

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

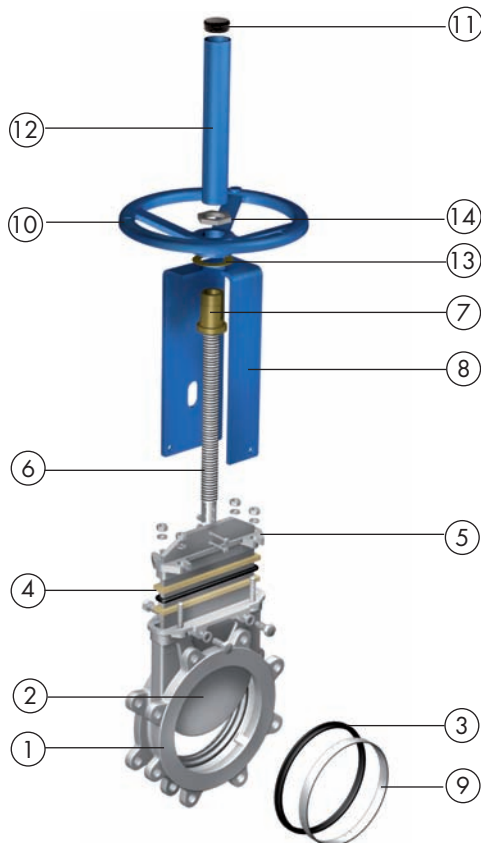
Sizes: DN 50/2" to DN 900/36" (larger diameters on request)

Working pressure: DN 50/2" to DN 600/24": 10 kg/cm² / 150 psi
 DN 750/30": 7 kg/cm² / 100 psi
 DN 900/36": 7 kg/cm² / 100 psi

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

Directives: DIR 2006/42/CE (MACHINES)
 DIR 97/23/CE (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)
 DIR 94/9/CE (ATEX) 

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 430
7- Stem Nut	Brass
8- Yoke	Carbon Steel - Epoxy Coated
9- Seat Retainer Ring	AISI 316
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
14- Nut	Zinc Plated Carbon Steel

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.



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.

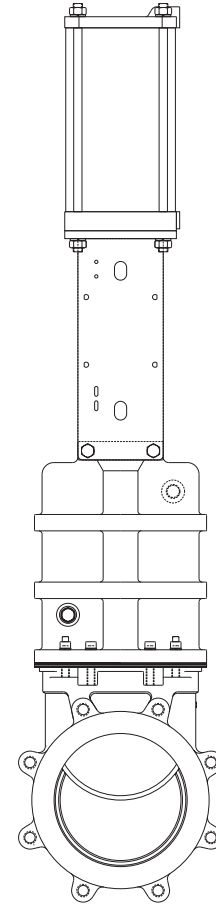


Fig.1

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...).

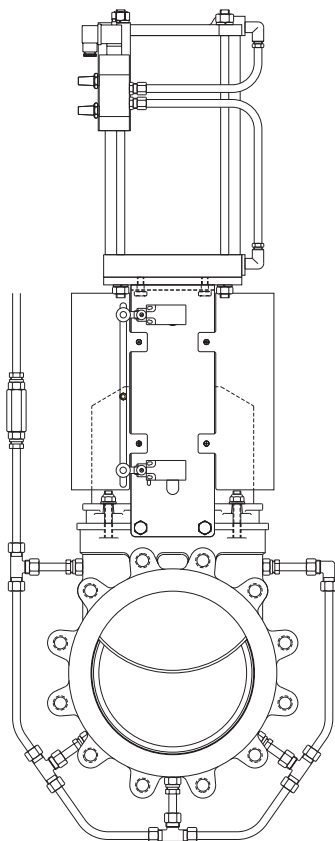
ATEX



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

- Hand operated ET 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.
- Electrical, pneumatical and hydraulically operated valves must be subjected to a conformity assesment of their own and also of the whole unit valve-actuator to get EC Type Approval to Directive 94/9.

We recommend consultation with our technical department.



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

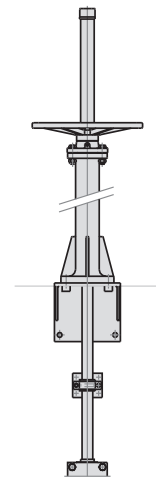
Available for all sizes (DN>200)

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.

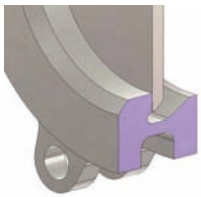
We recommend consultation with our technical department.

TEMPERATURE CHART

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

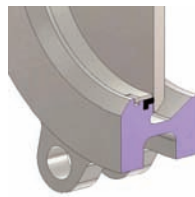
More details and other materials under request.

SEAT TYPES



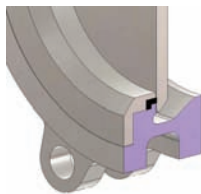
METAL / METAL

- For applications with:
- High temperature
 - High density media application
 - When full tightness is not required



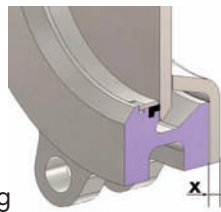
RESILIENT, TYPE "A"

- 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"

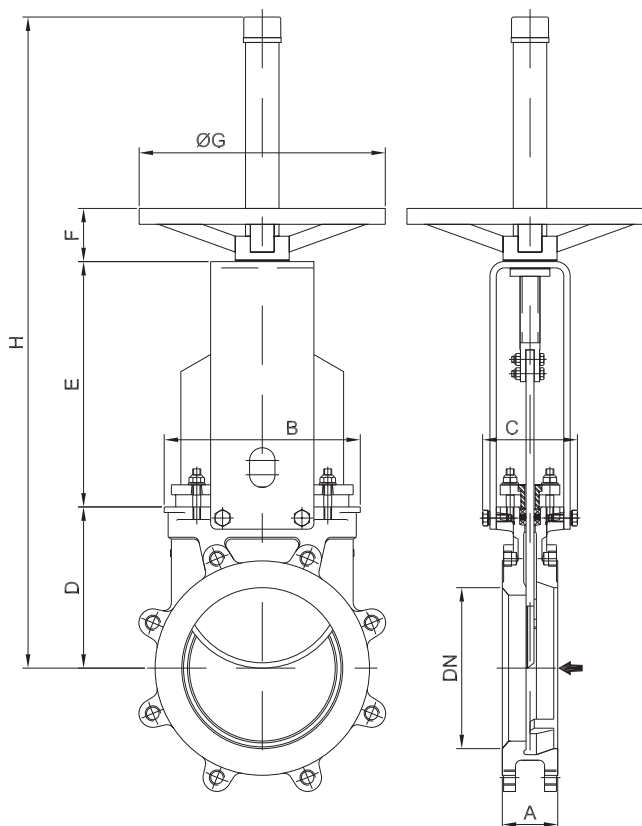
- Deflects the media away from any internal exposed parts of the valve such as gate guides, seat, etc.
- Different types of material available such as AISI 316 stainless, CA15, Ni-Hard, etc.

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.

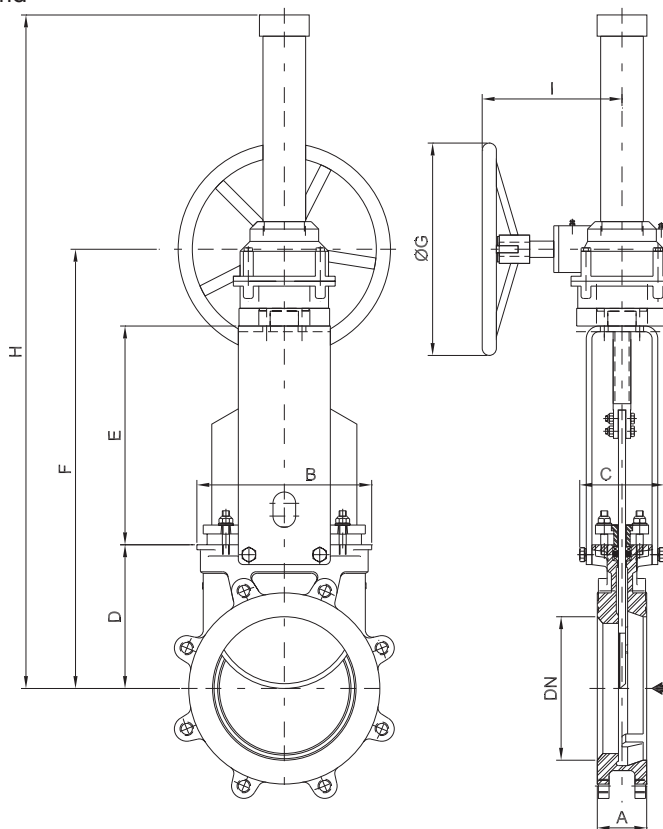
- Consists of:
 - Handwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
- Available from DN 50/2" to DN 600/24"
- Options (on request):
 - Chainwheel
 - Non-rising stem
 - Locking Device
 - Extensions



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 350/14" and working pressures greater than 3.5 kg/cm²/ 50 psi
- Consists of:
 - Stem
 - Yoke
 - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200/8" to DN 900/36"
- 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	582	300	992	200
10"/250	70	298	122	233	345	648	300	1060	200
12"/300	76	349	122	273	390	733	300	1143	200
14"/350	76	391	197	312	430	790	450	1489	270
16"/400	89	439	197	347	475	870	450	1570	270
18"/450	89	483	201	415	518	984	450	1615	270
20"/500	114	542	201	450	558	1092	450	1810	280
24"/600	114	637	201	501	663	1248	650	1879	290
30"/750	117	842	320	624	871	1597	650	2650	413
36"/900	117	970	320	779	1046	2135	650	3135	442

PNEUMATIC CYLINDER

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

- DN 50-250: Aluminum barrels
- DN ≥ 300: Composite barrels
- Aluminum end caps
- Stainless Steel (AISI 304) piston rod
- Nitrile coated steel piston

- Available from DN 50/2" to DN 900/36"

- Supply Pressure: minimum 3.5 kg/cm² / 50 psi
maximum 10 kg/cm² / 145 psi

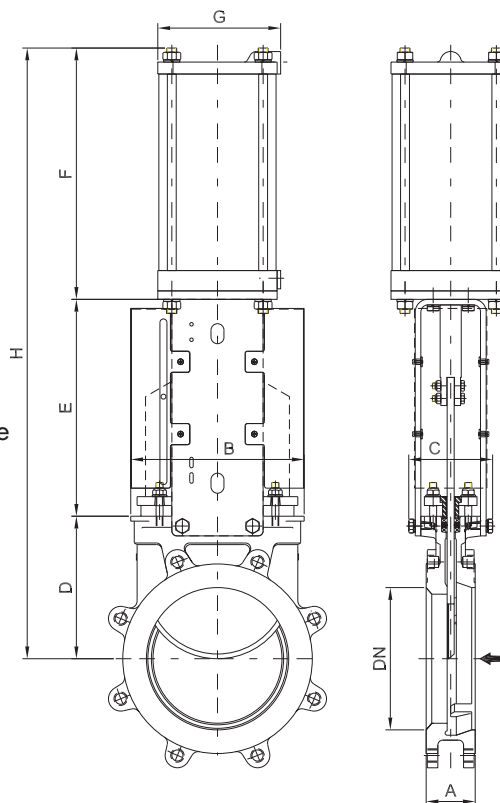
Actuator designed with 6 kg/cm² air supply

- 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
- Flow regulators
- Solenoid valves
- Air preparation units

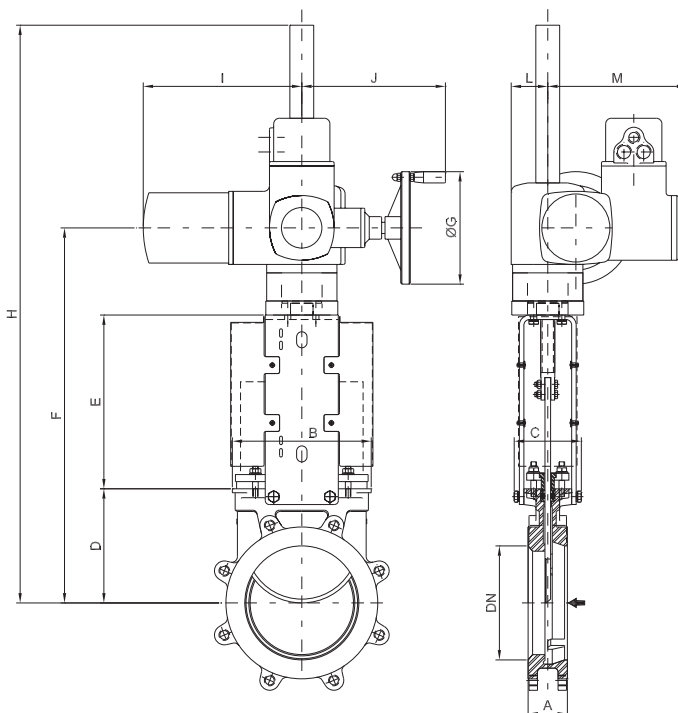


DN ("/mm.)A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl	Connect
2"/50	48	124	100	98	136	178	115	412	10	C100/62 1/4" G
3"/80	51	149	100	119	162	211	115	492	12	C100/95 1/4" G
4"/100	51	169	100	139	187	231	115	557	15	C100/115 1/4" G
5"/125	57	169	100	150	223	271	140	644	21	C125/143 1/4" G
6"/150	57	197	100	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	197	415	552	680	382	1647	212	C300/475 1/2" G
20"/500	114	542	197	450	611	719	382	1780	290	C300/525 1/2" G
24"/600	114	637	197	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
36"/900	117	970	320	775	1100	1190	515	3065	780	C400/930 3/4" G

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

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 50/2" to DN 900/36"
- Wide range of types and marks available to meet customer's needs.
- Option:
 - Non rising stem



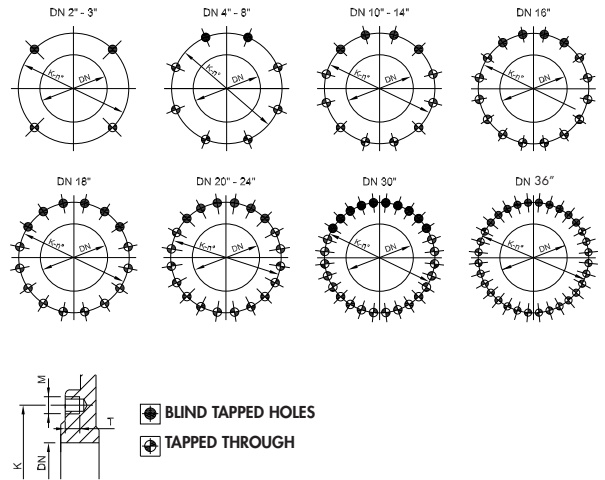
DN ("/mm.)	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque(Nm)
2"/50	48	124	100	98	136	377	160	454	265	249	62	237	20 x 4	10
3"/80	51	149	100	119	162	424	160	501	265	249	62	237	20 x 4	10
4"/100	51	169	100	139	187	469	160	546	265	249	62	237	20 x 4	10
5"/125	57	169	100	150	223	516	160	593	265	249	62	237	20 x 4	15
6"/150	57	197	100	165	237	545	160	1122	265	249	62	237	20 x 4	20
8"/200	70	247	122	203	309	667	160	1255	265	249	62	237	24 x 5	30
10"/250	70	298	122	233	345	733	160	1321	265	249	62	237	24 x 5	45
12"/300	76	349	122	273	390	793	200	1381	282	256	65	247	24 x 5	70
14"/350	76	391	193	312	433	875	200	1463	282	256	65	247	36 x 6	110
16"/400	89	439	193	347	478	955	315	1543	384	324	85	285	36 x 6	160
18"/450	89	483	270	415	552	1142	315	1870	384	324	90	285	36 x 6	190
20"/500	114	542	270	450	611	1222	400	1950	384	336	90	285	36 x 6	270
24"/600	114	637	270	501	697	1444	400	2172	384	336	90	285	40 x 6	450
30"/750	117	842	320	624	883	1779	500	2832	436	355	170	330	50 x 8	550
36"/900	117	970	320	779	1046	2035	500	3080	510	355	195	330	50 x 8	800

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

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
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
36"	42 3/4"	32	1 1/2" UNC	1 1/4"	10 - 12



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	6 - 10
450	565	20	M-24	15	6 - 10
500	620	20	M-24	22	6 - 14
600	725	20	M-27	22	6 - 14
900	1050	28	M-30	32	10 - 18

