

**MODEL****VG**

## RUBBER SLEEVE KNIFE GATE VALVE

The VG model knife gate is a bi-directional wafer valve equipped with two metal reinforced rubber sleeves, designed for applications with abrasive slurries. The VG slurry knife gate valve is mainly used in industries such as:

- Mining
- Chemical plants
- Etc.
- Power plants
- Wastewater treatment

### Sizes:

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

### Working pressure:

DN 2"/ 50mm to 16"/400mm    10 bar (150 psi)  
 DN 18"/450mm to 24"/600mm    6 bar (90 psi) or 10 bar(150 psi)  
 DN 28"/700mm to 36"/900mm    5 bar (75 psi) or 10 bar (150 psi)  
 Higher pressures and/or diameters on request

### Standard Flange connection:

DIN PN 10 and ANSI B16.5 (class 150)

Other: (On request)

DIN PN 6

DIN PN 16

DIN PN 25

BS "D" and "E"

ANSI 125

Others on request

### Directives:

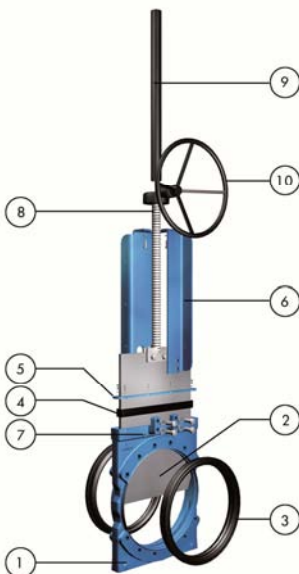
2006/42/CE (MACHINES)

97/23/CE (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)

94/9/CE (ATEX)



All ORBINOX valves are tested prior to shipping



### STANDARD PARTS LIST

Part:	Materials:
1- Body	Ductile iron A536 (60-40-18) / 0.7040 / GJS 400
2- Gate	AISI 304 (1.4301)/AISI 316 (1.4401)
3- Sleeves	Natural rubber / EPDM
4- Packing	EPDM
5- Gland Follower	A570 GR.40 / 1.0044 Epoxy coated
6- Yoke	A570 GR.40 / 1.0044 Epoxy coated
7- Grease Nipple	Zinc coated carbon-steel
8- Stem	AISI 430 /1.4016
9- Stem protector	A570 GR.40 / 1.0044 Epoxy coated
10- Bevel Gear	-

## DESIGN FEATURES

### BODY:

Wafer style cast monoblock, for installation between flanges, with reinforced ribs in larger diameters, providing the body with extra strength. Internal body design allows the gate to be fully guided. It is equipped with two machined lateral mouths where the sleeves fit perfectly. The grease nipples allow the gate to be lubricated, thus enhancing its capacity to slide between the sleeves. Additionally, the design allows draining through the lower part, where a cover or a bottom splash guard can be installed. Some leakage will occur from the bottom of the valve during operation. This allows solids to be flushed from body cavity and will ensure the full stroke of the valve.

### GATE:

Made of stainless steel, polished on both sides, and of rectangular shape, the gate is machined to an edge. As well as reducing friction and damage to the seats, this design allows to cut perfectly through the fluid. The material can be changed upon request, thus allowing greater working pressures.

### RUBBER SLEEVES:

The seat is made up of two highly resistant, long-lasting sleeves, made of natural rubber with a metal core. The patented sleeve design allows for maximum flexibility during gate travel, minimising the effort necessary for its operation. In the open position, the two sleeves are in permanent contact with each other, assuring full bore flow. There are no seat cavities which may cause material build-up, and the fluid does not come into contact with the metallic parts of the valve. This design allows for easy replacement of damaged sleeves. See available materials on page VG-6.

### PACKING:

Made of EPDM, it eliminates possible leaks to the exterior as well as minimising the maintenance needs of traditional packings. In combination with the grease nipples, it guarantees an optimal functioning of the gate.

### STEM:

Made of stainless steel, which provides it with a high resistance to corrosion and a long life. In rising stem valves the stem protector also protects the spindle against dirt.

### 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 steel (stainless steel available on request) and EPOXY coated. Its robust design provides it with great rigidity, withstanding the most adverse operating conditions. Reinforced design is standard starting from DN 200.

### EPOXY COATING:

The epoxy coating on all ORBINOX cast iron and carbon steel 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:

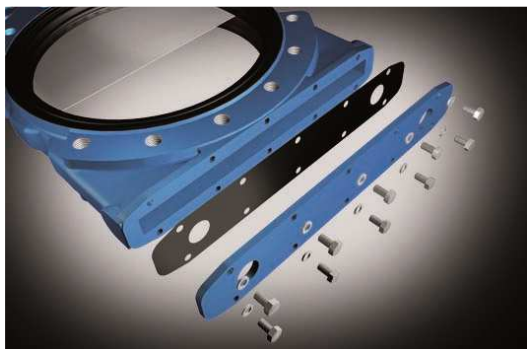
ORBINOX automated valves are provided with gate guards in accordance with EU Safety Standards. The design feature prevents any objects from being caught accidentally while the gate is moving.



## OTHER OPTIONS

### Bottom splash guard (Fig. 1 and 2):

There are two types of splash guards that can be installed on the lower part of the valve body. They permit either periodic or continuous removal of solids that may accumulate during operation of the valve. They shall always be connected to a drain line.



(Fig. 1) Flat plate



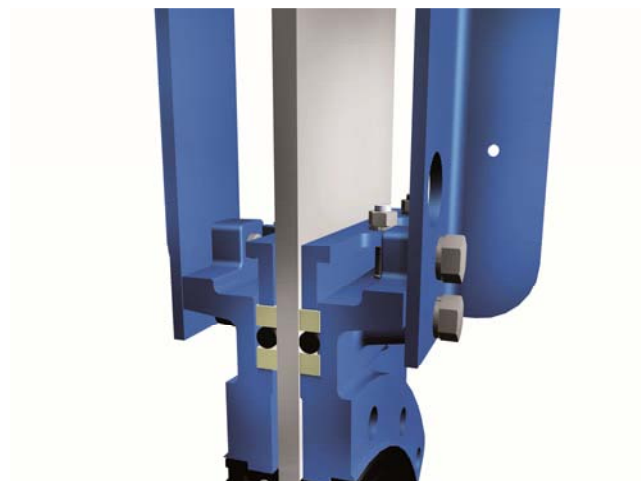
(Fig. 2) Tubular design

### Conventional leak proof packing (Fig. 3 and 4):

The VG can use conventional leak proof packing and packing gland follower which guarantee full tightness at maximum design pressure.



(Fig. 3) Standard packing



(Fig. 4) Optional: conventional leak proof packing

We recommend to contact our technical department

## OTHER OPTIONS

### Open-closed lockout system (Fig. 5):

The standard valve is ready to install a lockout pin for emergency or maintenance situations.



(Fig. 5)

### Other materials of constructions:

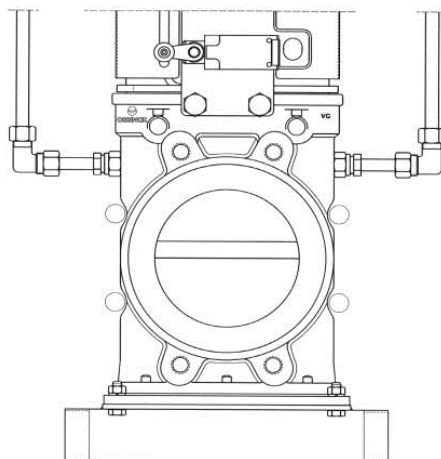
Other materials may be used, such as carbon steel, different stainless steels (AISI 316, AISI 317, 2205, ...), special alloys (254SMO, Hastelloys, ...), etc.

### Fabricated valves:

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

### Flush ports (Fig. 6):

Allows flushing out of solids trapped within the body cavity and the sleeves. This option can be used in conjunction with splash guards



(Fig. 6)

### Gate coatings:

Gates can be provided with different coatings to improve wear and corrosion resistance, non-adherence properties, etc.

We recommend to contact our technical department

## ACTUATOR TYPES

### MANUAL:

- Handwheel (rising stem)
- Bevel Gear
- Others (on request)

### AUTOMATIC:

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



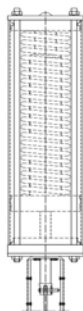
All actuators supplied by ORBINOX are interchangeable

## FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

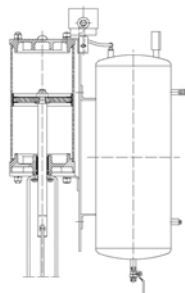
### SINGLE ACTING (SPRING RETURN)

- Available from DN 50 to DN 300
- Supply pressure:
  - min. 5 bar - max. 10 bar
- 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 - max. 10 bar
- Options:
  - Pneumatic or electric fail open
  - Pneumatic or electric fail close
  - Other options on request



## ACCESSORIES

- Open-closed lockout
- Mechanical stops
- Manual override actuators
- Solenoid valves
- Positioners
- Limit switches
- Proximity switches
- Floor stand
- Spindle extensions

*For further information, please see corresponding EX catalogue*

We recommend to contact our technical department

## TEMPERATURE CHART

### SEAT / SLEEVES

Material	Min/Max T.(°C)	Applications
Natural rubber	-30/75	General
EPDM	-30/120	Acids/Non-mineral oils
Neoprene	-30/90	Oils/Solvents
Chlorobutyl	-30/125	High temperatures
Nitrile	-30/120	Hydrocarbons/Oils/Greases

All of them are reinforced with a metal core. For other temperatures and applications, contact our technical department

### PACKINGS

Material	Max.T. (°C)
EPDM	120
PTFE impregn. synth. fiber (ST)	240

## SEAT

### RUBBER SLEEVES

The closure of the VG valve is achieved by its two characteristic high resistance elastomer sleeves, which improve the tight seal both in the adjustment with the flanges and in the closure. These sleeves have a metal core which provides them with a great resistance to demanding working conditions and pressures.



OPEN



INTERMEDIATE



CLOSED

## ATEX

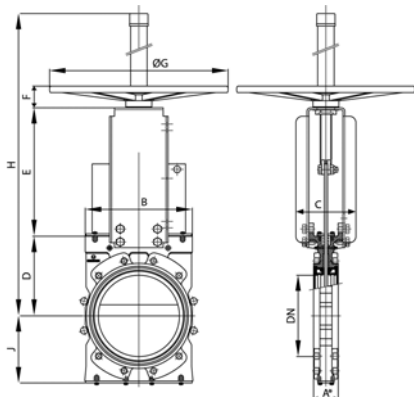


Please contact our ORBINOX representative for info and availability. Some considerations:

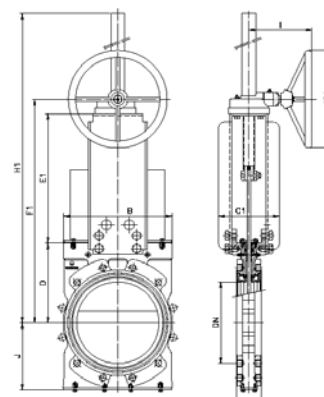
- Hand operated VG valves have been subjected to an ignition risk assessment according to DIN EN 13463: 1-5 and they are out the scope of application of ATEX Directive. Therefore hand operated valves are suitable for ALL ATEX zones.
- Electrically, pneumatically and hydraulically operated valves must be subjected to a conformity assessment of their own and also of the whole unit valve-actuator to get EC Type Approval to Directive 94/9.

**HAND OPERATED (rising stem)**

HANDWHEEL



GEAR



- Consists of:
  - Epoxy coated cast iron handwheel
  - Yoke
  - Stem and stem nut
  - Stem protector
- Available from DN 50 to DN 600 (larger sizes on request)
- Options (on request):
  - Open-closed lockout
  - Extensions and floor stands
  - PVC bellow
- Note: bevel gear is recommended for valve sizes DN>200 (full force on handwheel > 250 N)

- Recommended for valves larger than DN 200
- Consists of:
  - Stem and stem protector
  - Yoke
  - Bevel Gear Actuator with Handwheel
- Available from DN 200 to DN 900
- Options (on request):
  - Chainwheel
  - Open-closed lockout
  - Extensions and floor stands
  - PVC bellow

DN	GEAR	A1*	A2*	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1	J	I
50	-	54	60	140	100	-	105	145	-	47	-	225	-	440	-	58	-
65	-	54	60	155	100	-	115	157	-	47	-	225	-	500	-	70	-
80	-	57	63	175	100	-	124	175	-	47	-	225	-	545	-	85	-
100	-	57	63	170	100	-	140	200	-	67	-	310	-	620	-	95	-
125	-	63,5	69	195	100	-	150	240	-	67	-	310	-	700	-	118	-
150	-	63,5	69	230	100	-	175	265	-	67	-	310	-	755	-	125	-
200	RKO.15	76	83	280	165	165	205	325	322	66	572	410	300	935	990	155	200
250	RKO.35	76	83	335	185	185	245	350	397	66	688	550	350	1090	1510	195	263
300	RKO.35	82,5	90	390	266	266	280	414	441	66	767	550	350	1260	1590	227	263
350	RKO.35	82,5	90	440	270	270	325	486	508	66	879	550	450	1410	1700	253	263
400	RKO.35	95	102	505	270	270	350	536	567	74	963	800	450	1677	1780	287	263
450	RKO.35	95,5	103	560	270	290	420	588	631	74	1155	800	450	1905	2175	313	263
500	FL1.6	121	129	620	270	290	462	648	700	74	1265	800	650	2020	2305	340	263
600	FL1.6	121	129	730	-	320	510	748	805	74	1420	800	650	2320	2520	395	263
700	FL1.6	181	190	845	-	320	570	-	956	-	1628	-	650	-	2735	485	288
750	FL1.6	187	195	915	-	320	600	-	1021	-	1723	-	650	-	2780	510	288
800	FL1.6	206	214	980	-	320	650	-	1061	-	1833	-	650	-	2940	560	288
900	FL1.6	225,5	234	1074	-	320	700	-	1192	-	1995	-	650	-	3200	610	288

A1\*: installed face to face

A2\*: minimum required dimension for installation

Reserves the right to change specifications without notice.

**PNEUMATIC ACTUATOR**

• The standard pneumatic actuator (double acting on-off cylinder) consists of:

- DN ≤ 250: Aluminum barrels
- DN ≥ 300: Composite barrels
- Aluminum end caps
- Stainless Steel (AISI 304) piston rod
- Nitrile coated steel piston
- PVC bellows

• Available from DN 50 to DN 600

• Supply Pressure: 6 bar

• Reinforced design of support plates is standard starting from DN 200

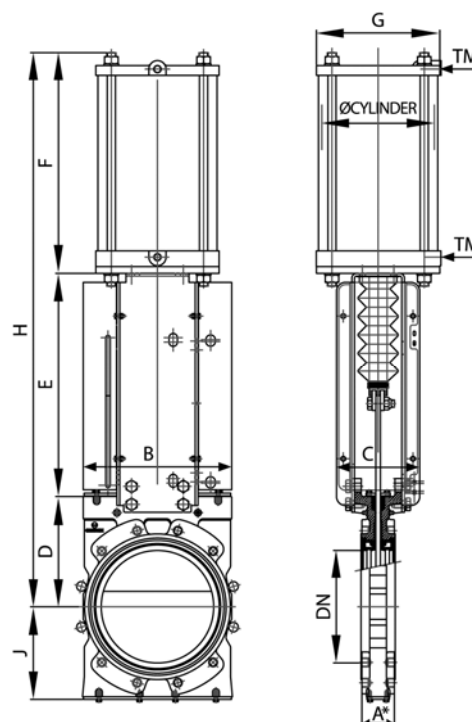
• Options (on request):

- Hard anodized barrel and covers
- Stainless steel barrel and covers on request
- Open-closed lockout
- Manual override actuator
- Fail-safe systems

• Instrumentation (on request):

- Positioners
- Flow regulators
- Solenoid valves
- Air preparation unit

• Note: in order to guarantee the correct functioning of the pneumatic cylinder for the catalogue pressures, a supply pressure of 6 bar is required. For lower pressures, we recommend to contact our technical department



DN	ØCYL.	TM	A1*	A2*	B	C	D	E	F	G	H	J
50	C100/91	1/4"	54	60	140	100	105	145	220	115	470	63
65	C100/92	1/4"	54	60	155	100	115	160	240	115	542	70
80	C125/121	1/4"	57	63	175	100	124	175	260	140	559	90
100	C125/140	1/4"	57	63	170	100	140	198	280	140	618	100
125	C160/168	1/4"	63,5	69	195	100	150	240	320	175	710	123
150	C160/194	1/4"	63,5	69	230	100	175	265	345	175	785	130
200	C200/252	3/8"	76	83	280	165	205	322	420	220	947	160
250	C250/317	3/8"	76	83	335	185	245	415	505	277	1165	200
300	C300/376	1/2"	82,5	90	390	266	280	472	580	382	1332	232
350	C350/440	3/4"	82,5	90	440	270	325	555	710	444	1590	258
400	C350/490	3/4"	95	102	505	270	350	605	760	444	1715	292
450	C400/542	3/4"	95,5	103	560	270	420	677	830	515	1927	318
500	C400/606	3/4"	121	129	620	270	462	742	890	515	2094	345
600	C400/712	3/4"	121	129	730	270	510	843	1010	515	2363	400

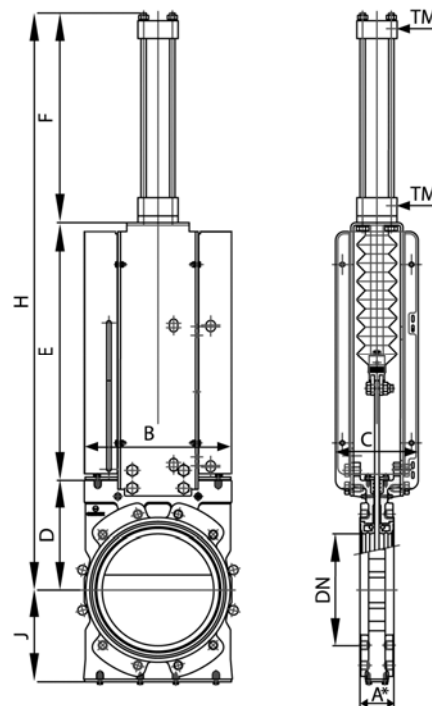
A1\*: installed face to face

A2\*: minimum required dimension for installation



## HYDRAULIC ACTUATOR

- The hydraulic actuator consists of a double acting cylinder in accordance with ISO 6020/2
- Available from DN 50 to DN 900 with PVC bellows
- Hydraulic pressure: 100 bar
- Maximum hydraulic pressure: 160 bar
- Options:
  - Pressure indicators: mechanical and inductive
  - Open-closed lockout
  - Position transducers
  - Hydraulic groups
  - Electrical cabinets



DN	ØCYL.	TM	A1*	A2*	B	C	D	E	F	H	J
50	C32/91	1/4"	54	60	140	100	105	260	205	570	58
65	C32/92	1/4"	54	60	155	100	115	270	220	605	70
80	C32/121	1/4"	57	63	175	100	124	283	230	637	85
100	C32/140	1/4"	57	63	170	100	140	305	248	693	95
125	C32/168	1/4"	63,5	69	195	100	150	350	306	806	118
150	C40/194	1/4"	63,5	69	230	100	175	370	338	883	125
200	C50/252	3/8"	76	83	280	165	205	427	405	1037	155
250	C63/317	3/8"	76	83	335	185	245	580	484	1309	195
300	C80/376	3/4"	82,5	90	390	266	280	639	557	1480	227
350	C80/440	3/4"	82,5	90	440	270	325	703	599	1627	253
400	C100/490	3/4"	95	102	505	270	350	779	649	1778	287
450	C100/542	3/4"	95,5	103	560	270	420	836	710	1966	313
500	C125/950	3/4"	121	129	620	270	462	952	790	2188	340
600	C125/712	3/4"	121	129	730	270	510	1175	940	2594	395
700	C100/825	3/4"	181	190	860	320	575	1224	1077	2876	485
750	C100/825	3/4"	187	195	930	320	605	1273	1109	2987	510
800	C125/950	1"	206	214	990	320	655	1443	1168	3266	560
900	C125/1060	1"	225,5	234	1095	320	705	1526	1335	3566	610

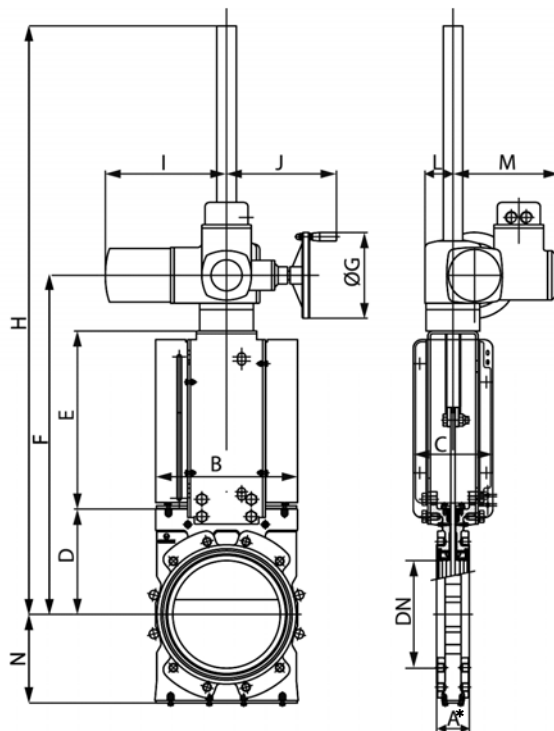
A1\*: installed face to face

A2\*: minimum required dimension for installation

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**ELECTRIC ACTUATOR (rising stem)**

- Automatic actuator which consists of:
  - Electric motor
  - Motor support yoke flange (standardised flanges as per ISO 5210/DIN 3338)
- The standard electric motor is equipped with:
  - Manual emergency handwheel
  - Limit switches (open/closed)
  - Torque switches
- Available from DN 50 to DN 900
- Wide range of types and brands available to meet customer requirements
- Options: (on request)
  - Open-closed lockout



DN	A1*	A2*	B	C	D	E	F	ØG	H	I	J	L	M	N	TORQUE (Nm)
50	54	60	140	100	105	145	393	160	945	265	249	62	238	63	20
65	54	60	155	100	115	160	418	160	975	265	249	62	238	70	20
80	57	63	175	100	124	175	442	160	1000	265	249	62	238	90	20
100	57	63	170	100	140	170	481	160	1035	265	249	62	238	100	30
125	63,5	69	195	100	150	195	533	160	1085	265	249	62	238	123	35
150	63,5	69	230	100	175	230	583	160	1135	265	249	62	238	130	40
200	76	83	280	165	205	280	682	200	1245	283	254	65	248	150	50
250	76	83	335	185	245	335	790	200	1378	283	254	65	248	200	70
300	82,5	90	390	266	280	390	882	200	1470	283	254	65	248	232	110
350	82,5	90	440	270	325	440	1055	315	1657	389	336	90	286	258	120
400	95	102	505	270	350	505	1130	315	1732	389	336	90	286	292	160
450	95,5	103	560	270	420	560	1272	315	1974	389	336	90	286	318	200
500	121	129	620	270	462	620	1379	400	2481	389	339	90	286	345	300
600	121	129	730	270	510	730	1528	400	2630	389	339	90	286	400	350
700	181	190	860	320	575	860	1730	400	2832	389	339	90	286	490	450
750	187	195	930	320	605	930	1930	500	3053	430	365	115	303	515	550
800	206	214	990	320	655	990	2085	500	3208	430	365	115	303	565	600
900	225,5	234	1095	320	705	1095	2285	500	3408	430	365	115	303	615	750



A1\*: installed face to face

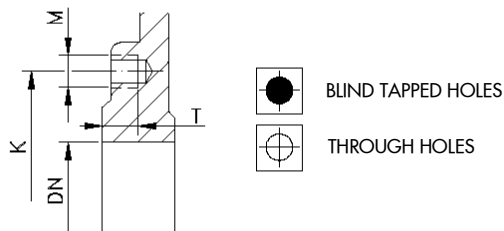
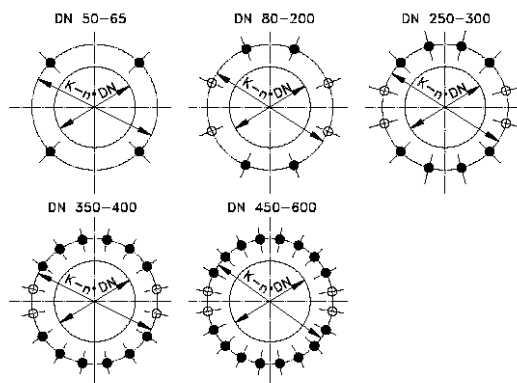
A2\*: minimum required dimension for installation

Reserves the right to change specifications without notice.



**FLANGE AND BOLTING DETAILS**

**EN 1092-2 PN10**

DN	K	n°	M	T	 
50	125	4	M-16	10	4 - 0
65	145	4	M-16	12	4 - 0
80	160	8	M-16	12	4 - 4
100	180	8	M-16	12	4 - 4
125	210	8	M-16	14	4 - 4
150	240	8	M-20	14	4 - 4
200	295	8	M-20	16	4 - 4
250	350	12	M-20	16	8 - 4
300	400	12	M-20	20	8 - 4
350	460	16	M-20	20	12 - 4
400	515	16	M-24	20	12 - 4
450	565	20	M-24	20	16 - 4
500	620	20	M-24	25	16 - 4
600	725	20	M-27	24	16 - 4



**ANSI B16.5, class 150**

DN	K	n°	M	T	 
2"	4 3/4"	4	5/8" UNC	3/8"	4 - 0
2 1/2"	5 1/2"	4	5/8" UNC	1/2"	4 - 0
3"	6"	4	5/8" UNC	1/2"	4 - 4
4"	7 1/2"	8	5/8" UNC	9/16"	4 - 4
5"	8 1/2"	8	3/4" UNC	9/16"	4 - 4
6"	9 1/2"	8	3/4" UNC	5/8"	4 - 4
8"	11 3/4"	8	3/4" UNC	5/8"	4 - 4
10"	14 1/4"	12	7/8" UNC	5/8"	8 - 4
12"	17"	12	7/8" UNC	3/4"	8 - 4
14"	18 3/4"	12	1" UNC	3/4"	8 - 4
16"	21 1/4"	16	1" UNC	3/4"	12 - 4
18"	22 3/4"	16	1 1/8" UNC	3/4"	12 - 4
20"	25"	20	1 1/8" UNC	15/16"	16 - 4
24"	29 1/2"	20	1 1/4" UNC	15/16"	16 - 4

