

HEAVY DUTY KNIFE GATE VALVE

The EW model knife gate is an uni-directional lug type valve designed according to AWWA C520-14 for general industrial service applications. The design of the body and seat also assures non-clogging shut off on suspended solids in industries such as:

- Pulp and Paper
- Power plants
- Chemical plants
- Food and Beverage
- Etc.

Sizes: DN 50mm/2" to DN 900mm/36" (larger diameters on request)

Working pressure:

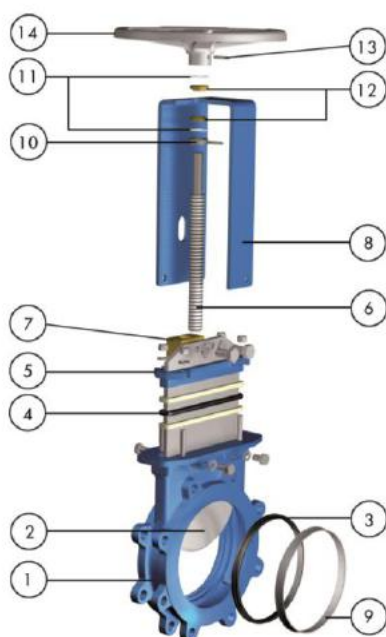
DN 50mm/ 2" to DN 600mm/24" 10 bar / 150 psi
 DN 700mm/28" to DN 900mm/36" 7 bar / 100 psi

Standard flange connection:

DIN PN 10 and ANSI B16.5 / ASME B16.47
 Other flange connections available on request



All valves are tested prior to shipping in accordance with the standard developed by the Quality Control Department at ORBINOX.



STANDARD PARTS LIST

Part:	Ductile Iron:
1- Body	GJS 400 (GGG40)
2- Gate	AISI 304
3- Seat	Metal/Metal or EPDM
4- Packing	PTFE Impreg. Synth. Fibre with an EPDM O-Ring
5- Gland Follower	CF8 DN 50mm/2" to DN 300mm/12" or GJS400 (GGG40) DN 350mm/14" to DN 900mm/36"
6- Stem	Stainless Steel
7- Stem nut	Brass
8- Yoke	Epoxy-coated Carbon Steel
9- Seat Retainer Ring	AISI 304
10-Axial fixing bush	AISI 304 (1.4301)
11- Friction washer	PET + solid lubricant
12- Guide bush	Bronze
13- Spring pin	AISI 420 (1.4021) (ISO 8752)
14- Handwheel	DN≤310mm/12.20": Aluminium (AlSi12); DN≥410mm/16.70": GJS400

DESIGN FEATURES

BODY:

Lug type monoblock ductile iron body with reinforced ribs in larger diameters for extra body strength. Internal cast gate wedges and guides allows for tighter shutoff. Port design follows the AWWA C520-14 standard

The internal design of the valve avoids any build up of solids that would prevent the valve from closing.

GATE:

Standard AISI 304 stainless steel gate. The gates are polished and lapped to attain a greater seal between the gate and both the packing and the seat. The bottom of the gate edge is also machined to a bevel, so that it cuts through the solids for a tighter seal in the closed position.

SEAT: (resilient)

Unique design that mechanically locks the seal in the internal of the valve body with a stainless steel retainer ring. Standard EPDM also available in different materials such as Viton, PTFE, etc.

PACKING:

Long-life packing with several layers of PTFE impregnated fibre plus and EPDM o-ring, with an easy access packing gland ensuring a tight seal. Long-life braided packing is available in a wide range of materials.

STEM:

The standard stainless steel stem offers a long corrosion resistant life. Non rising stem configuration as standard, for rising stem a stem protector is provided for additional protection against dust while the valve in the open position.

ACTUATORS:

All actuators supplied by ORBINOX are interchangeable, and supplied with an standard mounting kit for installation purposes on site.

YOKE or ACTUATOR SUPPORT:

Made of EPOXY coated steel (stainless steel available on request). Compact design makes it extremely robust even under the most severe conditions.

EPOXY COATING:

The epoxy coating on all ORBINOX cast iron and carbon steel valve bodies and components is electrostatically applied making the valves to be corrosion resistant with a high quality finished surface. The ORBINOX standard colour is RAL-5015 blue.

GATE SAFETY PROTECTION:

ORBINOX automated valves are provided with gate guards in accordance with EU Safety Standards. The design feature prevents any objects from being caught accidentally while the gate is moving.



OTHER OPTIONS

Bonnet (Fig.1):

Assures tight sealing to atmosphere. Reduces packing maintenance. Two types of packing are available: packing type with layers of PTFE impregnated fibre (Fig.1-A) and also o-ring type solution (Fig.1-B)



Fig.1 - A



Fig.1 - B

V-port:

60 degree and pentagonal port design. Selection depends on the desired fluid control type.

Flush ports (Fig.2):

Allow for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing. Depending on the process, purging can be done with air, steam, liquids, etc.

Other materials of construction:

Availability of other stainless steels such as AISI 316, Duplex (2205) and Superduplex (2507), 254SMO, Etc.

Fabricated valves:

ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures).

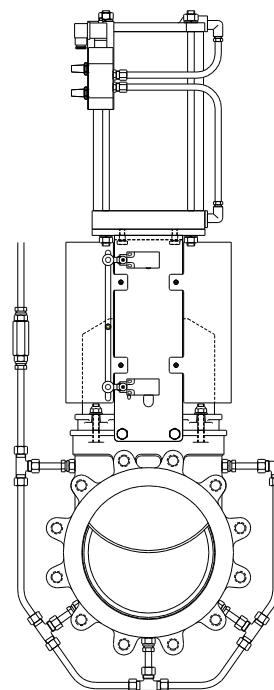


Fig.2

SURFACE TREATMENTS

Valve components can be protected or coated for a longer life expectancy, depending on the application of the valves and the valve service conditions.

At ORBINOX we can offer alternative treatments and coatings for the different valve components to improve their properties against abrasion (Stellite, polyurethane...), against corrosion (Halar, Rilsan, galvanizing...) and against adherence (polishing, PTFE...).

ACTUATOR TYPES

MANUAL:

Handwheel (rising stem)
 Handwheel (non-rising stem)
 Chainwheel
 Lever
 Bevel Gear
 Other (square nut)

AUTOMATIC:

Electric (rising & non-rising stem)
 Pneumatic (single & double-acting)
 Hydraulic

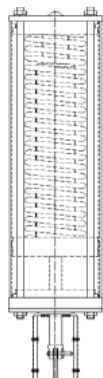
All actuators supplied by ORBINOX are interchangeable

FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

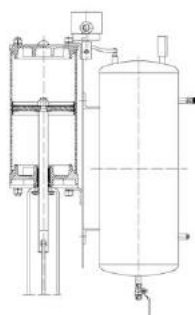
SINGLE ACTING (SPRING RETURN)

- Available from
DN 50mm/2" to DN 300mm/12"
- Supply pressure:
min. 5 bar / 75 psi- max. 10 bar / 150 psi
- Options:
 - Pneumatic or electric fail open
 - Pneumatic or electric fail close
 - Other options on request



DOUBLE ACTING WITH AIR TANK

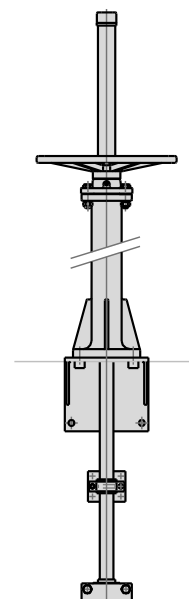
- Available for all valve sizes
- Supply pressure:
min. 3.5 bar / 50 psi
max. 10 bar/ 150 psi
- Options:
 - Pneumatic or electric fail open
 - Pneumatic or electric fail close
 - Other options on request



ACCESSORIES

Mechanical stops
 Locking device
 Manual override
 Solenoid valves
 Positioners
 Limit switches
 Proximity switches
 Floor stands
 Stem extensions

Wide range of valve extensions available



For further information about fail safe systems and valve extensions, please see EX catalogue.

We recommend to contact our technical department

TEMPERATURE CHART

SEAT / SEALS

Material	Max.T (°C)	Applications
Metal/Metal	>250	High temp. / Low tightness
EPDM (E)	120	Acids and non mineral oils
Nitrile (N)	120	Resistance to petroleum products
Viton (V)	200	Chemical service /High temp.
Silicone (S)	250	Food service / High temp.
PTFE (T)	250	Corrosion resistance

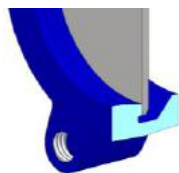
More details and other materials upon request

PACKING

Material	Max.T (°C)	pH
Dry cotton (AS)	50	6-8
PTFE impregn. synth. fibre (ST)	240	2-13
Braided PTFE (TH)	260	0-14
Graphited (GR)	600	0-14
Ceramic fibre (FC)	1200	--

NOTE: all types include an elastomere O-ring (same material as seal), excluding TH, GR and FC.

SEAT TYPES



METAL / METAL

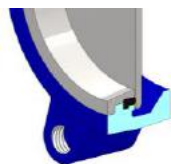
For applications with:

- High temperature
- High density media application
- When full tightness is not required



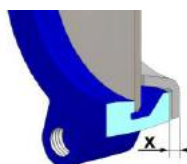
RESILIENT, TYPE "A"

- Standard resilient seat.
- Temperature limitations according to seat material selected. Review the above chart or contact our technical department for more information.
- Replaceable seat retainer ring.



RESILIENT, TYPE "B"

- Temperature limitations according to the selected seat material. Review the above chart or contact our Technical Department for more information.
- Replaceable and reinforced seat ring available in different materials such as: AISI 316 (1.4401), CA15, Ni Hard, etc.

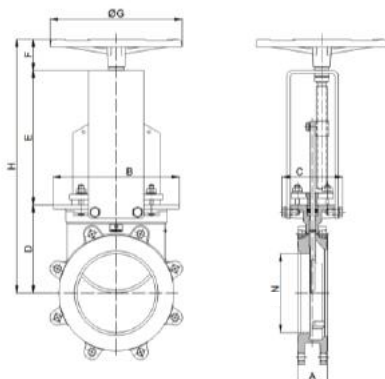


DEFLECTION CONE "C"

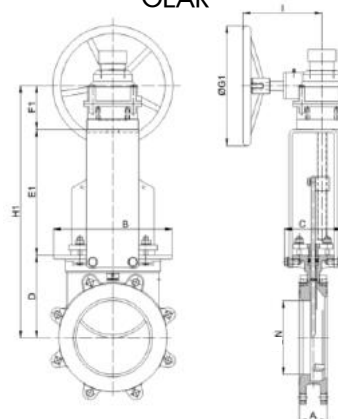
- Deflects the media away from any valve internal exposed parts (gate, seat,...)
- Material: AISI 316 (1.4401), CA15, Ni-Hard, etc.
- Face-to-face dimension increases:
 DN 50mm/2" to DN 250mm/10" X = 9mm/0.35"
 DN 300mm/12" to DN 600mm/24" X = 12mm/0.47"
 Larger diameters on request

HAND OPERATED (non rising stem)

HANDWHEEL



GEAR



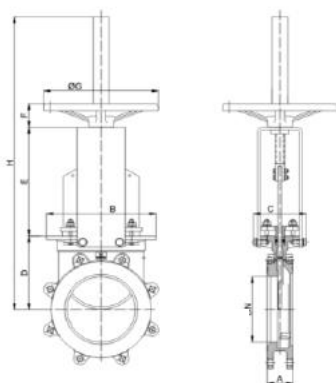
- Standard manual actuator
- Consists of:
 - Handwheel
 - DN 50-300: Aluminium
 - DN $\geq$ 350: GJS400 (GGG40)
 - Yoke
 - Stem
 - Yoke bushing
 - Stem nut fixed to the gate
- Available from DN 50mm/2" to DN 600mm/24" (larger sizes available upon request)
- Options (on request):
 - Rising stem
 - Chainwheel
 - Locking Device
 - Extensions

- Recommended for valves larger than DN 350/14" and working pressures greater than 3.5 bar / 50 psi
- Consists of:
 - Stem
 - Yoke
 - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200mm/8" to DN 900mm/36"
- Options:
 - Rising Stem
 - Chainwheel
 - Locking Device
 - Extensions

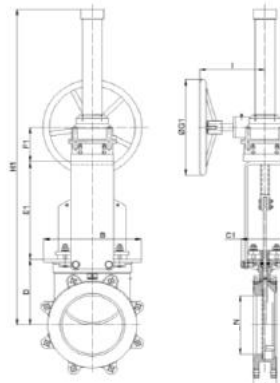
DN (mm/")	N	A	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1
50/2"	50	48	142	100	-	98	136	-	63	-	225	-	297	-
80/3"	80	51	160	100	-	119	162	-	63	-	225	-	344	-
100/4"	97	51	190	100	-	139	187	-	63	-	225	-	389	-
125/5"	117	57	204	100	-	150	223	-	63	-	225	-	436	-
150/6"	140	57	230	100	-	165	237	-	63	-	225	-	465	-
200/8"	184	70	296	122	122	203	309	309	73	102	310	300	585	614
250/10"	230	70	357	122	122	233	345	345	73	102	310	300	651	680
300/12"	275	76	407	122	122	273	390	390	73	102	410	300	736	765
350/14"	305	76	461	193	193	312	433	433	98	102	410	450	843	847
400/16"	351,6	89	536	193	193	347	478	478	98	102	410	450	923	927
450/18"	390	89	593	197	197	415	552	552	98	102	550	450	1065	1069
500/20"	435	114	622	197	197	450	611	611	98	102	550	450	1159	1163
600/24"	522	114	700	197	197	501	697	697	98	102	550	650	1296	1300
700/28"	620	114	840	-	320	634	-	820	-	102	-	650	1556	1556
750/30"	670	117	892	-	320	644	-	870	-	102	-	650	1616	1616
800/32"	720	117	933	-	320	673	-	922	-	102	-	650	1697	1697
900/36"	810	117	1040	-	320	779	-	1046	-	102	-	650	1927	1927

HAND OPERATED (rising stem)

HANDWHEEL



GEAR



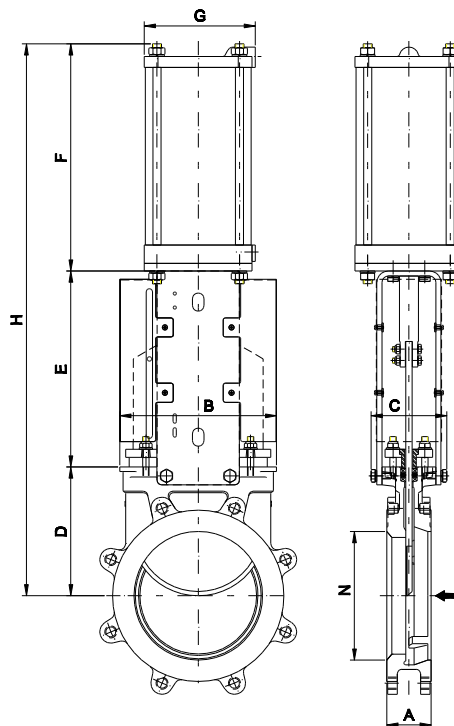
- Consists of:
 - Handwheel: Epoxy coated Cast Iron
 - Yoke
 - Stem
 - Yoke bushing
 - Stem nut fixed to the gate
- Available from DN 50mm/2" to DN 600mm/24" (larger sizes available upon request)
- Options (on request):
 - Non Rising Stem
 - Chainwheel
 - Locking Device
 - Extensions

- Recommended for valves larger than DN 350/14" and working pressures greater than 3.5 bar / 50 psi
- Consists of:
 - Stem
 - Yoke
 - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200mm/8" to DN 900mm/36"
- Options:
 - Non Rising Stem
 - Chainwheel
 - Locking Device
 - Extensions

DN (mm/")	N	A	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1	I	Weight (kg.)
50/2"	50	48	142	124	-	108	126	-	47	-	225	-	428	-	-	8
80/3"	80	51	160	124	-	122	159	-	47	-	225	-	471	-	-	11
100/4"	97	51	190	124	-	145	181	-	47	-	225	-	516	-	-	14
125/5"	117	57	204	124	-	153	208	-	47	-	225	-	601	-	-	17
150/6"	140	57	230	124	-	168	234	-	47	-	225	-	642	-	-	20
200/8"	184	70	296	144	144	206	306	306	67	102	310	300	822	992	200	34
250/10"	230	70	357	144	144	243	335	335	67	102	310	300	988	1058	200	48
300/12"	275	76	407	144	144	283	380	380	66	102	410	300	1069	1143	200	67
350/14"	305	76	461	193	193	315	442	442	66	102	410	450	1280	1504	270	100
400/16"	351,6	89	536	193	193	350	486	486	66	102	410	450	1359	1584	270	130
450/18"	390	89	555	201	201	415	535	535	67	102	410	450	1576	1631	270	165
500/20"	435	114	622	201	201	450	607	607	67	102	550	450	1683	1859	280	210
600/24"	522	114	700	201	201	504	674	674	67	102	550	650	1901	1980	280	300
700/28"	620	114	840	-	320	634	-	890	-	102	-	650	-	2423	280	455
750/30"	670	117	892	-	320	644	-	945	-	102	-	650	-	2555	280	610
800/32"	720	117	933	-	320	673	-	993	-	102	-	650	-	2926	280	572
900/36"	810	117	1040	-	320	779	-	1123	-	102	-	650	-	3160	280	750

PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
 - $\varnothing \leq 300\text{mm}/12''$: Aluminum barrels
 - $\varnothing \geq 350\text{mm}/14''$: Composite barrels
 - Aluminum end covers
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available from DN 50mm/2" to DN 900mm/36"
- Supply Pressure: min. 3.5 bar / 50 psi - max. 10 bar / 145 psi. Actuator designed with 6 bar / 85 psi air supply.
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
 - Hard anodized barrel and covers
 - Stainless Steel barrel and covers
 - Over/Undersized cylinder
 - Manual override
 - Fail safe systems
 - Limit switches
- Instrumentation (on request):
 - Positioners
 - Solenoid valves
 - Flow regulators
 - Air preparation units

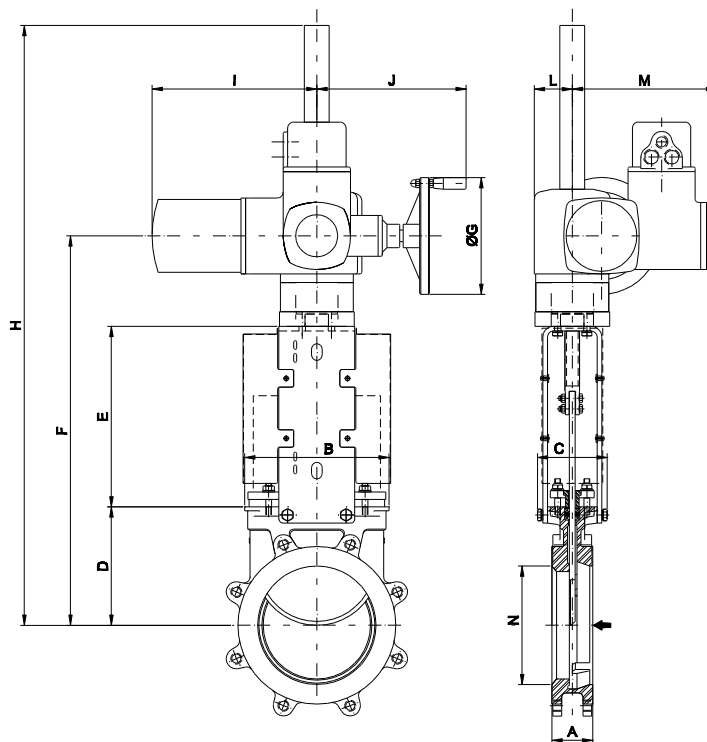


DN(mm/")	N	A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl.	Connect.
50/2"	50	48	124	100	98	136	178	115	412	10	C100/62	1/4" G
80/3"	80	51	149	100	119	162	211	115	492	12	C100/95	1/4" G
100/4"	97	51	169	100	139	187	231	115	557	15	C100/115	1/4" G
125/5"	117	57	169	100	150	223	271	140	644	21	C125/143	1/4" G
150/6"	140	57	197	100	165	237	296	140	698	27	C125/168	1/4" G
200/8"	184	70	247	122	203	309	358	175	870	46	C160/220	1/4" G
250/10"	230	70	298	122	233	345	428	220	1006	70	C200/270	3/8" G
300/12"	275	76	349	122	273	390	478	220	1141	89	C200/320	3/8" G
350/14"	305	76	391	193	312	459	549	277	1320	135	C250/375	3/8" G
400/16"	351,6	89	439	193	347	478	599	277	1424	162	C250/425	3/8" G
450/18"	390	89	483	197	415	552	680	382	1647	212	C300/475	1/2" G
500/20"	435	114	542	197	450	611	730	382	1791	290	C300/525	1/2" G
600/24"	522	114	637	197	501	697	830	382	2028	375	C300/625	1/2" G
700/28"	620	114	840	320	576	830	935	444	2459	610	C350/730	3/4" G
750/30"	670	117	842	320	624	880	985	444	2549	645	C350/780	3/4" G
800/32"	720	117	933	320	673	928	1035	444	2700	730	C350/830	3/4" G
900/36"	810	117	970	320	775	1100	1202	515	3077	780	C400/930	3/4" G

* For sizes DN 300mm/12" and above, actuator diameter may need to be oversized depending on the actual working pressure.

ELECTRIC ACTUATOR (rising stem)

- Consists of:
 - Electric actuator
 - Rising stem
 - Motor support yoke flange acc. to ISO 5210 / DIN 3338
- The standard electric motor is equipped with:
 - Manual emergency operation
 - Limit switches (open/closed)
 - Torque switches
- Available from DN 50mm /2" to DN 900mm/36"
- Wide range of types and marks available to meet customer's needs.
- Option:
 - Non rising stem



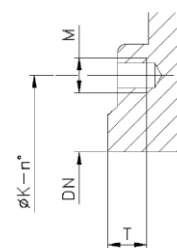
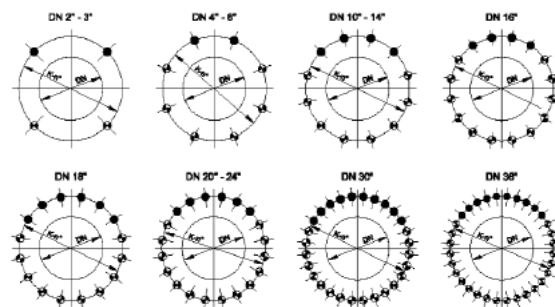
DN(mm/"	N	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
50/2"	50	48	124	100	98	136	377	160	454	265	249	62	238	20 x 4	10
80/3"	80	51	149	100	119	162	424	160	501	265	249	62	238	20 x 4	10
100/4"	97	51	169	100	139	187	469	160	546	265	249	62	238	20 x 4	10
125/5"	117	57	169	100	150	223	516	160	593	265	249	62	238	20 x 4	15
150/6"	140	57	197	100	165	237	545	160	1122	265	249	62	238	20 x 4	20
200/8"	184	70	247	122	203	309	667	160	1255	265	249	62	238	25 x 5	30
250/10"	230	70	298	122	233	345	733	160	1321	265	249	62	238	25 x 5	45
300/12"	275	76	349	122	273	390	793	200	1381	283	254	65	248	25 x 5	70
350/14"	305	76	391	193	312	433	875	200	1463	283	254	65	248	35 x 6	110
400/16"	351,6	89	439	193	347	478	955	315	1543	389	336	91	286	35 x 6	160
450/18"	390	89	483	270	415	552	1142	315	1870	389	336	91	286	35 x 6	190
500/20"	435	114	542	270	450	611	1222	400	1950	389	339	91	286	35 x 6	270
600/24"	522	114	637	270	501	697	1444	400	2172	389	339	91	286	40 x 7	450
700/28"	620	114	840	320	576	820	1631	500	2614	430	365	114	303	50 x 8	500
750/30"	670	117	842	320	624	883	1779	500	2832	430	365	117	303	50 x 8	550
800/32"	720	117	933	320	673	922	1867	500	2920	430	365	117	303	50 x 8	600
900/36"	810	117	970	320	779	1046	2035	500	3080	430	365	117	303	60 x 9	850

* For sizes 300mm/12" and above, Torque figures calculated based on pressure rate for EX valve model.

FLANGE AND BOLTING DETAILS

ANSI B16.5 / B16.47 , class 150

DN	K	n°	M	T	 
2"	4 3/4"	4	5/8" - 11 UNC	7/16"	2 - 2
3"	6"	4	5/8" - 11 UNC	11/32"	2 - 2
4"	7 1/2"	8	5/8" - 11 UNC	11/32"	2 - 6
5"	8 1/2"	8	3/4" - 10 UNC	3/8"	2 - 6
6"	9 1/2"	8	3/4" - 10 UNC	3/8"	2 - 6
8"	11 3/4"	8	3/4" - 10 UNC	15/32"	2 - 6
10"	14 1/4"	12	7/8" - 9 UNC	15/32"	4 - 8
12"	17"	12	7/8" - 9 UNC	15/32"	4 - 8
14"	18 3/4"	12	1" - 8 UNC	19/32"	4 - 8
16"	21 1/4"	16	1" - 8 UNC	19/32"	4 - 12
18"	22 3/4"	16	1 1/8" - 7 UNC	19/32"	6 - 10
20"	25"	20	1 1/8" - 7 UNC	7/8"	6 - 14
24"	29 1/2"	20	1 1/4" - 7 UNC	7/8"	6 - 14
28"	34"	28	1 1/4" - 7 UNC	1"	10 - 18
30"	36"	28	1 1/4" - 7 UNC	1 1/8"	10 - 18
32"	38.5"	28	1 1/2" - 6 UNC	1 1/8"	10 - 18
36"	42 3/4"	32	1 1/2" - 6 UNC	1 1/4"	10 - 22



-  BLIND TAPPED HOLES
-  TAPPED THROUGH

EN 1092-2 PN10

DN	K	n°	M	T	 
50	125	4	M-16	11	2 - 2
80	160	8	M-16	9	2 - 6
100	180	8	M-16	9	2 - 6
125	210	8	M-16	10	2 - 6
150	240	8	M-20	10	2 - 6
200	295	8	M-20	12	2 - 6
250	350	12	M-20	12	4 - 8
300	400	12	M-20	12	4 - 8
350	460	16	M-20	15	6 - 10
400	515	16	M-24	15	4 - 12
450	565	20	M-24	15	6 - 14
500	620	20	M-24	22	6 - 14
600	725	20	M-27	22	6 - 14
700	840	24	M-27	24	8 - 16
800	950	24	M-30	28	8 - 16
900	1050	28	M-30	32	10 - 18

