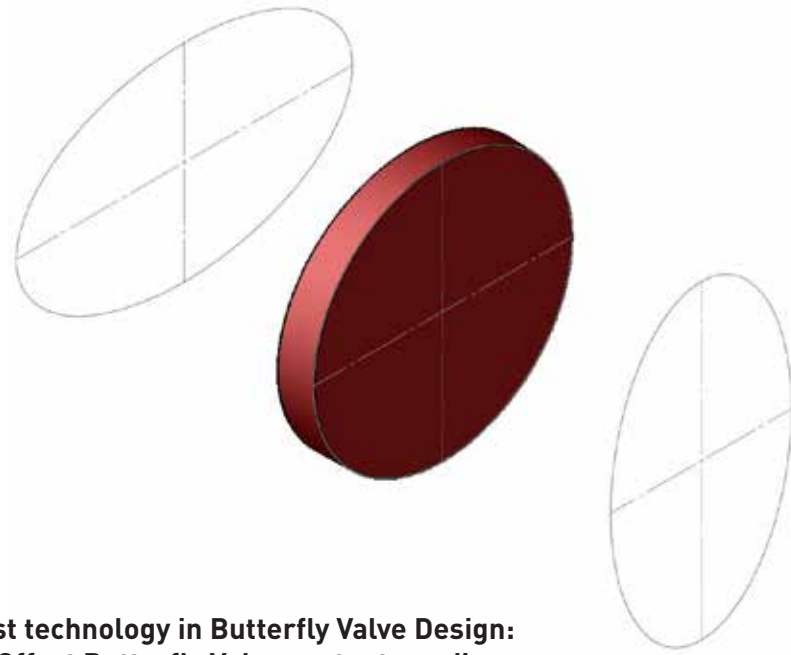




FIVE-OFFSET BUTTERFLY VALVES



GKV-AXX LATEST TECHNOLOGY IN BUTTERFLY VALVES DESIGN

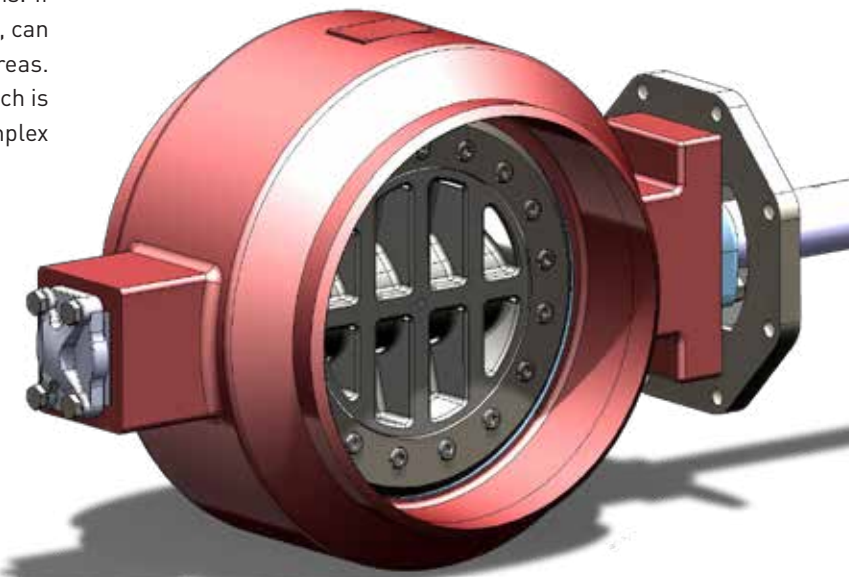


Latest technology in Butterfly Valve Design: Five Offset Butterfly Valve, patent pending

The same designer who invented and patented the four offset butterfly valve in 2008 is introducing now 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 GKV-A 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 figure, not yet named in geometry.

In previous designs, the seat shape never changed along its 3D figure, but in the newly invented design, the lines forming the outside shape do not cross in the same point as in a cone. Basically, 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

GKV-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 -270°C up to 1400°C, from vacuum up to 160bar, from liquid nitrogen up to liquid sodium.

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

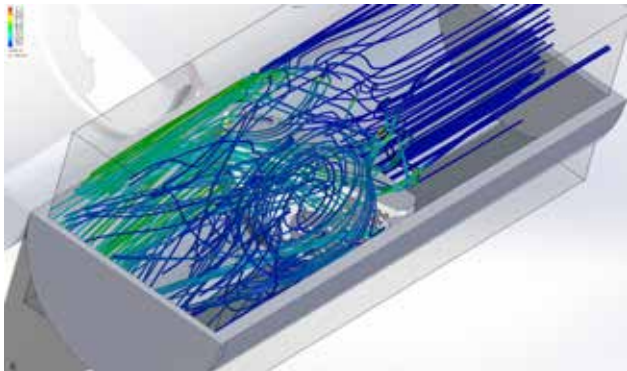
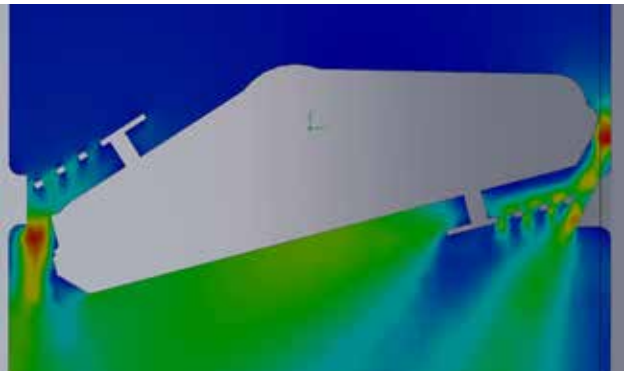
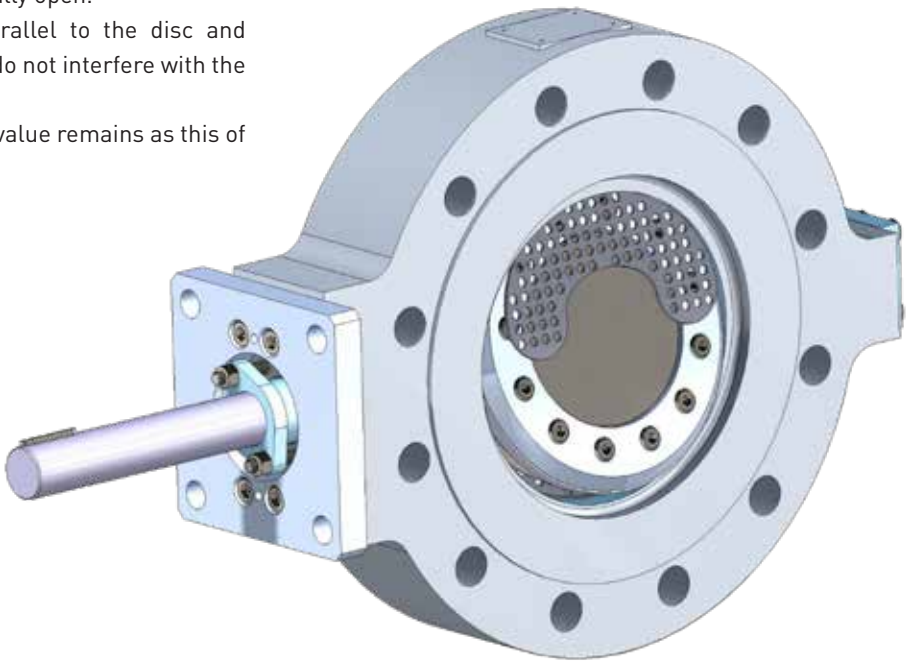


ORCA® ELIMINATING THE RISK OF CAVITATION

ORCA®

The new ORCA® trim provides huge advantages against other solutions. Plates mounted on both sides of the disc allow the pressure to drop in several stages and prevent supersonic speed in gases and prevent the 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 moved 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 as this of a standard valve.

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



Maximizing Kv / Cv Values

GKV-AXX

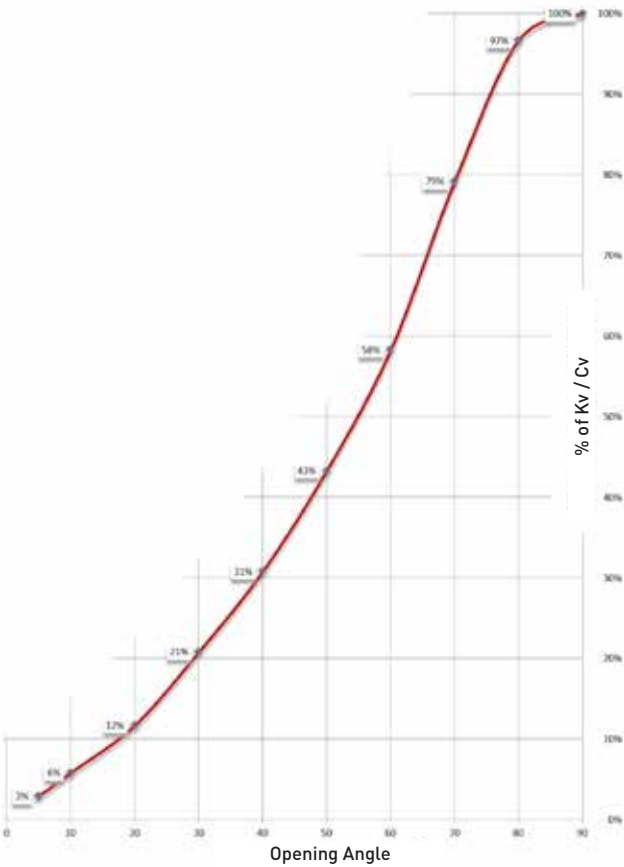
The GKV-9 valve has the highest Kv / Cv of any comparable torque-seated butterfly valve. Not only the valve can be sized smaller. Even the actuator, the piping as well as the entire construction supporting the piping can be sized smaller. Consequently, the costs can be reduced significantly.

With regards to day to day valve replacement where the pipe size and infrastructure have already been determined, the higher flow coefficients with the GKV-9 valve can improve the 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 important areas.
As a standard seat, seal, bearings, shaft, all screws, clamp ring, cover, gland follower all stainless.

Special Materials Available:

- ▶ Special stainless
- ▶ Duplex, superduplex
- ▶ Inconel
- ▶ Monel
- ▶ Bronze
- ▶ Specials, like titanium

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

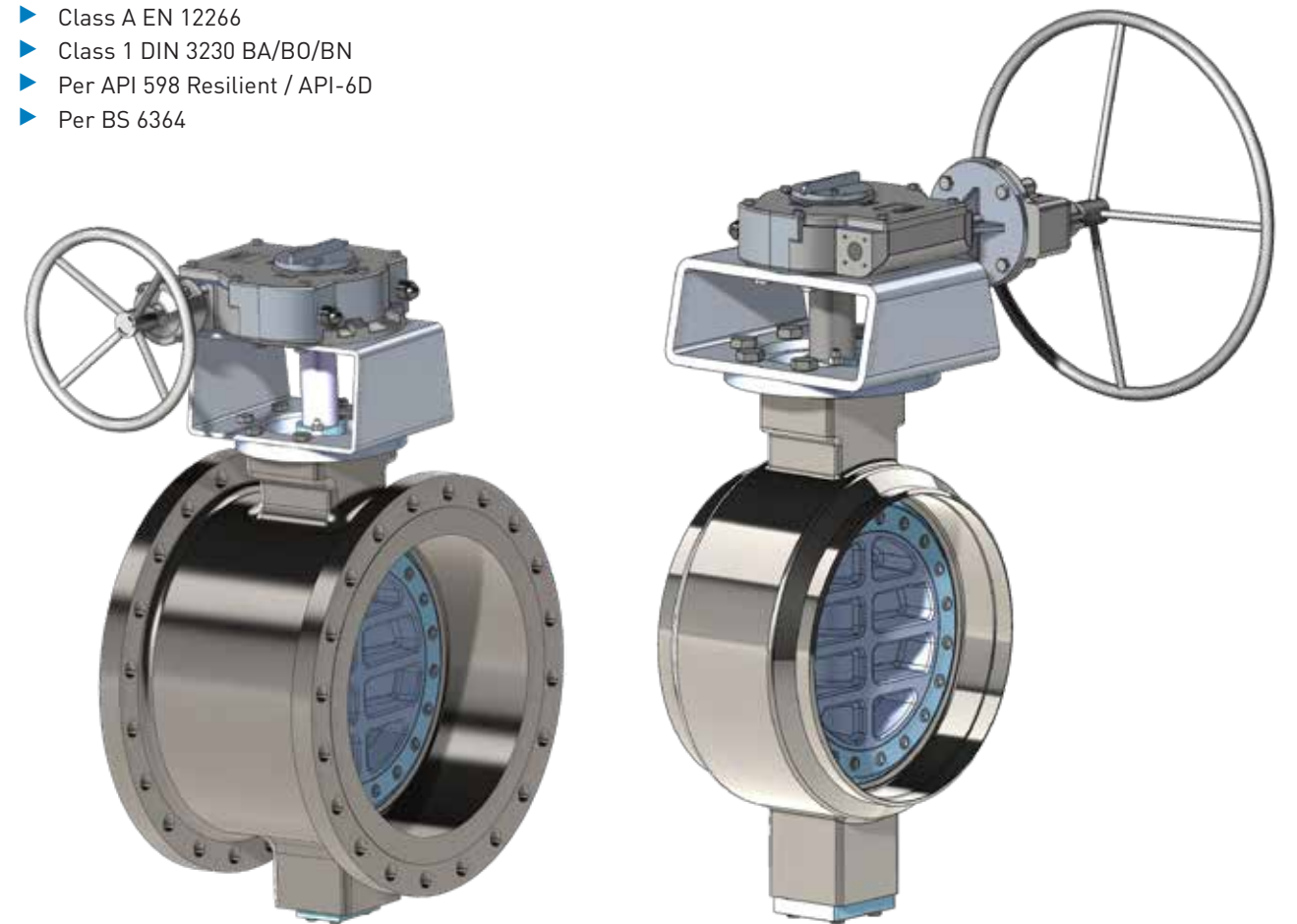
- ▶ ISO 10497
- ▶ API 607
- ▶ BS 6755

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

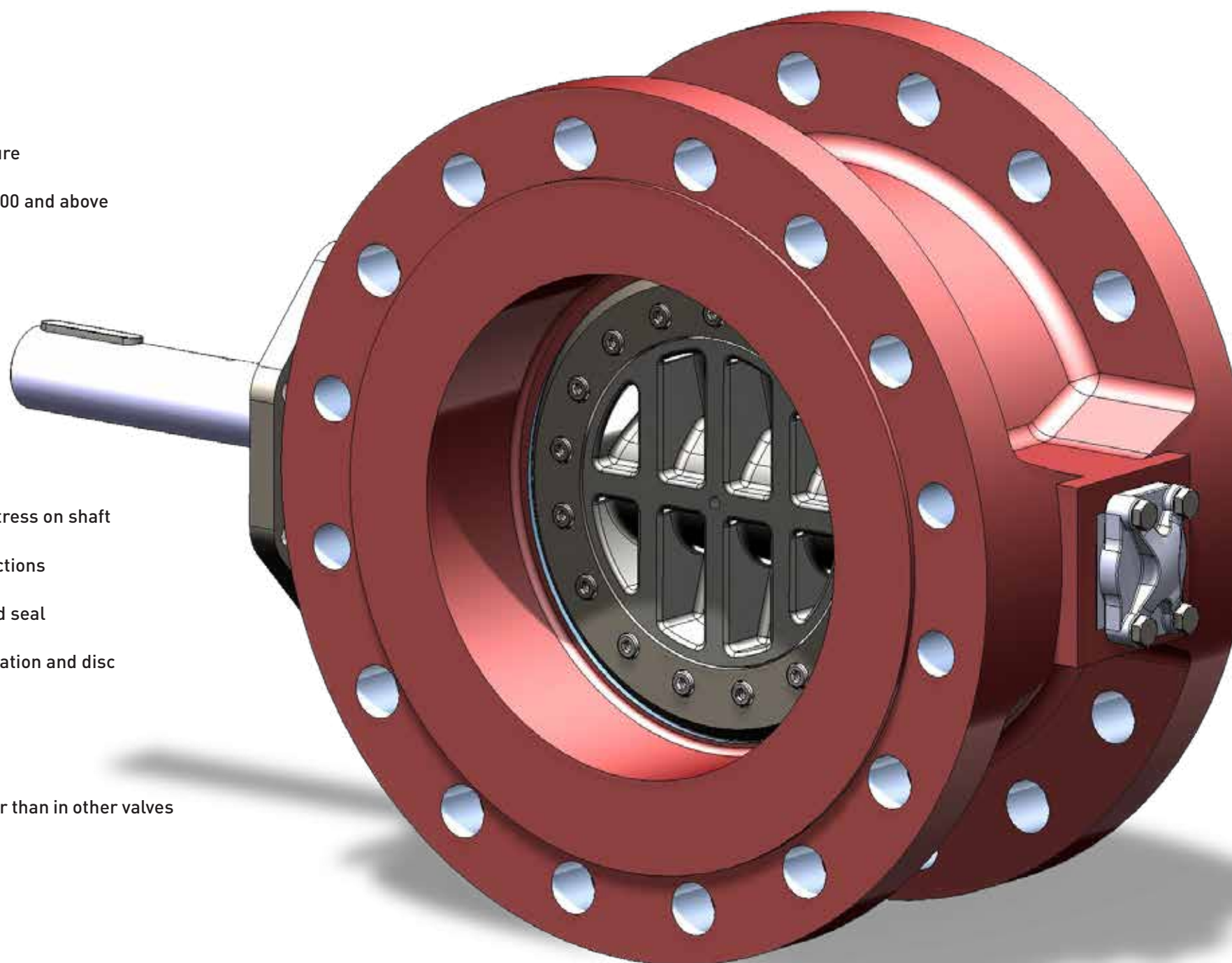


Very low temperatures / cryogenic applications

FEATURES

Tailor-Made Solutions

- ▶ Available to 84" and above
- ▶ 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
- ▶ Absolutely 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



- ▶ Temperature range from -270 °C to 1800 °C
- ▶ Perfect support of the seal
- ▶ No additional stress on seal
- ▶ Floating disc design, fastest temperature changes possible
- ▶ Excellent regulation capabilities
- ▶ Perfect cavitation prevention with ORCA® trim
- ▶ All metal design available with no graphite
- ▶ Oxygen applications up to 600 °C
- ▶ 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

DIMENSIONS AND WEIGHTS

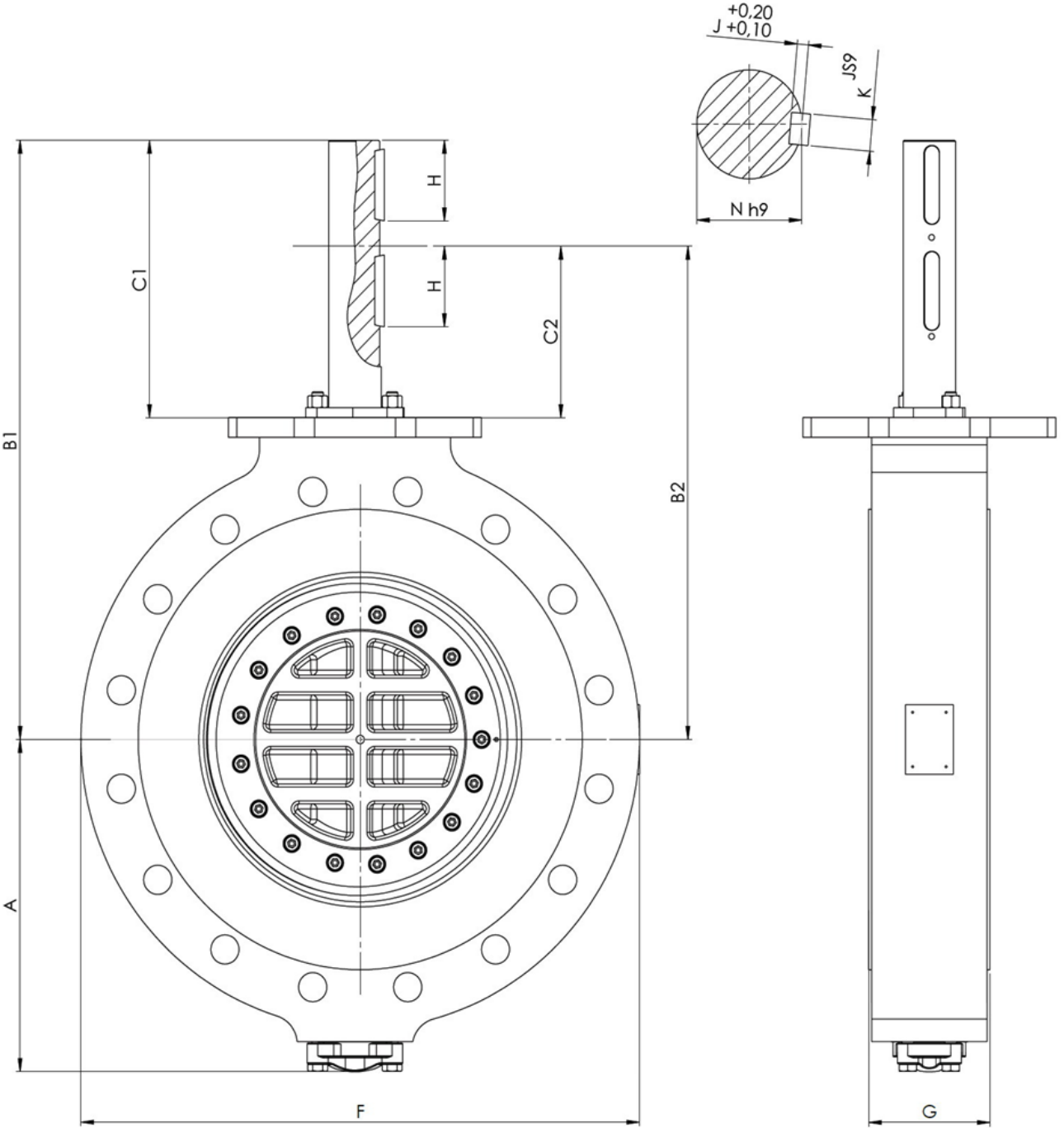
BOK3

Dimensions [mm] (BOK 3)

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	109	132	132	161	190	208	245	282	312	336	386	406	443	546
B1	200	223	223	287	325	348	420	459	485	605	674	705	749	850
C1	95	95	95	125	135	145	180	180	180	280	289	300	309	320
B2	156	179	179	230	258	271	325	364	390	498	555	575	599	700
C2	51	51	51	68	68	68	85	85	85	173	170	170	159	170
F (PN10)	158	200	200	230	270	295	375	450	515	585	660	680	770	908
F (PN16)	158	200	200	230	270	295	375	450	515	585	660	680	770	908
F (PN25)	158	200	200	230	270	295	375	450	515	585	660	680	770	908
F (PN40)	158	200	200	230	270	295	375	450	515	585	660	680	770	908
G	44	64	64	64	70	76	89	114	114	127	140	149	152	178
H	26	30	30	33	45	45	45	51	64	85	99	100	100	120
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	3	3,5	3,5	3,5	3,5	5	5	5	5,5	6	7	7,5	7,5	9
K	5	6	6	6	6	10	10	12	14	16	18	20	20	25
N	14	18	18	20	22	32	32	40	45	55	65	70	75	90

Weights [kg] (BOK 3)

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	9	18	18	25	36	45	78	147	173	255	367	401	546	825
PN16	9	18	18	25	36	45	78	147	173	255	367	401	546	825
PN25	9	18	18	25	36	45	78	147	173	255	367	401	546	825
PN40	9	18	18	25	36	45	78	147	173	255	367	401	546	825



DIMENSIONS AND WEIGHTS

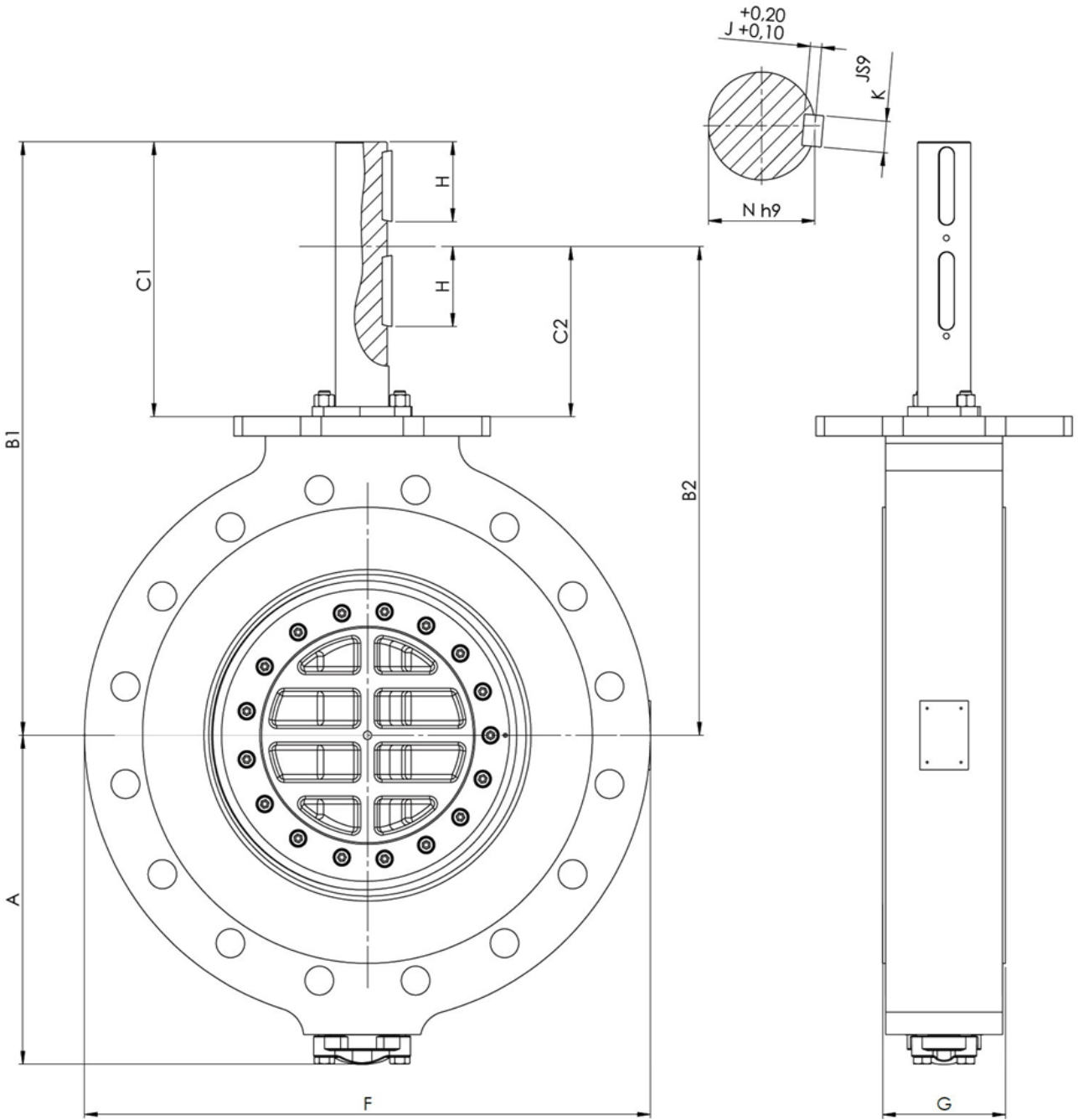
BOAP

Dimensions [mm] (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	109	132	132	161	190	208	245	282	312	336	386	406	443	546
B1	200	223	223	287	325	348	420	459	485	605	674	705	749	850
C1	95	95	95	125	135	145	180	180	180	280	289	300	309	320
B2	156	179	179	230	258	271	325	364	390	498	555	575	599	700
C2	51	51	51	68	68	68	85	85	85	173	170	170	159	170
F ANSI150	158	190	190	230	254	280	352	405	485	550	597	640	700	815
F ANSI300	158	210	210	254	280	320	380	445	521	585	660	710	770	908
G ANSI150	44	48	48	54	58	60	67	74	84	95	105	117	130	157
G ANSI300	44	48	48	54	59	62	73	83	92	117	133	149	159	181
H	26	30	30	33	45	45	45	51	64	85	99	100	100	120
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	3	3,5	3,5	3,5	3,5	5	5	5	5,5	6	7	7,5	7,5	9
K	5	6	6	6	6	10	10	12	14	16	18	20	20	25
N	14	18	18	20	22	32	32	40	45	55	65	70	75	90

Weights [kg] (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	9	14	14	23	30	35	62	102	131	199	307	321	440	666
ANSI300	9	15	15	25	34	44	72	121	153	243	358	437	567	859



DIMENSIONS AND WEIGHTS

BOFI

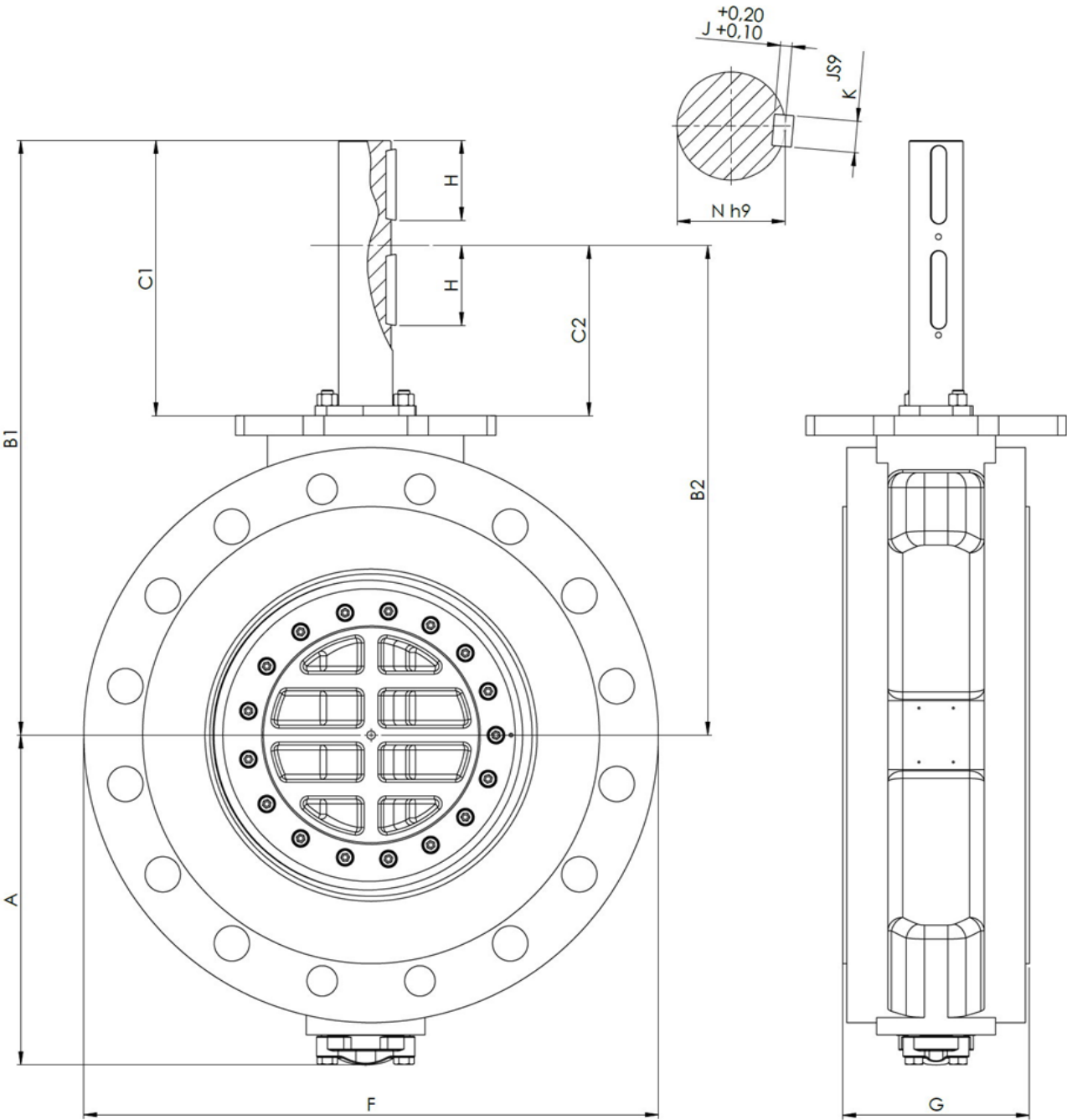


Dimensions [mm] (BOFI)

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	109	132	132	161	190	208	245	282	312	336	386	406	443	546
B1	200	223	223	287	325	348	420	459	485	605	674	705	749	850
C1	95	95	95	125	135	145	180	180	180	280	289	300	309	320
B2	156	179	179	230	258	271	325	364	390	498	555	575	599	700
C2	51	51	51	68	68	68	85	85	85	173	170	170	159	170
F (PN10)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN16)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN25)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN40)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F ANSI150		191	191	230		295	380	450	515	585	660	680	699	813
F ANSI300		210	210	254		318	381	445	521	585	648	711	775	914
G	108	114	114	127	140	140	152	165	178	190	216	222	229	267
H	26	30	30	33	45	45	45	51	64	85	99	100	100	120
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	3	3,5	3,5	3,5	3,5	5	5	5	5,5	6	7	7,5	7,5	9
K	5	6	6	6	6	10	10	12	14	16	18	20	20	25
N	14	18	18	20	22	32	32	40	45	55	65	70	75	90

Weights [kg] (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	13	21	21	31	43	51	90	128	184	270	384	401	567	846
PN16	13	21	21	31	43	51	90	128	184	270	384	401	567	846
PN25	13	21	21	31	43	51	90	128	184	270	384	401	567	846
PN40	13	21	21	31	43	51	90	128	184	270	384	401	567	846
ANSI150	13	21	21	31	43	51	90	128	184	270	384	401	567	846
ANSI300	13	21	21	31	43	51	90	128	184	270	384	401	567	846



DIMENSIONS AND WEIGHTS

BOF4

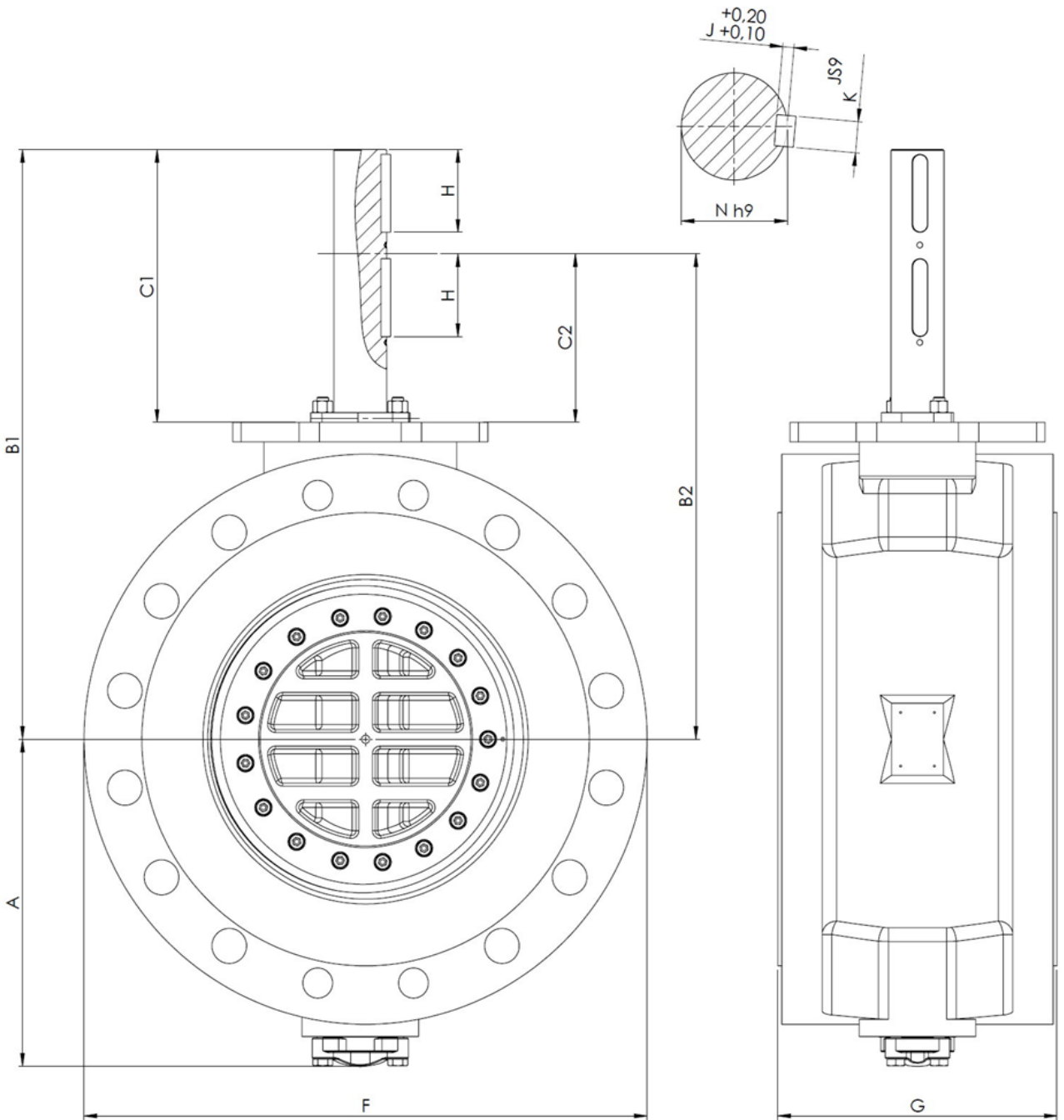


Dimensions [mm] (BOF4)

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	109	132	132	161	190	208	245	282	312	336	386	406	443	546
B1	200	223	223	287	325	348	420	459	485	605	674	705	749	850
C1	95	95	95	125	135	145	180	180	180	280	289	300	309	320
B2	156	179	179	230	258	271	325	364	390	498	555	575	599	700
C2	51	51	51	68	68	68	85	85	85	173	170	170	159	170
F (PN10)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN16)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN25)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN40)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F ANSI150		191	191	230		295	380	450	515	585	660	680	699	813
F ANSI300		210	210	254		318	381	445	521	585	648	711	775	914
G	150	180	180	190	200	210	230	250	270	290	310	330	350	390
H	26	30	30	33	45	45	45	51	64	85	99	100	100	120
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	3	3,5	3,5	3,5	3,5	5	5	5	5,5	6	7	7,5	7,5	9
K	5	6	6	6	6	10	10	12	14	16	18	20	20	25
N	14	18	18	20	22	32	32	40	45	55	65	70	75	90

Weights [kg] (BOF4)

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	16	28	28	39	52	64	108	156	224	330	453	475	683	980
PN16	16	28	28	39	52	64	108	156	224	330	453	475	683	980
PN25	16	28	28	39	52	64	108	156	224	330	453	475	683	980
PN40	16	28	28	39	52	64	108	156	224	330	453	475	683	980
ANSI150		28	28	39		64	108	156	224	330	453	475	683	980
ANSI300		28	28	39		64	108	156	224	330	453	475	683	980



DIMENSIONS AND WEIGHTS

BOS4

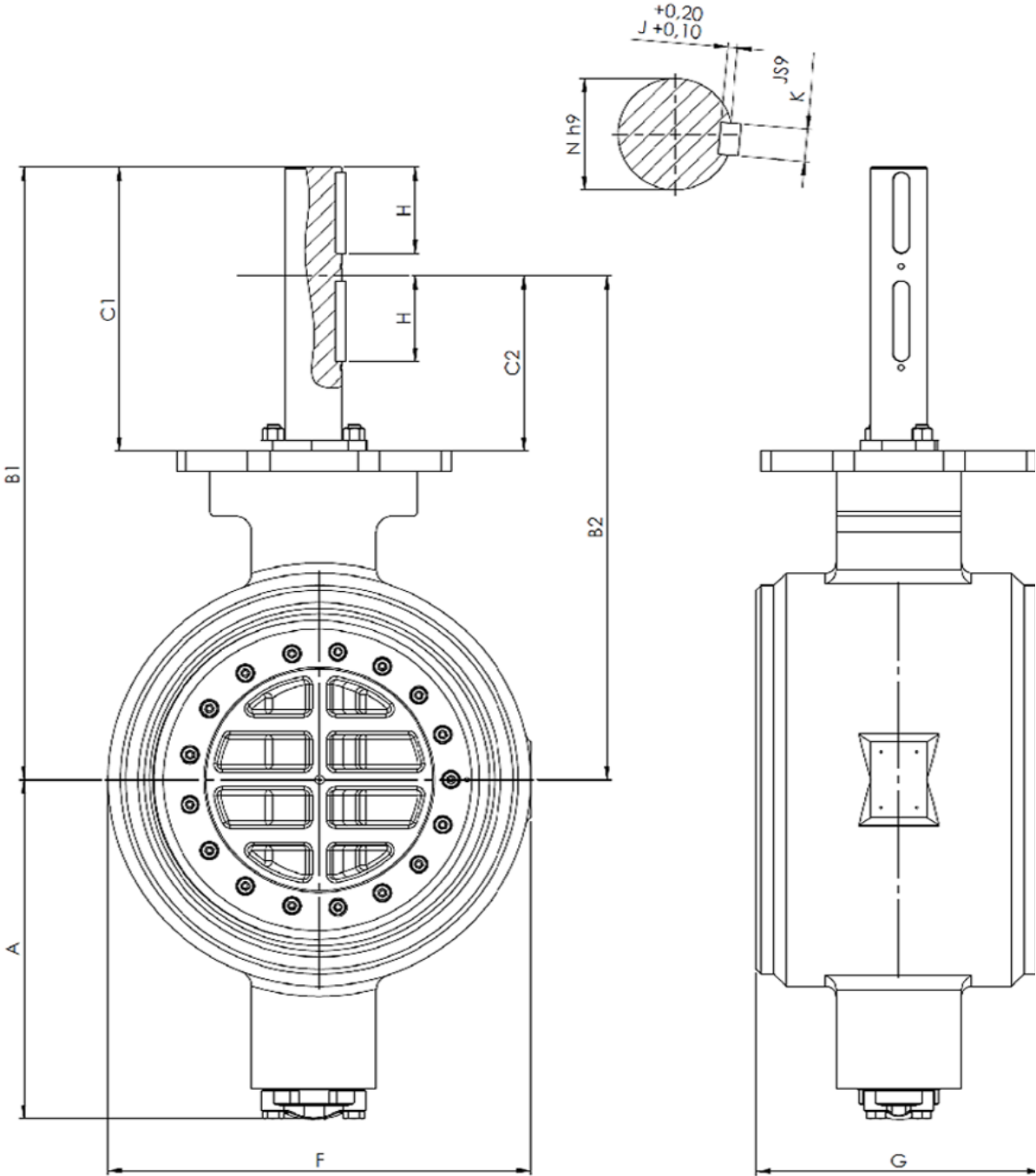


Dimensions [mm] (BOS4)

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	109	132	132	161	190	208	245	282	312	336	386	406	443	546
B1	200	223	223	287	325	348	420	459	485	605	674	705	749	850
C1	95	95	95	125	135	145	180	180	180	280	289	300	309	320
B2	156	179	179	230	258	271	325	364	390	498	555	575	599	700
C2	51	51	51	68	68	68	85	85	85	173	170	170	159	170
F (PN10)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN16)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN25)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F (PN40)	165	200	200	230	270	295	380	450	515	585	660	680	770	908
F ANSI150		191	191	230		295	380	450	515	585	660	680	699	813
F ANSI300		210	210	254		318	381	445	521	585	648	711	775	914
G	150	180	180	190	200	210	230	250	270	290	310	330	350	390
H	26	30	30	33	45	45	45	51	64	85	99	100	100	120
ISO pad	F07	F07	F07	F10	F10	F10	F16	F16	F16	F25	F30	F30	F35	F35
				F14	F14	F14								
J	3	3,5	3,5	3,5	3,5	5	5	5	5,5	6	7	7,5	7,5	9
K	5	6	6	6	6	10	10	12	14	16	18	20	20	25
N	14	18	18	20	22	32	32	40	45	55	65	70	75	90

Weights [kg] (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	13	22	22	31	42	51	86	125	179	264	362	380	546	784
PN16	13	22	22	31	42	51	86	125	179	264	362	380	546	784
PN25	13	22	22	31	42	51	86	125	179	264	362	380	546	784
PN40	13	22	22	31	42	51	86	125	179	264	362	380	546	784
ANSI150		22	22	31		51	86	125	179	264	362	380	546	784
ANSI300		22	22	31		51	86	125	179	264	362	380	546	784



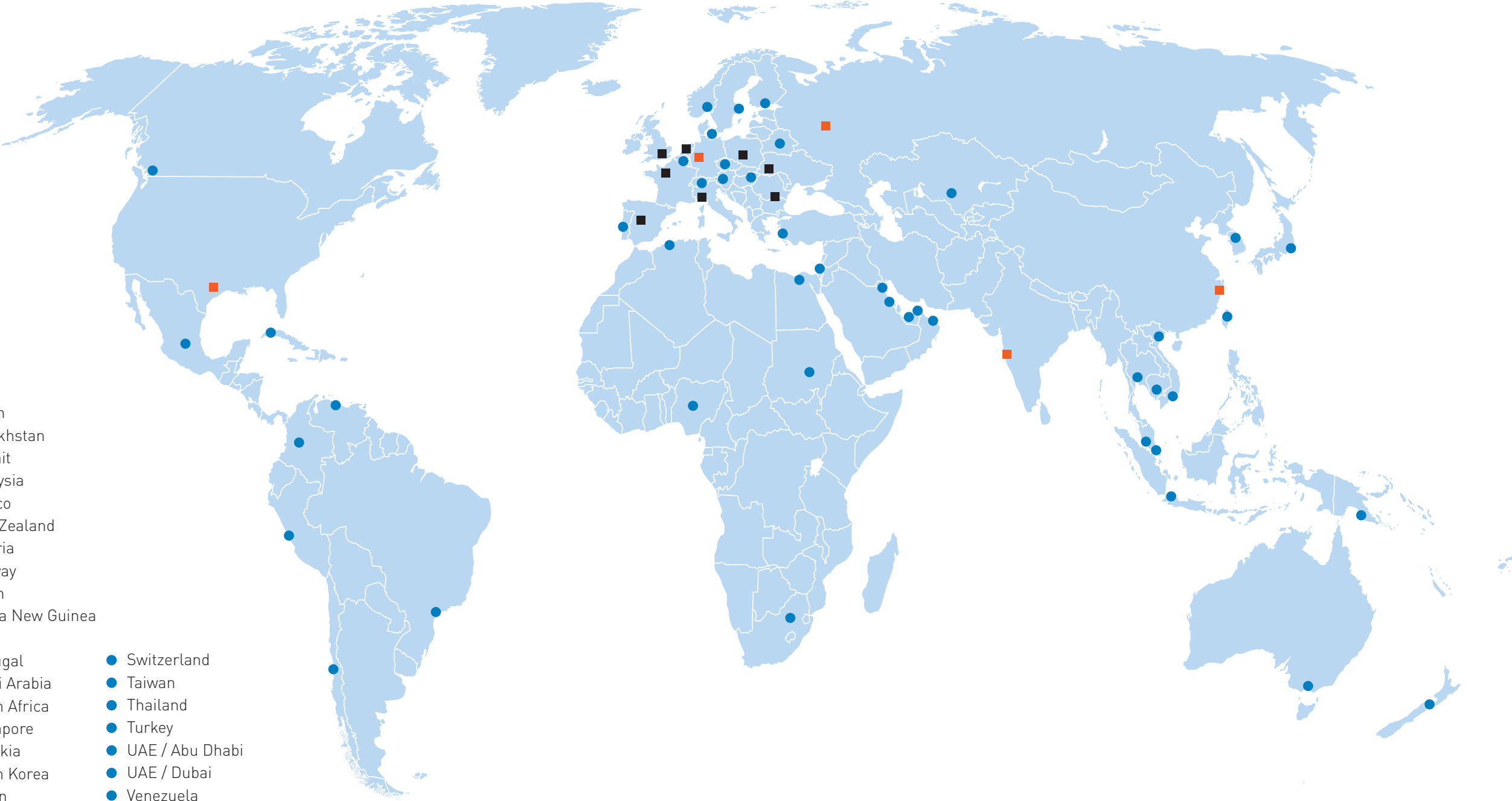
GEKO UNION GLOBAL PRESENCE



- Geko Union Center of Competence
- Geko Union Subsidiary
- Geko Union Sales Office

- Germany, Bochum
- China, Changzhou
- India, Pune
- Russia, Moscow
- USA, Houston
- England
- France
- Italy
- The Netherlands
- Poland
- Romania
- Spain
- Ukraine

- | | |
|------------------|--------------------|
| ● Algeria | ● Japan |
| ● Australia | ● Kazakhstan |
| ● Austria | ● Kuwait |
| ● Belarus | ● Malaysia |
| ● Belgium | ● Mexico |
| ● Brazil | ● New Zealand |
| ● Cambodia | ● Nigeria |
| ● Canada | ● Norway |
| ● Chile | ● Oman |
| ● Colombia | ● Papua New Guinea |
| ● Cuba | ● Peru |
| ● Czech Republic | ● Portugal |
| ● Denmark | ● Saudi Arabia |
| ● Egypt | ● South Africa |
| ● Finland | ● Singapore |
| ● Hungary | ● Slovakia |
| ● Indonesia | ● South Korea |
| ● Iraq | ● Sudan |
| ● Israel | ● Sweden |
| | ● Switzerland |
| | ● Taiwan |
| | ● Thailand |
| | ● Turkey |
| | ● UAE / Abu Dhabi |
| | ● UAE / Dubai |
| | ● Venezuela |
| | ● Vietnam |



Product Range Pumps:

Magnet Drive Pumps

- ▶ Centrifugal Pumps according to DIN EN ISO 2858 & DIN EN ISO 15783
- ▶ Centrifugal Pumps according to ASME B73.3M-2015
- ▶ Centrifugal Pumps according to API 685 2nd Edition
- ▶ Multi-Stage Centrifugal Pumps (Barrel-Type Design available)
- ▶ Side Channel Pumps following DIN EN ISO 15783
- ▶ Twin Screw Pumps, Single Volute, according to API 676 3rd Edition
- ▶ Pumps in Close-Coupled Design
- ▶ Pumps for High Pressure Applications
- ▶ Pumps for High Temperature Applications
- ▶ Self-Priming Pumps
- ▶ Submerged Pumps, Single- / Multi-Stage and Twin Screw Design
- ▶ Vertical Inline Pumps

Mechanically Sealed Pumps

- ▶ Centrifugal Pumps according to DIN EN ISO 2858 & DIN EN ISO 5199
- ▶ Centrifugal Pumps following API 610 11th Edition & ISO 13709 2010
- ▶ Multi-Stage Centrifugal Pumps (Barrel-Type Design available)
- ▶ Propeller Pumps, Horizontal / Vertical / Bottom-Flange
- ▶ Side Channel Pumps
- ▶ Twin Screw Pumps, Single / Double Volute, according API 676 3rd Edition
- ▶ Pumps for High Pressure Applications
- ▶ Pumps for High Temperature Applications
- ▶ Self-Priming Pumps
- ▶ Submerged Pumps, Single- / Multi-Stage and Twin Screw Design
- ▶ Vertical Inline Pumps

Product Range Valves:

- ▶ Globe Valves, T-Pattern
- ▶ Globe Valves, Y-Pattern
- ▶ Control Valves
- ▶ Gate Valves, Isomorphous Construction Series
- ▶ Gate Valves, Wedge or Wedge Plates
- ▶ Relief Valves
- ▶ Check Valves
- ▶ Sight Glasses
- ▶ Strainers
- ▶ Bottom Valves
- ▶ Butterfly Valves, Metal Seated
- ▶ Control Butterfly Valves, Metal Seated

GEKO Union Service Performance:

- ▶ Workshop / On-Site Repairs
- ▶ Genuine Spare Part Delivery Worldwide
- ▶ Spare Parts Storage
- ▶ Customized Spare Parts Management
- ▶ On-Site Maintenance
- ▶ Installation
- ▶ Retrofitting
- ▶ On-Site Testing / Monitoring
- ▶ Customer Advisory Service
- ▶ Start Up & Commissioning
- ▶ Individual 24 / 7 Service
- ▶ Trouble-Shooting
- ▶ In-House & On-Site Training
- ▶ On-Site Assembly and Disassembly
- ▶ Long-Term Maintenance Contracts
- ▶ Maintenance Planning and Consulting
- ▶ Diagnostics

Geko Union GmbH & Co. KG

Blumenfeldstraße 21 | 44895 Bochum | Germany

Phone: +49 (0) 711 21570744 | Fax: +49 (0) 711 21570744 | E-Mail: info@geko-union.com

www.geko-union.com