

HEAVY DUTY KNIFE GATE VALVE

The **SERIES 20** knife gate is a uni / bi directional lug type valve designed according to the MSS-SP-81 and TAPPI TIS 405-8 standard for industrial service applications.

The design of the valve allows for a tight shut off in services with solids in suspension in industries such as:

- Pulp and Paper**
- Power Plants**
- Mining**
- Chemical Plants**
- Waste Water**
- Food and Beverage**
- etc.**

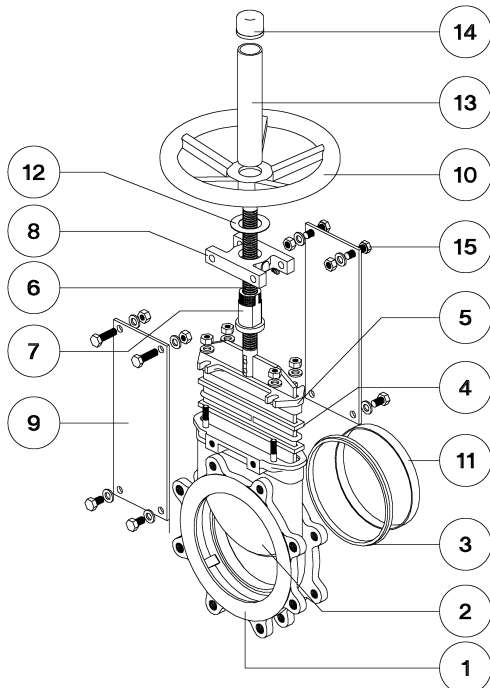
Sizes: 2" to 24" (larger diameters on request)

Working Pressure: 2" to 24" : 150 PSI to 60 PSI

Standard Flange Connection: ANSI B16.5 (class 150) and DIN PN 10



All valves are tested prior to shipping in accordance with the manufacturers specification 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 Resilient (EPDM Std.)
4- Packing	Braided PTFE
5- Gland Follower	CF8M
6- Stem	AISI 303
7- Stem Nut	Bronze
8- Yoke	Carbon Steel (2" to 6") Cast Iron (8" to 40")
9- Support plates	Carbon Steel - Epoxy Coated
10- Handwheel	Cast Iron (2" to 24")
11- Seat Retainer Ring	AISI 316
12- Thrust Washer	Bronze
13- Stem Protector	Carbon Steel - Epoxy Coated
14- Cap	Plastic



DESIGN FEATURES

BODY:

- One piece integrally cast stainless steel body with raised face flanges and reinforced body ribs in larger diameters for extra body strength.
- Internal cast gate wedges and guides allows for tighter shut off.
- Full port design according to MSS-SP-81 and TAPPI TIS 405-8.
- Internal design reduces any build up of solids that could prevent valve from closing.

GATE:

- Blade polished on both sides for a tighter seal in the packing chamber.
- Machined beveled gate end shears through solids for a tighter shut off.

SEAT:

- Unique design that mechanically locks the seat inside the valve body with a stainless steel retainer ring.
- Standard EPDM seat; available in different materials such as Viton, PTFE, etc.

PACKING CHAMBER:

- Standard braided PTFE impregnated fiber with EPDM O-ring for a tighter seal.
- Smooth chamber and cast gland follower with equally distributed gland bolts provides uniform compression of packing.

STEM:

- Corrosion resistance stainless steel stem.
- Single pitch Acme thread reduces torque on handwheel operator and eliminates installation of a gear operator on larger diameters.
- Standard stem protector on all handwheel actuators gives additional protection against dust while the valve is in the open position.

ACTUATORS:

- All Orbinox actuator models are supplied with a standard mounting kit to allow easy installation on site.

YOKE & SUPPORT PLATES:

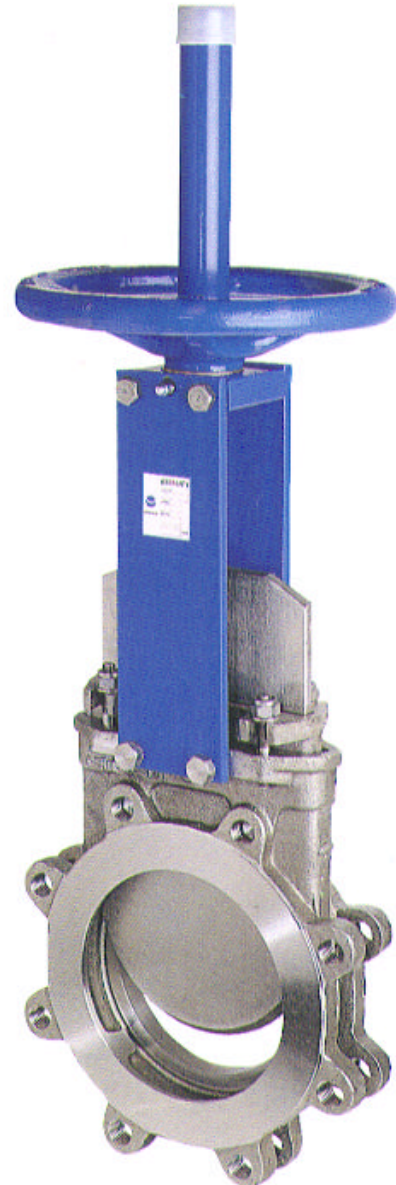
- EPOXY coated steel (stainless steel available on request).
- Compact design makes it extremely robust even in the most severe conditions.

EPOXY COATING:

- The electrostatic applied epoxy coating on all ORBINOX cast iron and carbon steel valve bodies and components make the valves corrosion resistant.

GATE SAFETY PROTECTION:

- Gate guards are available upon request for areas where safety is a concern.
- The design feature prevents any objects from getting caught accidentally while the gate is moving.



OTHER OPTIONS

BONNET:

- Reduces risk of leakage to atmosphere where contamination of the environment is a concern.
- Leakproof stem seal can be easily re-packed in line.

V-PORT:

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

BODY AND BONNET PURGE CONNECTIONS:

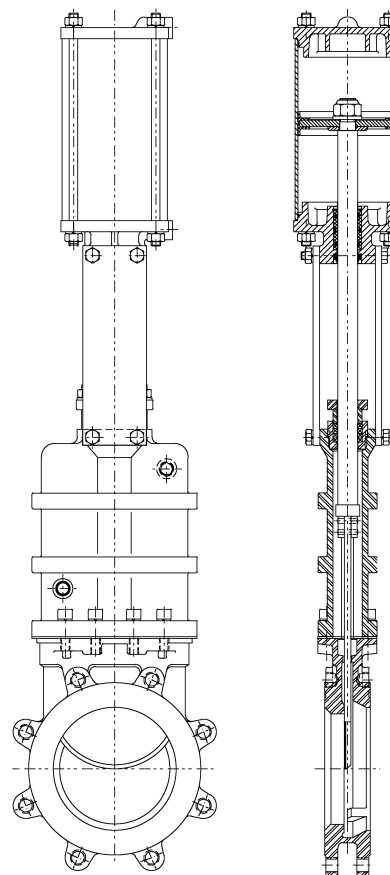
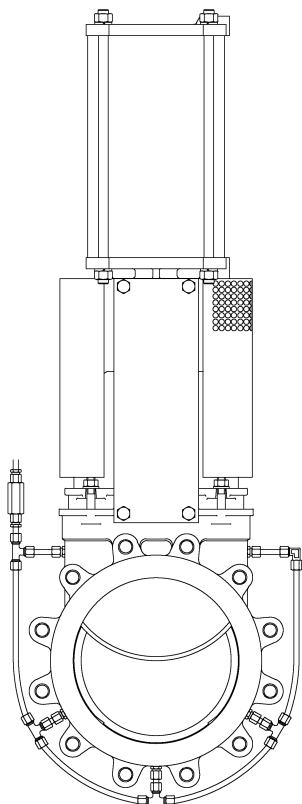
- Allows for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing fully.
- Depending on the process, purging can be with air, steam, liquids, etc.

OTHER MATERIALS OF CONSTRUCTION AVAILABLE:

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

FABRICATED VALVES:

- Orbinox is equipped for in house fabrication of special valves.
- Design is based on application, diameter, pressure, material of construction, etc.



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 all valve components to improve the properties against abrasion (stellite, polyurethane...), corrosion (Halar, Rilsan, galvanized...) and adherence (polishing, PTFE...)



ACTUATOR OPTION

- Handwheel (rising or non-rising stem)
- Chainwheel
- Lever
- Bevel Gear
- Others (square nut...)
- 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 in sizes 2" to 8", larger on request.

Supply Pressure: Minimum 75 PSI
Maximum 100 PSI

Options: Fail open
Fail closed

SINGLE ACTING / VOLUME TANK

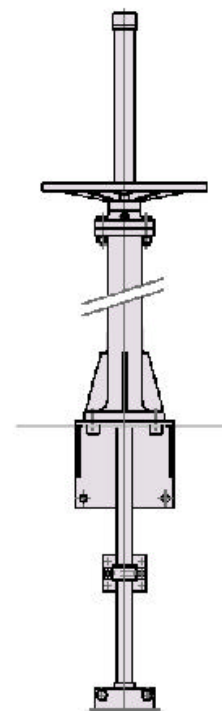
Available in all sizes.

Supply Pressure: Minimum 50 PSI
Maximum 100 PSI

Options: Pneumatic Fail safe
Electro pneumatic Fail safe

ACCESSORIES

- Mechanical Stops
- Locking Device
- Actuator Manual Override
- Solenoid Valves
- Positioners
- Limit Switches
- Electric Controls
- Floor Stands
- Stem Extensions



Wide range of valve extensions available.

For further information about fail safe systems and valve extensions, please refer to SERIES 10 section

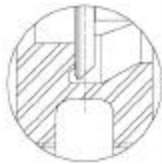
For additional information, please consult the factory.



SEAT / SEALS			PACKING		
Material	Max.Temp.(°F)	Applications	Material	Max.Temp.(°F)	pH
Metal/Metal	500	High temperature.	Talowed cotton (AH)	120	6 - 8
EPDM (E)	250	Acids and non mineral oils.	Dry cotton (AS)	120	6 - 8
Nitrile (N)	250	Resistance to petroleum products.	PTFE impregn. Natural fibre (NT)	250	4 - 12
Viton (V)	390	General chemical service. High temperature.	PTFE impregn. Synth. Fibre (ST)	465	2 - 13
Silicone (S)	480	Food service / High temperature.	Braided PTFE (TH)	500	0 - 14
PTFE (T)	480	Corrosion resistance.	Graphite (AG)	575	4 - 12
More details and other materials on request.			Ceramic fibre (FC)	2200	--

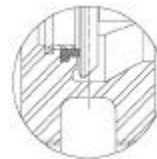
NOTE: Above includes an elastomer O-ring (same material as seal), excluding TH, AG and FC.

SEAT



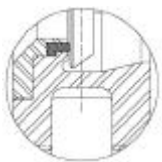
TYPE "A" SEAT (metal / metal)

- High Temperature
- High Density
- Positive Shut Off



TYPE "A" (resilient) standard

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



TYPE "B" SEAT (resilient)

- Temperature limitations according to seat material selected. Consult the above chart or our technical department for more information.
- Replaceable design without dismantling the valve.



DEFLECTOR CONE

- 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:

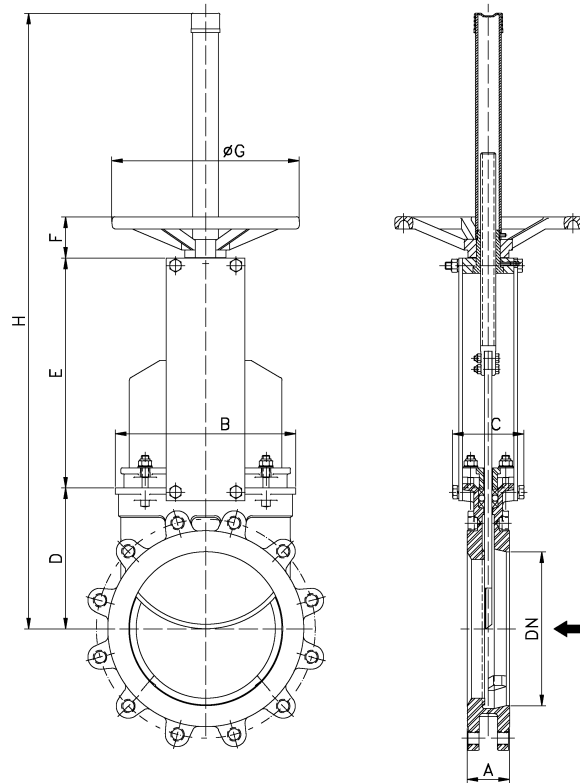
Sizes 2" to 10" = .375"

Sizes 12" to 24" = .50"



HANDWHEEL (rising stem)

- Standard handwheel actuator.
- Options:
 - Chainwheel
 - Non-rising stem
 - Locking Device
 - Stem Extensions
- Valve sizes available in 2" to 24", larger on request.
- For other options and dimensions, please consult our technical department.

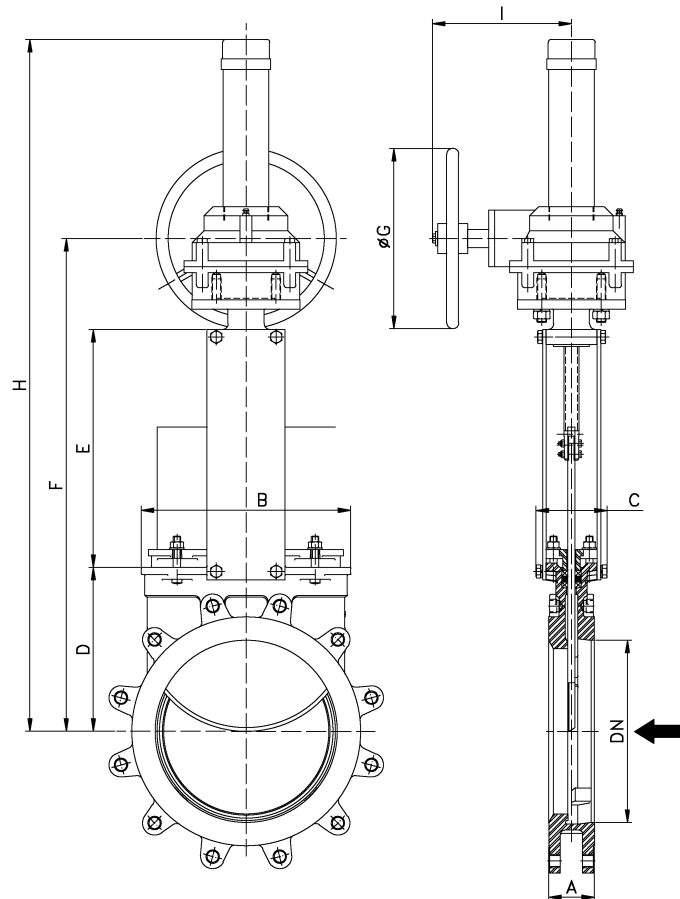


SIZE	A	B	C	D	E	F	OG	H	Weight (lbs)
2"	1.9	4.9	3.5	3.9	5.6	1.9	7.9	17.2	17
3"	2.0	5.9	3.5	4.7	6.6	1.9	7.9	18.7	22
4"	2.0	6.7	3.5	5.5	7.6	1.9	7.9	20.5	27
5"	2.3	6.7	4.1	5.9	8.5	2.0	9.8	23.9	35
6"	2.3	7.7	4.1	6.5	9.6	2.0	9.8	25.5	44
8"	2.7	9.7	4.6	8.0	12.5	2.5	11.8	32.6	70
10"	2.7	11.7	4.6	9.2	13.9	2.5	11.8	39.1	103
12"	3.0	13.7	4.6	10.7	15.6	2.5	16.1	42.4	143
14"	3.0	15.5	7.6	12.3	18.3	2.7	16.1	50.3	209
16"	3.5	17.4	7.6	13.7	20.2	2.7	16.1	53.5	268
18"	3.5	19.0	7.8	15.0	21.7	2.7	21.7	59.4	352
20"	4.5	21.3	7.8	17.0	24.1	2.7	21.7	63.7	444
24"	4.5	25.1	7.8	19.7	27.4	2.7	21.7	74.1	638



GEAR

- Recommended for valves larger than 14" and working pressures greater than 50 PSI.
- Options:
 - Locking Device
 - Stem Extensions
 - Chainwheel
 - Non-rising Stem
- Valve sizes available in 8" to 24".
- For other options and dimensions, please consult our technical department.



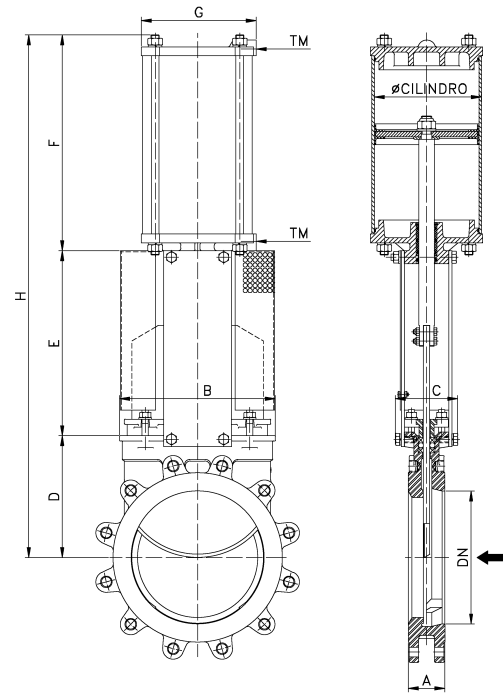
SIZE	A	B	C	D	E	F	OG	H	I
8"	2.7	9.7	4.6	8.0	12.5	26.6	12.2	40.0	9.8
10"	2.7	11.7	4.6	9.2	13.9	29.2	12.2	42.6	9.8
12"	3.0	13.7	4.6	10.7	15.6	32.4	16.1	45.8	9.8
14"	3.0	15.5	7.6	12.3	18.3	37.1	16.1	62.4	9.8
16"	3.5	17.4	7.6	13.7	20.2	40.4	16.1	65.6	9.8
18"	3.5	19.0	7.8	15.0	21.7	43.3	21.7	68.5	9.8
20"	4.5	21.3	7.8	17.0	24.1	47.6	21.7	72.8	9.8
24"	4.5	25.1	7.8	19.7	27.4	53.7	21.7	78.9	9.8



PNEUMATIC CYLINDER

- Standard pneumatic actuator:
 - Carbon steel construction
 - Stainless steel tie rods and nuts
 - Nitrile Seals
- Valve sizes available in 2" to 24", larger on request.
- Supply Pressure: minimum 40 PSI - maximum 150 PSI
- **All valves installed in a horizontal position, pneumatic actuators must be supported.**
- NOTE: Depending on the application and service conditions, Orbinox can supply larger bore size cylinders. The table below shows the most commonly used bore sizes. Please consult our technical department for maximum differential pressure and minimum air supply for all pneumatic operated knife gate valves.
- Instrumentation and options on request:

For other options and dimensions, please consult our technical department.

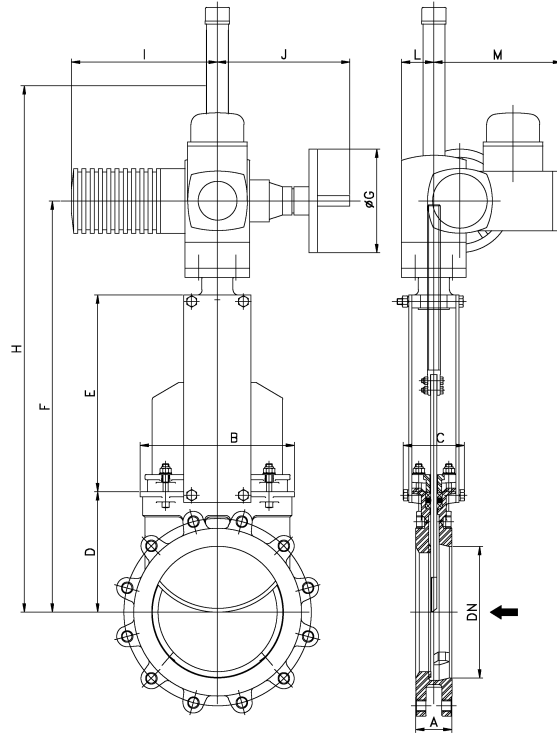


SIZE	A	B	C	D	E	F	G	H	Weight (lbs)	Standard Cyl.	Connect.
2"	1.9	4.9	3.5	3.9	5.6	6.7	3.7	16.1	22	4" Bore	1/4" NPT
3"	2.0	5.9	3.5	4.7	6.6	8.0	3.7	19.5	26	4" Bore	1/4" NPT
4"	2.0	6.7	3.5	5.5	7.6	8.8	4.5	21.9	33	4" Bore	1/4" NPT
5"	2.3	6.7	4.1	5.9	8.5	10.5	5.5	25.0	46	5" Bore	1/4" NPT
6"	2.3	7.7	4.1	6.5	9.6	11.5	5.5	27.6	59	5" Bore	1/4" NPT
8"	2.7	9.7	4.6	8.0	12.5	14.0	6.9	34.5	101	6" Bore	1/4" NPT
10"	2.7	11.7	4.6	9.2	13.9	16.3	8.7	39.4	154	7" Bore	3/8" NPT
12"	3.0	13.7	4.6	10.7	15.6	18.2	8.7	44.6	195	8" Bore	3/8" NPT
14"	3.0	15.5	7.6	12.3	18.3	21.3	10.9	51.9	297	10" Bore	3/8" NPT
16"	3.5	17.4	7.6	13.7	20.2	23.2	10.9	57.1	356	10" Bore	3/8" NPT
18"	3.5	19.0	7.8	15.0	21.7	26.0	15.0	62.8	466	10" Bore	1/2" NPT
20"	4.5	21.3	7.8	17.0	24.1	28.0	15.0	69.0	638	12" Bore	1/2" NPT
24"	4.5	25.1	11.4	19.7	27.4	31.9	15.0	79.1	825	12" Bore	1/2" NPT



ELECTRIC ACTUATOR

- Options:
 - Electric Motor
 - Rising Stem or Non-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 / close)
 - Torque Switches
- Valve sizes available in 2" to 24".
- Please consult our technical department for specifications and options on electric motors.



SIZE	A	B	C	D	E	F	OG	H	I	J	L	M	Stem0xpitch	Torque(ft/lbs)
2"	1.9	4.9	3.5	3.9	5.6	15.5	5.5	30.0	10.4	9.2	2.4	9.3	20 x 4	20
3"	2.0	5.9	3.5	4.7	6.6	17.3	5.5	31.9	10.4	9.2	2.4	9.3	20 x 4	25
4"	2.0	6.7	3.5	5.5	7.6	19.1	5.5	33.7	10.4	9.2	2.4	9.3	20 x 4	30
5"	2.3	6.7	4.1	5.9	8.5	20.5	6.3	35.0	10.4	9.8	2.4	9.3	20 x 4	40
6"	2.3	7.7	4.1	6.5	9.6	22.1	6.3	36.7	10.4	9.8	2.4	9.3	20 x 4	50
8"	2.7	9.7	4.6	8.0	12.5	27.7	7.9	42.6	11.1	10.1	2.6	9.7	20 x 4	60
10"	2.7	11.7	4.6	9.2	13.9	30.3	7.9	45.2	11.1	10.1	2.6	9.7	25 x 5	70
12"	3.0	13.7	4.6	10.7	15.6	33.5	7.9	48.5	11.1	10.1	2.6	9.7	25 x 5	80
14"	3.0	15.5	7.6	12.3	18.3	38.2	7.9	65.0	11.1	10.1	2.6	9.7	25 x 5	90
16"	3.5	17.4	7.6	13.7	20.2	41.5	7.9	68.2	11.1	10.1	2.6	9.7	35 x 6	105
18"	3.5	19.0	7.8	15.0	21.7	46.2	12.4	73.3	15.2	12.8	3.5	11.2	35 x 6	120
20"	4.5	21.3	7.8	17.0	24.1	50.4	12.4	77.6	15.2	12.8	3.5	11.2	35 x 6	160
24"	4.5	25.1	7.8	19.7	27.4	56.6	12.4	83.7	15.2	12.8	3.5	11.2	35 x 6	210



FLANGE AND BOLTING DETAILS

DIN PN10

DN	K	n°	M	T	
50	125	4	M-16	8	2 - 2
65	145	4	M-16	8	2 - 2
80	160	8	M-16	8,7	2 - 6
100	180	8	M-16	8,7	2 - 6
125	210	8	M-16	8,7	2 - 6
150	240	8	M-20	10,3	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	22,2	6 - 14
600	725	20	M-27	22,2	6 - 14

ANSI B16.5, class 150

DN	K	n°	M	T	
2"	4 3/4"	4	5/8" UNC	5/16"	2 - 2
2 1/2"	5 1/2"	4	5/8" UNC	5/16"	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	11/32"	2 - 6
6"	9 1/2"	8	3/4" UNC	15/32"	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

