

MODEL

ET

HEAVY DUTY KNIFE GATE VALVE

The ET model knife gate is an uni-directional lug type valve designed according to MSS-SP-81 and TAPPI TIS 405-8 for industrial service applications. The design of the body and seat assures non-clogging shut off on suspended solids in industries such as:

- Pulp and Paper
- Chemical plants
- etc.
- Power plants
- Wastewater
- Mining
- Food and Beverage

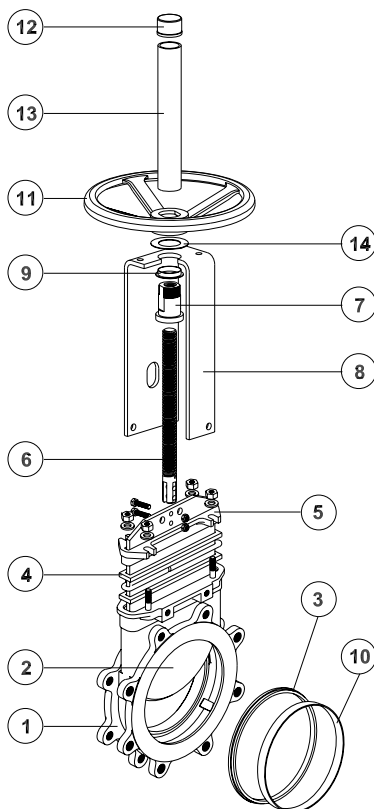
Sizes: DN 2"/50 to DN 30"/750 (larger diameters on request)

Working pressure: DN 2"/50 to DN 24"/600: 10 kg/cm²
 DN 30"/750: 7 kg/cm²

Standard flange connection: DIN PN 10 and ANSI B16.5 (class 150)
 Others on request

Directives: DIR 98/37/CE (MACHINES)
 DIR 97/23/CE (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)
 DIR 94/9/CE (ATEX) Group II, Cat. 3: zones 2 and 22

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



STANDARD PARTS LIST

Part:	Stainless Steel:
1- Body	CF8M
2- Gate	AISI 316
3- Seat	Metal or EPDM
4- Packing	PTFE Impreg. Synth. Fibre
5- Gland Follower	CF8M
6- Stem	AISI 303
7- Stem Nut	Brass
8- Yoke	Carbon Steel - Epoxy Coated
9- Collar	Nylon
10- Seat Retainer Ring	AISI 316
11- Handwheel	$\varnothing \leq 310$: ductile iron / $\varnothing \geq 410$: GG25
12- Cap	Plastic
13- Stem Protector	Carbon Steel - Epoxy Coated
14- Thrust Washer	Brass

MODEL**ET****DESIGN FEATURES****BODY:**

One piece integrally cast stainless steel body with reinforced ribs in larger diameters for extra body strength.

Internal cast gate wedges and guides allows for tighter shutoff.

Port design according to MSS-SP-81 and Tappi TIS 405-8.

Internal design avoids any build up of solids that would prevent valve from closing.

GATE:

Standard AISI 316 stainless steel gate.

Gates polished and lapped for a greater seal between the gate with both packing and seat.

Bottom of the gate edge is machined to a bevel to cut through solids for a tighter seal in the closed position.

SEAT: (resilient)

Unique design that mechanically locks the seat 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:

Standard braided PTFE impregnated fibre with EPDM o-ring for better shut off, 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.

For rising stem handwheel actuators only, a stem protector is provided for additional protection against dust while the valve is in the open position.

ACTUATORS:

All actuators supplied by ORBINOX are interchangeable, and supplied with an standard mounting kit to allow for installation 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.



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OTHER OPTIONS

Bonnet (Fig.1):

Assures tight sealing to atmosphere for use with hazardous gas or fluids.

Reduces packing maintenance.

V-port:

60 degree and pentagonal port design.

Selection depends on type of fluid control desired.

Flush ports:

Allow for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing.

Purging can be made with air, steam, liquids, etc. depending on the process.

Other materials of construction:

Special alloys such as AISI 317, 254SMO, Hastelloys, Titanium,...

Fabricated valves:

Orbinox is equipped for in house fabrication of special valves.

Depending on the design, diameter, pressures, material of construction, etc.

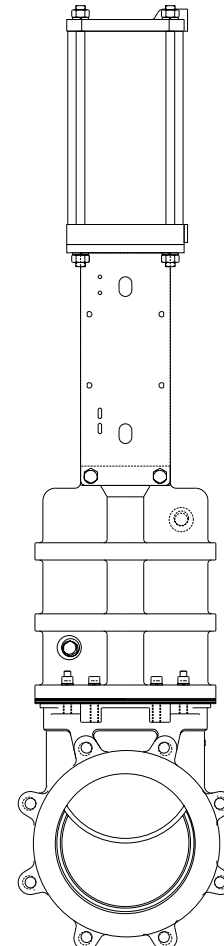
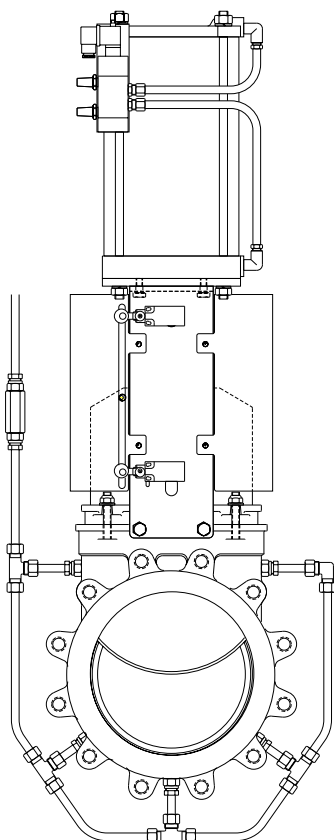


Fig.1



SURFACE TREATMENTS

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

At ORBINOX we can offer treatments and coatings for the valve components to improve the properties against **abrasion** (Stellite, Polyurethane...), **corrosion** (Halar, Rilsan, Galvanised...) and **adherence** (Polishing, PTFE...).

We recommend consultation with our technical department.

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ACTUATOR TYPES

Manual:

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

Automatic:

Electric
Double Acting Pneumatic
Single Acting Pneumatic
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 200

Options:

- Fail open
- Fail closed

SINGLE ACTING / VOLUME TANK

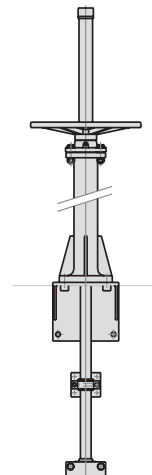
Available for all sizes (DN>200)

Options:

- Pneumatic Failsafe
- Pneumatic or Electric Failsafe

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 chapter.

We recommend consultation with our technical department.

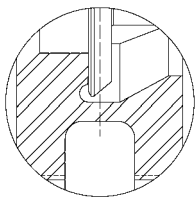
TEMPERATURE CHART

SEAT / SEALS			PACKING		
Material	Max.Temp.(°C)	Applications	Material	Max. Temp. (°C)	pH
Metal/Metal	>250	High temp. Low tightness.	Tallowed cotton (AH)	50	6 - 8
EPDM (E)	120	Acids and non mineral oils.	Dry cotton (AS)	50	6 - 8
Nitrile (N)	120	Resistance to petroleum products.	PTFE impregn. synth. fibre (ST)	240	2 - 13
Viton (V)	200	General chemical service. High temperature.	Braided PTFE (TH)	260	0 - 14
Silicone (S)	250	Food service. / High temperature.	Graphited (GR)	600	0 -14
PTFE (T)	250	Corrosion resistance.	Ceramic fibre (FC)	1200	--

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

More details and other materials under request.

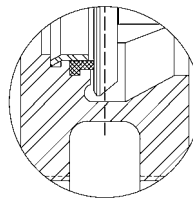
SEAT TYPES



METAL / METAL

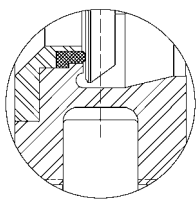
For applications with:

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



RESILIENT, TYPE "A"

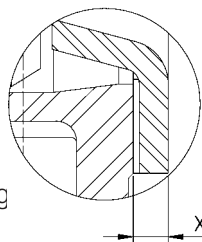
- Standard resilient seat.
- Temperature limitations according to seat material selected. Consult the above chart or our technical department for more information.
- Replaceable seat retainer ring.



TYPE "B" SEAT (resilient)

For applications with:

- High temperature
- High density media application
- When full tightness is not required
- Replaceable design without dismantling the valve



DEFLECTION CONE "C"

- Deflects the media away from any internal exposed parts of the valve such as gate guides, seat, etc.
- Different types of material available such as AISI 316 stainless, CA15, Ni-Hard, etc.

Face to face dimensions increase:

DN 50 to DN 250 X = 9mm

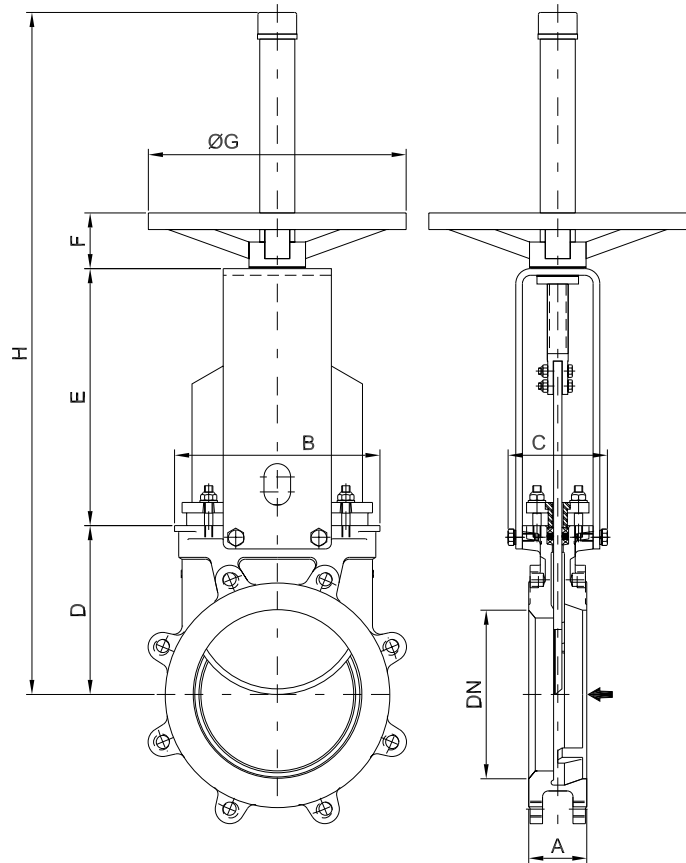
DN 300 to DN 600 X = 12mm

Larger diameters on request.

HANDWHEEL (rising stem)

Standard handwheel actuator.

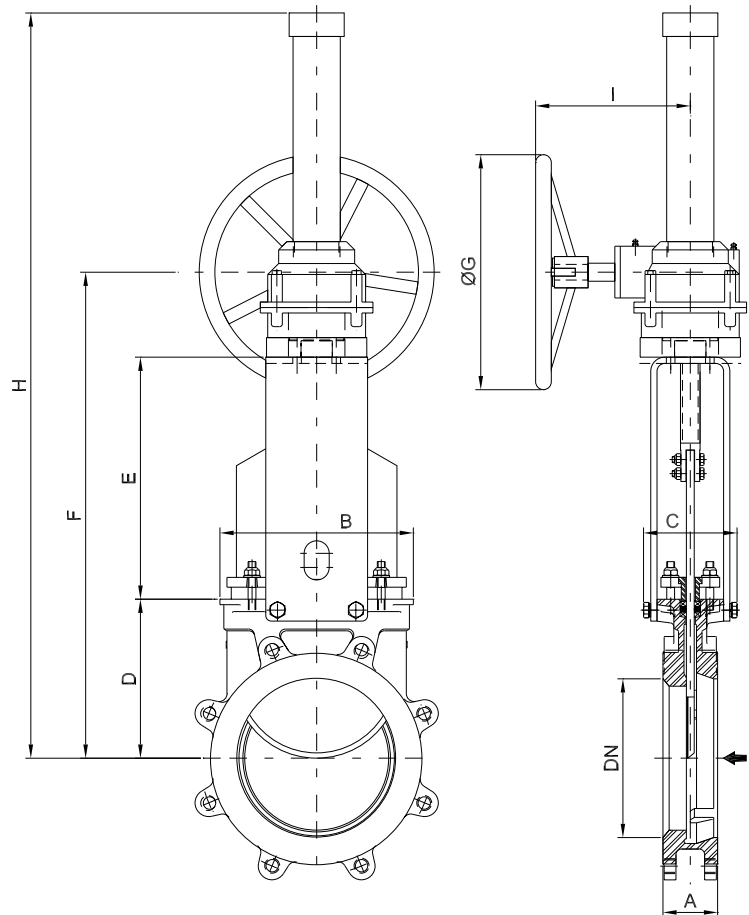
- Consists on:
 - Handwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
- Available from DN 50 to DN 600
- Options (on request):
 - Chainwheel
 - Non-rising stem
 - Locking Device
 - Extensions



DN ("/mm.)	A	B	C	D	E	F	ØG	H	Weight (kg.)
2"/50	48	124	100	98	136	47	225	420	8
3"/80	51	149	100	119	162	47	225	470	10
4"/100	51	169	100	139	187	47	225	519	12,5
5"/125	57	169	100	150	223	47	225	613	16
6"/150	57	197	100	165	237	47	225	642	20
8"/200	70	247	122	203	309	67	310	820	32
10"/250	70	298	122	233	345	67	310	986	47
12"/300	76	349	122	273	390	69	410	1071	65
14"/350	76	391	193	312	433	66	410	1245	95
16"/400	89	439	193	347	478	66	410	1325	122
18"/450	89	483	197	415	552	67	550	1510	160
20"/500	114	542	197	450	611	67	550	1617	202
24"/600	114	637	197	501	697	67	550	1883	290

GEAR

- Recommended for valves larger than DN 350 and working pressures greater than 3.5 kg/cm²
- Consists on:
 - Stem
 - Yoke
 - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200 to DN 600
- Options:
 - Chainwheel
 - Non-rising Stem
 - Locking Device
 - Extensions



DN ("/mm.)	A	B	C	D	E	F	ØG	H	I
8"/200	70	247	122	203	309	621	300	962	198
10"/250	70	298	122	233	345	704	300	1045	198
12"/300	76	349	122	273	390	799	300	1140	198
14"/350	76	391	193	312	433	855	450	1496	218
16"/400	89	439	193	347	478	954	450	1596	218
18"/450	89	483	197	415	552	1082	450	1713	218
20"/500	114	542	197	450	611	1190	450	1821	218
24"/600	114	637	197	501	697	1346	450	1977	218
30"/750	117	842	320	624	940	1712	450	2743	218

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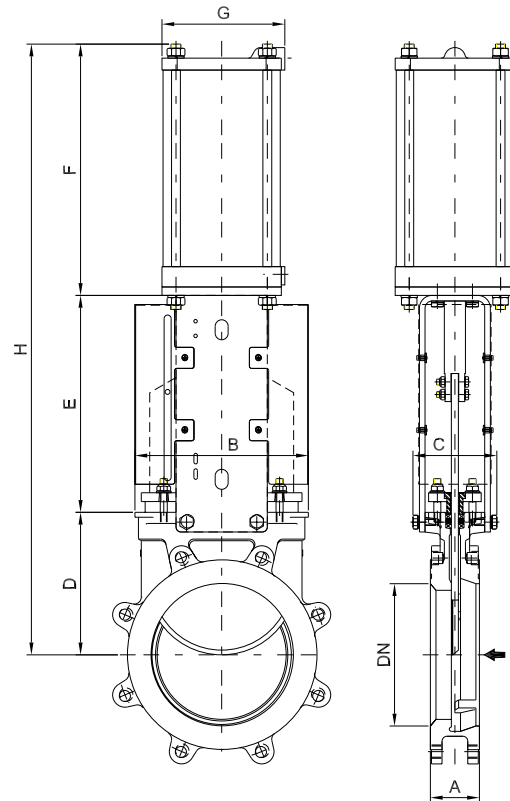
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PNEUMATIC CYLINDER

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

- Aluminium jacket and covers
- Stainless Steel (AISI 304) piston rod
- Nitrile coated steel piston

- Available from DN 50 to DN 600
- Supply Pressure: minimum 3.5 kg/cm² - maximum 10 kg/cm²
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
 - Hard anodized jacket and covers
 - Over / Undersized cylinder
 - Stainless Steel jacket and covers
 - Manual override
 - Fail safe systems
 - Travel stops
- Instrumentation (on request):
 - Positioners
 - Solenoid valves
 - Flow regulators
 - Air preparation units



DN (" /mm.)	A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl	Connect
2"/50	48	124	100	98	136	178	115	412	10	C100/62	1/4" G
3"/80	51	149	100	119	162	211	115	492	12	C100/95	1/4" G
4"/100	51	169	100	139	187	231	115	557	15	C100/115	1/4" G
5"/125	57	169	100	150	223	271	140	644	21	C125/143	1/4" G
6"/150	57	197	100	165	237	296	140	698	27	C125/168	1/4" G
8"/200	70	247	122	203	309	358	175	870	46	C160/220	1/4" G
10"/250	70	298	122	233	345	428	220	1006	70	C200/270	3/8" G
12"/300	76	349	122	273	390	478	220	1141	89	C200/320	3/8" G
14"/350	76	391	193	312	433	549	277	1294	135	C250/375	3/8" G
16"/400	89	439	193	347	478	599	277	1424	162	C250/425	3/8" G
18"/450	89	483	270	415	552	680	382	1647	212	C300/475	1/2" G
20"/500	114	542	270	450	611	719	382	1780	290	C300/525	1/2" G
24"/600	114	637	270	501	697	819	382	2017	375	C300/625	1/2" G
30"/750	117	842	320	624	940	960	444	2524	645	C350/730	3/4" G

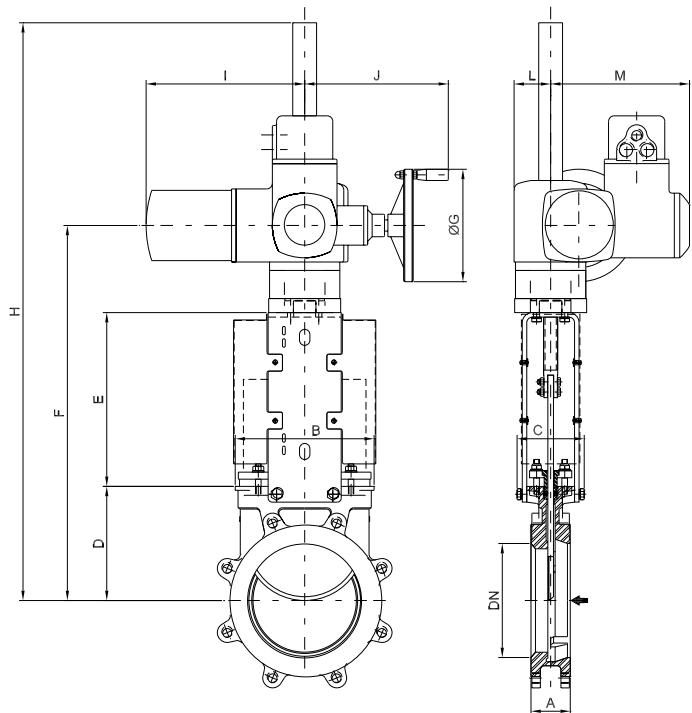
* For sizes DN12" and above, actuator diameter may need to be oversized depending on the actual working pressure.

MODEL

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ELECTRIC ACTUATOR

- Consists on:
 - Electric motor
 - Rising stem
 - Motor support yoke
(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 50 to DN 600
- Wide range of types and marks available to meet customer's needs.
- Option:
 - Non rising stem



DN ("/mm.)	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque(Nm)
2"/50	48	124	100	98	136	352	160	429	265	249	62	237	20 x 4	20
3"/80	51	149	100	119	162	399	160	476	265	249	62	237	20 x 4	30
4"/100	51	169	100	139	187	444	160	521	265	249	62	237	20 x 4	40
5"/125	57	169	100	150	223	491	160	568	265	249	62	237	20 x 4	50
6"/150	57	197	100	165	237	520	160	1097	265	249	62	237	20 x 4	60
8"/200	70	247	122	203	309	642	200	1230	282	256	65	247	25 x 5	70
10"/250	70	298	122	233	345	708	200	1296	282	256	65	247	25 x 5	80
12"/300	76	349	122	273	390	793	200	1381	282	256	65	247	25 x 5	90
14"/350	76	391	193	312	433	875	200	1463	282	256	85	247	35 x 6	105
16"/400	89	439	193	347	478	955	200	1543	282	256	85	247	35 x 6	120
18"/450	89	483	270	415	552	1142	315	1870	385	325	90	285	35 x 6	160
20"/500	114	542	270	450	597	1222	315	1950	385	325	90	285	35 x 6	180
24"/600	114	637	270	501	768	1444	315	2172	385	325	90	285	35 x 6	210
30"/750	117	842	320	624	940	1779	400	2832	385	336	90	285	40 x 7	260

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

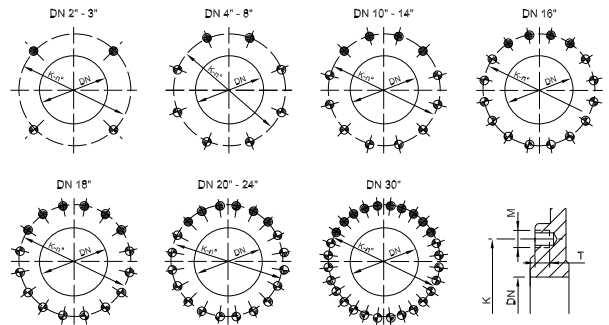
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FLANGE AND BOLTING DETAILS

ANSI B16.5, class 150

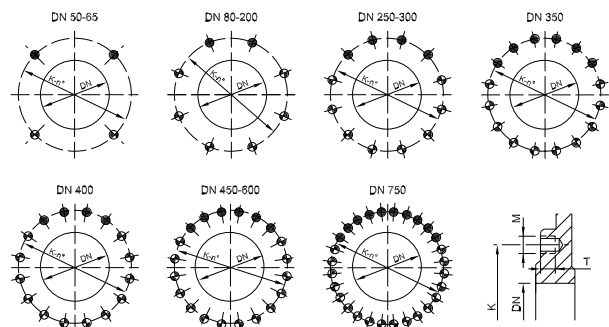
DN	K	n°	M	T	◆◆
2"	4 3/4"	4	5/8" UNC	7/16"	2 - 2
2 1/2"	5 1/2"	4	5/8" UNC	11/32"	2 - 2
3"	6"	4	5/8" UNC	11/32"	2 - 2
4"	7 1/2"	8	5/8" UNC	11/32"	2 - 6
5"	8 1/2"	8	3/4" UNC	3/8"	2 - 6
6"	9 1/2"	8	3/4" UNC	3/8"	2 - 6
8"	11 3/4"	8	3/4" UNC	15/32"	2 - 6
10"	14 1/4"	12	7/8" UNC	15/32"	4 - 8
12"	17"	12	7/8"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



◆ BLIND TAPPED BOLTS
 ◆ TAPPED THROUGH

DIN PN10

DN	K	n°	M	T	◆◆
50	125	4	M-16	11	2 - 2
65	145	4	M-16	9	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 - 10
500	620	20	M-24	22	6 - 14
600	725	20	M-27	22	6 - 14
750	914,5	28	M-27	28,5	10 - 18



◆ BLIND TAPPED BOLTS
 ◆ TAPPED THROUGH