CNC
FLOW CONTROL



Double Offset Butterfly Valves

BFD Series
High Performance Butterfly Valve

C&C

C&C is a product brand of CNC Flow Control

CONTENTS

HOW TO ORDER	3
FEATURES, BENEFITS, & PRINCIPLE DESIGN	4-7
STANDARD MATERIALS OF CONSTRUCTION	8
VALVE DIMENSIONAL DATA	9-16
FLOW / PRESSURE / TEMPERATURE	17-18
OPERATIONAL TORQUE	19-20

STANDARDS AND SPECIFICATIONS

STANDARDS

- **Design/Materials:** ASME B16.34
  MSS-SP-68
- **Fire Safe:** ISO 10497 & API 607
  - API 607 is Applicable to Class 150 & 300 in WCB & Stainless
- **Pressure-Temperature Rating:** API 609
- **Leakage:** Soft Seat Bi-directional Bubble Tight
  Metal Seat CLASS IV or V Leakage
- **Low Fugitive Emission Gland Packing System** | DIN3780, MSS-SP-143
  API 641, ISO 15848-1
- **NACE:** MR0103, MR0175 / ISO 15156
- **Flanged End:** ASME B16.5, B16.47
- **Face to Face:** API 609, MSS-SP-68, ISO 5752
- **Flange Short Pattern:** ISO 5752
- **Flange Long Pattern:** ASME B16.10
- **Top Mounting:** ISO 5211
- **Anti-Blow-Out Stem**
- **Markings:** MSS-SP-25, API 609
- **CSA Z245.15-22**
- **CRN - Canadian Registration Number**

SPECIFICATIONS Scope of Offering

- **Wafer, Lug, & Double Flanged Body:**
  2”- 48” CL. 150
  2”- 24” CL. 300
- **Fire safe and Non-Fire Safe Designs**
- **Full Material Traceability**
- **Multiple Operator Selection**
- **Temperature Standard Range:**
  -50° to 400° F (Soft or Fire Safe Seat)
  -50° to 800° F (Metal Seat)

* Other requirements are available upon request.
** Applicable temperatures vary with material.



TYPICAL APPLICATIONS

- **Hydrocarbon and Chemical Processing**
- **Power & Utilities**
- **Water, Wastewater, & Vacuum Systems**
- **Data Centers & HVAC Systems**
- **Marine, Pulp & Paper, & Industrial Processing**

FLOW CONTROL:

Reliable performance in oil, gas, aggressive chemicals, and oxygen service.

- **Industrial Applications:** Steam, cooling water, power generation auxiliaries, filtration, discharge, and low-pressure vacuum systems.
- **Sealing Performance:** Tight shutoff for critical containment.
- **Environmental Resilience:** Operates effectively in seawater and cooling infrastructure environments.
- **Robust Design:** Built for high-demand, mission-critical operations.

How To Order

EXAMPLE: A 3", Class 150, Lug style, double offset butterfly valve with raised face end connections, 316 stainless steel body, disc, stem, RTFE seat, Graphite packing, cast iron gear wheel operator, with anti-static option is written as : **301BFDLS22PGA7GA**

A	B	C	D	E	F	G	H	I	J	K
3	01	BFD	L	S	2	2	PG	A7	G	A

A	Size	
	Inch	DN
2	2	50
2.5	2-1/2	65
3	3	80
4	4	100
5	5	125
6	6	150
8	8	200
10	10	250
12	12	300
14	14	250
16	16	400
18	18	450
20	20	500
24	24	600
26	26	650
28-48	28-48	700-1200

B	Pressure Class
01	150
03	300

C	Valve Type
BFD	Double Offset Butterfly Valve

D	Flange Type
L	Lug Style
W	Wafer Style
R	ISO 5752 Short Flange (Double Flange)

E	Body Material
C	ASTM A216 WCB
F	A351 Gr. CF8 / 304SS
S	ASTM A 351 CF8M / 316SS
M	A351 Gr. CF3M / 316L SS
D	Duplex SS A890 4A
X	Super Duplex SS A890 5A

F	Disc Material
1	A351 Gr. CF8 / 304SS
2	ASTM A351 CF8M / 316SS
3	A351 Gr. CF3M / 316L SS
4	Duplex SS A890 4A
5	Super Duplex SS A890 5A

ENP on 2" to 6"
HRC (Hard Chrome Overlay) 8" and above

G	Stem Material
1	A182 Gr. F304
2	A182 Gr. F316
3	A182 Gr. F316L
4	17-4PH A 564 Type 630 (HH1150)
5	XM-19 (Nitronic)
6	Duplex SS UNS S32205
7	Super Duplex UNS S32750

H	Seat Material
78	Inconel 718 (Metal Seat)
PF	FTET (PTFE+15% Glass Fiber)
CE	PCTFE
PK	PEEK
PT	PTFE
PG	RTFE (PTFE+15% Graphite)
TF	TFM 1600
PE	UPE (UHMWPE)

I	Gland Packing	
U1	PTFE	Standard
U2	RTFE	
A1	PTFE	Live Loading Low Fugitive Emission
A2	RTFE ISO	
A3	Graphite - EVSP 9000	
A4	Graphite - Slade 3300W	
A5	PTFE + Lantern Ring	
A6	RTFE + Lantern Ring ISO	
A7	Graphite ISO	
F1	PTFE *(316SS Back Ring)*	Packing For Soft Seated Valves *(Includes Metal Back Ring For Valve Seat)*
F2	RTFE *(316SS Back Ring)*	
F4	Graphite *(316SS Back Ring)*	
F9	Graphite *(Inconel Back Ring)*	
U9	Graphite - Metal Seat Only (Category H = 78)	
T7	Graphite (High Temp +1,000 °F)	

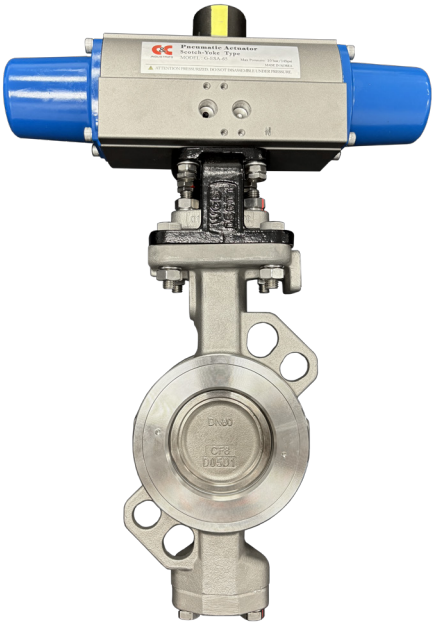
- *All Graphite Packings are **Fire-Safe** Tested to API 607*
- *No HRC On Metal Seat & Backing.*
- *ISO-15848 for Fugitive Emissions ISO*

J	Operator
B	Bare Stem
L	Lever (WCB)
E	Lever (SS)
G	Gear Wheel (Cast Iron)
W	Gear Wheel (SS)
A	Actuator

K	Optional Extras
D	High Freq. (UPE/PEEK/Metal)
E	Low Fugitive Emission
H	High Temperature
L	Low Temperature
P	Polish (Food Grade / PTFE)
A	Anti-Static
T	Anti-Static + Low Emission
R	Purge Tube / Gear

Features, Benefits & Principle Design

The C&C BFD quarter-turn butterfly valve features true double offset geometry, ensuring bubble-tight sealing. This design enables the valve to achieve fully bidirectional zero leakage.



- Double Eccentricity Design
- Blowout Proof Stem Design
- Upper & Lower Bearings to Maximize Valve Life
- Floating Seat Design Applies to all seat types by self-aligning, enhancing sealing, reducing wear, and improving a tighter shutoff.

FEATURES

Gland Flange
A fully adjustable two-piece gland flange to ensure even packing load over 360°

Anti-Blowout Stem
Prevents stem blowout due to pressure

Gland Bushing
Applies even pressure to glad packing

Gland Packing
Leak performance is compliant with API 598

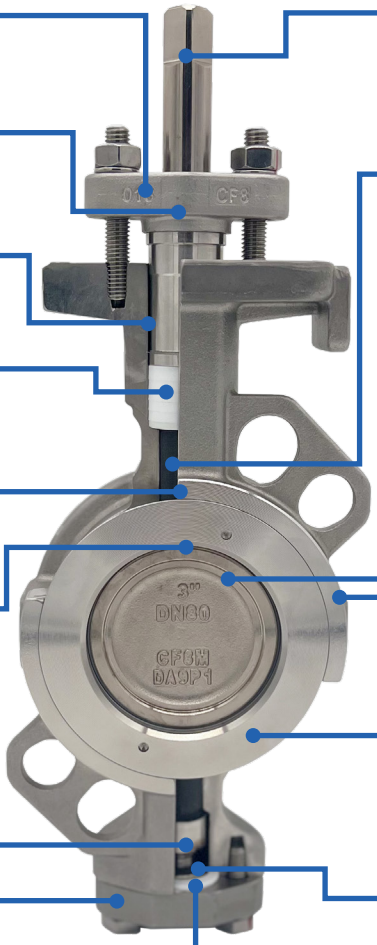
Valve Seat
Bi-directional seat design when equipped with MPTFE, RTFE, or UHMWPE

Taper Pins
Tangentially located to secure the disc to stem

Thrust Ring
Prevents stem wobble

Bottom Cover
316 stainless for durability

Bottom Gasket
PTFE or graphite available



Valve Stem
• Chrome plated stainless • One-piece design
• ISO 5211 compliant • Disc position marker

Self Lubricating Bushing
B-woven fabric metal for reduced stem friction

Valve Disc
Streamline design for greatly reduced noise and turbulence

Valve Body
Compliant with API 609 and ASME B16.34. Valve information listed on the side plate of the valve body

Patented Retainer Ring
Screwless floating ring design eliminates cold flow. This design provides positive shut-off with a surface roughness of 125-250AARH

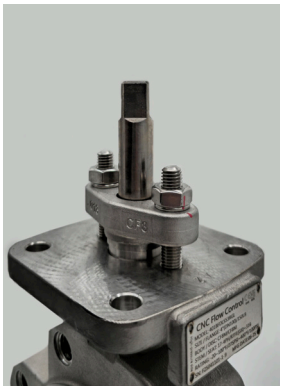
Thrust Plate
B-woven fabric metal for reduced stem friction

Features & Benefits Continued

Valve Body

C&C BFD High Performance Butterfly Valves are designed 100% compliance with API 609 and ASME B16.34. Utilizing CAD in every component resulting in top performing reliability.





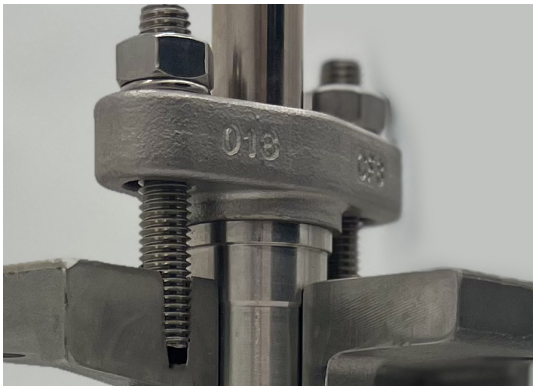


Top Works

ISO 5211 compliant.
The yoke is designed with a draining system for outdoor service.

Anti-Blow-Out Stem Top & Anti-Electrostatic System

An anti-Blow-out design and optional Anti-electrostatic system. Compliant with API 609 and ATEX.





Anti-Blow-Out Stem Bottom & Positioning Thrust Ring

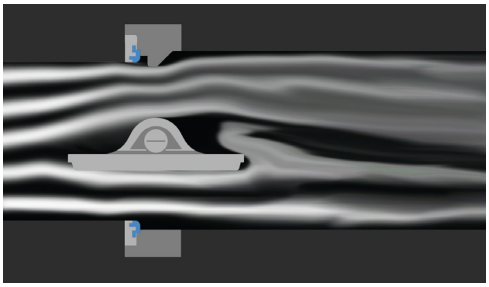
A rigid thrust ring keeps the stem in precise alignment.
This and the stem threads help to prevent stem blow-out.

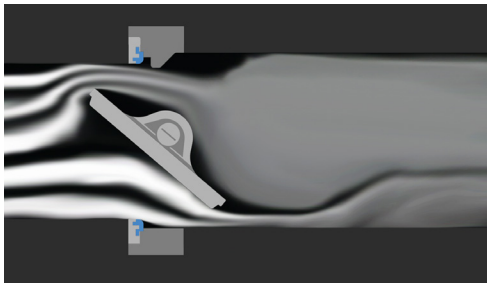
Features & Benefits Continued

Valve Disc

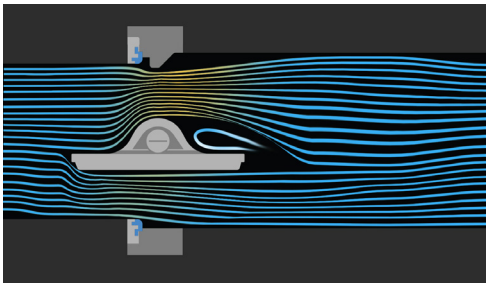
Utilizing advanced 3D CAD simulation techniques, a streamlined disc has been designed which reduces noise and turbulence. Meanwhile, all disc and stem surfaces are hard-chrome-plated. This feature significantly improves disc performance against abrasion and shock, resulting in longer life cycle.

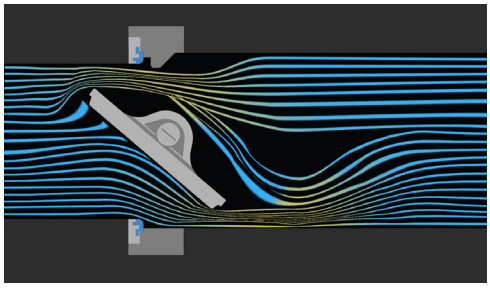
Gas Simulation
(50 M/Sec)





Fluid Simulation
(10 M/Sec)





Patented Retainer Ring

The patented screwless seat retainer ring rotates along a groove in the valve body until fully secured. This design increases the contact area between the flange gasket and the valve's sealing surface, improving the system's tolerance for installation misalignment.





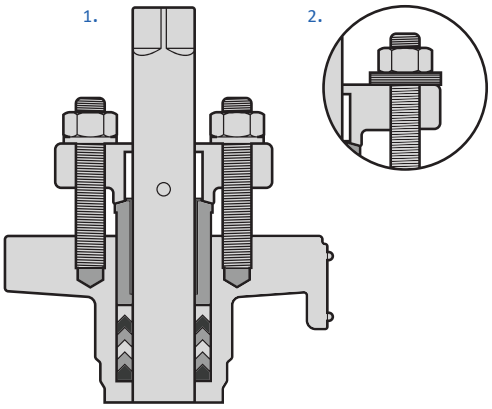


Markings and Name Plate

BFD valves come equipped with an additional info plate providing feature information about each distinct valves details. Compliance MSS-SP-25 & API 609.

Gland Packing Types

1. Standard Vee Type

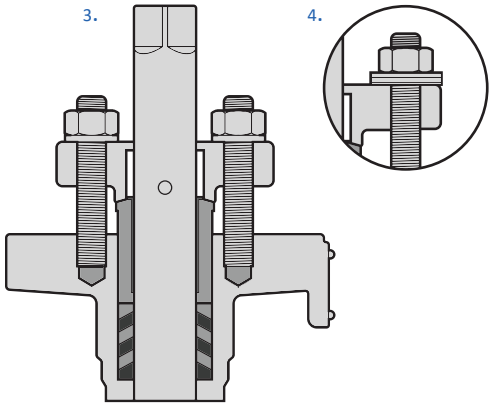


Standard PTFE or RTFE gland packing system.

2. Vee Type with Live-Load Option

Live loaded low fugitive emission V-type PTFE or RTFE gland packing system.

3. Standard Graphite Type

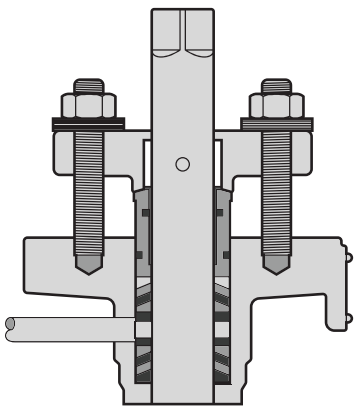


Standard graphite gland packing system (fire-safe only).

4. Graphite with Live-Load Option

Live loaded low fugitive emission V-type PTFE or RTFE gland packing system.

5. Live-Load Type with Lantern Ring



A lantern ring with double packing leak-off monitoring allows the user to purge and monitor leakage from the bottom packing.

Standard Materials of Construction

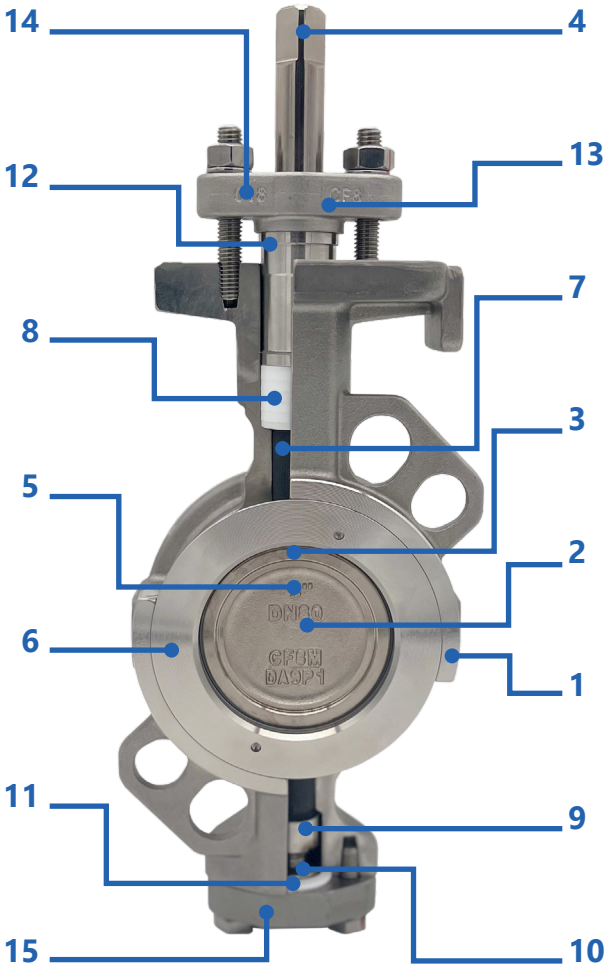
Lever Operated
6" and Below



Gear Operated
Standard 8" and Above



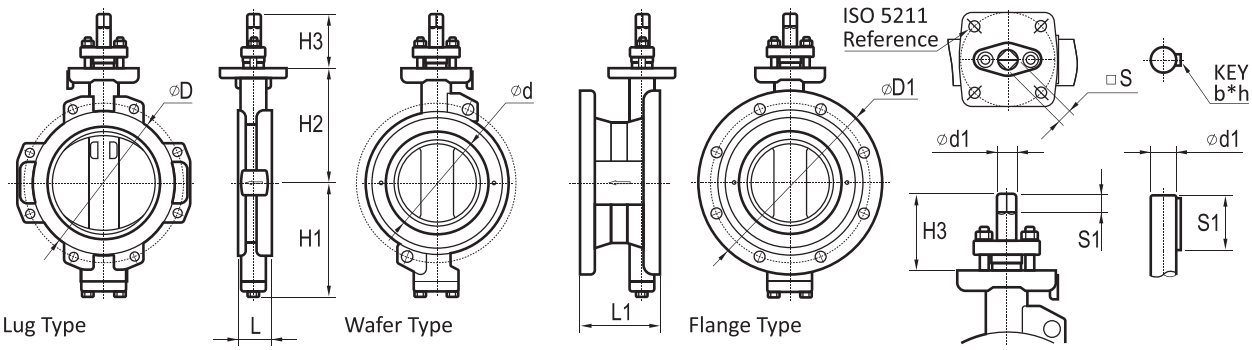
Optional Below 8"



#	Name	Material		
1	Body	A216 Gr. WCB	A315 Gr. CF8	A351 Gr. CF8M
2	Disc*	A351 Gr. CF8		A351 Gr. CF8M
3	Seat	PTFE/MPTFE/RTFE/Fire Safe/Rubber/Metal		
4	Stem**	A182 Gr. F304	A182 Gr. F316	A564 Type 630
5	Taper Pin (X2)	A182 Gr. F316L		
6	Retainer Ring	A216 Gr. WCB	A351 Gr. CF8	A351 Gr. CF8M
7	Stem Bushing (X2)	B-Woven Fabric Metal		A182 Gr. F316
8	Gland Packing	PTFE	RTFE	Graphite
9	Thrust Ring	A351 Gr. CF8M		
10	Thrust Plate	B-Woven Fabric Metal		
11	Gasket	PTFE	RTFE	Graphite
12	Gland Bushing	A351 Gr. CF8M		
13	Anti-Blowout Pin	A182 Gr. F316		
14	Gland Flange	A216 Gr. WCB		A351 Gr. CF8
15	Bottom Cover	A216 Gr. WCB	A351 Gr. CF8	A351 Gr. CF8M

** Surface is hard chrome plated.*
*** For Class 300, we recommend 17-4PH for the stem material.*

Dimensions - Bare Shaft (Inch)



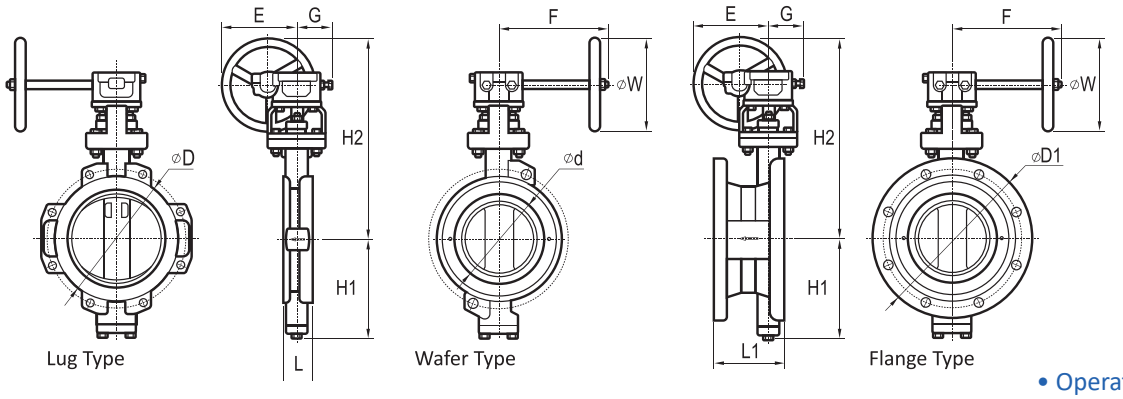
150 LB

Size		L	L1	D	D1	d	H1	H2	H3	S1	d1	S	ISO	Weight (lb)		
DN	In.											(b*h)		Wafer	Lug	Flange
50	2	1.77	-	3.74	5.91	1.81	4.65	5.04	3.39	0.71	0.71	0.55	F10	13	15	-
65	2.5	1.89	-	4.41	7.09	2.40	4.96	5.35	3.39	0.71	0.71	0.55	F10	15	18	-
80	3	1.89	4.49	4.96	7.48	2.99	5.28	5.51	3.39	0.71	0.71	0.55	F10	18	20	31
100	4	2.13	5.00	6.10	9.06	3.78	5.67	5.91	3.39	0.71	0.71	0.55	F10	20	29	42
125	5	2.24	-	7.24	10.04	4.65	7.01	6.69	3.50	0.83	0.87	0.67	F10	26	40	-
150	6	2.24	5.51	8.46	11.02	5.63	7.48	7.28	3.5	0.83	0.87	0.67	F10	31	44	62
200	8	2.44	5.98	10.51	13.58	7.40	8.43	8.46	3.98	0.91	0.98	0.75	F12	44	64	99
250	10	2.76	6.50	12.83	15.94	9.29	10.00	10.24	4.09	1.02	1.10	0.87	F12	71	104	139
300	12	3.19	7.01	14.76	19.09	11.06	11.73	11.42	5.08	1.22	1.38	1.06	F14	106	152	218
350	14	3.62	7.48	16.38	21.06	12.60	12.91	12.60	5.28	1.42	1.65	1.26	F14	143	203	282
400	16	4.02	8.50	18.90	23.43	14.61	14.84	14.57	6.22	1.57	1.97	1.42	F16	216	302	381
450	18	4.49	8.74	21.02	25.00	16.54	15.83	15.55	6.22	1.57	1.97	1.42	F16	289	391	454
500	20	5.00	9.02	23.15	27.56	18.46	17.20	16.93	6.61	1.97	2.36	1.81	F16	377	534	580
600	24	6.06	10.51	27.24	32.09	21.61	19.37	18.90	9.45	3.54	2.56	0.71*0.47	F25	606	833	893
700	28	6.50	11.50	31.50	36.50	25.79	22.44	21.85	9.65	3.74	2.95	0.79*0.47	F25	849	1157	1398
750	30	7.48	12.52	33.74	38.74	27.48	23.82	23.62	11.81	3.94	3.35	0.98*0.55	F30	1124	1357	1748
800	32	7.48	12.52	35.83	41.73	29.72	24.80	24.61	12.20	4.33	3.54	0.98*0.55	F30	1215	1693	2024
900	36	7.99	12.99	39.37	45.98	34.25	27.17	26.18	12.60	4.72	3.94	1.10*0.63	F30	1470	2112	2615
1000	40	8.50	16.14	43.90	50.75	37.13	30.24	30.12	14.17	5.12	4.53	1.26*0.71	F35	2061	2681	3468
1100	44	10.00	16.14	48.03	55.24	41.14	32.20	32.09	14.17	5.12	4.53	1.26*0.71	F35	2586	3362	4539
1200	48	10.00	18.50	52.36	59.45	45.08	34.80	34.65	14.17	5.12	4.92	1.42*0.79	F35	3084	3933	5194

300 LB

Size		L	L1	D	D1	d	H1	H2	H3	S1	d1	S	ISO	Weight (lb)		
DN	In.											(b*h)		Wafer	Lug	Flange
50	2	1.77	-	3.74	-	1.81	4.65	5.04	3.39	0.71	0.71	0.55	F10	13	18	-
65	2.5	1.89	-	4.41	-	2.40	4.96	5.35	3.39	0.71	0.71	0.55	F10	15	20	-
80	3	1.89	4.49	4.96	7.48	2.99	5.28	5.51	3.39	0.71	0.71	0.55	F10	18	24	31
100	4	2.13	5.00	6.10	9.06	3.78	5.67	5.91	3.39	0.71	0.71	0.55	F10	20	29	42
125	5	2.24	-	7.24	-	4.65	7.01	6.69	3.50	0.83	0.87	0.67	F10	26	40	-
150	6	2.32	5.51	8.82	12.52	5.63	7.83	7.87	3.98	0.91	0.98	0.75	F12	40	87	93
200	8	2.87	5.98	11.02	15.00	7.40	9.21	9.45	4.06	1.02	1.10	0.87	F12	62	95	150
250	10	3.27	6.50	13.58	17.52	9.29	10.94	10.63	5.08	1.22	1.38	1.06	F14	115	157	203
300	12	3.62	7.01	15.55	20.51	11.06	12.52	12.20	5.28	1.42	1.62	1.26	F14	159	225	328
350	14	4.61	7.48	17.32	23.03	12.60	14.45	14.17	6.22	1.57	1.97	1.42	F16	231	355	423
400	16	5.24	8.50	19.49	25.51	14.61	15.43	15.16	6.61	1.97	2.36	1.81	F16	326	481	573
450	18	5.87	8.74	22.05	28.03	16.54	17.20	16.73	9.45	3.54	2.56	0.71*0.47	F25	472	697	908
500	20	6.26	9.02	24.49	30.51	18.46	48.31	17.72	9.65	3.74	2.95	0.79*0.47	F25	597	871	1160
600	24	7.13	10.51	28.35	36.02	21.61	21.06	20.87	12.20	4.33	3.54	0.98*0.55	F30	952	1418	1786

Dimensions - Gear Operation (Inch)



150 LB

• Operator Sized for dp of 145 PSI

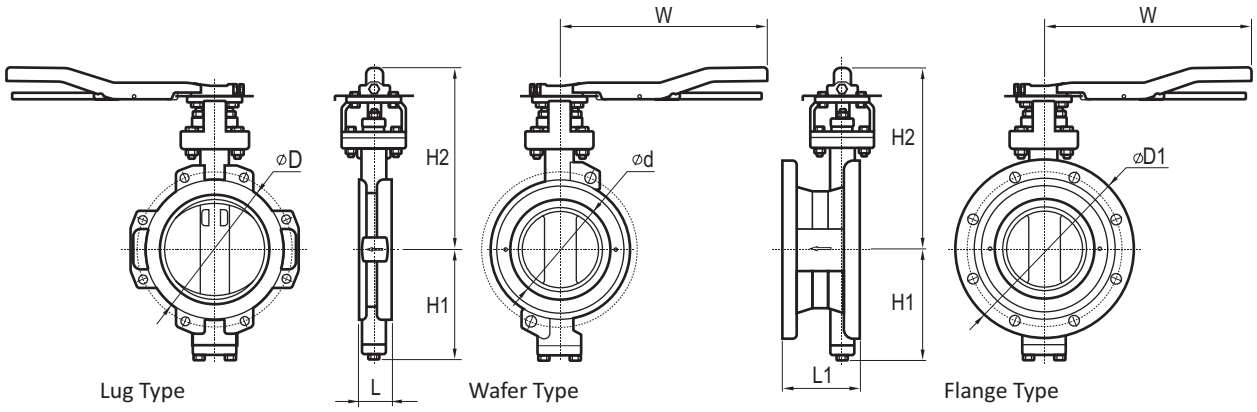
Size		L	L1	D	D1	d	H1	H2	W	G	E	F	Weight (lb)			Gear Model	Gear Ratio
DN	In.												Wafer	Lug	Flange		
50	2	1.77	-	3.74	5.91	1.81	4.65	12.09	5.91	2.60	4.80	5.24	22	24	-	G07	1:40
65	2.5	1.89	-	4.41	7.09	2.40	4.96	12.40	5.91	2.60	4.80	5.24	24	26	-	G07	1:40
80	3	1.89	4.49	4.96	7.48	2.99	5.28	12.56	5.91	2.60	4.80	5.24	26	29	40	G07	1:40
100	4	2.13	5.00	6.10	9.06	3.78	5.67	12.95	5.91	2.60	4.80	5.24	29	37	51	G07	1:40
125	5	2.24	-	7.24	10.04	4.65	7.01	13.74	5.91	2.60	4.80	5.24	35	49	-	G07	1:40
150	6	2.24	5.51	8.46	11.02	5.63	7.48	14.33	5.91	2.60	4.80	5.24	40	53	71	G07	1:40
200	8	2.44	5.98	10.51	13.58	7.40	8.43	16.97	7.87	3.03	6.34	9.29	62	82	117	G10	1:40
250	10	2.76	6.50	12.83	15.94	9.29	10.00	18.74	7.87	3.03	6.34	9.29	88	121	157	G10	1:40
300	12	3.19	7.01	14.76	19.09	11.06	11.73	20.83	7.87	3.70	7.20	9.29	132	179	245	G12	1:60
350	14	3.62	7.48	16.38	21.06	12.60	12.91	22.01	7.87	3.70	7.20	9.29	170	229	309	G12	1:60
400	16	4.02	8.50	18.90	23.43	14.61	14.84	27.17	11.81	4.72	10.12	12.76	267	353	432	G14	1:64
450	18	4.49	8.74	21.02	25.00	16.54	15.83	28.15	11.81	4.72	10.12	12.76	340	432	505	G14	1:64
500	20	5.00	9.02	23.15	27.56	18.46	17.20	29.53	11.81	4.72	10.12	12.76	428	584	631	G14	1:64
600	24	6.06	10.51	27.24	32.09	21.61	19.37	34.96	15.75	6.02	13.86	14.72	721	948	1008	G16	1:96
700	28	6.50	11.50	31.50	36.50	25.79	22.44	37.91	15.75	6.02	13.86	14.72	963	1272	1512	G16	1:96
750	30	7.48	12.52	33.74	38.74	27.48	23.82	45.87	23.62	7.28	20.16	17.56	1336	1579	1960	G25	1:125
800	32	7.48	12.52	35.83	41.73	29.72	24.80	46.85	23.62	7.28	20.16	17.56	1426	1905	2235	G25	1:125
900	36	7.99	12.99	39.37	45.98	34.25	27.17	48.43	23.62	7.28	20.16	17.56	1682	2324	2826	G25	1:125
1000	40	8.50	16.14	43.90	50.75	37.13	30.24	53.54	23.62	7.28	20.16	17.56	2315	2932	3719	G30	1:125
1100	44	10.00	16.14	48.03	55.24	41.14	32.20	55.51	23.62	7.28	20.16	17.56	2837	3613	4791	G30	1:125
1200	48	10.00	18.50	52.36	59.45	45.08	34.80	58.07	23.62	7.28	20.16	17.56	3336	4184	5445	G30	1:125

300 LB

• Operator Sized for dp of 290 PSI

Size		L	L1	D	D1	d	H1	H2	W	G	E	F	Weight (lb)			Gear Model	Gear Ratio
DN	In.												Wafer	Lug	Flange		
50	2	1.77	-	3.74	-	1.81	4.65	12.09	5.91	2.60	3.82	5.24	22	26	-	G07	1:40
65	2.5	1.89	-	4.41	-	2.40	4.96	11.42	5.91	2.60	3.82	5.24	24	29	-	G07	1:40
80	3	1.89	4.49	4.96	7.48	2.99	5.28	12.56	5.91	2.60	4.80	5.24	26	33	40	G07	1:40
100	4	2.13	5.00	6.10	9.06	3.78	5.67	12.95	5.91	2.60	4.80	5.24	29	37	51	G07	1:40
125	5	2.24	-	7.24	-	4.65	7.01	13.74	5.91	2.60	4.80	5.24	35	49	-	G07	1:40
150	6	2.32	5.51	8.82	12.52	5.63	7.83	16.38	7.87	3.03	6.34	9.29	57	75	110	G10	1:40
200	8	2.87	5.98	11.02	15.00	7.40	9.21	17.95	7.87	3.03	6.34	9.29	79	112	168	G10	1:40
250	10	3.27	6.50	13.58	17.52	9.29	10.94	20.04	7.87	3.70	7.20	9.29	141	183	236	G12	1:60
300	12	3.62	7.01	15.55	20.51	11.06	12.52	21.61	7.87	3.70	7.20	9.29	185	251	355	G12	1:60
350	14	4.61	7.48	17.32	23.03	12.60	14.45	26.77	11.81	4.72	10.12	12.76	282	406	474	G14	1:64
400	16	5.24	8.50	19.49	25.51	14.61	15.43	27.76	11.81	4.72	10.12	12.76	377	531	624	G14	1:64
450	18	5.87	8.74	22.05	28.03	16.54	17.20	32.80	15.75	6.02	13.86	14.72	586	811	1023	G16	1:96
500	20	6.26	9.02	24.49	30.51	18.46	18.31	33.78	15.75	6.02	13.86	14.72	712	985	1274	G16	1:96
600	24	7.13	10.51	28.35	36.02	21.61	21.06	43.11	23.62	7.28	20.16	17.56	1164	1629	1997	G25	1:125

Dimensions - Lever Operation (Inch)



150 LB

• Operator Sized for dp of 145 PSI

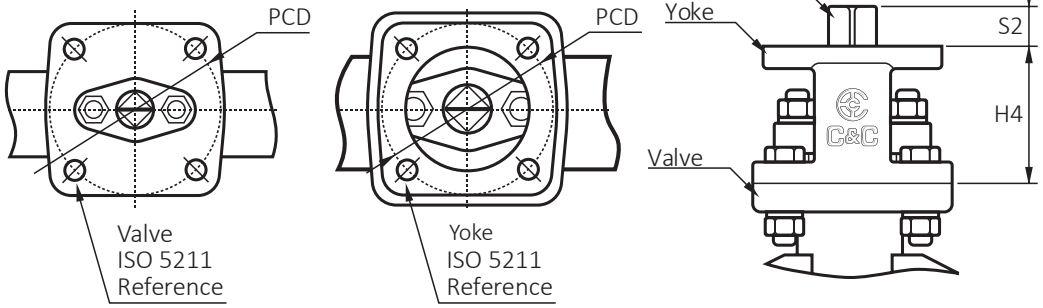
Size		L	L1	D	D1	d	H1	H2	W	Weight (lb)			Lever Model
DN	In.									Wafer	Lug	Flange	
50	2	1.77	-	3.74	5.91	1.81	4.65	9.76	8.66	18	20	-	L22
65	2.5	1.89	-	4.41	7.09	2.40	4.96	10.08	8.66	20	22	-	L22
80	3	1.89	4.49	4.96	7.48	2.99	5.28	10.24	8.66	22	24	35	L22
100	4	2.13	5.00	6.10	9.06	3.78	5.67	10.63	8.66	24	33	46	L22
125	5	2.24	-	7.24	10.04	4.65	7.01	11.42	11.81	33	46	-	L23
150	6	2.24	5.51	8.46	11.02	5.63	7.48	12.01	11.81	37	51	68	L23
200	8	2.44	5.98	10.51	13.58	7.40	8.43	13.78	15.75	55	75	110	L34

300 LB

• Operator Sized for dp of 290 PSI

Size		L	L1	D	D1	d	H1	H2	W	Weight (lb)			Lever Model
DN	In.									Wafer	Lug	Flange	
50	2	1.77	-	3.74	-	1.81	4.65	9.76	8.66	18	22	-	L22
65	2.5	1.89	-	4.41	-	2.40	4.96	9.92	8.66	20	24	-	L22
80	3	1.89	4.49	4.96	7.48	2.99	5.28	10.24	8.66	22	29	35	L22
100	4	2.13	5.00	6.10	9.06	3.78	5.67	10.63	8.66	24	33	46	L22
125	5	2.24	-	7.24	-	4.65	7.01	11.42	11.81	33	46	-	L23
150	6	2.32	5.51	8.82	12.52	5.63	7.83	13.19	15.75	51	68	104	L34

Dimensions - Yoke (Inch)



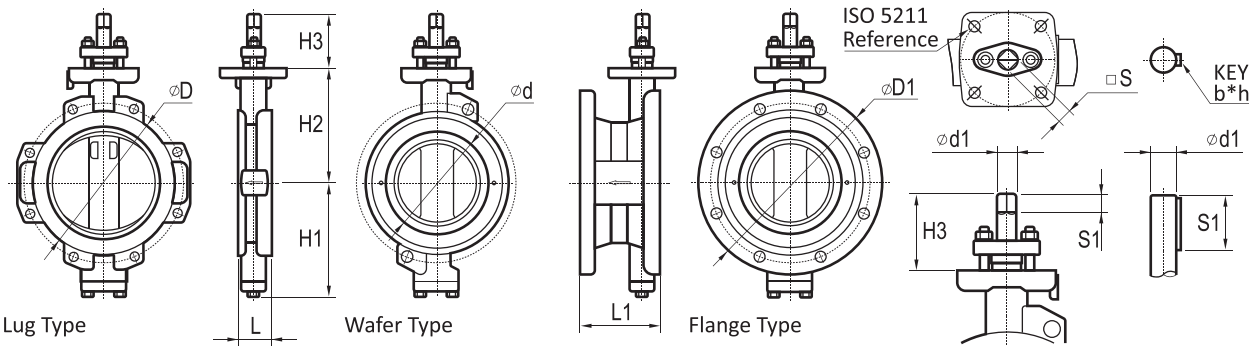
150 LB

Size		H4	S2	Yoke		Valve
DN	Inch			ISO	PCD	ISO
50	2	2.76	0.63	F07	2.76	F10
65	2.5	2.76	0.63	F07	2.76	F10
80	3	2.76	0.63	F07	2.76	F10
100	4	2.76	0.63	F07	2.76	F10
125	5	2.76	0.75	F07	2.76	F10
150	6	2.76	0.75	F07	2.76	F10
200	8	3.15	0.83	F10	4.02	F12
250	10	3.15	0.94	F10	4.02	F12
300	12	3.94	1.14	F12	4.92	F14
350	14	3.94	1.34	F12	4.92	F14
400	16	4.72	1.50	F14	5.51	F16
450	18	4.72	1.50	F14	5.51	F16
500	20	4.72	1.89	F14	5.51	F16
600	24	5.91	3.54	F16	6.50	F25
700	28	5.91	3.74	F16	6.50	F25
750	30	7.87	3.94	F25	10.00	F30
800	32	7.87	4.33	F25	10.00	F30
900	36	7.87	4.72	F25	10.00	F30
1000	40	9.06	5.12	F30	11.73	F35
1100	44	9.06	5.12	F30	11.73	F35
1200	48	9.06	5.12	F30	11.73	F35

300 LB

Size		H4	S2	Yoke		Valve
DN	Inch			ISO	PCD	ISO
50	2	2.76	0.63	F07	2.76	F10
65	2.5	2.76	0.63	F07	2.76	F10
80	3	2.76	0.63	F07	2.76	F10
100	4	2.76	0.63	F07	2.76	F10
125	5	2.76	0.75	F07	2.76	F10
150	6	3.15	0.83	F10	4.02	F12
200	8	3.15	0.94	F10	4.02	F12
250	10	3.94	1.14	F12	4.92	F14
300	12	3.94	1.34	F12	4.92	F14
350	14	4.72	1.50	F14	5.51	F16
400	16	4.72	1.89	F14	5.51	F16
450	18	5.91	3.54	F16	6.50	F25
500	20	5.91	3.74	F16	6.50	F25
600	24	7.87	4.33	F25	10.00	F30

Dimensions - Bare Shaft (mm)



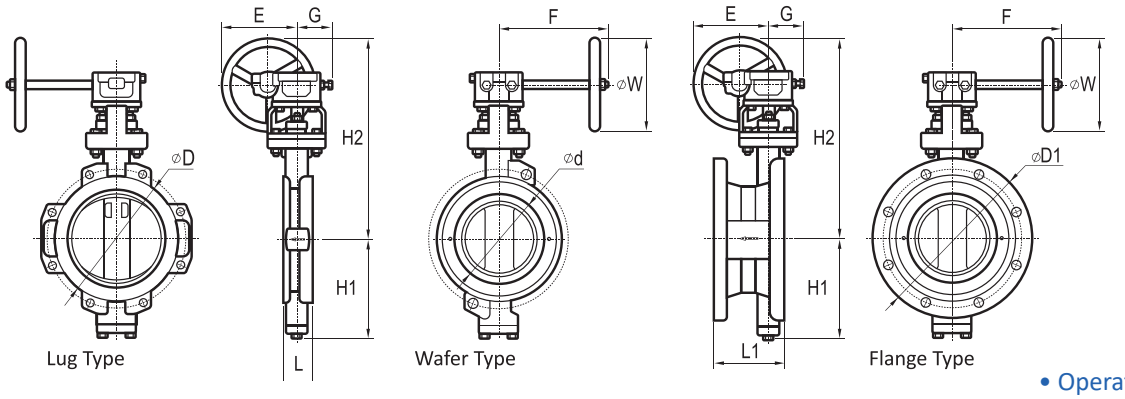
150 LB

Size		L	L1	D	D1	d	H1	H2	H3	S1	d1	S	ISO	Weight (kg)		
DN	In.											(b*h)		Wafer	Lug	Flange
50	2	45	-	95	150	46	118	128	86	18	18	14	F10	6	7	-
65	2.5	48	-	112	180	61	126	136	86	18	18	14	F10	7	8	-
80	3	48	114	126	190	76	134	140	86	18	18	14	F10	8	9	14
100	4	54	127	155	230	96	144	150	86	18	18	14	F10	9	13	19
125	5	57	-	184	255	118	178	170	89	21	22	17	F10	12	18	-
150	6	57	140	215	280	143	190	185	89	21	22	17	F10	14	20	28
200	8	62	152	267	345	188	214	215	101	23	25	19	F12	20	29	45
250	10	70	165	326	405	236	254	260	104	26	28	22	F12	32	47	63
300	12	81	178	375	485	281	298	290	129	31	35	27	F14	48	69	99
350	14	92	190	416	535	320	328	320	134	36	42	32	F14	65	92	128
400	16	102	216	480	595	371	377	370	158	40	50	36	F16	98	137	173
450	18	114	222	534	635	420	402	395	158	40	50	36	F16	131	172	206
500	20	127	229	588	700	469	437	430	168	50	60	46	F16	171	242	263
600	24	154	267	692	815	549	492	480	240	90	65	18*12	F25	275	378	405
700	28	165	292	800	927	655	570	555	245	95	75	20*12	F25	385	525	634
750	30	190	318	857	984	698	605	600	300	100	85	25*14	F30	510	620	793
800	32	190	318	910	1060	755	630	625	310	110	90	25*14	F30	551	768	918
900	36	203	330	1000	1168	870	690	665	320	120	100	28*16	F30	667	958	1186
1000	40	216	410	1115	1289	943	768	765	360	130	115	32*18	F35	936	1216	1573
1100	44	254	410	1220	1403	1045	818	815	360	130	115	35*18	F35	1173	1525	2059
1200	48	254	470	1330	1510	1145	884	880	360	130	125	36*20	F35	1399	1784	2356

300 LB

Size		L	L1	D	D1	d	H1	H2	H3	S1	d1	S	ISO	Weight (kg)		
DN	In.											(b*h)		Wafer	Lug	Flange
50	2	45	-	95	-	46	118	128	86	18	18	14	F10	6	8	-
65	2.5	48	-	112	-	61	126	136	86	18	18	14	F10	7	9	-
80	3	48	114	126	190	76	134	140	86	18	18	14	F10	8	11	14
100	4	54	127	155	230	96	144	150	86	18	18	14	F10	9	13	19
125	5	57	-	184	-	118	178	170	89	21	22	17	F10	12	18	-
150	6	59	140	224	318	143	199	200	101	23	25	19	F12	18	26	42
200	8	73	152	280	381	188	234	240	104	26	28	22	F12	28	43	68
250	10	83	165	345	445	236	278	270	129	31	35	27	F14	52	71	95
300	12	92	178	395	521	281	318	310	134	36	42	32	F14	72	102	149
350	14	117	190	440	585	320	367	360	158	40	50	36	F16	105	161	192
400	16	133	216	495	648	371	392	385	168	50	60	46	F16	148	218	260
450	18	149	222	560	712	420	437	425	240	90	65	18*12	F25	214	316	412
500	20	159	229	622	775	469	465	450	245	95	75	20*12	F25	271	395	526
600	24	181	267	720	915	549	535	530	310	110	90	25*14	F30	432	643	810

Dimensions - Gear Operation (mm)



150 LB

• Operator Sized for dp of 10 BAR

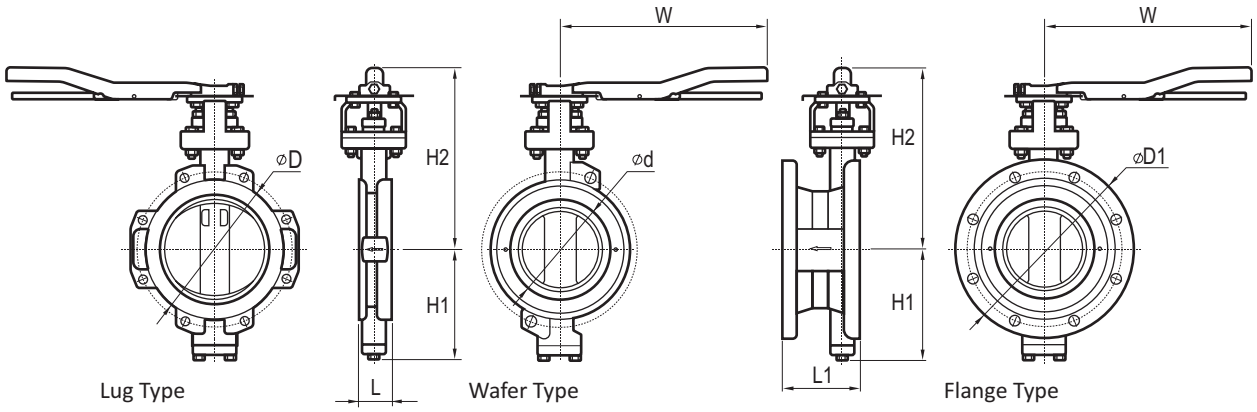
Size		L	L1	D	D1	d	H1	H2	W	G	E	F	Weight (kg)			Gear Model	Gear Ratio
DN	In.												Wafer	Lug	Flange		
50	2	45	-	95	150	46	118	307	150	66	122	133	10	11	-	G07	1:40
65	2.5	48	-	112	180	61	126	315	150	66	122	133	11	12	-	G07	1:40
80	3	48	114	126	190	76	134	319	150	66	122	133	12	13	18	G07	1:40
100	4	54	127	155	230	96	144	329	150	66	122	133	13	17	23	G07	1:40
125	5	57	-	184	255	118	178	349	150	66	122	133	16	22	-	G07	1:40
150	6	57	140	215	280	143	190	364	150	66	122	133	18	24	32	G07	1:40
200	8	62	152	267	345	188	214	431	200	77	161	236	28	37	53	G10	1:40
250	10	70	165	326	405	236	254	476	200	77	161	236	40	55	71	G10	1:40
300	12	81	178	375	485	281	298	529	200	94	183	236	60	81	111	G12	1:60
350	14	92	190	416	535	320	328	559	200	94	183	236	77	104	140	G12	1:60
400	16	102	216	480	595	371	377	690	300	120	257	324	121	160	196	G14	1:64
450	18	114	222	534	635	420	402	715	300	120	257	324	154	196	229	G14	1:64
500	20	127	229	588	700	469	437	750	300	120	257	324	194	265	286	G14	1:64
600	24	154	267	692	815	549	492	888	400	153	352	374	327	430	457	G16	1:96
700	28	165	292	800	927	655	570	963	400	153	352	374	437	577	686	G16	1:96
750	30	190	318	857	984	698	605	1165	600	185	512	446	606	716	889	G25	1:125
800	32	190	318	910	1060	755	630	1190	600	185	512	446	647	864	1014	G25	1:125
900	36	203	330	1000	1168	870	690	1230	600	185	512	446	763	1054	1282	G25	1:125
1000	40	216	410	1115	1289	943	768	1360	600	185	512	446	1050	1330	1687	G30	1:125
1100	44	254	410	1220	1403	1045	818	1410	600	185	512	446	1287	1639	2173	G30	1:125
1200	48	254	470	1330	1510	1145	884	1475	600	185	512	446	1513	1898	2470	G30	1:125

300 LB

• Operator Sized for dp of 20 BAR

Size		L	L1	D	D1	d	H1	H2	W	G	E	F	Weight (kg)			Gear Model	Gear Ratio
DN	In.												Wafer	Lug	Flange		
50	2	45	-	95	-	46	118	307	150	66	122	133	10	12	-	G07	1:40
65	2.5	48	-	112	-	61	126	315	150	66	122	133	11	13	-	G07	1:40
80	3	48	114	126	190	76	134	319	150	66	122	133	12	15	18	G07	1:40
100	4	54	127	155	230	96	144	329	150	66	122	133	13	17	23	G07	1:40
125	5	57	-	184	-	118	178	349	150	66	122	133	16	22	-	G07	1:40
150	6	59	140	224	318	143	199	416	200	77	161	236	26	34	50	G10	1:40
200	8	73	152	280	381	188	234	456	200	77	161	236	36	51	76	G10	1:40
250	10	83	165	345	445	236	278	509	200	94	183	236	64	83	107	G12	1:60
300	12	92	178	395	521	281	318	549	200	94	183	236	84	114	161	G12	1:60
350	14	117	190	440	585	320	367	680	300	120	257	324	128	184	215	G14	1:64
400	16	133	216	495	648	371	392	705	300	120	257	324	171	241	283	G14	1:64
450	18	149	222	560	712	420	437	833	400	153	352	374	266	368	464	G16	1:96
500	20	159	229	622	775	469	465	858	400	153	352	374	323	447	578	G16	1:96
600	24	181	267	720	915	549	535	1095	600	185	512	446	528	739	906	G25	1:125

Dimensions - Lever Operation (mm)



150 LB

• Operator Sized for dp of 10 BAR

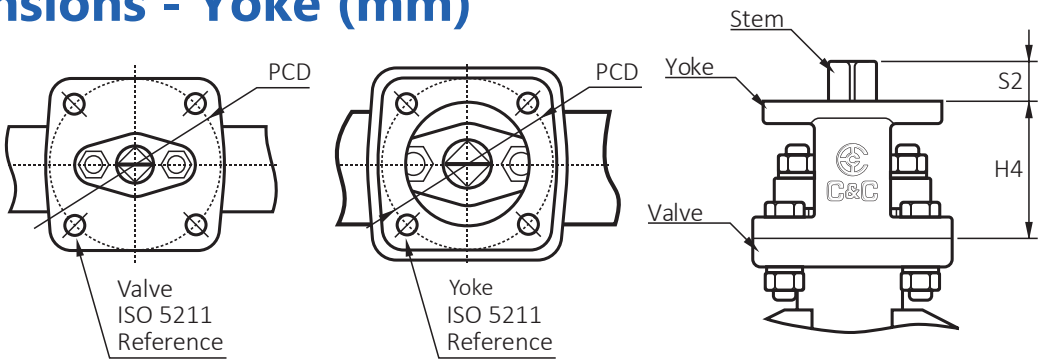
Size		L	L1	D	D1	d	H1	H2	W	Weight (kg)			Lever Model
DN	In.									Wafer	Lug	Flange	
50	2	45	-	95	150	46	118	248	220	8	9	-	L22
65	2.5	48	-	112	180	61	126	256	220	9	10	-	L22
80	3	48	114	126	190	76	134	260	220	10	11	16	L22
100	4	54	127	155	230	96	144	270	220	11	15	21	L22
125	5	57	-	184	255	118	178	290	300	15	21	-	L23
150	6	57	140	215	280	143	190	305	300	17	23	31	L23
200	8	62	156	267	345	188	214	350	400	25	34	50	L34

300 LB

• Operator Sized for dp of 20 BAR

Size		L	L1	D	D1	d	H1	H2	W	Weight (kg)			Lever Model
DN	In.									Wafer	Lug	Flange	
50	2	45	-	95	-	46	118	248	220	8	10	-	L22
65	2.5	48	-	112	-	61	126	252	220	9	11	-	L22
80	3	48	114	126	190	76	134	260	220	10	13	16	L22
100	4	54	127	155	230	96	144	270	220	11	15	21	L22
125	5	57	-	184	-	118	178	290	300	15	21	-	L23
150	6	59	140	224	318	143	199	335	400	23	31	47	L34

Dimensions - Yoke (mm)



150 LB

Size		H4	S2	Yoke		Valve
DN	Inch			ISO	PCD	ISO
50	2	70	16	F07	70	F10
65	2.5	70	16	F07	70	F10
80	3	70	16	F07	70	F10
100	4	70	16	F07	70	F10
125	5	70	19	F07	70	F10
150	6	70	19	F07	70	F10
200	8	80	21	F10	102	F12
250	10	80	24	F10	102	F12
300	12	100	29	F12	120	F14
350	14	100	34	F12	120	F14
400	16	120	38	F14	140	F16
450	18	120	38	F14	140	F16
500	20	120	48	F14	140	F16
600	24	150	90	F16	165	F25
700	28	150	95	F16	165	F25
750	30	200	100	F25	254	F30
800	32	200	110	F25	254	F30
900	36	200	120	F25	254	F30
1000	40	230	130	F30	298	F35
1100	44	230	130	F30	298	F35
1200	48	230	130	F30	298	F35

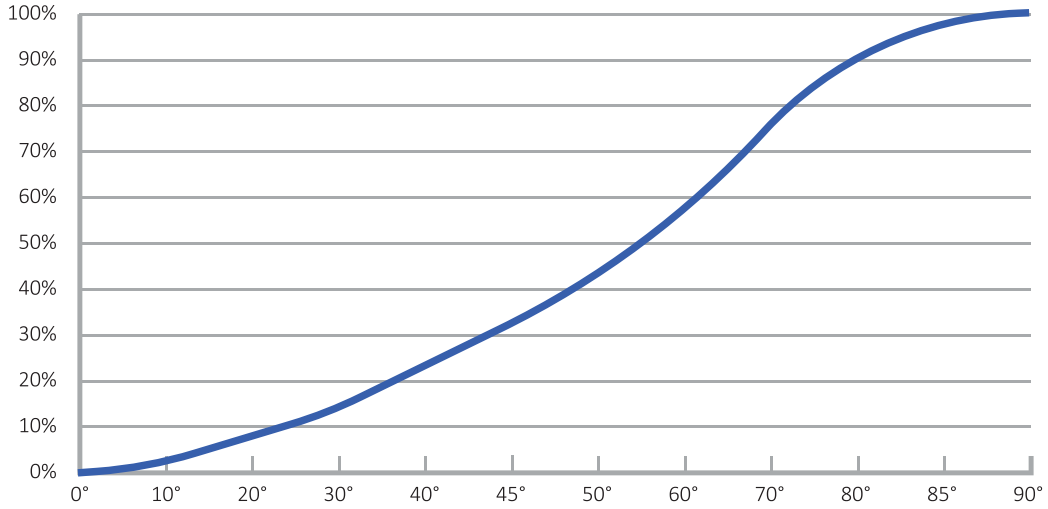
300 LB

Size		H4	S2	Yoke		Valve
DN	Inch			ISO	PCD	ISO
50	2	70	16	F07	70	F10
65	2.5	70	16	F07	70	F10
80	3	70	16	F07	70	F10
100	4	70	16	F07	70	F10
125	5	70	19	F07	70	F10
150	6	80	21	F10	102	F12
200	8	80	24	F10	102	F12
250	10	100	29	F12	120	F14
300	12	100	34	F12	120	F14
350	14	120	38	F14	140	F16
400	16	120	48	F14	140	F16
450	18	150	90	F16	165	F25
500	20	150	95	F16	165	F25
600	24	200	110	F25	254	F30

Flow Characteristics

Cv Flow Coefficient

Cv Curve %



150 LB

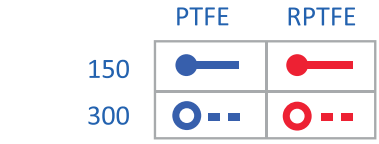
Size		Cv Value										
DN	In.	10°	20°	30°	40°	45°	50°	60°	70°	80°	85°	90°
50	2	0	8	22	36	44	51	60	69	72	70	70
65	2.5	2	16	38	61	71	83	109	135	146	152	150
80	3	6	33	62	94	108	118	143	176	208	230	227
100	4	16	58	106	155	178	213	274	349	433	465	473
125	5	20	94	167	230	263	310	411	527	617	683	690
150	6	40	147	242	335	382	422	588	787	1018	1102	1151
200	8	66	237	368	509	606	712	1034	1400	1804	1938	2285
250	10	139	390	595	807	963	1168	1686	2305	3095	3593	3647
300	12	204	548	820	1138	1357	1591	2330	3312	4494	5067	5326
350	14	264	674	972	1386	1658	1994	2982	4239	5680	6586	6780
400	16	384	864	1196	1765	2155	2611	3755	5105	6975	7920	8182
450	18	508	1092	1551	2341	2881	3522	5125	7134	9511	10599	11548
500	20	626	1294	1792	2651	3304	4082	5919	8256	11429	13126	13813
600	24	1047	2251	3178	4563	5543	6568	9741	13967	18802	20711	21684

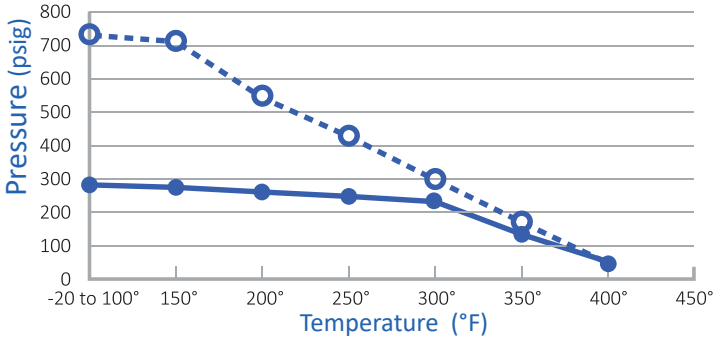
300 LB

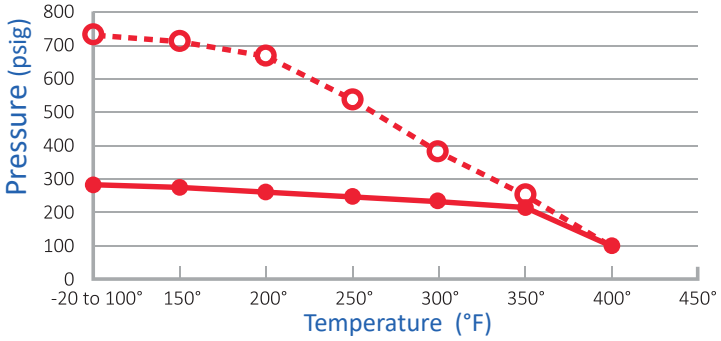
Size		Cv Value										
DN	In.	10°	20°	30°	40°	45°	50°	60°	70°	80°	85°	90°
80	3	6	33	62	94	108	118	143	176	208	230	227
100	4	16	58	106	155	178	213	274	349	433	465	473
125	5	20	94	167	230	263	310	391	488	561	604	605
150	6	37	137	225	312	355	393	521	678	860	907	939
200	8	62	220	343	473	563	662	916	1206	1525	1595	1864
250	10	129	362	554	750	896	1087	1493	1985	2617	2957	2975
300	12	190	510	762	1059	1262	1480	2064	2852	3799	4170	4345
350	14	246	627	904	1289	1542	1854	2641	3650	4803	5420	5531
400	16	357	803	1112	1642	2004	2428	3492	4748	6487	7365	7609
450	18	473	1015	1442	2177	2679	3275	4766	6634	8845	9857	10739
500	20	583	1204	1667	2466	3073	3797	5504	7678	10629	12207	12846
600	24	974	2093	2956	4244	5155	6108	8627	12027	15897	17045	17689

Pressure / Temperature Rating

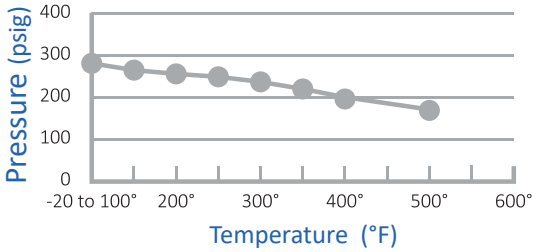
For Soft & Fire Safe Seats



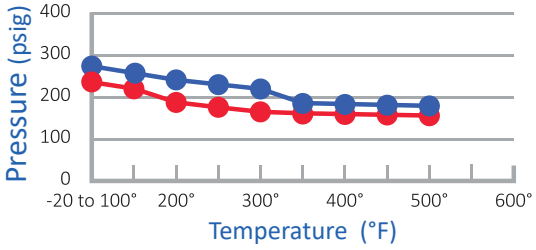




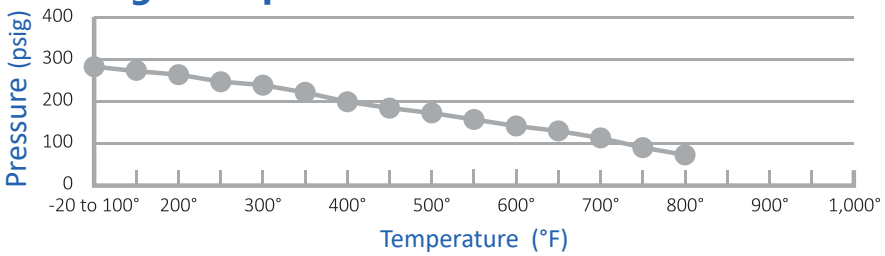
Metal Seat



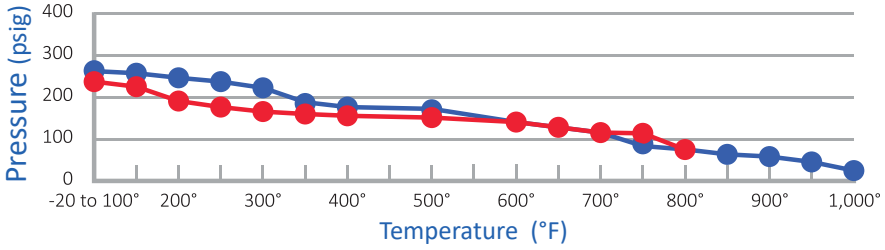
Class 150 WCB Body
Class 150 CF8/CF8M Body
Class 150 CF3M Body



High Temperature



Class 150 WCB Body
Class 150 CF8/CF8M Body
Class 150 CF3M Body



Pressure / Temperature Rating

	Body and Seat / Temperature		Class 150										Class 300			
			General (a)				WCB		CF8/CF8M		CF3M		General (a)			
			PTFE (g)		RPTFE (g)		AMS 5596 Alloy Inconel® (b)						PTFE		RPTFE	
	F°	C°	PSI	BAR	PSI	BAR	PSI	BAR	PSI	BAR	PSI	BAR	PSI	BAR	PSI	BAR
Metal Seated (h) / Fire-Safe Seated / Soft Seated	-20 to 100	-29 to 38	285	19.7	285	19.7	285	19.7	275	18.9	230	15.9	740	51	740	51
	150	66	273	18.8	273	18.8	273	18.8	255	17.6	213	14.7	708	48.8	708	48.8
	200	93	260	17.9	260	17.9	260	17.9	235	16.2	195	13.4	550	37.9	675	46.5
	250	121	245	16.9	245	16.9	245	16.9	225	15.5	185	12.8	425	29.3	530	36.5
	300	149	230	15.9	230	15.9	230	15.9	215	14.8	175	12.1	300	20.7	390	26.9
	350	177	140	9.7	215	14.8	215	14.8	195	13.4	168	11.6	175	12.1	250	17.2
	400	204	50	3.4	100	6.9	200	13.8	183	12.6	160	11	50	3.4	100	6.9
	500	260	-	-	(c)	(c)	170	11.7	170	11.7	150	10.3	-	-	(c)	(c)
High Temperature Type	600	316	-	-	-	-	140	9.7	140	9.7	140	9.7	-	-	-	-
	650	343	-	-	-	-	125	8.6	125	8.6	125	8.6	-	-	-	-
	700	371	-	-	-	-	110	7.6	110	7.6	110	7.6	-	-	-	-
	750	399	-	-	-	-	95	6.6	95	6.6	110	7.6	-	-	-	-
	800	427	-	-	-	-	80	5.5	80	5.5	80	5.5	-	-	-	-
	850	454	-	-	-	-	(d)	(d)	65	4.5	(e)	(e)	-	-	-	-
	900	482	-	-	-	-	(d)	(d)	50	3.4	-	-	-	-	-	-
	950	510	-	-	-	-	(d)	(d)	35	2.4	-	-	-	-	-	-
	1000	538	-	-	-	-	(d)	(d)	20 (f)	1.4 (f)	-	-	-	-	-	-

(a) General carbon steel and stainless steel.
(b) AMS 5596 Inconel represents Aerospace Material Specification level Inconel 718.
(c) RPTFE may be used up to an instantaneous 500°F depends on working condition.
(d) Above 800°F, the carbide phase of WCB may convert to graphite. Workable, but not recommended for prolonged use.
(e) Shall not be used over 800°F
(f) From 1,000°, shall only use CF8/CF8M with carbon content ≥0.04%. For temperature range 1,000° / 1,500° F, contact sales.
(g) The maximum service temperature limited by seat material.
(h) The continuous working temperature is 500°F and instantaneous high temperature is 572°F.

Operational Torque (Lbf-in)

ANSI Class 150 LB

Size		Soft Seat PSI (Lbf-in)				Fire Safe Seat PSI (Lbf-in)			
DN	In.	87 PSI	145 PSI	232 PSI	290 PSI	87 PSI	140 PSI	232 PSI	290 PSI
50	2	195	239	292	336	274	310	345	389
65	2.5	212	248	310	354	327	416	460	504
80	3	248	319	381	425	389	451	566	673
100	4	310	372	487	655	531	628	735	867
125	5	389	566	832	1036	743	929	1195	1363
150	6	540	743	1115	1372	991	1239	1620	1806
200	8	894	1381	2106	2215	1823	2186	2425	2595
250	10	1407	2195	3372	3531	2850	3266	3850	4110
300	12	2266	3478	5293	6169	4284	4939	5850	7385
350	14	3408	5160	7001	7574	6072	7045	8355	9595
400	16	5001	7550	10231	12612	8461	9922	11887	15613
450	18	6266	9656	13267	16436	10878	12842	15471	17882
500	20	9453	14223	19215	23605	18197	17967	21711	28588
600	24	14914	22245	29845	36439	22817	27110	32836	37878

ANSI Class 300 LB

Size		Soft Seat PSI (Lbf-in)				Fire Safe Seat PSI (Lbf-in)			
DN	In.	290 PSI	435 PSI	580 PSI	725 PSI	290 PSI	435 PSI	580 PSI	725 PSI
50	2	336	434	531	699	398	469	549	717
65	2.5	372	478	584	761	478	593	699	814
80	3	434	558	682	823	673	797	920	1275
100	4	726	991	1257	1478	1115	1381	1646	1797
125	5	1248	1699	2151	2257	1832	2283	2735	3018
150	6	1823	2478	3133	3496	2629	3284	3939	4408
200	8	3213	4478	5753	6576	4700	5965	7240	7399
250	10	5549	7709	9869	11205	7842	10001	12170	12488
300	12	8718	12019	15321	17622	11940	15232	18533	19445
350	14	12904	17693	22490	26481	17162	21959	26747	28827
400	16	20118	27313	34509	39890	25667	32854	40050	43059
450	18	27340	37359	47378	52998	34713	44732	54760	57043
500	20	37580	51202	64823	72833	46776	60389	74010	77869
600	24	58468	79515	100562	113352	71107	92154	113192	120237

Notes:

1. Torque is measured with water at listed pressure.
2. For longer life cycle and lower torque, it is recommended to install the valve with the seat on the upstream side.
3. 290 PSI is the limit of Class 150. For consistent operation at 290 PSI, a Class 300 valve is recommended.

Operational Torque (Nm)

ANSI Class 150 LB

Size		Soft Seat bar (Nm)				Fire Safe Seat bar (Nm)			
DN	In.	6 bar	10 bar	16 bar	20 bar	6 bar	10 bar	16 bar	20 bar
50	2	22	27	33	38	31	35	39	44
65	2.5	24	28	35	40	37	47	52	57
80	3	28	36	43	48	44	51	64	76
100	4	35	42	55	74	60	71	83	98
125	5	44	64	94	117	84	105	135	154
150	6	61	84	126	155	112	140	183	204
200	8	101	156	238	250	206	247	274	293
250	10	159	248	381	399	322	369	435	464
300	12	256	393	598	697	484	558	661	834
350	14	385	583	791	856	686	796	944	1084
400	16	565	853	1156	1425	956	1121	1343	1764
450	18	708	1091	1499	1857	1229	1451	1748	2020
500	20	1068	1607	2171	2667	1717	2030	2453	3230
600	24	1685	2510	3372	4117	2578	3063	3710	4280

ANSI Class 300 LB

Size		Soft Seat bar (Nm)				Fire Safe Seat bar (Nm)			
DN	In.	20 bar	30 bar	40 bar	50 bar	20 bar	30 bar	40 bar	50 bar
50	2	38	49	60	79	45	53	62	81
65	2.5	42	54	66	86	54	67	79	92
80	3	49	63	77	93	76	90	104	144
100	4	82	112	142	167	126	156	186	203
125	5	141	192	243	255	207	258	309	341
150	6	206	280	354	395	297	371	445	498
200	8	363	506	650	743	531	674	818	836
250	10	627	871	1115	1266	886	1130	1375	1411
300	12	985	1358	1731	1991	1349	1721	2094	2197
350	14	1458	1999	2541	2992	1939	2481	3022	3257
400	16	2273	3086	3899	4507	2900	3712	4525	4865
450	18	3089	4221	5353	5988	3922	5054	6187	6445
500	20	4246	5785	7324	8229	5285	6823	8362	8798
600	24	6606	8984	11362	12807	8034	10412	12789	13585

Notes:

1. Torque is measured with water at listed pressure.
2. For longer life cycle and lower torque, it is recommended to install the valve with the seat on the upstream side.
3. 290 PSI is the limit of Class 150. For consistent operation at 290 PSI, a Class 300 valve is recommended.

Dead-End Service:



Our high-performance double-offset butterfly valve is dead-end service capable **only in its preferred flow direction**, with the **retainer ring installed upstream**. This design ensures proper seat energization and sealing. Using dead-end service with the retainer ring downstream can compromise sealing and cause leakage. Additionally, the pipeline must be clean prior to installation to prevent debris from affecting seat performance.



Essential Guidelines:

- Dead-end service requires a **lug-type valve**.
- Retainer ring must face **upstream** for dead-end service.
- Ensure pipeline cleanliness before installation for optimal sealing.
- Check our C&C IOM for more information and recommendations.

Notes

Notes

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.

Member of API



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.

Headquarters
10350 Clay Road, Suite 250
Houston, TX 77041
Toll-Free: 844.398.6449

Permian Basin
1100 W IH 20
Odessa, TX 79763
Phone: 432.276.7640

Canada
2930 51 Avenue NW, Unit # 3
Edmonton, AB T6P 0E1
Phone: 780.462.9166

Website: www.cncflowcontrol.com
Follow us:

Additional Consignment Locations

Bakersfield CA
Oklahoma City OK
Kilgore TX
Shreveport LA
Casper WY
Williston ND
Victoria TX
Alice TX
Pleasanton TX

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, expressed or implied, regarding the products or services described herein or their use or applicability.
© 2021 CNC Flow Control