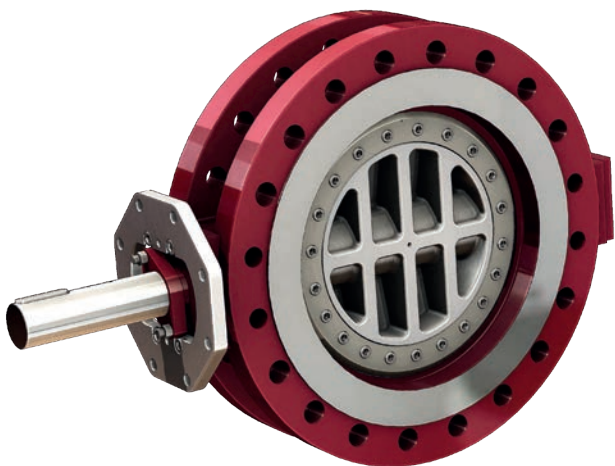


**V-AX**

**AVI**  
ADVANCED VALVE AND INSTRUMENT

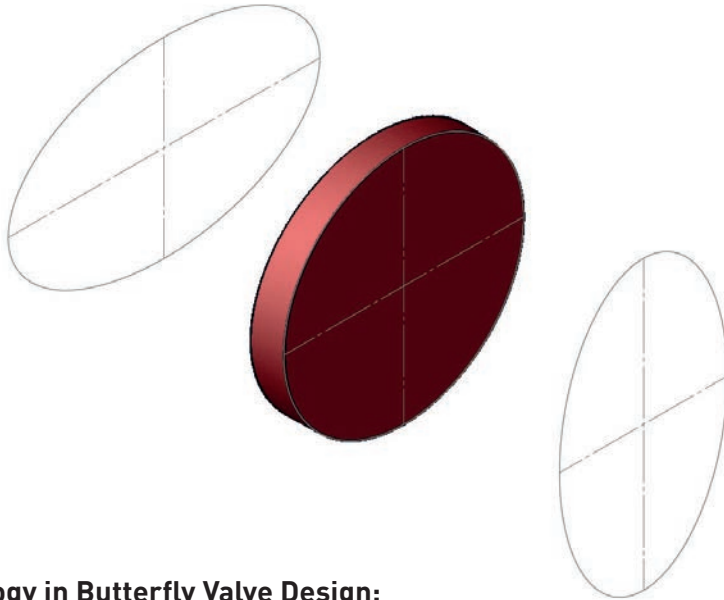


## **FIVE OFFSET BUTTERFLY VALVES**



# V-AXX<sup>®</sup>

## LATEST TECHNOLOGY IN BUTTERFLY VALVE DESIGN

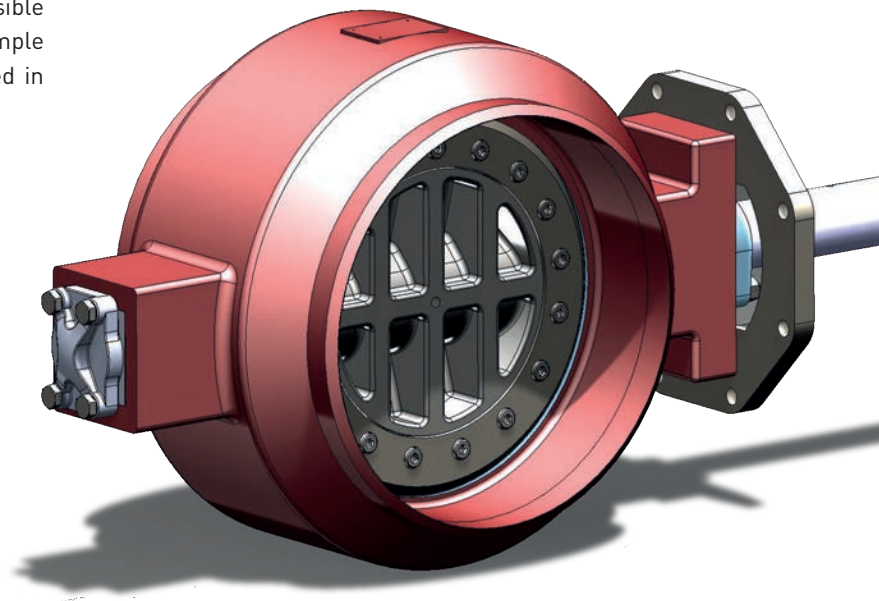


### Latest technology in Butterfly Valve Design: Five Offset Butterfly Valve, patent pending

The same designer who invented and patented the four offset butterfly valve in 2008 is now introducing the newest evolution in butterfly valve design. The first butterfly valve in the world which is not using a regular cone for its seat design.

In the newly designed V-AXX<sup>®</sup> valve, the seat shape can be changed around the whole seat without restrictions. If necessary, the angle of the seat, even in the shaft area, can be 25° or more, without changing the angle in other areas. This is only possible due to the unique seat design, which is not formed by a simple cone but by a much more complex shape not yet described in geometry.

In previous designs, the seat shape never changed along its 3D shape but in the newly invented design, the lines forming the outside shape do not cross in the same point as in a cone. This means the designer is free to design the seat angle all the way around the seat. If necessary, the shaft offset from the pipe centerline could be brought to zero and still produce a friction-free valve.



Experience  
Responsibility  
**Passion**



### V-AXX® CRYOGENIC

The research conducted in the Dr. Gaida R&D Institute has provided an initial evaluation of the real shrinkage rates in cryogenic temperatures as a function of the wall section and allowed the seat to be formed accordingly making the valve zero leakage from  $-454^{\circ}\text{F}$  up to  $2,552^{\circ}\text{F}$  from vacuum up to 160 bar, from liquid nitrogen up to liquid sodium.

Designed, invented, and produced in Europe in accordance to the highest standards.



# ORCA® ELIMINATING CAVITATION

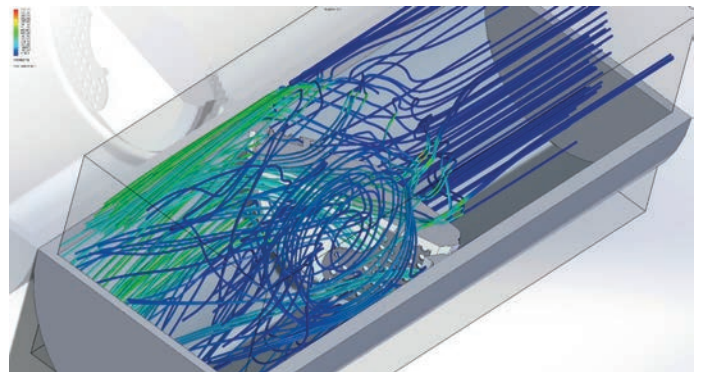
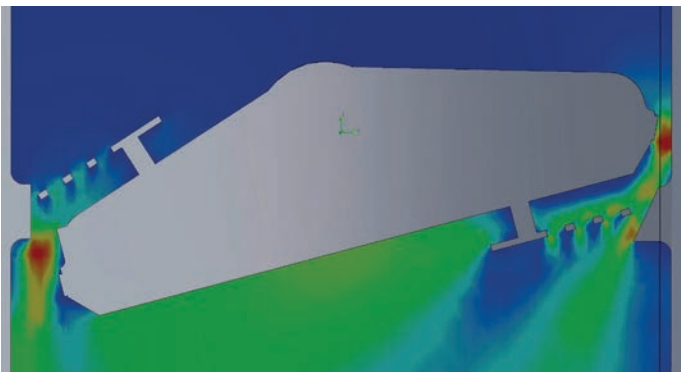
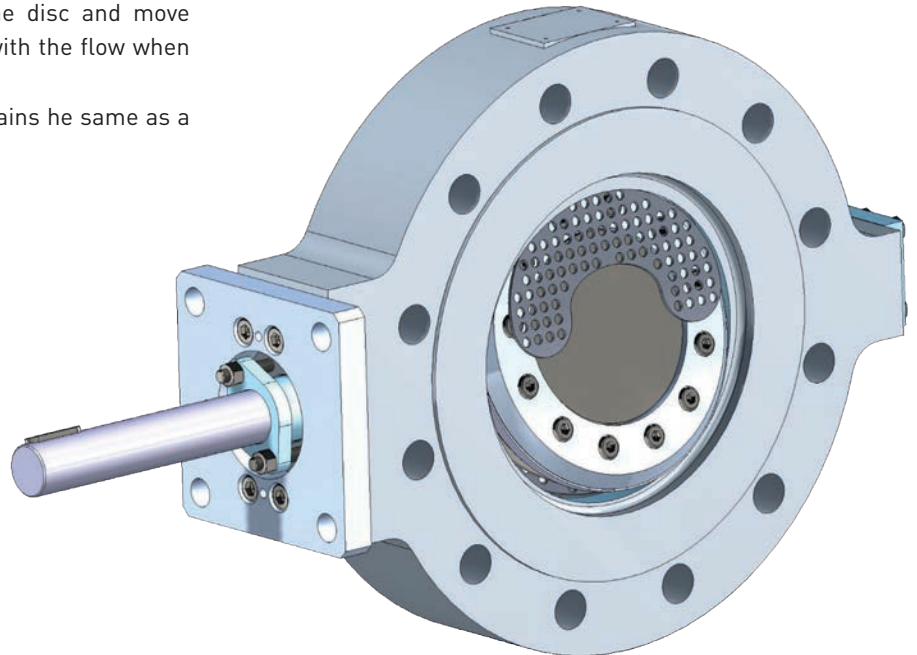
## ORCA®

The new ORCA® trim provides major advantages against other solutions. Plates mounted on both sides of the disc allow the pressure to drop in several stages preventing supersonic speed in gases and cavitation in liquids. One or more sets of plates can be mounted in accordance to the customer needs, allowing an excellent flow control when the valve is partially open.

Since the plates are mounted parallel to the disc and move together with the disc, they do not interfere with the flow when the valve is fully open.

This ensures the maximum Kv / Cv value remains the same as a standard valve.

- ▶ Better flow control
- ▶ No cavitation
- ▶ No supersonic speed
- ▶ Lower noise level



## Maximizing Kv / Cv Values



### V-AXX®

The V-AXX® valve has the highest Kv / Cv of any comparable torque-seated butterfly valve.

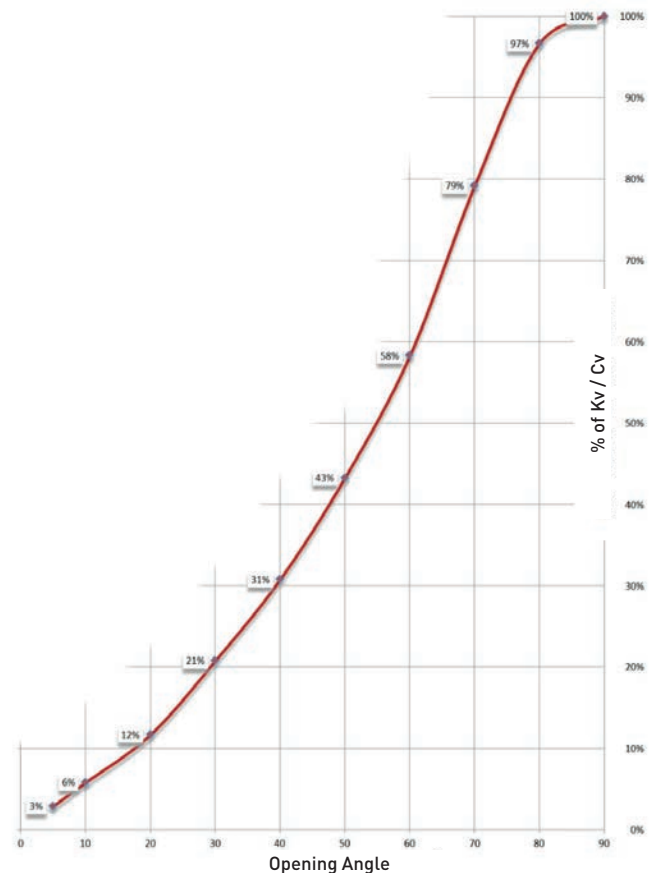
Not only can the valve be sized smaller, but even the actuator, the piping, as well as the entire construction supporting the piping, can be sized smaller. Consequently, the costs of new construction can be reduced significantly.

With regards to day to day valve replacement where the pipe size and infrastructure have already been determined, the higher flow coefficients of the V-AXX® valve improve process performance and lower pumping costs due to the lower pressure drop across the valve.

### Kv / Cv Values

DN	Size	Kv Max	Cv Max
50	2"	39	45
80	3"	125	145
100	4"	273	316
125	5"	443	512
150	6"	693	801
200	8"	1532	1771
250	10"	2598	3003
300	12"	3933	4547
350	14"	5427	6274
400	16"	7760	8971
450	18"	10585	12237
500	20"	12845	14850
600	24"	20408	23593

Values for full rated ANSI 300 / PN 40 bidirectionally tight valve



# PRODUCT RANGE

## 5 OFFSET BUTTERFLY VALVES

DN 50 to DN 2000  
2" to 84"  
PN 10, 16, 25, 40, 63, 100, 160  
ANSI 150, 300, 600, 900  
Fully rated Delta P in both directions  
Temperature -270° C up to 1.800° C  
-454° F up to 3,272° F

### Body Versions

- ▶ Lug DIN 3202 K3
- ▶ Lug API 609 short
- ▶ Flanged ISO
- ▶ Flanged DIN 3202 F4
- ▶ Weld ends DIN 3202 S4
- ▶ Flanged B 16.10

All valves use stainless materials in all critical areas. As a standard seat, seal, bearings, shaft, all screws, clamp ring, cover, gland follower all stainless steel.

### Special Materials are Available:

- ▶ Special stainless steel
- ▶ Duplex, superduplex
- ▶ Inconel
- ▶ Monel
- ▶ Bronze
- ▶ Specials, (titanium, etc.)

### Strong Solutions for Special Applications

- ▶ Sealed bearing design
- ▶ Monitoring port
- ▶ Shaft extensions
- ▶ Steam jacket
- ▶ Vacuum isolation



## Quality and Know-How



### Certifications

- ▶ ISO 9001
- ▶ PED 2014/68/EU
- ▶ DIN EN 12516, DIN 3840
- ▶ ASME B 16.34
- ▶ AD 2000
- ▶ AD W10
- ▶ BAM Oxygen Approval
- ▶ TA Luft
- ▶ NACE MR 0175, NACE MR 0103
- ▶ 94/9 EG ATEX

### Fire Safe in Both Directions

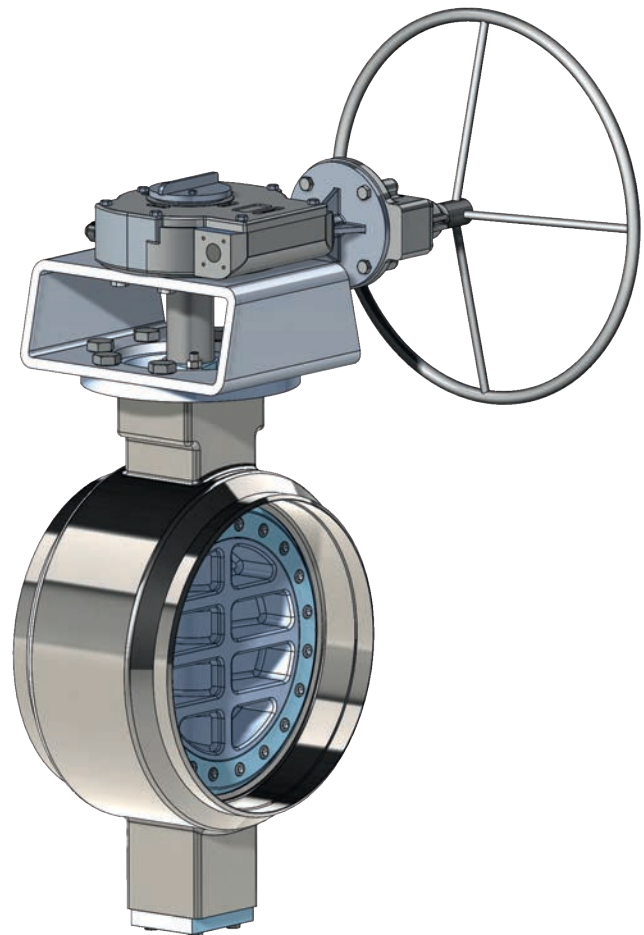
- ▶ ISO 10497
- ▶ API 607
- ▶ BS 6755

### Actuator

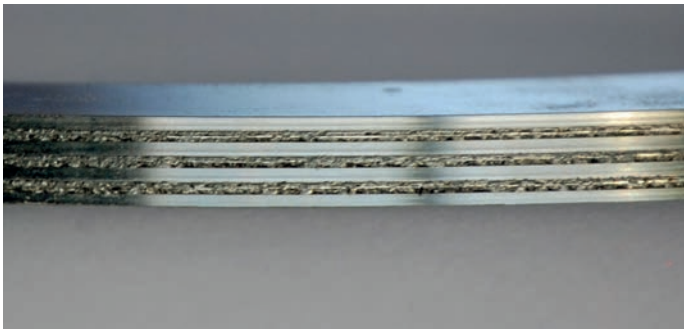
- ▶ Manual gear box
- ▶ Pneumatic NC / NO / DA
- ▶ Hydraulic NC / NO / DA
- ▶ Electric

### Zero Leakage, Fully Rated

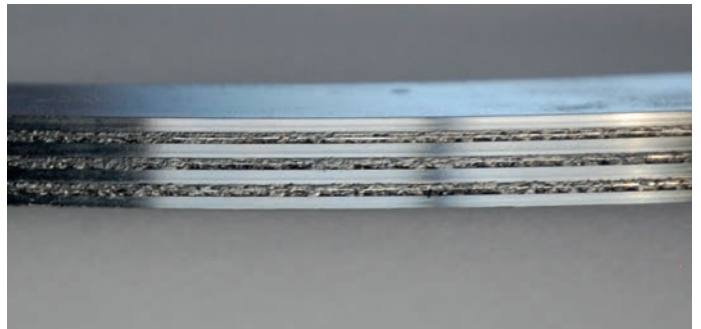
- ▶ Class A EN 12266
- ▶ Class 1 DIN 3230 BA/BO/BN
- ▶ Per API 598 Resilient / API-6D
- ▶ Per BS 6364



# DIFFERENT SEALS FOR DIFFERENT APPLICATIONS



Standard graphite / stainless steel lamination  
for standard applications



Graphite / inconel lamination  
for very aggressive chemicals



All metal lamination  
typically for wet steam applications



PTFE o-ring seal  
for clean chemical applications



Silver coated inconel o-ring seal  
for very special applications  
high temperature, cryogenic, oxygen



# Sample Applications



District heating



Industrial gases



Solar thermal energy



Oxygen applications



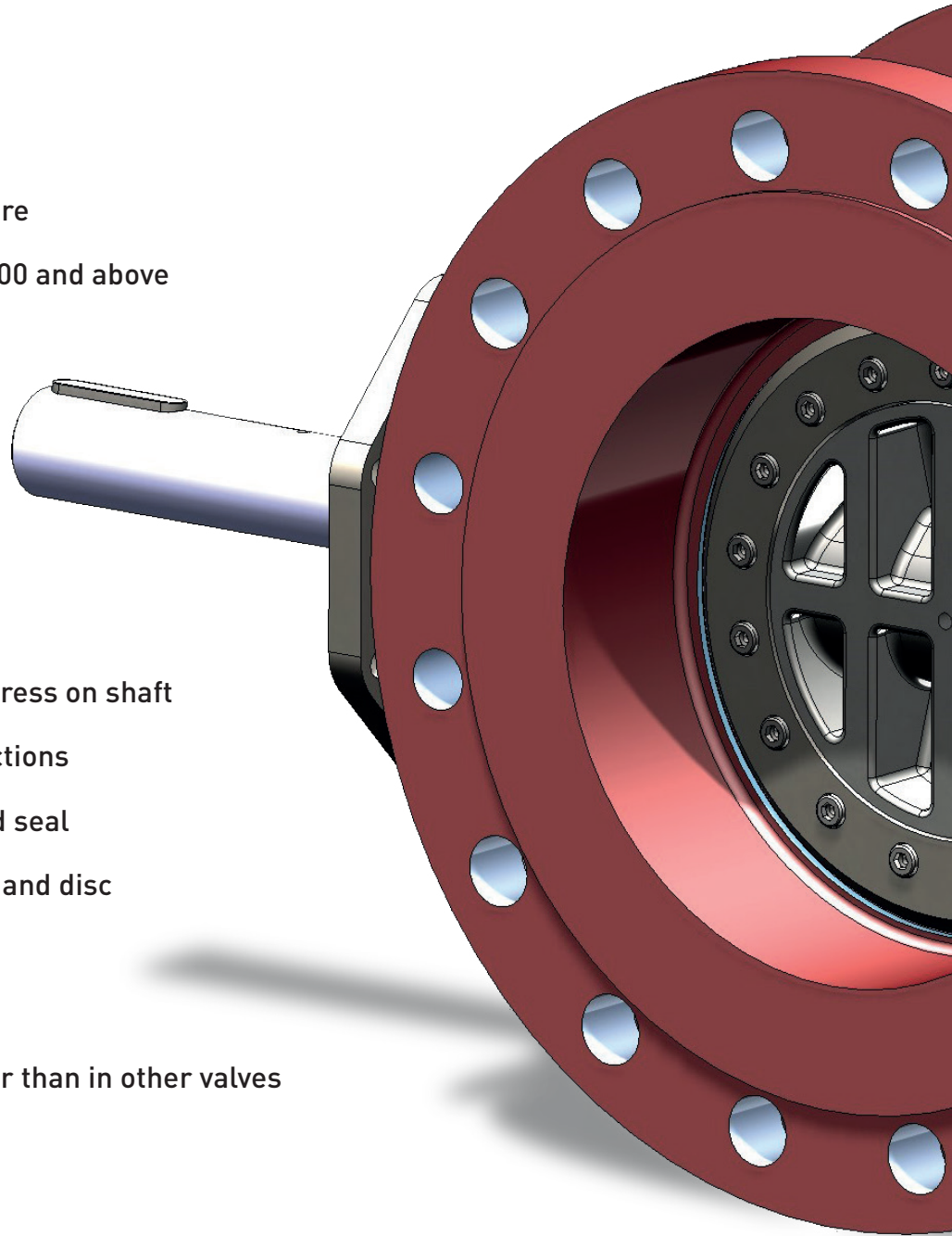
Power generation



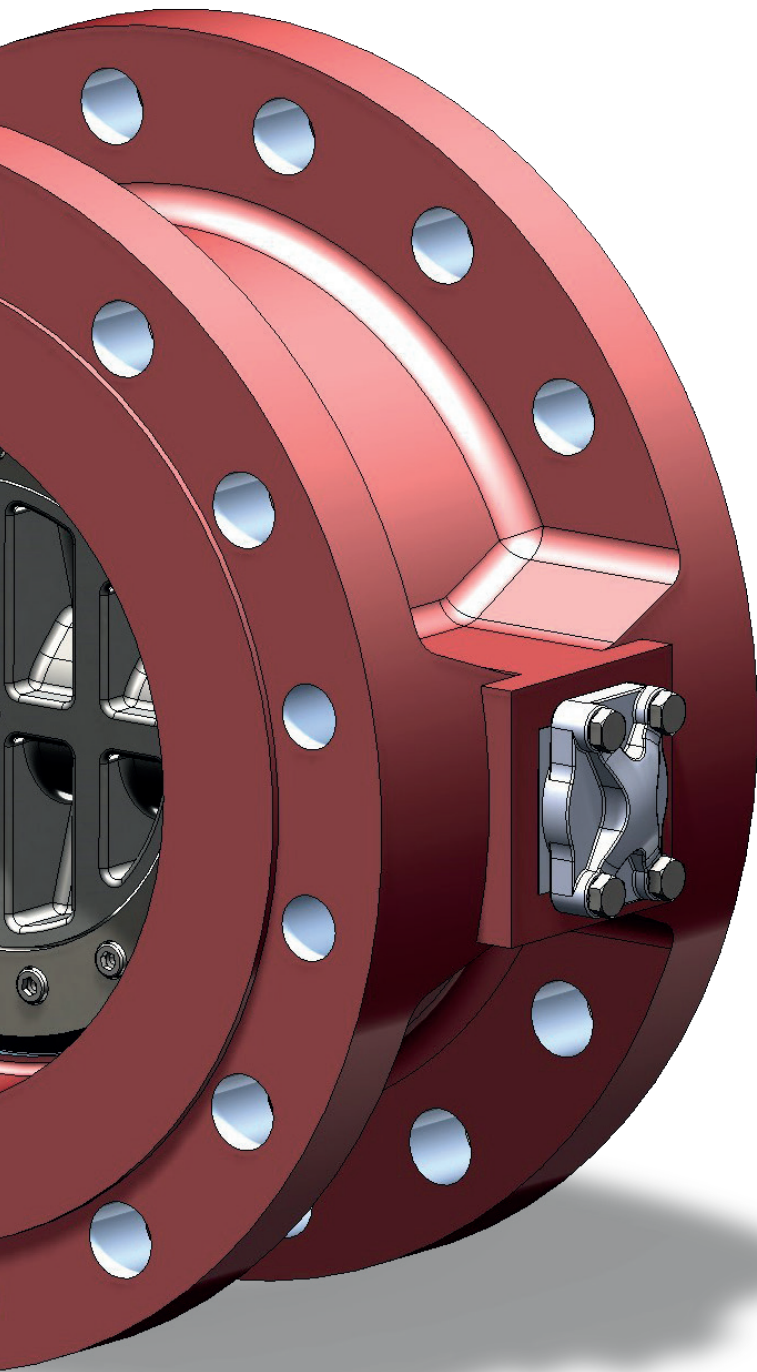
LNG/Very low temperatures / cryogenic applications

# FEATURES & BENEFITS

- ▶ Available to 84" and larger
  - ▶ Inconel seat as standard
  - ▶ Stellite seat as option
  - ▶ Very low torques in high pressure
  - ▶ Available up to PN 160 / ANSI 900 and above
  - ▶ Zero leakage even in cryogenic
- 
- ▶ Optimized disc shape, lowest stress on shaft
  - ▶ Full pressure tight in both directions
  - ▶ No movement between disc and seal
  - ▶ 100% tight between lamination and disc
  - ▶ Mirror finish of the seat
  - ▶ Maximum hardness of the seat
  - ▶ Dead leg minimized and smaller than in other valves
  - ▶ ISO top flange for actuation
  - ▶ No wear, friction free

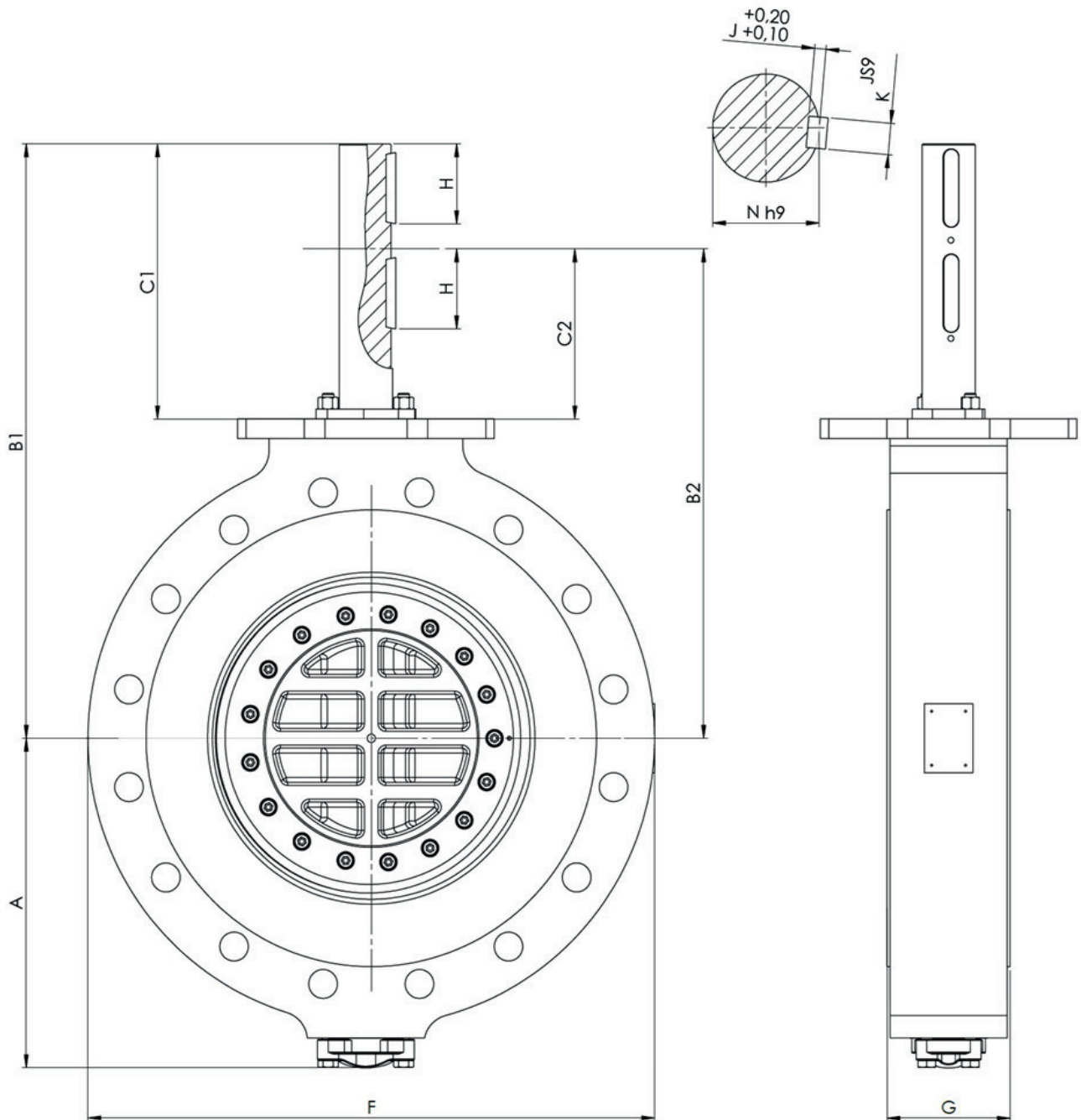


## Tailor-Made Solutions



- ▶ Temperature range from  $-454^{\circ}\text{F}$  up to  $3,272^{\circ}\text{F}$
- ▶ Ideal support of the seal
- ▶ No additional stress on seal
- ▶ Floating disc design, fastest temperature changes possible
- ▶ Excellent flow control or throttling capabilities
- ▶ Excellent cavitation prevention with ORCA<sup>®</sup> trim
- ▶ All metal design available with no graphite
- ▶ Oxygen applications up to  $1,112^{\circ}\text{F}$
- ▶ Superior cover design, zero leakage even with water hammers
- ▶ Cover and gland follower in stainless as standard
- ▶ Direct mount and coupling mount possible
- ▶ Highest Kv / Cv – values in the market

**LUG TYPE -  
Model BOAP**  
Acc. API 609 T2



# DIMENSIONS AND WEIGHTS

## LUG TYPE - BOAP

### Dimensions [inch] (BOAP)

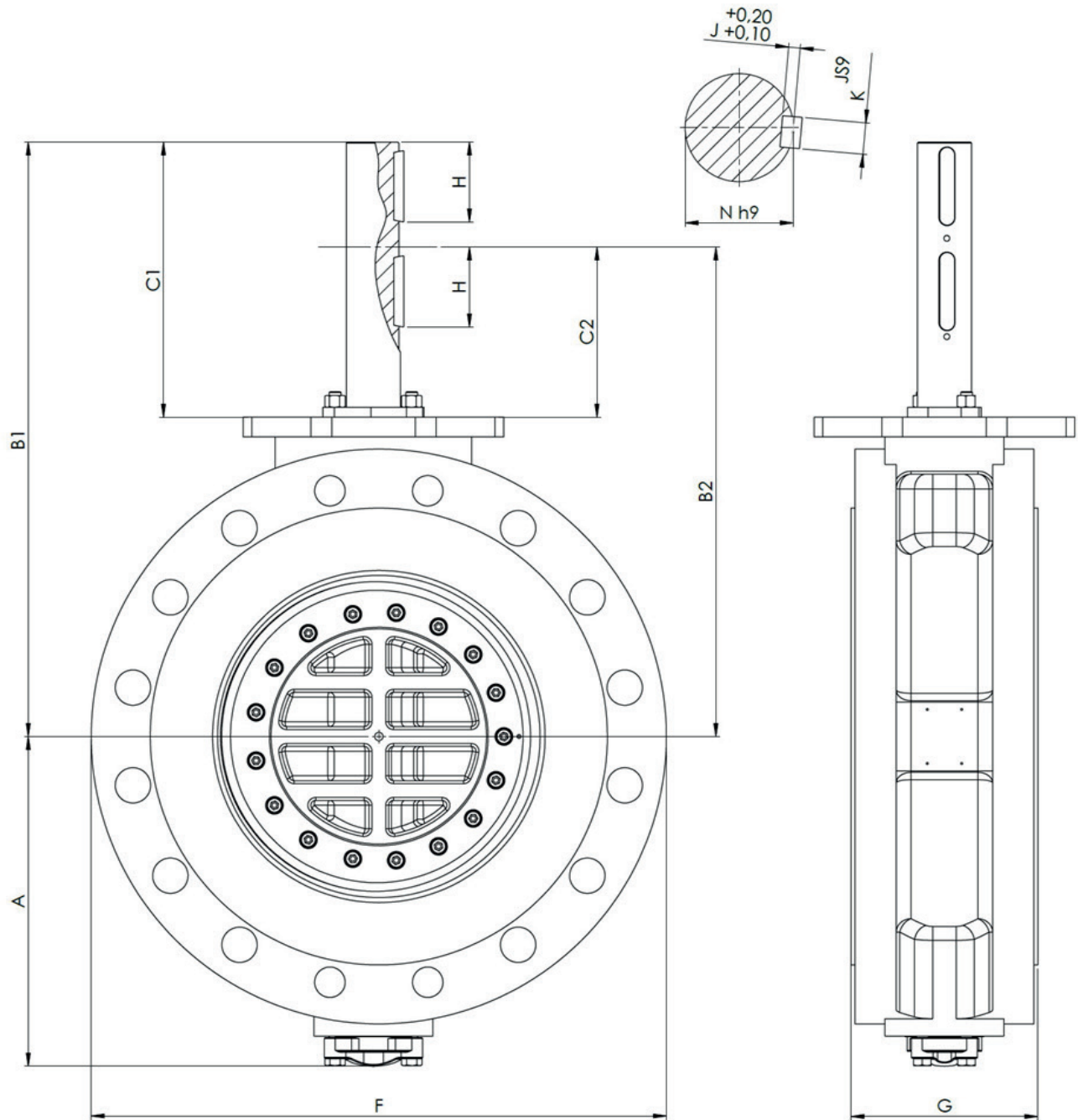
DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
A	4.29	5.20	5.20	6.34	7.49	8.20	9.65	11.11	12.29	13.24	15.21	16.00	17.45	21.51
B1	7.88	8.79	8.79	11.31	12.81	13.71	16.55	18.08	19.11	23.84	26.56	27.78	29.51	33.49
C1	3.74	3.74	3.74	4.93	5.32	5.71	7.09	7.09	7.09	11.03	11.39	11.82	12.17	12.61
B2	6.15	7.05	7.05	9.06	10.17	10.68	12.81	14.34	15.37	19.62	21.87	22.66	23.60	27.58
C2	2.01	2.01	2.01	2.68	2.68	2.68	3.35	3.35	3.35	6.82	6.70	6.70	6.26	6.70
F ANSI150	6.23	7.49	7.49	9.06	10.01	11.03	13.87	15.96	19.11	21.67	23.52	25.22	27.58	32.11
F ANSI300	6.23	8.27	8.27	10.01	11.03	12.61	14.97	17.53	20.53	23.05	26.00	27.97	30.34	35.78
G ANSI150	1.73	1.89	1.89	2.13	2.29	2.36	2.64	2.92	3.31	3.74	4.14	4.61	5.12	6.19
G ANSI300	1.73	1.89	1.89	2.13	2.32	2.44	2.88	3.27	3.62	4.61	5.24	5.87	6.26	7.13
H	1.02	1.18	1.18	1.30	1.77	1.77	1.77	2.01	2.52	3.35	3.90	3.94	3.94	4.73
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	0.12	0.14	0.14	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	0.35
K	0.20	0.24	0.24	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.99
N	0.55	0.71	0.71	0.79	0.87	1.26	1.26	1.58	1.77	2.17	2.56	2.76	2.96	3.55

### Weights [lbs] (BOAP)

DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
ANSI150	20	31	31	51	66	77	137	225	289	439	677	708	970	1469
ANSI300	20	33	33	55	75	97	159	267	337	536	789	964	1250	1894

# DUAL FLANGE - Model BOFI

Acc. EN 558-1 R13  
DIN 3202 F16  
ISO 5752 R13



# DIMENSIONS AND WEIGHTS

## DUAL FLANGE - BOFI

Dimensions [inch] (BOFI)

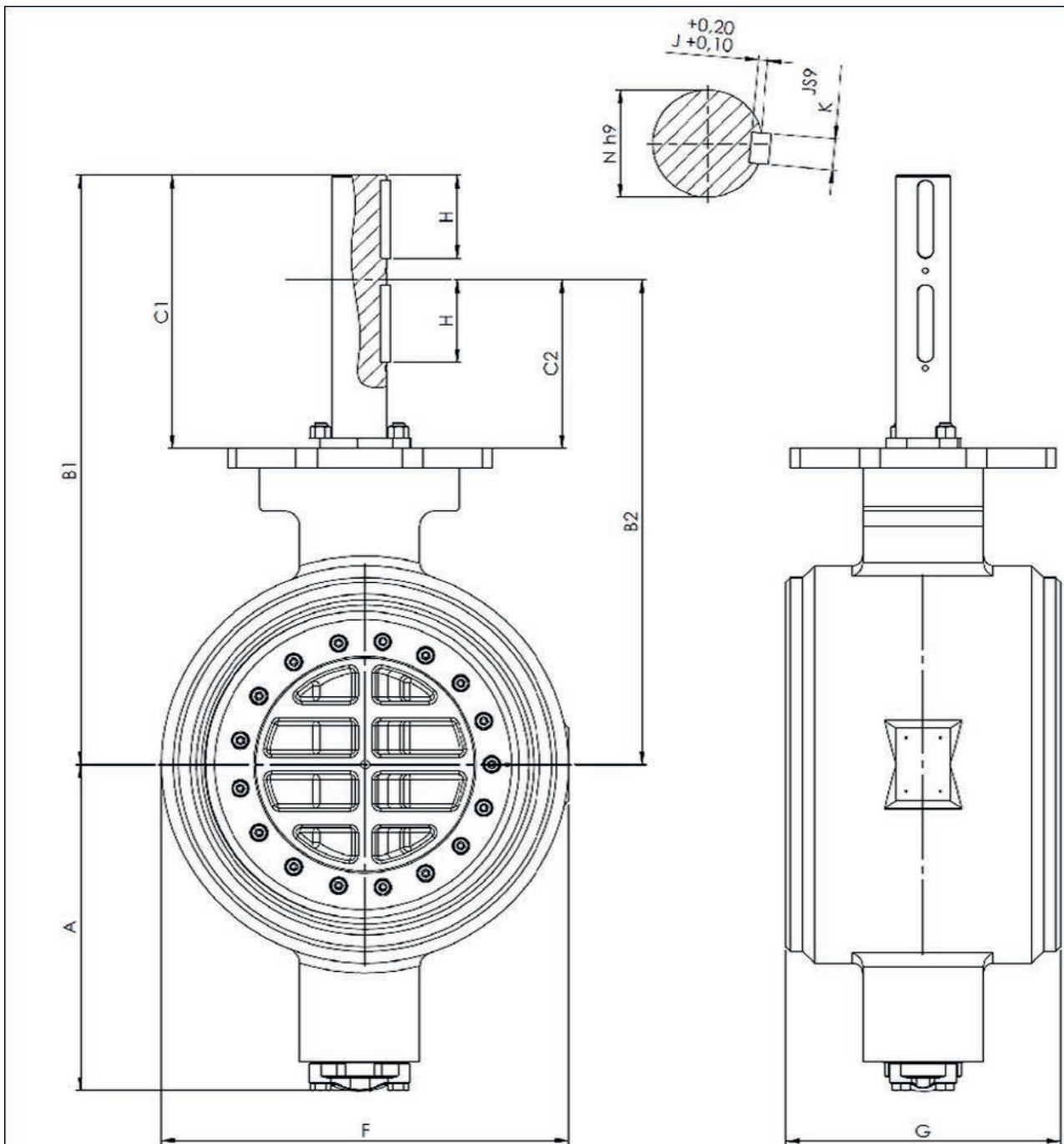
DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
A	4.29	5.20	5.20	6.34	7.49	8.20	9.65	11.11	12.29	13.24	15.21	16.00	17.45	21.51
B1	7.88	8.79	8.79	11.31	12.81	13.71	16.55	18.08	19.11	23.84	26.56	27.78	29.51	33.49
C1	3.74	3.74	3.74	4.93	5.32	5.71	7.09	7.09	7.09	11.03	11.39	11.82	12.17	12.61
B2	6.15	7.05	7.05	9.06	10.17	10.68	12.81	14.34	15.37	19.62	21.87	22.66	23.60	27.58
C2	2.01	2.01	2.01	2.68	2.68	2.68	3.35	3.35	3.35	6.82	6.70	6.70	6.26	6.70
F (PN10)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F (PN16)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F (PN25)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F (PN40)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F ANSI150	0.00	7.53	7.53	9.06	0.00	11.62	14.97	17.73	20.29	23.05	26.00	26.79	27.54	32.03
F ANSI300	0.00	8.26	8.26	10.01	0.00	12.51	15.01	17.51	20.52	23.05	25.52	28.02	30.52	36.03
G	4.26	4.49	4.49	5.00	5.52	5.52	5.99	6.50	7.01	7.49	8.51	8.75	9.02	10.52
H	1.02	1.18	1.18	1.30	1.77	1.77	1.77	2.01	2.52	3.35	3.90	3.94	3.94	4.73
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	0.12	0.14	0.14	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	0.35
K	0.20	0.24	0.24	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.99
N	0.55	0.71	0.71	0.79	0.87	1.26	1.26	1.58	1.77	2.17	2.56	2.76	2.96	3.55

Weights [lbs] (BOFI)

DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
PN10	29	46	46	68	95	112	198	282	406	595	847	884	1250	1865
PN16	29	46	46	68	95	112	198	282	406	595	847	884	1250	1865
PN25	29	46	46	68	95	112	198	282	406	595	847	884	1250	1865
PN40	29	46	46	68	95	112	198	282	406	595	847	884	1250	1865
ANSI150	29	46	46	68	95	112	198	282	406	595	847	884	1250	1865
ANSI300	29	46	46	68	95	112	198	282	406	595	847	884	1250	1865

# BUTT WELD - Model BOS4

Acc. EN 558-1 R14  
DIN 3202 S4  
ISO 5752 R14





# DIMENSIONS AND WEIGHTS

## BUTT WELD - BOS4

Dimensions [inch] (BOS4)

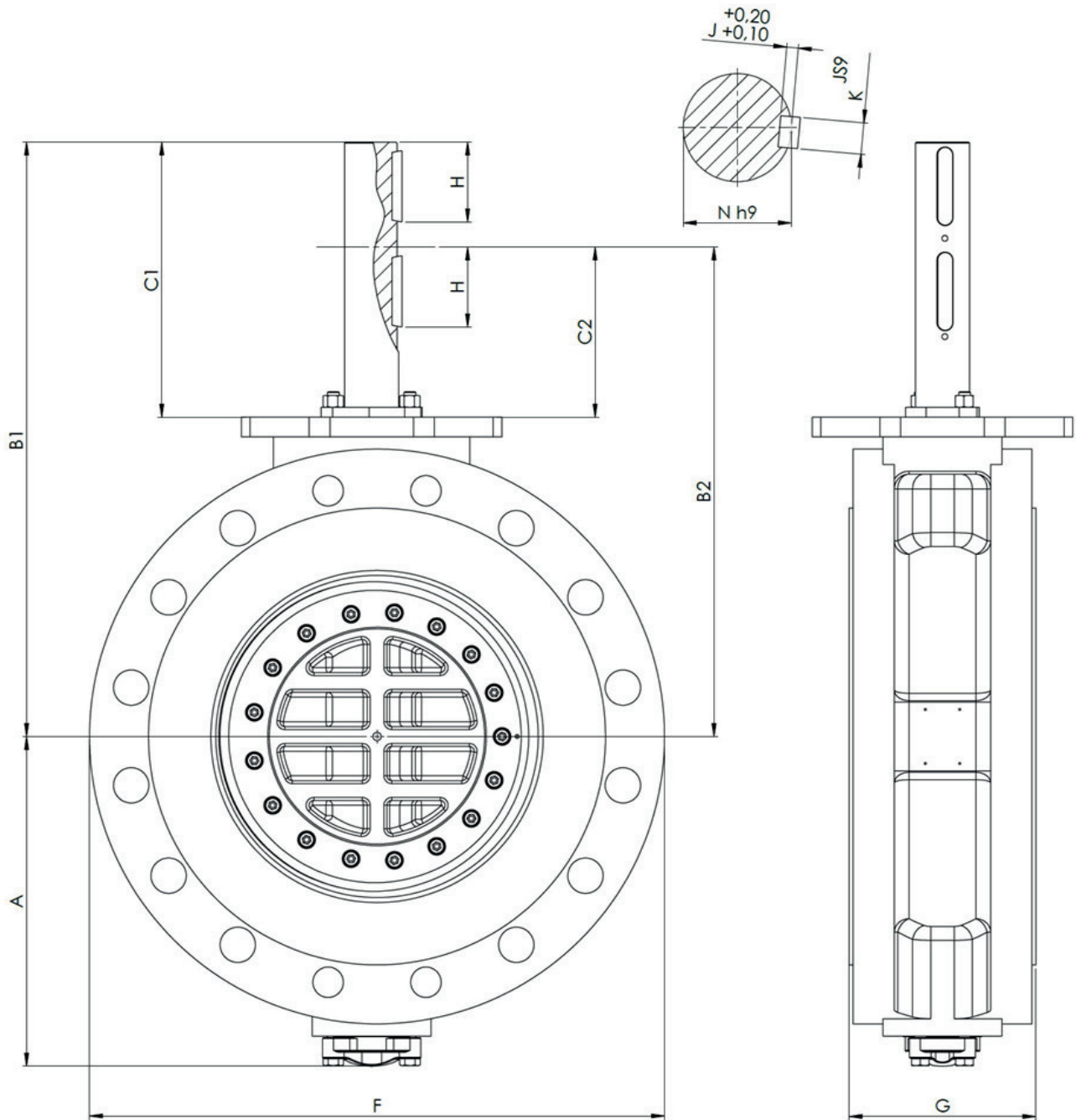
DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
A	4.29	5.20	5.20	6.34	7.49	8.20	9.65	11.11	12.29	13.24	15.21	16.00	17.45	21.51
B1	7.88	8.79	8.79	11.31	12.81	13.71	16.55	18.08	19.11	23.84	26.56	27.78	29.51	33.49
C1	3.74	3.74	3.74	4.93	5.32	5.71	7.09	7.09	7.09	11.03	11.39	11.82	12.17	12.61
B2	6.15	7.05	7.05	9.06	10.17	10.68	12.81	14.34	15.37	19.62	21.87	22.66	23.60	27.58
C2	2.01	2.01	2.01	2.68	2.68	2.68	3.35	3.35	3.35	6.82	6.70	6.70	6.26	6.70
F (PN10)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F (PN16)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F (PN25)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F (PN40)	6.50	7.88	7.88	9.06	10.64	11.62	14.97	17.73	20.29	23.05	26.00	26.79	30.34	35.78
F ANSI150	0.00	7.53	7.53	9.06	0.00	11.62	14.97	17.73	20.29	23.05	26.00	26.79	27.54	32.03
F ANSI300	0.00	8.26	8.26	10.01	0.00	12.51	15.01	17.51	20.52	23.05	25.52	28.02	30.52	36.03
G	5.91	7.09	7.09	7.49	7.88	8.27	9.06	9.85	10.64	11.43	12.21	13.00	13.79	15.37
H	1.02	1.18	1.18	1.30	1.77	1.77	1.77	2.01	2.52	3.35	3.90	3.94	3.94	4.73
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	0.12	0.14	0.14	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	0.35
K	0.20	0.24	0.24	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.99
N	0.55	0.71	0.71	0.79	0.87	1.26	1.26	1.58	1.77	2.17	2.56	2.76	2.96	3.55

Weights [lbs] (BOS4)

DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
PN10	29	49	49	68	93	112	190	276	395	582	798	838	1204	1729
PN16	29	49	49	68	93	112	190	276	395	582	798	838	1204	1729
PN25	29	49	49	68	93	112	190	276	395	582	798	838	1204	1729
PN40	29	49	49	68	93	112	190	276	395	582	798	838	1204	1729
ANSI150	-	49	49	68	0.00	112	190	276	395	582	798	838	1204	1729
ANSI300	-	49	49	68	0.00	112	190	276	395	582	798	838	1204	1729

# GATE VALVE - Model BOFG

ANSI B.16.10 Takeout



# DIMENSIONS AND WEIGHTS

## GATE VALVE - BOFG

### Dimensions [inch] (BOFG)

DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
A	4.29	5.20	5.20	6.34	7.48	8.19	9.65	11.10	12.28	13.23	15.20	15.98	17.44	21.50
B1	7.87	8.78	8.78	11.30	12.76	13.70	16.54	18.07	19.09	23.82	26.54	27.75	29.49	33.46
C1	3.74	3.74	3.74	4.92	5.31	5.70	7.09	7.08	7.08	11.02	11.39	11.81	12.16	12.60
B2	6.14	7.05	7.05	9.05	10.16	10.67	12.79	14.33	15.35	19.60	21.85	22.64	23.58	27.56
C2	2.00	2.00	2.00	2.68	2.67	2.67	3.35	3.34	3.35	6.81	6.69	170.00	6.26	6.69
F ANSI150	6.00	7.50	7.50	9.00	254.00	11.00	13.50	16.00	19.00	21.00	23.50	25.00	27.50	32.00
F ANSI300	6.50	8.25	8.25	10.00	11.00	12.50	15.00	17.50	20.50	23.00	25.50	28.00	30.50	36.00
G ANSI150	7.01	8.00	8.00	9.01	10.00	10.50	11.50	13.00	14.00	15.00	16.00	17.00	18.00	20.00
G ANSI300	8.50	11.10	11.10	12.00	15.00	15.87	16.50	18.00	19.76	30.00	33.00	36.00	39.00	45.00
H	1.02	1.18	1.18	1.30	1.77	1.77	1.77	2.00	2.52	3.35	3.90	3.94	3.94	4.72
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
J	0.12	0.14	0.14	0.14	0.14	0.20	0.20	0.20	0.22	0.24	0.28	0.30	0.30	0.35
K	0.20	0.24	0.24	0.24	0.24	0.39	0.39	0.47	0.55	0.63	0.71	0.79	0.79	0.99
N	0.55	0.71	0.71	0.79	0.87	1.26	1.26	1.58	1.77	2.17	2.56	2.76	2.96	3.55

### Weights [lbs] (BOFG)

DN - Size	50 (2")	65 (2,5")	80 (3")	100 (4")	125 (5")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")	450 (18")	500 (20")	600 (24")
ANSI150	41.80	74.80	74.80	103.40	136.40	169.40	286.00	411.40	591.80	430.70	1196.80	1254.00	1804.00	2587.20
ANSI300	41.80	74.80	74.80	103.40	136.40	169.40	286.00	411.40	591.80	430.70	1196.80	1254.00	1804.00	2587.20



ADVANCED VALVE AND INSTRUMENT

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## ABOUT AVI



Advanced Valve and Instrument, Inc. began operations in mid-1994 with our focus on being a short turnaround supplier of automated quarter turn valves. Since our beginning, that vision has expanded to include instrumentation and valve application seminars, classes and valve application consulting.

Located in the heart of the Pulp & Paper industry in Southeast Georgia, AVI serves a diverse market which also includes Power & Utilities, Chemical, Waste & Water Treatment, and Food Processing.

While valve automation has remained a primary focus of our energies, AVI's attention has also turned in recent years to the education of our local customer base, as well as customers from as far away as British Columbia and San Francisco. These customers have turned to AVI to train their supervisors on proper valve specification and selection with our Valve Application Classes.

Improper selection of process valves is costly to manufacturers in both down time and lost production dollars. In other words, the cost of the valve is negligible compared to the cost of the valve failure. AVI has a proven formula which takes the guesswork out of valve selection.

It is this focus on reduction of production downtime which makes AVI unique. Contact AVI today and ask what we can do to reduce costly downtime brought on by 'trial & error' valve selection.

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