

**MODEL****BT****SERIES 21**

## HEAVY DUTY KNIFE GATE VALVE

The BT model knife gate is a bi-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

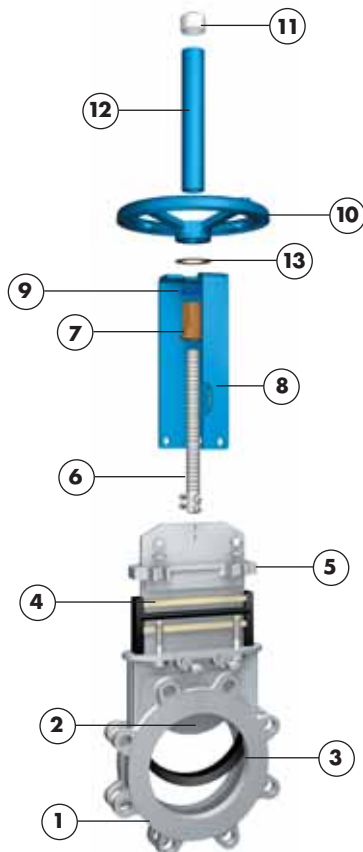
**Sizes:** DN 2"/50 to DN 24"/600 (larger diameters on request)

**Working pressure:** DN 2"/50 to DN 24"/600:150psi / 10kg/cm<sup>2</sup>

**Standard flange connection:** 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: Also available this directive. Please contact Orbinox for more information and availability of other categories and zones.

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- Seal	EPDM
4- Packing	PTFE Impreg. Synth. Fibre + EPDM O-Ring
5- Gland Follower	CF8M
6- Stem	AISI 430
7- Stem Nut	Brass
8- Yoke	Carbon Steel - Epoxy Coated
9- Collar	Nylon
10- Handwheel	$\phi \leq 310$ : ductile iron / $\phi \geq 410$ : GG25
11- Cap	Plastic
12- Stem Protector	Carbon Steel - Epoxy Coated
13- Thrust Washer	Brass



Reserves the right to change specifications without notice

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**ORBINOX CANADA, ORBINOX USA, ORBINOX COMERCIAL, ORBINOX UK, ORBINOX FRANCE, ORBINOX GERMANY, ORBINOX INDIA, ORBINOX CHINA, ORBINOX S.E.A.**

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OBX 06/09 | 1st EDITION

BT-1

MODEL

BT

SERIES 21



## DESIGN FEATURES

### BODY:

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

Internal cast 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 could prevent valve from closing.

### GATE:

Standard AISI 316 stainless steel gate.

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

### SEAT: (resilient)

Retained in the valve body internal groove by its trapezoidal shape.

Standard EPDM; also available in different materials such as Viton, nitrile, 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 them 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.

\* IN EUROPE ONLY



**MODEL**

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## ACTUATOR TYPES

### Manual:

Handwheel (rising & non-rising stem)  
Chainwheel  
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 2"/50 to 8"/200

Options:

- Fail open
- Fail closed

### SINGLE ACTING / VOLUME TANK

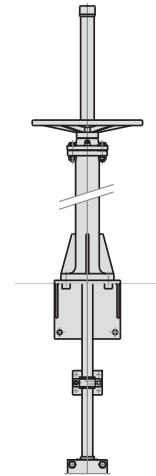
Available for all sizes (DN>8"/200)

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.*

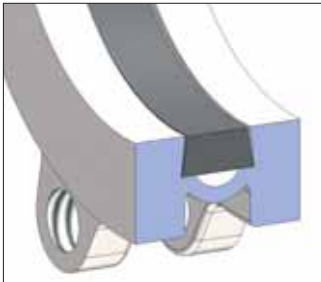
We recommend consultation with our technical department.

**TEMPERATURE CHART**

SEAT / SEALS			PACKING		
Material	Max.Temp.(°C)	Applications	Material	Max. Temp. (°C)	pH
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.	Braided PTFE (TH)	260	0 - 14
		High temperature.	Graphited (GR)	600	0 - 14
More details and other materials upon request.			Ceramic fibre (FC)	1200	—

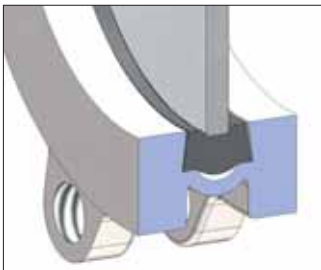
NOTE: all types include an elastomere O-ring (same material as seal), excluding TH, GR and FC.

**SEAT TYPES**



**Resilient seat:**

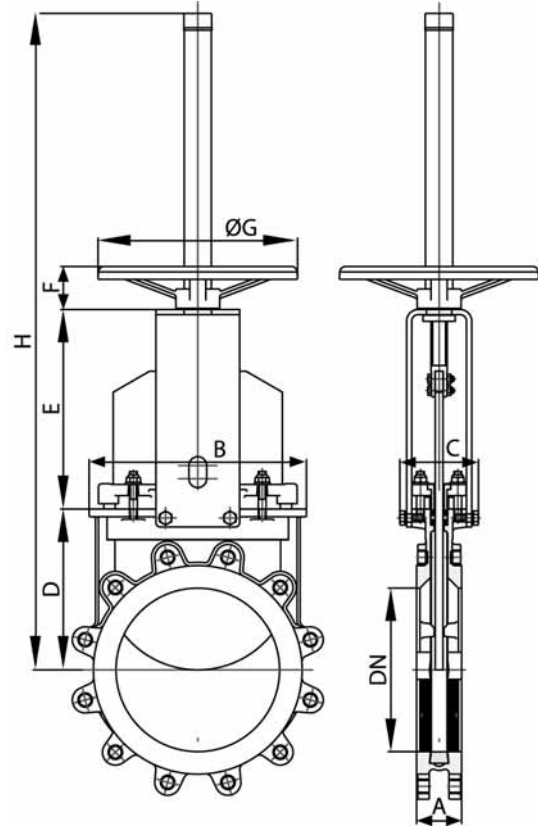
The seat is retained in the valve body's internal groove by its trapezoidal shape and is in contact with the gate around its perimeter. This design provides watertightness and seamless liquid flow in both directions while avoiding any build-up of solids that could prevent the valve from closing.



**HANDWHEEL (rising stem)**

Standard handwheel actuator.

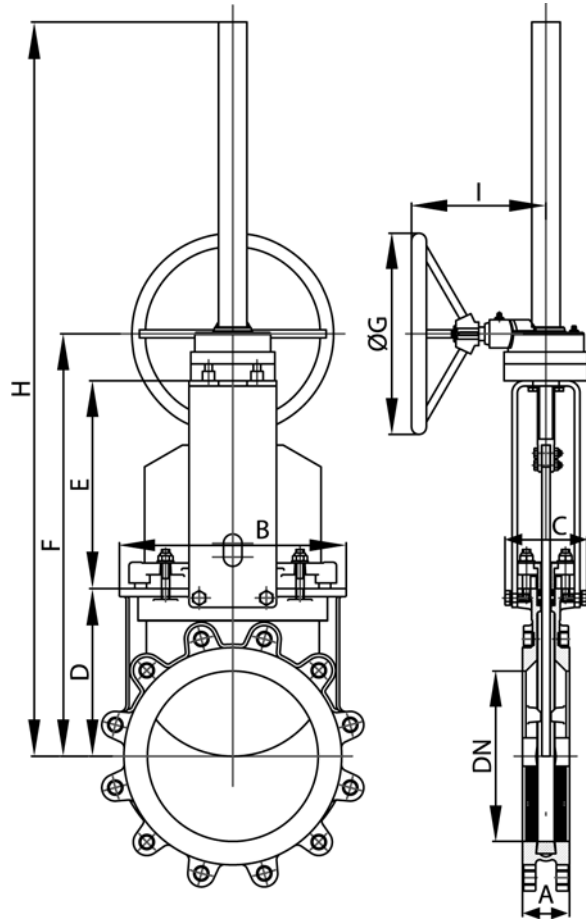
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Stem
  - Stem nut
  - Stem protector
- Available from DN 2"/50 to DN 24"/600
- Options (on request):
  - Chainwheel
  - Non-rising stem
  - Locking Device
  - Extensions



DN ("/mm.)	A	B	C	D	E	F	ØG	H
2"/50	1,88/47,8	4,68/119	4,13/105	4,13/105	5,07/129	1,85/47	8,85/225	16,49/419
2,5"/65	1,96/50	5,27/134	4,13/105	4,33/110	5,74/146	1,85/47	8,85/225	17,36/441
3"/80	2/50,8	5,86/149	4,13/105	4,68/119	6,37/162	1,85/47	8,85/225	18,34/466
4"/100	2/50,8	6,29/160	4,13/105	5,47/139	7,36/187	1,85/47	8,85/225	20,11/511
5"/125	2,25/57,2	7,24/184	4,13/105	5,90/150	8,30/211	1,85/47	8,85/225	23,46/596
6"/150	2,25/57,2	8,42/214	4,13/105	6,49/165	9,33/237	1,85/47	8,85/225	25,07/637
8"/200	2,74/69,8	11,02/280	4,80/122	8,07/205	12,16/309	2,63/67	12,20/310	32,24/819
10"/250	2,74/69,8	13,30/338	4,80/122	9,84/250	14,33/364	2,63/67	12,20/310	40,11/1019
12"/300	3/76,2	15,35/390	4,80/122	11,81/300	16,29/414	2,59/66	16,14/410	44,05/1119
14"/350	3/76,2	17,44/443	7,75/197	13,30/338	19,13/486	2,59/66	16,14/410	51,73/1314
16"/400	3,50/89	19,56/497	7,75/197	15,43/392	18,81/478	2,59/66	16,14/410	52,16/1325
18"/450	3,50/89	21,85/555	7,91/201	16,33/415	21,10/536	2,59/66	16,14/410	55,82/1418
20"/500	4,48/114	24,52/623	7,91/201	19,09/485	25,51/648	2,63/67	21,65/550	67,20/1707
24"/600	4,48/114	28,81/732	7,91/201	23,22/590	29,44/748	2,63/67	21,65/550	79,60/2022

**GEAR**

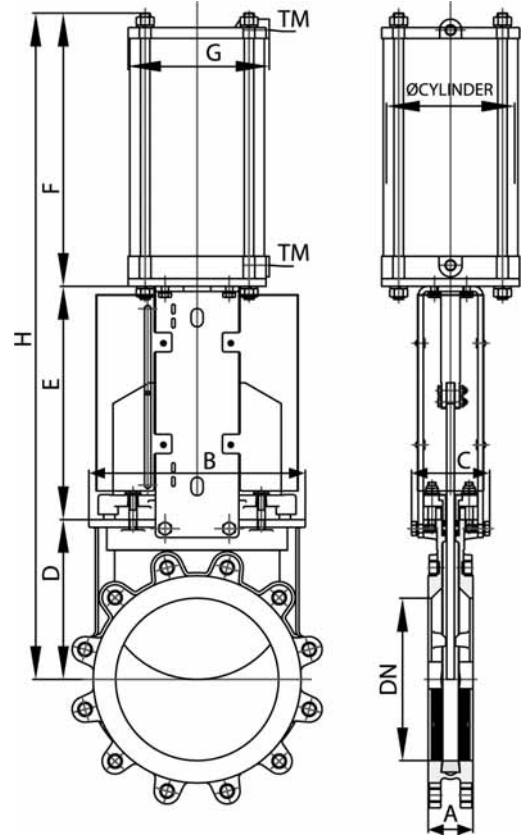
- Recommended for valves larger than DN 12"/300 and working pressures greater than 50 psi / 3.5 kg/cm<sup>2</sup>
- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 8"/200 to DN 24"/600
- Options:
  - Chainwheel
  - Non-rising Stem
  - Locking Device
  - Extensions



DN ("/mm.)	A	B	C	D	E	F	ØG	H	I
8"/200	2,74/69,8	11,02/280	4,80/122	8,07/205	12,16/309	22,99/584	11,81/300	39,13/994	7,87/200
10"/250	2,74/69,8	13,30/338	4,80/122	9,84/250	14,33/364	26,92/684	11,81/300	41,14/1045	7,87/200
12"/300	3/76,2	15,35/390	4,80/122	11,81/300	16,29/414	30,86/784	11,81/300	47/1194	7,87/200
14"/350	3/76,2	17,44/443	7,75/197	12,28/312	17,04/433	33,66/855	17,71/450	58,89/1496	8,58/218
16"/400	3,50/89	19,56/497	7,75/197	15,43/392	21,10/536	38,38/975	17,71/450	65,94/1675	10,31/262
18"/450	3,50/89	21,85/555	7,91/201	16,61/422	23,14/588	41,61/1057	17,71/450	69,17/1757	10,31/262
20"/500	4,48/114	24,52/623	7,91/201	19,09/485	25,51/648	46,45/1180	17,71/450	74,01/1880	10,31/262
24"/600	4,48/114	28,81/732	7,91/201	23,22/590	29,44/748	54,52/1385	17,71/450	90,11/2289	10,31/262

**PNEUMATIC CYLINDER**

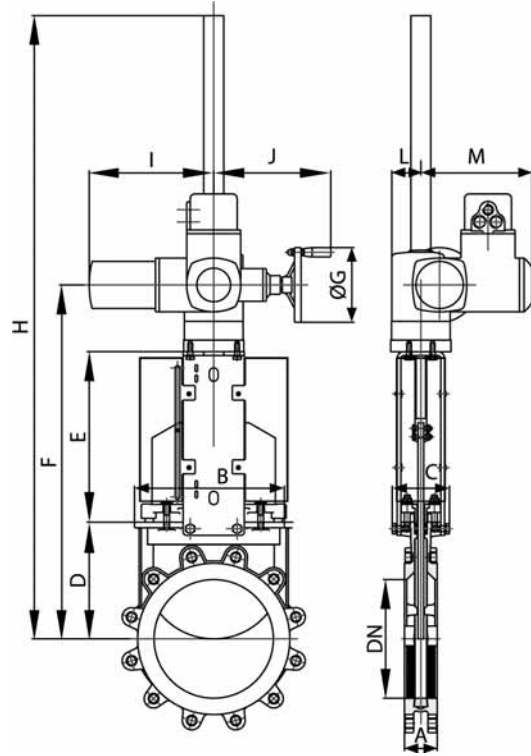
- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - Aluminium jacket and covers
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 2"/50 to DN 24"/600
- Air supply pressure: 85 psi / 6 kg/cm<sup>2</sup>
- For valves installed in 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	Standard Cyl	Connect
2"/50	1,88/47,8	4,68/119	4,13/105	4,13/105	5,07/129	7/178	4,52/115	16,22/412	C4"/100-2,04"/52	1/4" G
2,5"/65	1,96/50	5,27/134	4,13/105	4,33/110	5,74/146	7,59/193	4,52/115	17,67/449	C4"/100-2,63"/67	1/4" G
3"/80	2/50,8	5,86/149	4,13/105	4,68/119	6,37/162	8,30/211	4,52/115	19,37/492	C4"/100-3,26"/83	1/4" G
4"/100	2/50,8	6,29/160	4,13/105	5,47/139	7,36/187	9,09/231	4,52/115	21,92/557	C4"/100-4,01"/102	1/4" G
5"/125	2,25/57,2	7,24/184	4,13/105	5,90/150	8,30/211	10,66/271	5,51/140	24,88/632	C5"/125-5"/127	1/4" G
6"/150	2,25/57,2	8,42/214	4,13/105	6,49/165	9,33/237	11,65/296	5,51/140	27,48/698	C6,4"/160-5,98"/152	1/4" G
8"/200	2,74/69,8	11,02/280	4,80/122	8,07/205	12,16/309	14,09/358	6,88/175	34,72/882	C8"/200-7,95"/202	1/4" G
10"/250	2,74/69,8	13,30/338	4,80/122	9,84/250	14,33/364	16,85/428	8,66/220	41,02/1042	C10"/250-9,92"/252	3/8" G
12"/300	3/76,2	15,35/390	4,80/122	11,81/300	16,29/414	18,81/478	8,66/220	46,92/1192	C10"/250-11,88"/302	3/8" G
14"/350	3/76,2	17,44/443	7,75/197	13,30/338	19,68/500	21,61/549	10,90/277	54,60/1387	C12"/300-13,89"/353	3/8" G
16"/400	3,50/89	19,56/497	7,75/197	15,43/392	21,65/550	23,58/599	10,90/277	60,66/1541	C14"/350-15,86"/403	3/8" G
18"/450	3,50/89	21,85/555	7,91/201	16,61/422	23,54/598	26,77/680	15,03/382	66,92/1700	C16"/400-17,83"/453	1/2" G
20"/500	4,48/114	24,52/623	7,91/201	19,09/485	25,11/638	28,74/730	15,03/382	73,74/1873	C18"/450-19,80"/503	1/2" G
24"/600	4,48/114	28,81/732	7,91/201	23,22/590	29,84/758	32,67/830	15,03/382	85,74/2178	C18"/450-23,74"/603	1/2" G

**MODEL****BT****SERIES 21****ELECTRIC ACTUATOR**

- Consists of:
  - 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 2"/50 to DN 24"/600
- Wide range of types and makes available to meet customer's needs.
- Option:
  - Non rising stem

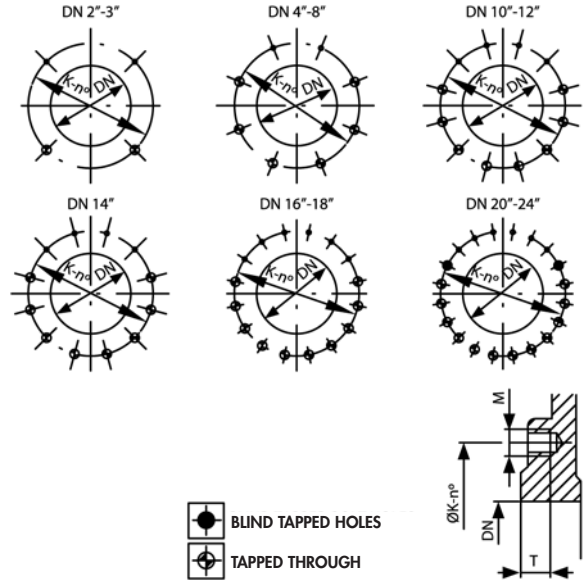


DN (" / mm.)	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
2"/50	1,88/47,8	4,68/119	4,13/105	4,13/105	5,07/129	13,85/352	6,29/160	17,87/454	10,43/265	9,80/249	2,44/62	9,33/237	20 x 4	20
2,5"/65	1,96/50	5,27/134	4,13/105	4,33/110	5,74/146	14,72/374	6,29/160	18,74/476	10,43/265	9,80/249	2,44/62	9,33/237	20 x 4	20
3"/80	2/50,8	5,86/149	4,13/105	4,68/119	6,37/162	15,70/399	6,29/160	19,72/501	10,43/265	9,80/249	2,44/62	9,33/237	20 x 4	25
4"/100	2/50,8	6,28/160	4,13/105	5,47/139	7,36/187	17,48/444	6,29/160	21,49/546	10,43/265	9,80/249	2,44/62	9,33/237	20 x 4	30
5"/125	2,25/57,2	7,24/184	4,13/105	5,90/150	8,30/211	18,85/479	6,29/160	22,87/581	10,43/265	9,80/249	2,44/62	9,33/237	20 x 4	35
6"/150	2,25/57,2	8,42/214	4,13/105	6,49/165	9,33/237	20,47/520	6,29/160	44,17/1122	10,43/265	9,80/249	2,44/62	9,33/237	20 x 4	40
8"/200	2,74/69,8	11,02/280	4,80/122	8,07/205	12,16/309	24,88/632	7,87/200	48,58/1234	10,43/265	9,80/249	2,44/62	9,33/237	24 x 5	55
10"/250	2,74/69,8	13,30/338	4,80/122	9,84/250	14,33/364	28,81/732	7,87/200	52,51/1334	10,43/265	9,80/249	2,44/62	9,33/237	24 x 5	70
12"/300	3/76,2	15,35/390	4,80/122	11,81/300	16,29/414	32,75/832	7,87/200	56,45/1434	10,43/265	9,80/249	2,44/62	9,33/237	24 x 5	90
14"/350	3/76,2	17,44/443	7,75/197	13,30/338	19,68/500	38,11/968	7,87/200	61,25/1556	11,10/282	10/254	2,55/65	9,72/247	36 x 6	130
16"/400	3,5/89	19,56/497	7,75/197	15,43/392	21,65/550	42,20/1072	7,87/200	65,35/1660	11,10/282	10/254	2,55/65	9,72/247	36 x 6	150
18"/450	3,5/89	21,85/555	7,91/201	16,61/422	23,54/598	45,27/1150	7,87/200	68,42/1738	11,10/282	10/254	2,55/65	9,72/247	36 x 6	200
20"/500	4,48/114	24,72/623	7,91/201	19,09/485	25,90/658	50,11/1273	7,87/200	73,26/1861	11,10/282	10/254	2,55/65	9,72/247	36 x 6	250
24"/600	4,48/114	28,81/732	7,91/201	23,22/590	29,84/758	59,96/1523	12,40/315	83,70/2126	15,11/384	9,40/239	3,54/90	11,22/285	50 x 8	350

**FLANGE AND BOLTING DETAILS**

**ANSI B16.5, class 150**

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



**DIN PN10**

DN	K	n°	M	T	◆ ◆
50	125	4	M-16	11	2 - 2
65	145	4	M-16	11	2 - 2
80	160	8	M-16	11	2 - 6
100	180	8	M-16	11	2 - 6
125	210	8	M-16	11	2 - 6
150	240	8	M-20	14	2 - 6
200	295	8	M-20	14	2 - 6
250	350	12	M-20	18	4 - 8
300	400	12	M-20	18	4 - 8
350	460	16	M-20	22	6 - 10
400	515	16	M-24	24	6 - 10
450	565	20	M-24	24	8 - 12
500	620	20	M-24	24	8 - 12
600	725	20	M-27	24	8 - 12

