

MODEL

EX



WAFER STYLE KNIFE GATE VALVE

The **EX** model knife gate is a uni-directional wafer valve designed for general 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
- Wastewater treatment plants
- Food and Beverage
- Mining
- Power plants
- Chemical plants
- Bulk handling
- etc.

Sizes: DN 50 to DN 1000 (larger diameters on request)

Working pressure:

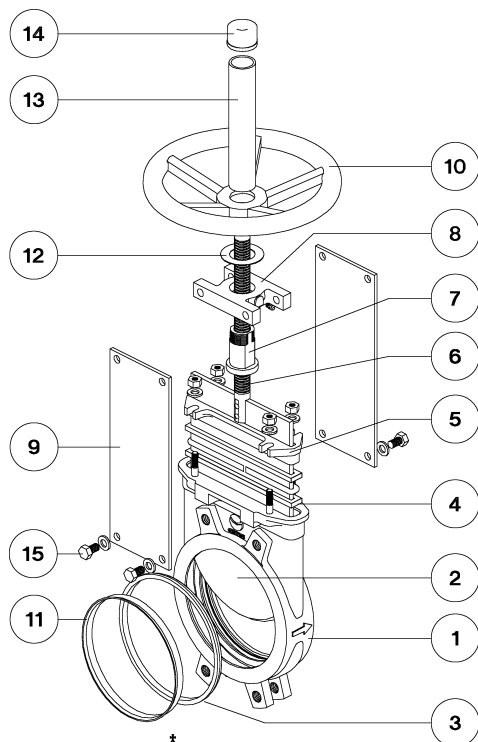
DN 50 to DN 250:	10 (kg/cm ²)
DN 300 to DN 400:	6 (kg/cm ²)
DN 450 :	5 (kg/cm ²)
DN 500 to DN 600:	4 (kg/cm ²)
DN 700 to DN 1000:	2 (kg/cm ²)

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

Note: other flange connections are available on request such as:

DIN PN 6	DIN PN 16	DIN PN 25
BS "D" and "E"	ANSI 125	

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



STANDARD PARTS LIST

Part:	Cast Iron:	Stainless Steel:
1- Body	GG25	CF8M
2- Gate	AISI 304	AISI 316
3- Seat	Metal or Resilient	
4- Packing	AH	NT
5- Gland Follower	Aluminum (DN 50 to DN 300) S.G. Iron (DN 350 to DN 1000)	CF8M
6- Stem	AISI 303	
7- Stem Nut	Bronze	
8- Yoke	Carbon Steel (DN 50 to DN 150) S.G. Iron (DN 200 to DN 1000)	
9- Support Plates	Carbon Steel - Epoxy Coated	
10- Handwheel	Steel (DN 50 to DN 300) CAST Iron (DN 350 to DN 1000)	
11- Seat Retainer Ring	AISI 304	AISI 316
12- Thrust Washer	Bronze	
13- Stem Protector	Carbon Steel - Epoxy Coated	
14- Cap	Plastic	



ORBINOX reserves the right to change specifications without notice.
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OBX 1/99 4th EDITION

EX-1

DESIGN FEATURES

BODY:

Wafer style cast **monoblock** with raised face, with reinforced ribs in larger diameters for extra body strength.

Internal cast-in gate wedges and guides allows for tighter shut-off.

Full port design for greater flow capacity and minimal pressure drop.

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

GATE:

Standard stainless steel gate.

Gate is polished on both sides to avoid jamming and seat damage.

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:

Long-life packing with several lines of braided fibre plus an EPDM o-ring, 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.

A grease nipple is fitted located on the handwheel assembly to lubricate the stem whilst operating the valve for easier operation and a longer 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 a standard mounting kit to allow for installation on site.

YOKE & SUPPORT PLATES:

Made of EPOXY coated steel (stainless steel available on request).

Compact design makes it extremely robust even in the most severe conditions.

EPOXY COATING:

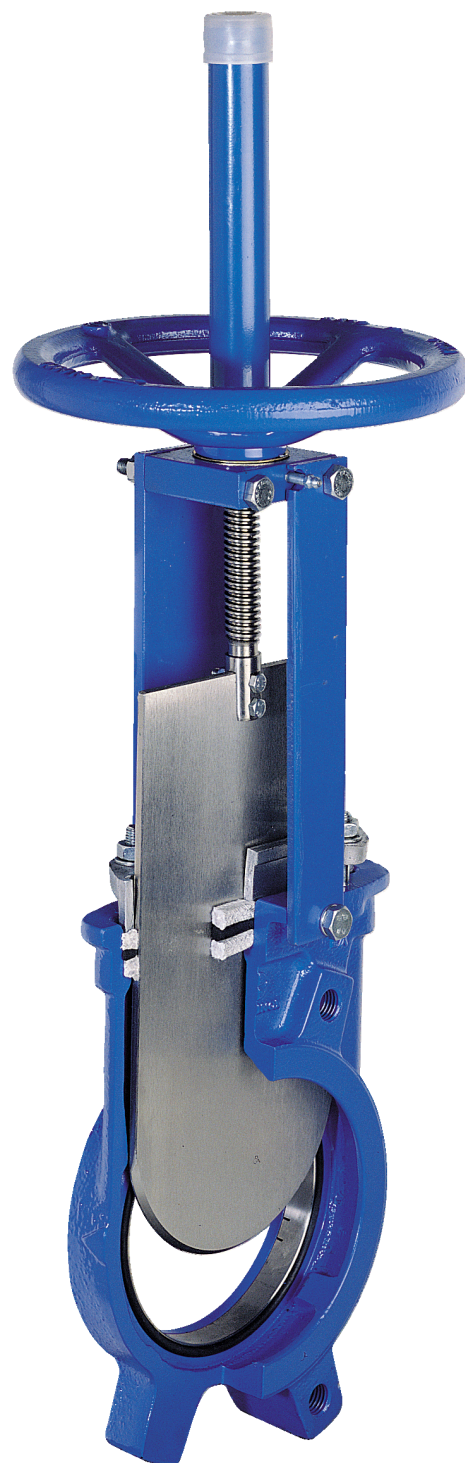
The epoxy coating on all **ORBINOX** cast iron and carbon steel valve bodies and components is electrostatic applied making the valves corrosion resistant with a high quality finished surface.

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 getting caught accidentally while the gate is moving.



OTHER OPTIONS

Bonnet:

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:

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

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

Other materials of construction:

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

Fabricated valves:

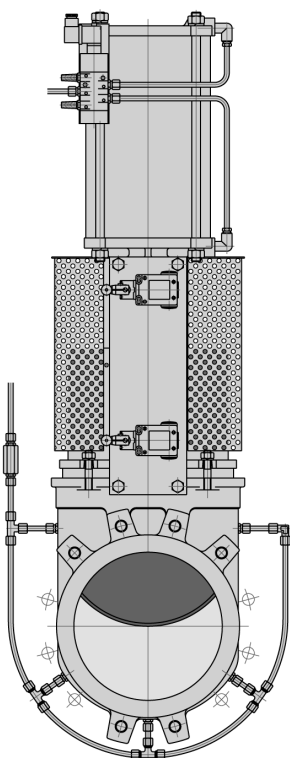
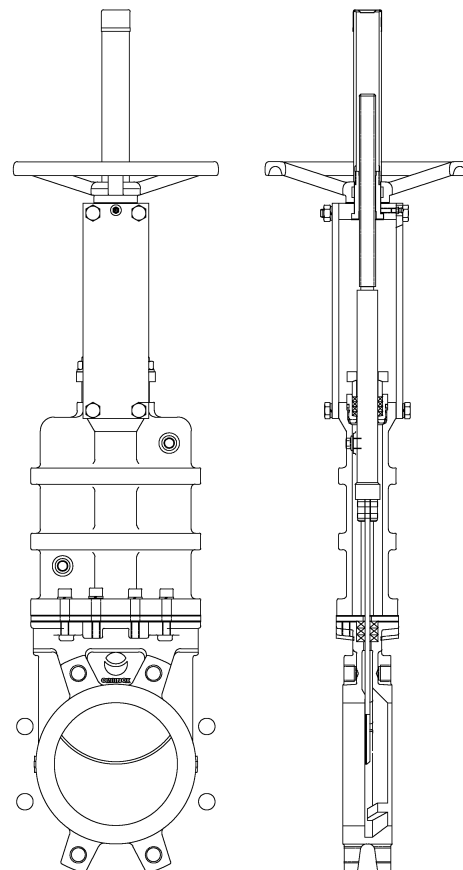
Orbinox is equipped for in house fabrication of special valves. Depending on the design, diameter, pressures, material of construction, etc.,

Full lug design (EXT):

Modified version of the EX model with full lug design for end of line applications.

Standard flange connection from DIN PN 10, ANSI 150, to AS "D".

Sizes available up to DN 600.



SURFACE TREATMENTS

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

At Orbinox, S.A. 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 to consult our technical department.

ACTUATOR TYPES

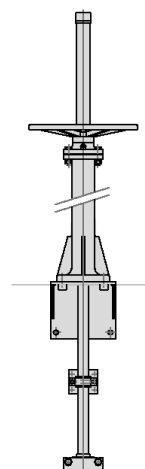
- Handwheel (rising & non-rising stem)
- Chainwheel
- Lever
- Bevel Gear
- Others (square nut....)
- Electric
- Double Acting Pneumatic
- Single Acting Pneumatic
- Hydraulic

All actuators supplied by ORBINOX are interchangeable.

Accessories

- Mechanical Stops
- Actuator manual override
- Positioners
- Electric controls
- Stem extensions
- Locking device
- Solenoid valves
- Limit Switches
- Floor stands

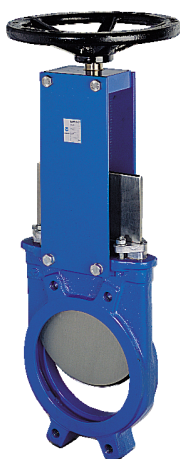
Wide range of valve extensions available.



Please consult our technical department.



Standard Handwheel
(Rising Stem)



Handwheel
(Non Rising Stem)



Pneumatic
Double Acting



Electric



Lever

SEAT / SEALS

Material	Max.Temp.(°C)	Applications
Metal/Metal	>250	High temp. Low tightness.
EPDM (E)	120	Acids and non mineral oils.
Nitrile (N)	120	Resistance to petroleum products.
Viton (V)	200	General chemical service. High temperature.
Silicone (S)	250	Food service. / High temperature.
PTFE (T)	250	Corrosion resistance.

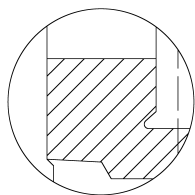
More details and other materials under request.

PACKING

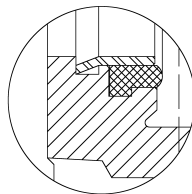
Material	Max. Temp. (°C)	pH
Tallowd cotton (AH)	50	6 - 8
Dry cotton (AS)	50	6 - 8
PTFE impregn. natural fibre (NT)	120	4 - 12
PTFE impregn. synth. fibre (ST)	240	2 - 13
Braided PTFE (TH)	260	0 - 14
Graphited (AG)	300	4 - 12
Ceramic fibre (FC)	1200	—

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

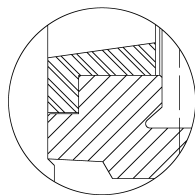
SEAT TYPES

**METAL / METAL**

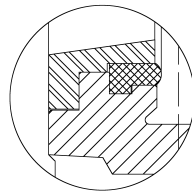
- High temperature
- High density media application
- Positive shut off

**RESILIENT, TYPE "A"**

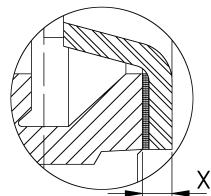
- Standard resilient seat.
- Temperature limitations according to seat material selected. Consult the above chart or our technical department for more information.
- Replaceable seat retainer ring.

**TYPE "B" SEAT (metal / metal)**

- High temperature
- High density media application
- Positive shut off
- Replaceable design without dismantling the valve

**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

**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:

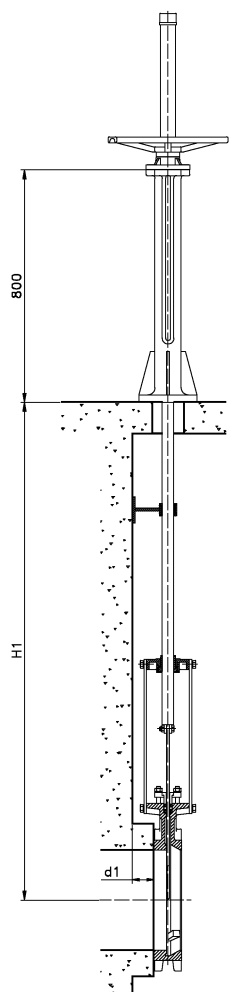
DN 50 to DN 250 = 9mm

DN 300 to DN 600 = 12mm

VALVE EXTENSIONS

The extension on a valve allows the operator to open or close the valve from a distance. Different types of extensions can be used depending on the application and the distance from the gate to the actuator.

1.- Floor stand



Mainly used to facilitate the operator in opening and closing the valve at normal operating level.

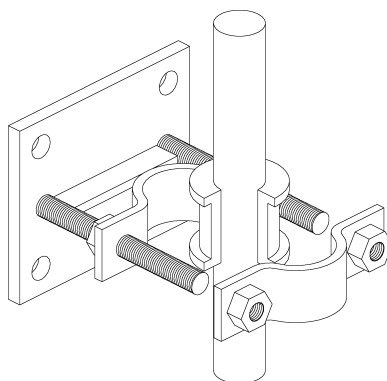
Required dimensions:

H1 - distance from centre line of the pipe to the base of the floor.

d1 - (wall bracket) distance from the wall to the face of the connecting flange.

NOTE:

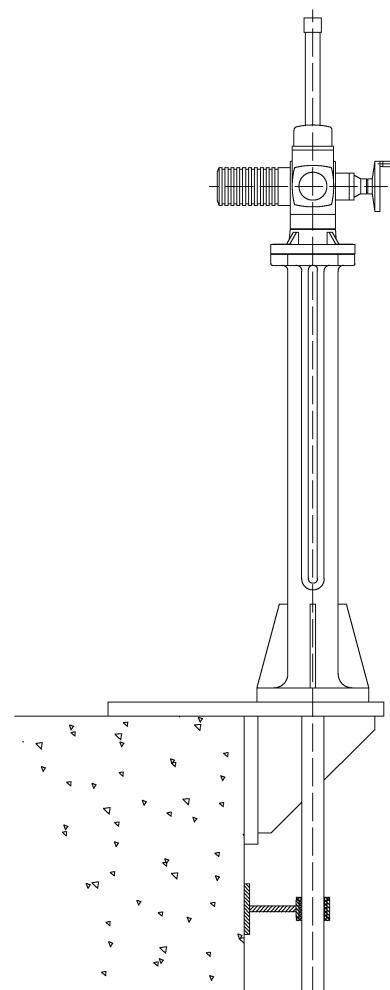
1. Any type of actuator can be mounted on the floor stand such as Handwheel, Gear, Electric, etc....
2. A wall bracket (detail A) is recommended at every 1.5m. This prevents any deviation or buckling of the extension rod.
3. Standard construction of the floor stand is Cast Iron or carbon steel. Other materials are available on request.
4. A position indicator (optional) can be installed for easy visibility of the percentage of opening of the valve.



Detail A.

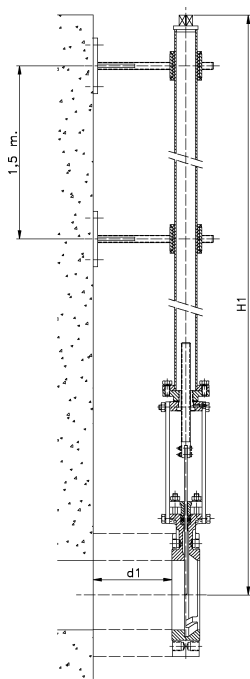
STANDARD PARTS LIST

Spindle	AISI 303
Stem	AISI 304
Wall bracket	Carbon Steel - Epoxy coated
Slider / bushing	Nylon
Floor stand	Cast Iron - Epoxy coated



VALVE EXTENSIONS

2.- Tube



- Stem and yoke assembly remains in its original position.
- Handwheel is replaced by a tube, which rotates when operating the valve.
- Stem rises and lowers within the tube.
- Ideal for surface box operation, valve can be operated with a T-bar and a square nut.
- Required dimensions:

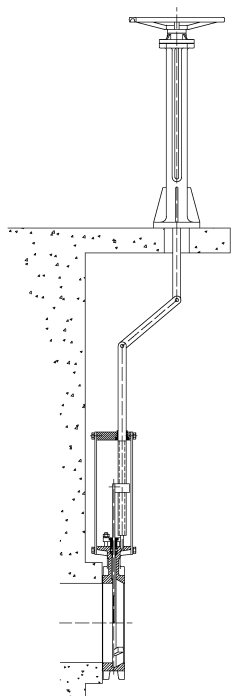
H1: distance from centre line of the pipe to the base of the floor.

d1: (wall bracket) distance from the wall to the face of the connecting flange.

NOTE:

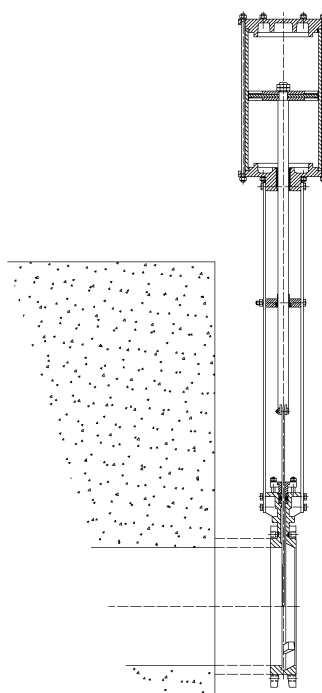
1. Handwheel or square nut operated only.
2. A wall bracket (detail A) is recommended at every 1.5m. This prevents any deviation or buckling of the extension rod.
3. Standard construction of the extension is carbon steel epoxy coated. Other materials are available on request.

3 - Universal joint



- Universal joints are installed between the rod extensions where a straight alignment is not available. Please contact our technical department for more information.

4 - Extended support plates

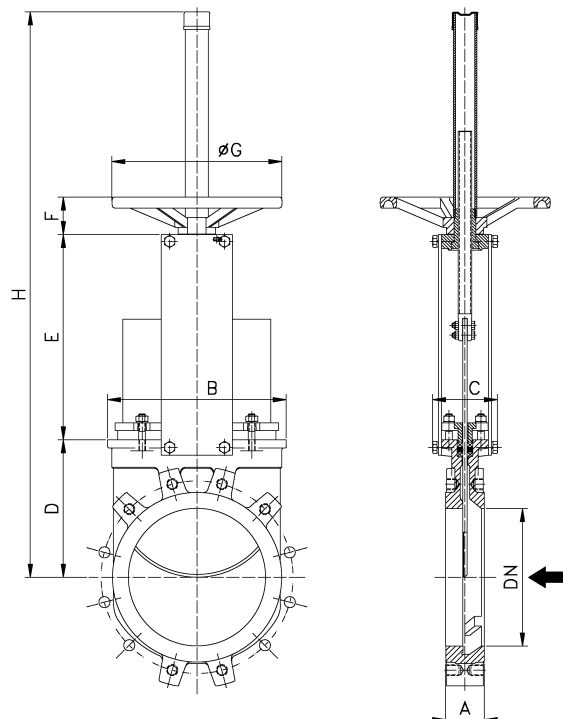


- Ideal where long extensions are not required.
- Guide bearing is installed at the mid point to prevent any deflection of the rod.

Please consult our technical department.

HANDWHEEL (rising stem)

- Standard handwheel actuator.
- Consists of:
 - Handwheel: Epoxy coated Cast Iron or Steel (DN 50 to DN 300)
 - Stem
 - Stem nut
 - Stem protector
 - Grease nipple
- Available in DN 50 to DN 1000
- Options:
 - Locking Device
 - Extensions



DN	A	B	C	D	E	F	ØG	H	Weight (kg.)
50	40	124	90	105	135	48	200	429	7
65	40	139	90	115	152	48	200	456	8
80	50	154	90	124	168	48	200	481	9
100	50	174	90	140	193	48	200	522	11
125	50	192	104	150	217	52	250	606	15
150	60	217	104	175	243	52	250	657	18
200	60	270	118	205	318	63	300	830	30
250	70	326	118	250	373	63	300	1030	44
300	70	380	118	300	423	63	300	1130	58
350	96	438	193	338	503	68	410	1341	96
400	100	493	193	392	553	68	410	1445	124
450	106	546	197	432	603	68	550	1610	168
500	110	620	197	485	663	68	550	1723	192
600	110	714	197	590	763	68	550	2038	245
700	110	834	400	686	890	74	800	2370	405
750	110	884	400	760	945	74	800	2579	455
800	110	1015	320	795	989	74	800	2737	512
900	110	1040	320	900	1118	74	800	3051	680
1000	110	1150	320	980	1220	74	800	3319	865

HANDWHEEL (non-rising stem)

- Recommended for installation where space is limited.

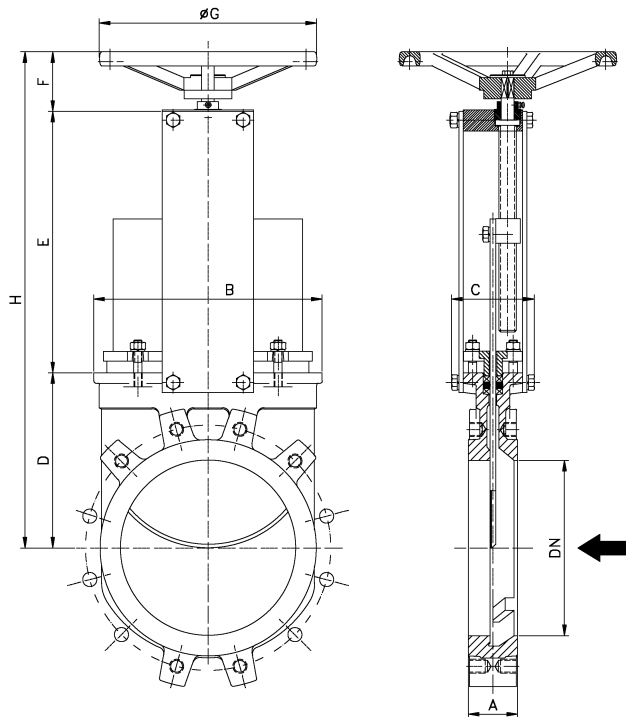
- Consists of:

- Handwheel
- Epoxy coated Cast Iron or Steel (DN 50 to DN 300)
- Stem
- Yoke bushing
- Stem nut fixed to the gate
- Grease nipple

- Available in DN 50 to DN 1000

- Options:

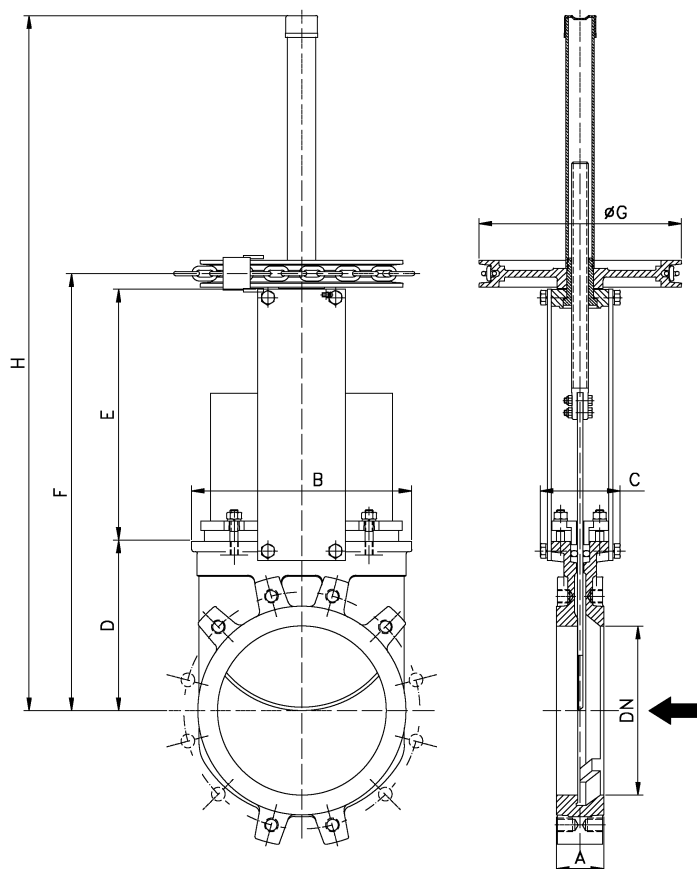
- Locking Device
- Extension
- Square Nut Drive



DN	A	B	C	D	E	F	ØG	H
50	40	124	107	105	135	62	200	302
65	40	139	107	115	152	62	200	329
80	50	154	107	124	168	62	200	354
100	50	174	107	140	193	62	200	395
125	50	192	107	150	217	66	250	433
150	60	217	107	175	243	66	250	484
200	60	270	118	205	318	80	300	603
250	70	326	118	250	373	80	300	703
300	70	380	118	300	423	80	300	803
350	96	438	200	338	503	81	410	922
400	100	493	200	392	553	81	410	1026
450	106	546	200	432	603	81	550	1116
500	110	620	200	485	663	81	550	1229
600	110	714	200	590	763	81	550	1434
700	110	834	296	686	890	150	800	1726
750	110	884	296	760	945	150	800	1855
800	110	1015	296	795	989	150	800	1934
900	110	1040	296	900	1118	150	800	2168
1000	110	1150	296	980	1220	150	800	2350

CHAINWHEEL

- Recommended for elevated installations.
- Consists of:
 - Chainwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
 - Grease nipple
- Available in DN 50 to DN 600
- Options:
 - Locking Device
 - Extension
 - Non-rising Stem



DN	A	B	C	D	E	F	ØG	H
50	40	124	90	105	135	258	225	429
65	40	139	90	115	152	285	225	456
80	50	154	90	124	168	310	225	481
100	50	174	90	140	193	351	225	522
125	50	192	104	150	217	385	225	606
150	60	217	104	175	243	436	225	657
200	60	270	118	205	318	546	300	830
250	70	326	118	250	373	646	300	1030
300	70	380	118	300	423	746	300	1130
350	96	438	193	338	503	874	454	1341
400	100	493	193	392	553	978	454	1445
450	106	546	197	432	603	1068	454	1610
500	110	620	197	485	663	1181	454	1723
600	110	714	197	590	763	1386	454	2038

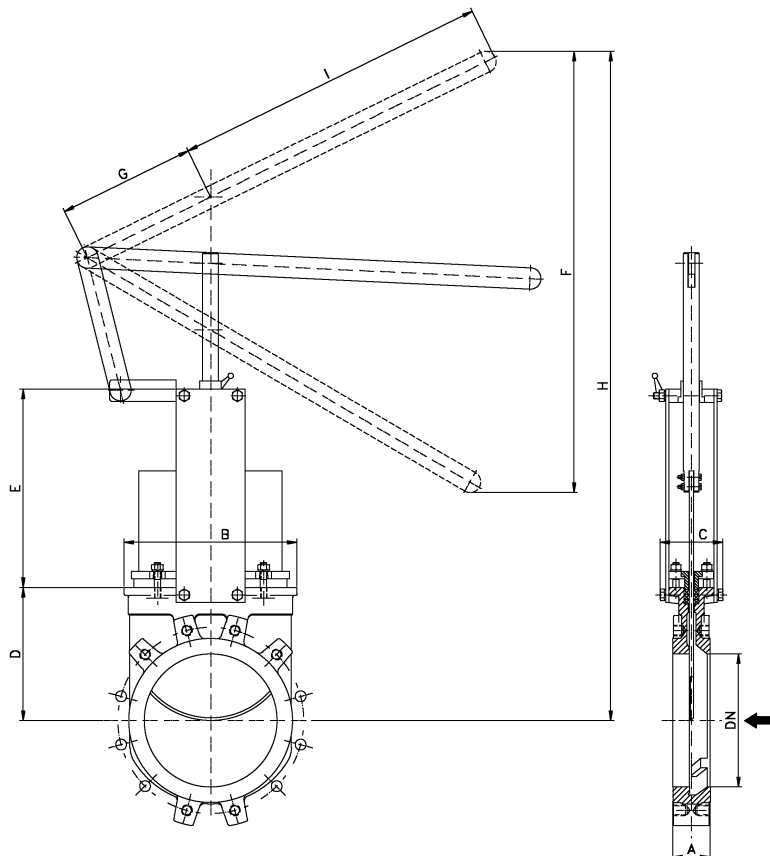
LEVER

- Recommended for quick opening and closing.

- Consists of:

- Lever
- Stem
- Yoke sleeve
- Lever lock

- Available in DN 50 to DN 300



DN	A	B	C	D	E	F	G	H	I
50	40	124	90	105	135	208	150	390	315
65	40	139	90	115	152	214	150	423	315
80	50	154	90	124	168	259	150	500	315
100	50	174	90	140	193	378	150	623	415
125	50	192	104	150	217	455	150	734	415
150	60	217	104	175	243	520	150	846	415
200	60	270	118	205	318	666	235	1008	620
250	70	326	118	250	373	830	235	1258	620
300	70	380	118	300	423	943	235	1474	620

GEAR

- Recommended for valves larger than DN 350 and working pressures greater than 3.5 bars.

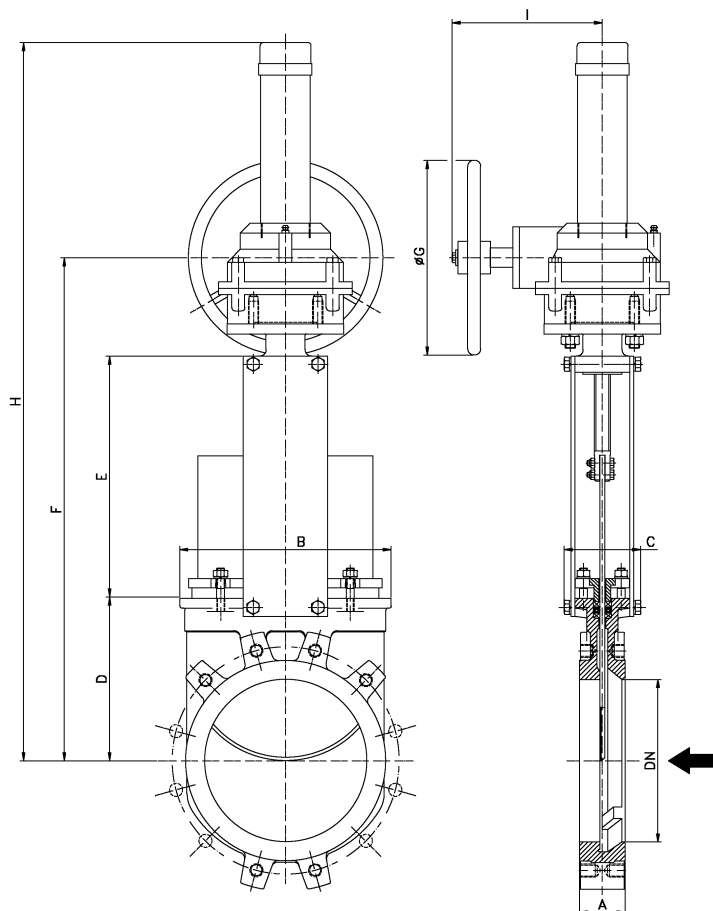
- Consists of:

- Stem
- Yoke
- Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)

- Available in DN 200 to DN1000

- Options:

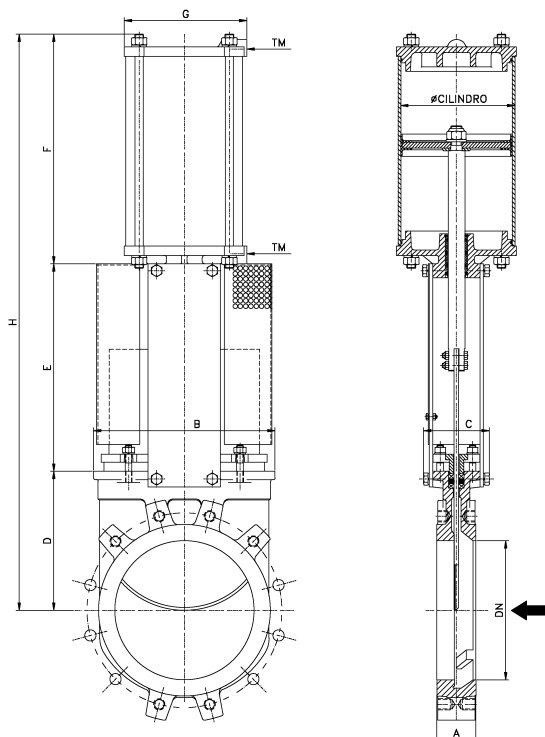
- Locking device
- Extension
- Chainwheel
- Non-rising stem



DN	A	B	C	D	E	F	ØG	H	I
200	60	270	118	205	318	675	300	1016	250
250	70	326	118	250	373	775	300	1116	250
300	70	380	118	300	423	875	300	1216	250
350	96	438	193	338	503	1005	450	1646	250
400	100	493	193	392	553	1108	450	1750	250
450	106	546	197	432	603	1200	450	1840	250
500	110	620	197	485	663	1312	450	1953	250
600	110	714	197	590	763	1516	450	2158	250
700	110	834	400	686	890	1678	450	2821	250
750	110	884	400	760	945	1807	650	2950	250
800	110	1015	320	795	989	1886	650	3029	250
900	110	1040	320	900	1118	2120	650	3263	250
1000	110	1150	320	980	1220	2302	650	3445	250

PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
 - Aluminium jacket and covers
 - Stainless (AISI 304) piston rod
 - Nitrile coated steel piston
- Available in DN 50 to DN 1000
- Supply Pressure: minimum 3.5 kg/cm² - maximum 7 kg/cm²
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
 - Hard anodised jacket and covers
 - Over / Under sized cylinder
 - Stainless jacket and covers
 - Manual override
 - Fail safe system (Page EX-14)
 - Travel stops
- Instrumentation (on request):
 - Positioners
 - Solenoid valves
 - Flow regulators
 - Air preparation units

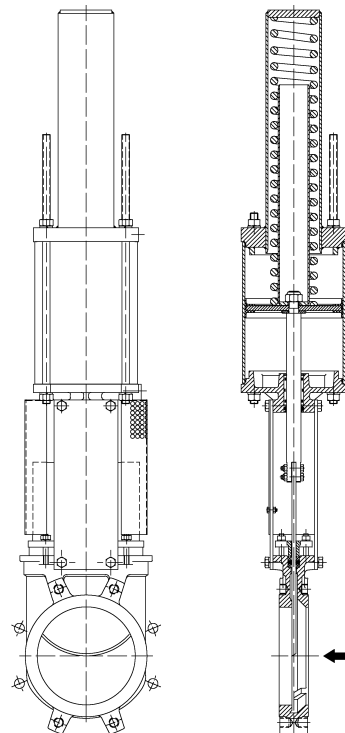


DN	A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl	Connect.
50	40	124	90	105	135	170	95	410	9	C80/62	1/4" G
65	40	139	90	115	152	186	95	453	10	C80/77	1/4" G
80	50	154	90	124	168	204	95	496	11	C80/95	1/4" G
100	50	174	90	140	193	225	115	558	14	C100/115	1/4" G
125	50	192	104	150	217	268	140	635	20	C125/143	1/4" G
150	60	217	104	175	243	292	140	710	25	C125/168	1/4" G
200	60	270	118	205	318	355	175	878	44	C160/220	1/4" G
250	70	326	118	250	373	413	220	1036	67	C200/270	3/8" G
300	70	380	118	300	423	463	220	1186	82	C200/320	3/8" G
350	96	438	193	338	503	541	277	1382	135	C250/375	3/8" G
400	100	493	193	392	553	591	277	1536	165	C250/425	3/8" G
450	106	546	197	432	603	669	382	1704	220	C300/475	1/2" G
500	110	620	197	485	663	719	382	1867	280	C300/525	1/2" G
600	110	714	197	590	763	819	382	2172	330	C300/625	1/2" G
700	110	834	400	686	890	970	444	2546	520	C350/730	3/4" G
750	110	884	400	760	945	1020	444	2725	585	C350/780	3/4" G
800	110	1015	320	795	989	1070	444	2854	650	C350/830	3/4" G
900	110	1040	320	900	1118	1185	515	3203	850	C400/930	3/4" G
1000	110	1150	320	980	1220	1285	515	3485	1060	C400/1030	3/4" G

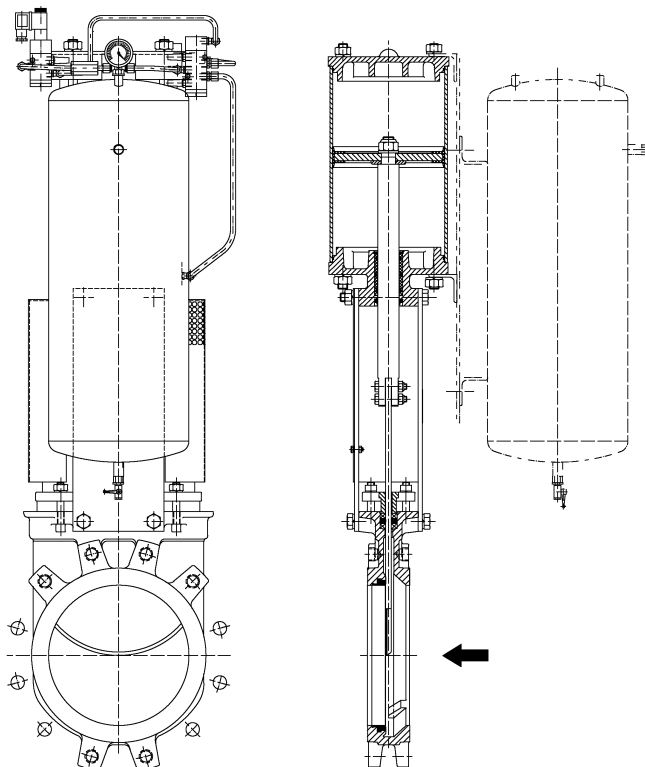
FAIL SAFE SYSTEM

SINGLE ACTING / SPRING RETURN

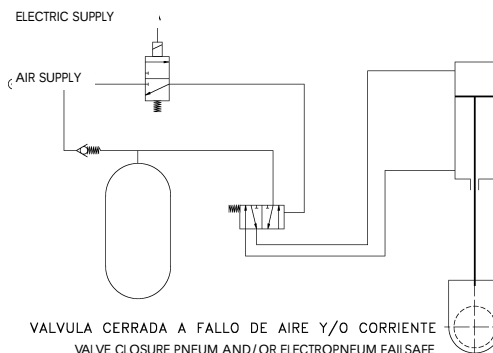
- This actuator (single acting cylinder) consists of:
 - Aluminium jacket and covers
 - SG Iron or carbon steel spring cap
 - Steel spring
 - Stainless (AISI 304) piston rod
 - Nitrile coated steel piston
- Available in DN 50 to DN 200
- Supply pressure: minimum 5 kg/cm² - maximum 7 kg/cm²
- Options:
 - Fail open
 - Fail close



SINGLE ACTING / VOLUME TANK

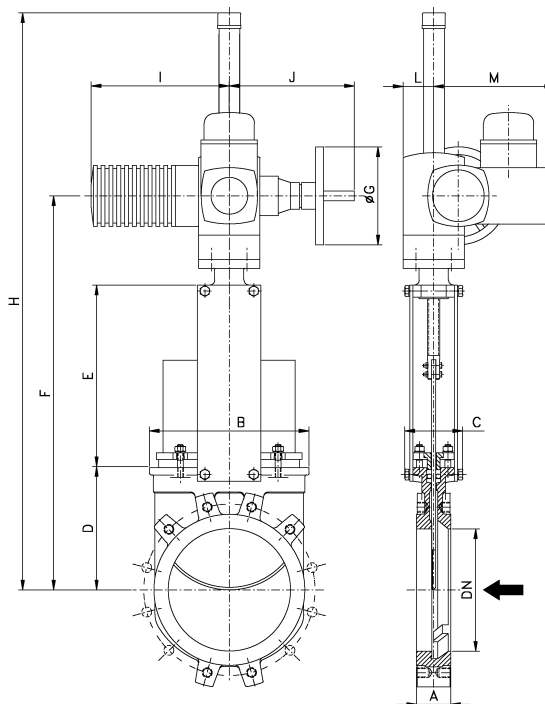


- Consists of:
 - Air-pilot actuated valve
 - Solenoid-pilot actuated valve (only for option 2)
 - Volume tank with gauge, safety valve,...
- Available for all diameters
- Options:
 - 1- Pneumatic failsafe
 - 2- Pneumatic and electropneumatic failsafe
- Option 2:



ELECTRIC ACTUATOR

- Consists of:
 - Electric motor
 - 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 / closed)
 - Torque switches
- Available in DN 50 to DN 1000
- Wide range of types and marks available to meet customer's needs.
- Option:
 - Non rising stem

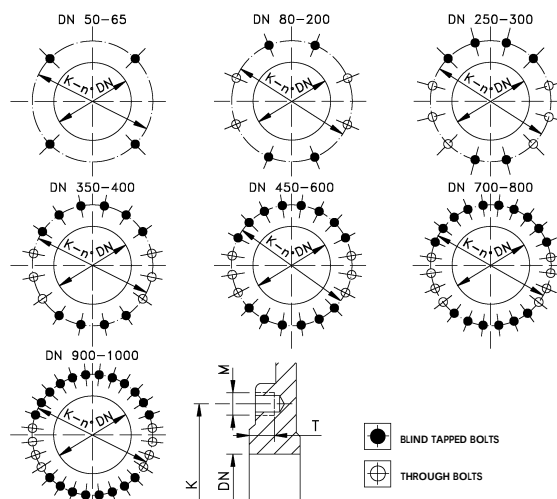


DN	A	B	C	D	E	F	ØG	H	I	J	L	M	stem Ø x pitch	Torque(Nm)
50	40	124	90	105	135	393	140	763	265	234	62	237	20 x 4	20
65	40	139	90	115	152	420	140	790	265	234	62	237	20 x 4	25
80	50	154	90	124	168	445	140	815	265	234	62	237	20 x 4	30
100	50	174	90	140	193	486	140	856	265	234	62	237	20 x 4	40
125	50	192	104	150	217	520	160	890	265	250	62	237	20 x 4	50
150	60	217	104	175	243	571	160	941	265	250	62	237	20 x 4	60
200	60	270	118	205	318	705	200	1085	282	256	65	247	25 x 5	70
250	70	326	118	250	373	805	200	1185	282	256	65	247	25 x 5	80
300	70	380	118	300	423	905	200	1285	282	256	65	247	25 x 5	90
350	96	438	193	338	503	1035	200	1715	282	256	65	247	35 x 6	105
400	100	493	193	392	553	1139	200	1819	282	256	65	247	35 x 6	120
450	106	546	197	432	603	1274	315	1964	385	325	90	285	35 x 6	160
500	110	620	197	485	663	1387	315	2077	385	325	90	285	35 x 6	180
600	110	714	197	590	763	1592	315	2282	385	325	90	285	35 x 6	210
700	110	834	400	686	890	1751	315	2905	385	325	90	285	40 x 7	230
750	110	884	400	760	945	1880	400	2970	385	332	90	285	40 x 7	260
800	110	1015	320	795	989	1959	400	3049	385	332	90	285	50 x 8	290
900	110	1040	320	900	1118	2193	400	3283	385	332	90	285	50 x 8	325
1000	110	1150	320	980	1220	2375	400	3465	385	332	90	285	50 x 8	370

FLANGE AND BOLTING DETAILS

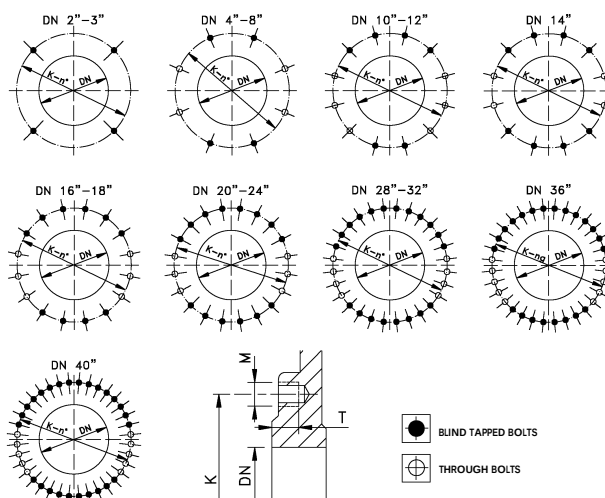
DIN PN10

DN	K	n°	M	T	 
50	125	4	M-16	10	4 - --
65	145	4	M-16	10	4 - --
80	160	8	M-16	10	4 - 4
100	180	8	M-16	10	4 - 4
125	210	8	M-16	10	4 - 4
150	240	8	M-20	14	4 - 4
200	295	8	M-20	14	4 - 4
250	350	12	M-20	18	6 - 6
300	400	12	M-20	18	6 - 6
350	460	16	M-20	22	10 - 6
400	515	16	M-24	24	10 - 6
450	565	20	M-24	24	14 - 6
500	620	20	M-24	24	14 - 6
600	725	20	M-27	24	14 - 6
700	840	24	M-27	20	16 - 8
800	950	24	M-30	20	16 - 8
900	1050	28	M-30	20	20 - 8
1000	1160	28	M-33	20	20 - 8



ANSI B16.5, class 150(*)

DN	K	n°	M	T	 
2"	4 3/4"	4	5/8" UNC	3/8"	4 - --
2 1/2"	5 1/2"	4	5/8" UNC	3/8"	4 - --
3"	6"	4	5/8" UNC	3/8"	4 - --
4"	7 1/2"	8	5/8" UNC	3/8"	4 - 4
5"	8 1/2"	8	3/4" UNC	3/8"	4 - 4
6"	9 1/2"	8	3/4" UNC	1/2"	4 - 4
8"	11 3/4"	8	3/4" UNC	1/2"	4 - 4
10"	14 1/4"	12	7/8" UNC	3/4"	6 - 6
12"	17"	12	7/8" UNC	3/4"	6 - 6
14"	18 3/4"	12	1" UNC	7/8"	8 - 4
16"	21 1/4"	16	1" UNC	1"	10 - 6
18"	22 3/4"	16	1 1/8" UNC	1"	10 - 6
20"	25"	20	1 1/8" UNC	1"	14 - 6
24"	29 1/2"	20	1 1/4" UNC	1"	14 - 6
28"	34"	28	1 1/4" UNC	3/4"	20 - 8
30"	36"	28	1 1/4" UNC	3/4"	20 - 8
32"	38 1/2"	28	1 1/2" UNC	3/4"	20 - 8
36"	42 3/4"	32	1 1/2" UNC	3/4"	22 - 10
40"	47 1/4"	36	1 1/2" UNC	3/4"	26 - 10



(*) From DN 24", acc. to MSS SP 44 (class 150)