280	347	600	460	-	446
300	610	485	303	303	336	65	12 x 25	315	393	600	460	-	557
350	686	535	334	334	366	87	12 x 29	385	522	600	560	-	830
400	762	595	385	385	405	87	16 x 29	420	560	600	560	-	1144
450	864	635	436	436	441	87	16 x 32	458	597	750	560	-	1440
500	914	700	487	487	480	87	20 x 32	496	636	750	560	-	1944
600	1067	815	589	589	567	108	20 x 35	591	763	750	560	-	2803

## CLASS 300

FULL PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)

SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
50	216	165	49	49	116	40	8 x 19	98	145	-	220	357	29
80	283	210	74	74	147	40	8 x 22	124	181	-	220	507	55
100	305	255	100	100	197	40	8 x 22	148	231	-	220	607	91
150	403	320	150	150	220	56	12 x 22	205	276	600	275	-	171
200	502	380	201	201	260	56	12 x 25	245	316	600	420	-	322
250	568	445	252	252	305	65	16 x 29	285	362	600	460	-	540
300	648	520	303	303	345	65	16 x 32	325	402	600	460	-	763
350	762	585	334	334	370	87	20 x 32	390	427	600	460	-	975
400	838	650	385	385	415	87	20 x 35	430	472	600	460	-	1400
450	914	710	436	436	455	87	24 x 35	472	611	750	560	-	1715
500	991	775	487	487	500	87	24 x 35	525	696	750	560	-	2479
600	1143	915	589	589	580	108	24 x 41	605	665	750	650	-	2890

## CLASS 600

FULL PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
50	292	165	49	49	145.5	40	8 x 19	104.5	179.5	-	220	597	45
80	356	210	74	74	173	54	8 x 22	132	225	-	229	707	80
100	432	275	100	100	196	56	8 x 25	160	248	460	229	857	140
150	559	355	150	150	225	56	12 x 29	215	281	600	275	-	260
200	660	420	201	201	270	56	12 x 32	255	326	600	420	-	398
250	787	510	252	252	320	65	16 x 35	300	377	600	460	-	680
300	838	560	303	303	360	87	20 x 35	340	417	600	460	-	980
350	889	605	334	334	395	87	20 x 38	411	551	600	560	-	1329
400	991	685	385	385	435	87	20 x 41	453	591	750	560	-	1960
450	1092	745	436	436	485	108	20 x 45	510	681	750	560	-	2285
500	1194	815	487	487	530	108	24 x 45	554	615	750	650	-	3100
600	1397	940	589	589	647	133	24 x 51	650	756	750	650	-	4450

## CLASS 900

FULL PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
50	368	215	49	49	153	40.5	8 x 25	117	-	-	-	650	60
80	381	240	74	74	182	55.5	8 x 25	141	-	-	-	750	87
100	457	290	100	100	205	56	8 x 32	169	257	460	229	-	160
150	610	380	150	150	226.5	75	12 x 32	255	277.5	600	402	-	390
200	737	470	201	201	282.5	90	12 x 38	300	347.5	600	520	-	700
250	838	545	252	252	324.5	110	16 x 38	360	398.5	750	543	-	1100
300	965	610	303	303	376	120	20 x 38	410	461	750	604	-	1750
350	1029	640	322	322	409	140	20 x 41	450	494	750	604	-	2300
400	1130	705	373	373	455	140	20 x 44	500	540	750	604	-	3500
450	1219	785	423	423	513	180	20 x 52	550	596.5	750	643	-	4727
500	1321	855	471	471	560	180	20 x 54	600	643.5	750	660	-	5542
600	1549	1040	570	570	667	200	20 x 67	700	781	850	754	-	9745

## CLASS 1500

FULL PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
50	368	215	49	49	153	40.5	8 x 25	117	-	-	-	650	60
80	470	265	74	74	188	54.7	8 x 32	147	-	-	-	900	115
100	546	310	100	100	216	56	8 x 35	185	268	600	360	-	194
150	705	395	144	144	256.5	90	12 x 38	270	321.5	600	520	-	592
200	832	485	192	192	311	110	12 x 44	325	385	750	543	-	935
250	991	585	239	239	371.5	120	12 x 52	405	456.5	750	604	-	1900
300	1130	675	287	287	430	140	16 x 54	465	515	750	604	-	2285
350	1257	750	315	315	461.5	140	16 x 60	495	545	750	643	-	3940
400	1384	825	360	360	527	180	16 x 67	560	610.5	750	660	-	5430
450	1559	915	406	406	600	190	16 x 70	630	714	750	754	-	6189
500	1686	985	454	454	660	200	16 x 79	690	777	800	855	-	9075
600	1972	1,170	546	546	792	270	16 x 90	800	922	915	901	-	14280

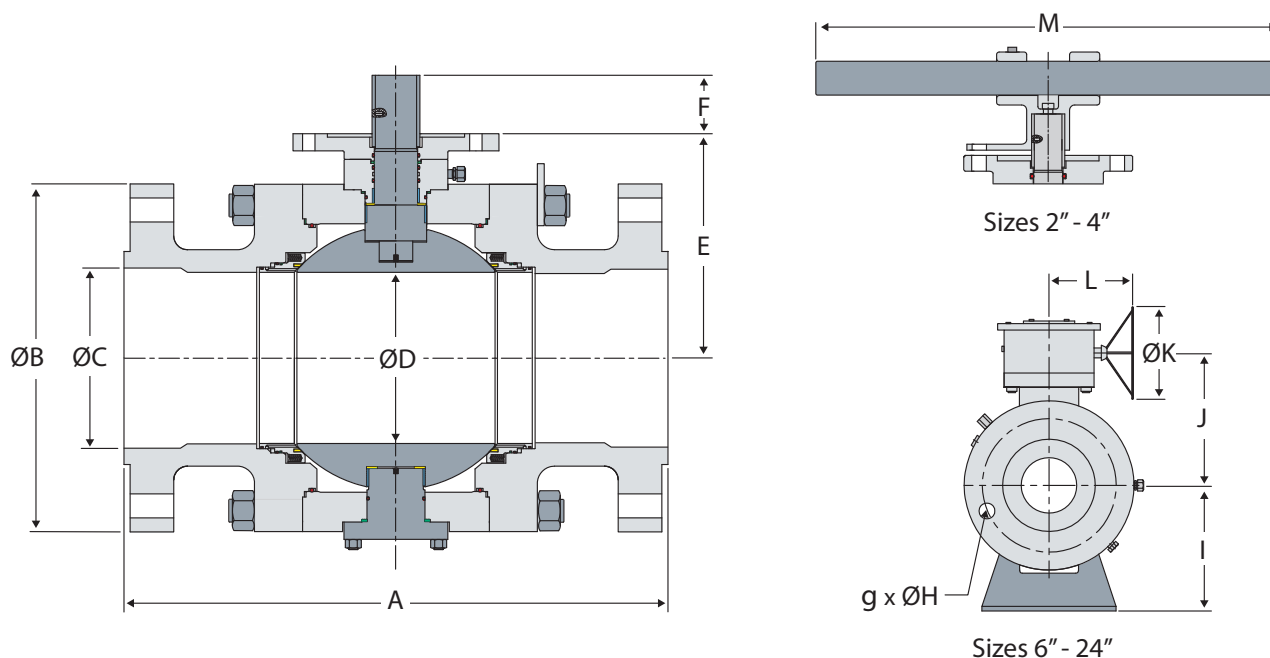
## CLASS 2500

FULL PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
50	451	235	43	43	161	55	8 x 29	115	213	460	229	-	88
80	578	305	62	62	198	65	8 x 35	149	250	600	360	-	187
100	673	356	87	87	239	75	8 x 41	195	291	600	402	-	380
150	914	483	132	132	310	110	8 x 54	320	384	750	543	-	770

1. Weights are estimated and may vary slightly.

2. RTJ end connections are available. Contact CNC Flow Control for dimensions.

# REDUCED PORT DIMENSIONS METRIC UNITS



## CLASS 150

REDUCED PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
80 x 50	203	190	74	49	116	40	4 x 19	98	145	-	220	357	30
100 x 80	229	230	100	74	147	40	8 x 19	124	181	-	220	507	60
150 x 100	394	280	150	100	170	40	8 x 22	144	204	-	220	607	100
200 x 150	457	345	201	150	220	56	8 x 22	205	276	600	275	-	185
250 x 200	533	405	252	201	255	56	12 x 25	240	311	600	275	-	291
300 x 250	610	485	303	252	300	65	12 x 25	280	347	600	460	-	462
350 x 250	686	535	334	252	300	65	12 x 29	280	347	600	460	-	518
400 x 300	762	595	385	303	336	65	16 x 29	315	393	600	460	-	698
450 x 350	864	635	436	334	366	87	16 x 32	385	522	600	560	-	990
500 x 400	914	700	487	385	405	87	20 x 32	420	560	600	560	-	1100
600 x 500	1067	815	589	487	480	87	20 x 35	491	636	750	560	-	1970

## CLASS 300

REDUCED PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
80 x 50	283	210	74	49	116	40	8 x 22	98	145	-	220	357	32
100 x 80	305	255	100	74	147	40	8 x 22	124	181	-	220	507	65
150 x 100	403	320	150	100	197	40	12 x 22	148	231	-	220	607	115
200 x 150	502	380	201	150	220	56	12 x 25	205	276	600	275	-	219
250 x 200	568	445	252	201	260	56	16 x 29	245	316	600	420	-	320
300 x 250	648	520	303	252	305	65	16 x 32	285	362	600	460	-	594
350 x 250	762	585	334	252	305	65	20 x 32	285	362	600	460	-	643
400 x 300	838	650	385	303	345	65	20 x 35	325	402	600	460	-	816
450 x 350	914	710	436	334	370	87	24 x 35	390	427	600	460	-	1150
500 x 400	991	775	487	385	415	87	24 x 35	430	472	600	460	-	1663
600 x 500	1143	915	589	487	500	87	24 x 41	524	696	750	560	-	2661



# REDUCED PORT DIMENSIONS METRIC UNITS



## CLASS 600

REDUCED PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
80 x 50	356	210	74	49	145.5	40	8 x 22	104.5	179.5	-	220	597	39
100 x 80	432	275	100	74	173	54	8 x 25	132	225	-	229	707	78
150 x 100	559	355	150	100	196	56	12 x 29	160	248	460	229	857	150
200 x 150	660	420	201	150	225	56	12 x 32	215	281	600	275	-	292
250 x 200	787	510	252	201	270	56	16 x 35	255	326	600	420	-	550
300 x 250	838	560	303	252	320	65	20 x 35	300	377	600	460	-	811
350 x 250	889	605	334	252	320	65	20 x 38	300	377	600	460	-	912
400 x 300	991	685	385	303	360	87	20 x 41	340	417	600	460	-	1348
450 x 350	1092	745	436	334	395	87	20 x 45	411	551	600	560	-	1680
500 x 400	1194	815	487	385	435	87	24 x 45	453	591	750	560	-	2085
600 x 500	1397	940	589	487	530	108	24 x 51	554	615	750	650	-	3248

## CLASS 900

REDUCED PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
80 x 50	381	240	74	49	153	40.5	8 x 25	117	-	-	-	650	52
100 x 80	457	290	100	74	182	55.5	8 x 32	141	-	-	-	750	95
150 x 100	610	380	150	100	205	56	12 x 32	169	257	460	229	-	205
200 x 150	737	470	201	150	226.5	75	12 x 38	255	277.5	600	402	-	440
250 x 200	838	545	252	201	282.5	90	16 x 38	300	347.5	600	520	-	690
300 x 250	965	610	303	252	324.5	110	20 x 38	360	398.5	750	543	-	1155
350 x 250	1029	640	322	252	324.5	110	20 x 41	360	398.5	750	543	-	1240
400 x 300	1130	705	373	303	376	120	20 x 44	410	461	750	604	-	1730
450 x 350	1219	785	423	322	409	140	20 x 52	450	494	750	604	-	1900
500 x 400	1321	855	471	373	455	140	20 x 54	500	540	750	604	-	2875
600 x 500	1549	1040	570	471	560	180	20 x 67	600	643.5	750	660	-	5400

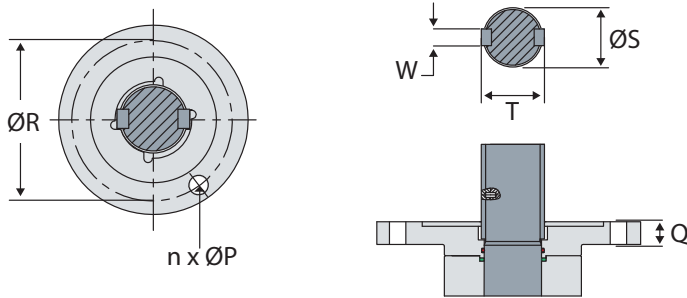
## CLASS 1500

REDUCED PORT VALVE - DIMENSIONS IN MILLIMETERS (MM)													
SIZE (DN)	A	ØB	ØC	ØD	E	F	G X ØH	I	J	ØK	L	M	WEIGHT (KG)
80 x 50	470	265	74	49	153	40.5	8 x 32	117	-	-	-	650	68
100 x 80	546	310	100	74	188	54.7	8 x 35	147	-	-	-	900	122
150 x 100	705	395	144	100	216	56	12 x 38	185	268	600	360	-	285
200 x 150	832	485	192	144	256.5	90	12 x 44	270	321.5	600	520	-	566
250 x 200	991	585	239	192	311	110	12 x 52	325	385	750	543	-	1022
300 x 250	1130	675	287	239	371.5	120	16 x 54	405	456.5	750	604	-	1760
350 x 250	1257	750	315	239	371.5	120	16 x 60	405	456.5	750	604	-	2145
400 x 300	1384	825	360	287	430	140	16 x 67	465	515	750	604	-	2800
450 x 350	1559	915	406	315	461.5	140	16 x 70	495	545	750	643	-	4600
500 x 400	1686	985	454	360	527	180	16 x 79	560	610.5	750	660	-	5135
600 x 500	1972	1170	546	454	660	200	16 x 90	690	777	800	855	-	10875

1. Weights are estimated and may vary slightly.

2. RTJ end connections are available. Contact CNC Flow Control for dimensions.

# ACTUATOR MOUNTING DIMENSIONS IMPERIAL UNITS



n = Number of Bolts  
 ØP = Hole Diameter  
 Q = Min. Flange Thickness  
 ØR = Bolt Circle Diameter

ØS = Stem Diameter  
 T = Stem Diameter Over Keys  
 W = Key Width

## CLASS 150

ISO 5211 FLANGE IN INCHES (IN)								
SIZE	ISO	N	ØP	Q	ØR	ØS	T	W
2"	F10	4	0.43	0.51	4.02	0.87	1.06	0.24
3"	F10	4	0.51	0.51	4.02	1.18	1.42	0.39
4"	F12	4	0.55	0.59	4.92	1.18	1.42	0.31
6"	F16	4	0.87	0.59	6.50	1.42	1.65	0.39
8"	F16	4	0.87	0.79	6.50	1.69	1.93	0.47
10"	F25	8	0.71	0.79	10.00	2.09	2.40	0.63
12"	F25	8	0.71	0.79	10.00	2.09	2.40	0.63
14"	F25	8	0.71	1.18	10.00	2.44	2.76	0.71
16"	F25	8	0.71	1.18	10.00	2.44	2.76	0.71
18"	F25	8	0.71	1.18	10.00	2.84	3.19	0.79
20"	F25	8	0.71	1.18	10.00	2.84	3.19	0.79
24"	F30	8	0.87	1.39	11.73	3.35	3.74	0.87

## CLASS 900

ISO 5211 FLANGE IN INCHES (IN)								
SIZE	ISO	N	ØP	Q	ØR	ØS	T	W
2"	F12	4	0.55	0.71	4.92	0.98	1.22	0.31
3"	F14	4	0.71	0.91	5.51	1.38	1.61	0.39
4"	F16	4	0.87	0.91	6.50	1.57	1.81	0.47
6"	F16	4	0.87	0.91	6.50	1.97	2.24	0.63
8"	F25	8	0.71	0.98	10.00	2.36	2.68	0.71
10"	F25	8	0.71	0.98	10.00	2.95	3.31	0.79
12"	F25	8	0.71	0.98	10.00	3.35	3.74	0.87
14"	F30	8	0.87	1.18	11.73	3.54	3.94	0.98
16"	F30	8	0.87	1.18	11.73	3.94	4.41	1.10
18"	F35	8	1.30	1.50	14.02	4.13	4.61	1.10
20"	F35	8	1.30	1.50	14.02	4.53	5.08	1.26
24"	F40	8	1.54	1.77	15.98	5.51	6.14	1.42

## CLASS 300

ISO 5211 FLANGE IN INCHES (IN)								
SIZE	ISO	N	ØP	Q	ØR	ØS	T	W
2"	F10	4	0.43	0.51	4.02	0.87	1.06	0.24
3"	F10	4	0.51	0.51	4.02	1.18	1.42	0.39
4"	F12	4	0.55	0.59	4.92	1.18	1.42	0.31
6"	F16	4	0.87	0.59	6.50	1.42	1.65	0.39
8"	F16	4	0.87	0.79	6.50	1.69	1.93	0.47
10"	F25	8	0.71	0.98	10.00	2.09	2.40	0.63
12"	F25	8	0.71	0.98	10.00	2.44	2.76	0.71
14"	F25	8	0.71	1.18	10.00	2.44	2.76	0.71
16"	F25	8	0.71	1.18	10.00	2.84	3.19	0.79
18"	F25	8	0.71	1.18	10.00	3.35	3.74	0.87
20"	F25	8	0.71	1.18	10.00	3.35	3.74	0.87
24"	F30	8	0.87	1.39	11.73	3.94	4.41	1.10

## CLASS 1500

ISO 5211 FLANGE IN INCHES (IN)								
SIZE	ISO	N	ØP	Q	ØR	ØS	T	W
2"	F12	4	0.55	0.71	4.92	0.98	1.22	0.31
3"	F14	4	0.71	0.91	5.51	1.38	1.61	0.39
4"	F16	4	0.87	0.91	6.50	1.57	1.81	0.47
6"	F25	8	0.71	0.98	10.00	2.48	2.80	0.71
8"	F25	8	0.71	0.98	10.00	2.95	3.31	0.79
10"	F25	8	0.71	0.98	10.00	3.35	3.74	0.87
12"	F30	8	0.87	1.18	11.73	4.13	4.61	1.10

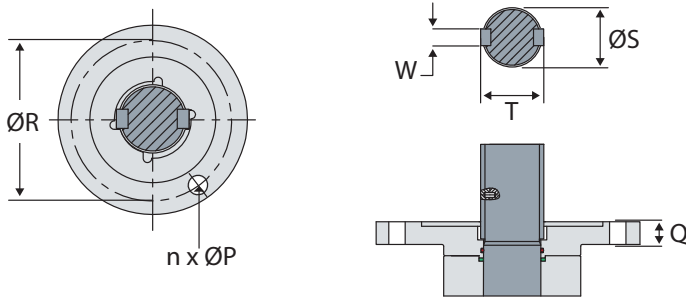
## CLASS 600

ISO 5211 FLANGE IN INCHES (IN)								
SIZE	ISO	N	ØP	Q	ØR	ØS	T	W
2"	F12	4	0.55	0.71	4.92	0.98	1.22	0.31
3"	F14	4	0.71	0.91	5.51	1.38	1.61	0.39
4"	F16	4	0.87	0.91	6.50	1.57	1.81	0.47
6"	F16	4	0.87	0.98	6.50	1.97	2.24	0.55
8"	F16	4	0.87	0.98	6.50	1.97	2.24	0.55
10"	F25	8	0.71	1.18	10.00	2.36	2.68	0.71
12"	F25	8	0.71	1.18	10.00	3.15	3.54	0.87
14"	F25	8	0.71	1.18	10.00	3.15	3.54	0.87
16"	F25	8	0.71	1.18	10.00	3.15	3.54	0.87
18"	F30	8	0.87	1.38	11.73	3.94	4.41	1.10
20"	F30	8	0.87	1.38	11.73	3.94	4.41	1.10
24"	F35	8	1.26	1.57	14.02	4.72	5.28	1.26

## CLASS 2500

ISO 5211 FLANGE IN INCHES (IN)								
SIZE	ISO	N	ØP	Q	ØR	ØS	T	W
2"	F14	4	0.71	0.79	5.51	1.42	1.65	0.39
3"	F16	4	0.87	0.79	6.50	1.69	1.93	0.47
4"	F25	8	0.71	0.98	10.00	2.09	2.40	0.63
6"	F25	8	0.71	0.98	10.00	2.83	3.19	0.79

# ACTUATOR MOUNTING DIMENSIONS METRIC UNITS



n = Number of Bolts  
 ØP = Hole Diameter  
 Q = Min. Flange Thickness  
 ØR = Bolt Circle Diameter

ØS = Stem Diameter  
 T = Stem Diameter Over Keys  
 W = Key Width

## CLASS 150

ISO 5211 FLANGE IN MILLIMETERS (MM)								
SIZE (DN)	ISO	N	ØP	Q	ØR	ØS	T	W
50	F10	4	10.9	13	102	22	27	6
80	F10	4	13.0	13	102	30	36	10
100	F12	4	14.0	15	125	30	36	8
150	F16	4	22.1	15	165	36	42	10
200	F16	4	22.1	20	165	43	49	12
250	F25	8	18.0	20	254	53	61	16
300	F25	8	18.0	20	254	53	61	16
350	F25	8	18.0	30	254	62	70	18
400	F25	8	18.0	30	254	62	70	18
450	F25	8	18.0	30	254	72	81	20
500	F25	8	18.0	30	254	72	81	20
600	F30	8	22.1	35	298	85	95	22

## CLASS 900

ISO 5211 FLANGE IN METRIC UNITS (MM)								
SIZE (DN)	ISO	N	ØP	Q	ØR	ØS	T	W
50	F12	4	14.0	18	125	25	31	8
80	F14	4	18.0	23	140	35	41	10
100	F16	4	22.1	23	165	40	46	12
150	F16	4	22.1	23	165	50	57	16
200	F25	8	18.0	25	254	60	68	18
250	F25	8	18.0	25	254	75	84	20
300	F25	8	18.0	25	254	85	95	22
350	F30	8	22.1	30	298	90	100	25
400	F30	8	22.1	30	298	100	112	28
450	F35	8	33.0	38	356	105	117	28
500	F35	8	33.0	38	356	115	129	32
600	F40	8	39.1	45	406	140	156	36

## CLASS 300

ISO 5211 FLANGE IN MILLIMETERS (MM)								
SIZE (DN)	ISO	N	ØP	Q	ØR	ØS	T	W
50	F10	4	10.9	13	102	22	27	6
80	F10	4	13.0	13	102	30	36	10
100	F12	4	14.0	15	125	30	36	8
150	F16	4	22.1	15	165	36	42	10
200	F16	4	22.1	20	165	43	49	12
250	F25	8	18.0	25	254	53	61	16
300	F25	8	18.0	25	254	62	70	18
350	F25	8	18.0	30	254	62	70	18
400	F25	8	18.0	30	254	72	81	20
450	F25	8	18.0	30	254	85	95	22
500	F25	8	18.0	30	254	85	95	22
600	F30	8	22.1	35	298	100	112	28

## CLASS 1500

ISO 5211 FLANGE IN MILLIMETERS (MM)								
SIZE (DN)	ISO	N	ØP	Q	ØR	ØS	T	W
50	F12	4	14.0	18	125	25	31	8
80	F14	4	18.0	23	140	35	41	10
100	F16	4	22.1	23	165	40	46	12
150	F25	8	18.0	25	254	63	71	18
200	F25	8	18.0	25	254	75	84	20
250	F25	8	18.0	25	254	85	95	22
300	F30	8	22.1	30	298	105	117	28

## CLASS 600

ISO 5211 FLANGE IN MILLIMETERS (MM)								
SIZE (DN)	ISO	N	ØP	Q	ØR	ØS	T	W
50	F12	4	14.0	18	125	25	31	8
80	F14	4	18.0	23	140	35	41	10
100	F16	4	22.1	23	165	40	46	12
150	F16	4	22.1	25	165	50	57	14
200	F16	4	22.1	25	165	50	57	14
250	F25	8	18.0	30	254	60	68	18
300	F25	8	18.0	30	254	80	90	22
350	F25	8	18.0	30	254	80	90	22
400	F25	8	18.0	30	254	80	90	22
450	F30	8	22.1	35	298	100	112	28
500	F30	8	22.1	35	298	100	112	28
600	F35	8	32.0	40	356	120	134	32

## CLASS 2500

ISO 5211 FLANGE IN MILLIMETERS (MM)								
SIZE (DN)	ISO	N	ØP	Q	ØR	ØS	T	W
50	F14	4	18.0	20	140	36	42	10
80	F16	4	22.1	20	165	43	49	12
100	F25	8	18.0	25	254	53	61	16
150	F25	8	18.0	25	254	72	81	20
200	F25	8	18.0	25	254	50		

# TECHNICAL DATA



## C<sub>V</sub> FOR FULL PORT BALL

CV VALUE OF FULL PORT BALL VALVE							
SIZE		CL 150	CL 300	CL 600	CL 900	CL 1500	CL 2500
IN	DN						
2"	50	420	420	370	450	450	250
3"	80	1200	1050	1020	1100	500	500
4"	100	2200	2100	1850	2200	2200	1100
6"	150	5150	5100	4400	4380	3800	2500
8"	200	9500	9400	8450	8500	7400	-
10"	250	15000	15000	14250	14500	11500	-
12"	300	23000	23000	22500	21100	18000	-
14"	350	28000	28000	28000	25000	21000	-
16"	400	37200	37200	38150	34500	27500	-
18"	450	49000	49000	49000	45000	37000	-
20"	500	59000	59000	68500	55200	48000	-
24"	600	92000	92000	98860	83800	70000	-

## C<sub>V</sub> FOR REDUCED PORT BALL

CV VALUE OF REDUCED PORT BALL VALVE						
SIZE		CL 150	CL 300	CL 600	CL 900	CL 1500
IN	DN					
3 x 2	80 x 50	200	200	200	190	180
4 x 3	100 x 80	600	600	600	590	550
6 x 4	150 x 100	800	800	790	790	780
8 x 6	200 x 150	2150	2150	2150	2150	2150
10 x 8	250 x 200	4300	4300	4300	4450	4450
12 x 10	300 x 250	7550	7550	7550	8000	9000
14 x 10	350 x 250	6000	6000	6000	6100	6100
16 x 12	400 x 300	9100	9100	9100	8900	8900
18 x 14	450 x 350	12100	12100	12100	11800	11800
20 x 16	500 x 400	15300	15300	15300	13800	12000
24 x 20	600 x 500	28200	28200	28200	25100	20600

## OPERATING TORQUE

BREAK TORQUE IN INCH POUNDS (IN-LB)						
SIZE	CL 150	CL 300	CL 600	CL 900	CL 1500	CL 2500
2"	443	531	1062	1770	2035	4425
3"	531	885	2124	3779	4425	8851
4"	1142	1859	4071	6638	8851	17701
6"	3717	5576	8762	14161	24782	42483
8"	6815	10621	15312	24782	44254	-
10"	10709	17524	28057	43368	88507	-
12"	15489	24339	36730	70806	119484	-
14"	17524	30977	47971	88507	150462	-
16"	24339	34075	55759	115059	221268	-
18"	36996	58415	91959	177014	318625	-
20"	44696	73018	123911	212417	398282	-
24"	65938	108510	183387	318625	663803	-

BREAK TORQUE IN NEWTON METERS (NM)						
SIZE (DN)	CL 150	CL 300	CL 600	CL 900	CL 1500	CL 2500
50	50	60	120	200	230	500
80	60	100	240	427	500	1000
100	129	210	460	750	1000	2000
150	420	630	990	1600	2800	4801
200	770	1200	1730	2800	5000	-
250	1210	1980	3170	4900	10000	-
300	1750	2750	4150	8000	13500	-
350	1980	3500	5421	10000	17000	-
400	2750	3850	6300	13000	25000	-
450	4180	6600	10390	20000	36000	-
500	5050	8250	14000	24000	45000	-
600	7450	12260	20720	36000	75000	-

The above values are new valve torque values, at maximum differential pressure.  
 The run (operating) torque is 60% of break torque. Closing torque is 80% of break torque.  
 The above torque values do not contain service factors.  
 When selecting an actuator, add 25% safety factor to the required torque as a minimum.  
 Actuator selection should be made on customer experience and appropriate service factors.  
 For metal seated ball valves and sizes not listed, contact CNC Flow Control.

## PRESSURE RATINGS

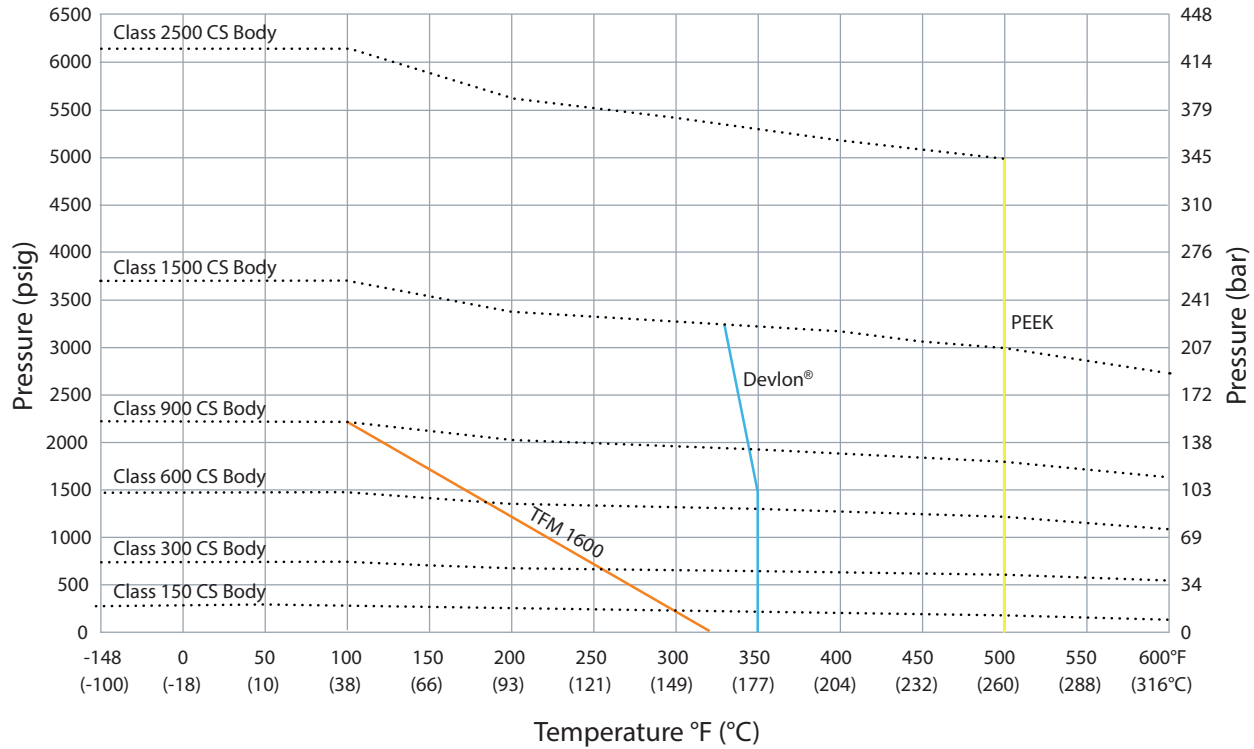
MATERIAL MAXIMUM PRESSURE RATING BY CLASS AT AMBIENT TEMPERATURE						
CLASS	CARBON STEEL		LOW TEMP CARBON STEEL		STAINLESS STEEL	
	PSIG	BAR	PSIG	BAR	PSIG	BAR
150	285	20	285	20	275	19
300	740	51	740	51	720	50
600	1480	102	1480	102	1440	99
900	2220	153	2220	153	2160	149
1500	3705	255	3705	255	3600	248
2500	6170	426	6170	426	6000	414

\*Above pressure ratings are applicable at ambient temperature -20°F to 100°F (-29°C to 38°C)

# TECHNICAL DATA



## SEAT PERFORMANCE CAPABILITIES



## TEMPERATURE LIMITS

MATERIAL TEMPERATURE LIMITS						
	MATERIAL	SPECIFICATION	FAHRENHEIT (°F)		CELSIUS (°C)	
			MIN.	MAX.	MIN.	MAX.
BODY	Carbon Steel	ASTM A105N	-20	800	-29	427
	Low Temp Carbon Steel	ASTM A350 LF2, Cl 1	-50	800	-46	427
	Stainless Steel	ASTM A182 F316	-425	850	-254	454
SPE SEAT	TFM 1600	TFM 1600	-148	320	-100	160
	Devlon®	Devlon®	-50	320	-46	160
	PEEK	PEEK	-148	500	-100	260
	Metal (TCC Coated)	Metal	-50	650	-46	343
DPE SEAT	HNBR LT AED	HNBR LT AED	-67	320	-55	160
	VITON® GLT AED	VITON® GLT AED	-50	410	-46	210
	ATLAS® AED	ATLAS® AED	23	482	-5	250
SEAL	LT HNBR 90	LT HNBR 90	-50	302	-46	150
	Viton® GLT 90	Viton® GLT 90	-50	392	-46	200
	AFLAS® 90	AFLAS® 90	5	392	-15	200

\*Contact CNC Flow Control for additional materials based on application.

## TRIM OPTIONS

TRIM OPTIONS & MATERIALS			
COMPONENT	CARBON STEEL	LOW TEMP CARBON STEEL	STAINLESS STEEL
	TRIM 3	TRIM 4	TRIM 5
Ball	ASTM A105/AISI 4140 + 3 mil ENP <sup>1</sup>	ASTM A350 LF2/AISI 4140 + 3 mil ENP <sup>1</sup>	ASTM A182 F316/F51 <sup>2</sup>
Stem	AISI 4140 + 3 mil ENP	AISI 4140 + 3 mil ENP	ASTM A182 F51
Trunnion	AISI 4140 + 3 mil ENP	AISI 4140 + 3 mil ENP	ASTM A182 F51
Seat Ring	ASTM A105 + 3 mil ENP	ASTM A350 LF2 + 3 mil ENP	ASTM A182 F316

1: For Classes 1500 and 2500, Ball is made of Low Alloy Steel (AISI 4140 + 3mil ENP)  
 2: For Classes 1500 and 2500, Ball is made of Duplex Stainless Steel (ASTM A182 F51)

# SERVICE CAPABILITIES



## Trusted Partner. Reliable Solutions.

Our extensive product and application expertise allows us to be more than just a supplier. Our customers view us as the people they trust to integrate flow controls with their equipment and ensure the successful achievement of their project goals. Our increased involvement with a diverse range of projects, spanning an array of industries provides us with a multitude of references for successful integration.

### PEOPLE

- Product and Application Know-How
- Technically Trained Sales Staff
- Exceptional Customer Service

### PRODUCTS

- Ball, Butterfly, Check, Gate, Needle and Plug Valves
- Adapters, Fittings, Gaskets, Joints, Couplings, Seals and Hammer Unions
- Product Leadership—Quality, Reliable and Innovative Products
- Replacement and Spare Parts
- ISO 9001:2015 Certified Organization

### SERVICES

- Distribution Network Located throughout North, Central, and South America
- Customer Specific Labeling and Packaging
- Strategic Account Partnerships
- Express Delivery
- Quality and Materials Assurance
- Valve Customization and Automation



API 6D Pressure Test Capability

Reports providing proof of quality and testing are available to our customers. Additional tests can be provided upon request.

- Positive Material Identification
- Material Test Reports
- Non-Destructive Testing
- Quality and Technical Documentation
- Supplementary Testing per Customer Requirements

## Valve Quality Development Team

Before the decision is made to brand a product C&C, our Valve Quality Development Team conducts comprehensive manufacturers audits and inspections on both the product and the manufacturer's production process. These stringent audits and inspections ensure the manufacturer's ability to produce and provide products of consistent quality demanded by our customers and in accordance with documented procedures. Once manufacturers are qualified, the VQDT performs onsite witnessing and inspections of the product prior to releasing it for shipment. This added capability and oversight differentiates us from other suppliers.



Proof of Product Quality and Compliance

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# ADDITIONAL API 6D OFFERINGS



## PISTON CHECK VALVE

### GUARDIAN SERIES

The C&C Cast Piston Check Valve provides system protection through back flow control. It is used in applications where there is a need to reduce excessive wear associated with reciprocating service, such as with compressors and pumps. The Piston Check is outfitted with a top entry flange, allowing for ease of maintenance and repair of internal parts, ultimately reducing downtime.

- Sizes 2" to 12", ASME Class 150 through 1500
- Suitable for Liquid or Gaseous Applications
- NACE MR0175/ISO 15156-1
- API 6D Monogrammed, ISO 14313, CSA Z245.15-17
- PED 2014/68/EU Annex III, Module H
- Material Traceability to ASME B31.1



## 2 PIECE CAST TRUNNION BALL VALVE

### ATLAS SERIES

The C&C Cast Trunnion Mounted Ball Valve's split body construction complies with API 6D, ASME B16.34, API 608, API 607 and other relevant ASTM specifications. With a variety of material selections available as well as ISO 5211 compliant direct mount actuator pad, the Cast Trunnion Ball Valve can be customized and automated to suit a complete range of oil and gas applications.

- Sizes 2" to 12", ASME Class 150 through 600
- API 6D Monogrammed, ISO 14313, CSA Z245.15-17
- NACE MR0175/ISO 15156-1
- Material Traceability to ASME B31.1
- Compliant with ASME B16.5, B16.10 and ISO 5211
- PED 2014/68/EU Annex III, Module H
- Fire Safe: API 607 7th Edition
- Fugitive Emissions: API 641



# About Our Company



CNC Flow Control is headquartered in Houston, Texas with multiple other locations in the U.S. and Canada. Our company unifies several trusted valve and flow line brands that have been serving numerous industries in North America for nearly three decades. From long range projects to same-day delivery, our diverse team is dedicated to understanding customers' needs in order to ensure exceptional service and the best solutions. Our extensive product portfolio ranges from commodity products like hammer unions and needle valves, to highly engineered products like API 6D trunnion mounted ball valves.



Quality assurance is critical to CNC Flow Control's process and we hold multiple internationally recognized quality standards certifications and management system. We are dedicated to understanding our customers' needs to ensure exceptional service by offering an in-house engineering and product management team, an extremely large product portfolio and extensive inventory to support same day shipments.

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