

MODEL**BT****SERIES 22**

HEAVY DUTY KNIFE GATE VALVE

The BT(SER.22) 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 completely new design of the body and seat (patent pending) assures non-clogging shut off on suspended solids in industries such as:

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

Sizes:

DN 2"/50mm to DN 12"/300mm (larger diameters on request)

Working pressure:

DN 2"/50mm to DN 12"/300mm: 150psi / 10kg/cm²

Standard flange connection:

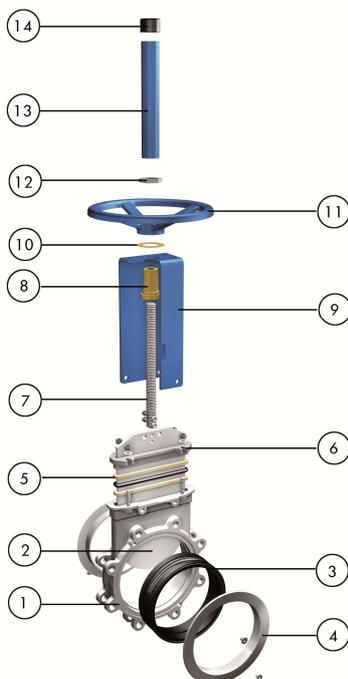
ANSI B16.5 (class 150)
Others on request

Directives:

2006/42/CE (MACHINES)
97/23/CE (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)
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- Sleeve	EPDM
4- Seat Ring	AISI 316
5- Packing	PTFE Impreg. Synth. Fibre + EPDM O-Ring
6-Gland Follower	CF8M
7- Stem	AISI 430
8- Stem nut	Brass
9- Yoke	Carbon Steel - Epoxy Coated
10- Thrust Washer	Brass
11- Handwheel	Ductile iron
12- Nut	Zinc Plated Carbon Steel
13- Stem protector	Carbon Steel - Epoxy Coated
14- Cap	Plastic



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DESIGN FEATURES

BODY:

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

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.

Note: These bi-directional knife gate valves are not suitable for dead-end service without a slight modification or a counter flange, please consult factory.

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)

Patent pending. Totally new design. The resilient seat is an elastomer sleeve, available in different materials. This sleeve is slotted in the top half to allow the gate travel, and guarantees full tightness with low friction. The sleeve is held by means of two seat rings which support it and also guide the gate.

PACKING:

Standard braided PTFE impregnated synthetic fibre with EPDM o-ring for better shut off, with an easy access packing gland ensuring a tight seal. The 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 actuators only, a stem protector is provided for additional protection against dust and damage while the valve 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 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

OTHER MATERIALS:

On request, the body and the gate can be supplied in other materials.



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ACTUATOR TYPES

MANUAL:

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

AUTOMATION:

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)

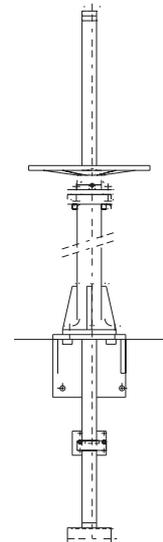
- Available only for valve DN 2"/50mm to 8"/200mm
- Options:
 - Fail open
 - Fail closed

SINGLE ACTING (AIR TANK)

- Available for all valve sizes
- Standard for valve sizes DN>8"/200mm
- Options:
 - Fail open
 - Fail close

ACCESSORIES

Bonnet
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(SER.10) catalog.

We recommend consultation with our technical department.

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TEMPERATURE CHART

SEAT / SLEEVE

Material	Max.Temp.(°F)	(°C)	Applications
EPDM (E)	248	120	Acids and non mineral oils
Nitrile (N)	248	120	Resistance to petroleum products
FKM-FPM (V)	392	200	Chemical service/High temp.

More details and other materials upon request.
All of them are reinforced with a metal core.

PACKING

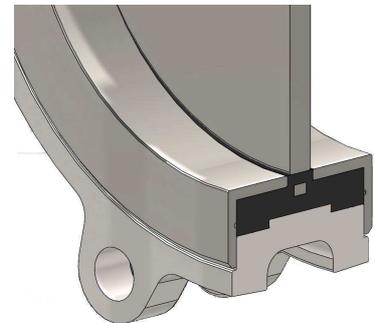
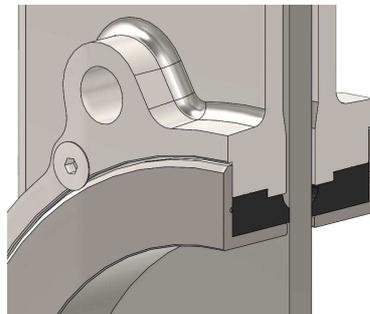
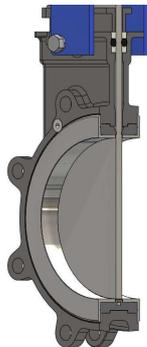
Material	Max.Temp.(°F)	(°C)	pH
Dry cotton (AS)	122	50	6-8
PTFE impregn. synth. fibre (ST)	464	240	2-13
Braided PTFE (TH)	560	260	0-14
Graphited (GR)	1112	600	0-14
Ceramic fibre (FC)	2192	1200	---

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

SEAT

RESILIENT SEAT:

The new seat (patent pending) is a slotted sleeve on its top half and includes a metal core in the bottom half which provides a great resistance to demanding working conditions and pressures. The seat is held by means of two stainless steel rings. This design provides watertightness in both directions while avoiding any buildup of solids that could prevent the valve from closing. The seat can be supplied in different resilient material qualities.



ATEX



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

- Hand operated BT (SER.22) 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.
- Electrically, pneumatically and hydraulically operated valves must be subjected to a conformity assesment of their own and also of the whole of unit valve-actuator to get EC Type Approval to Directive 94/9.

MODEL

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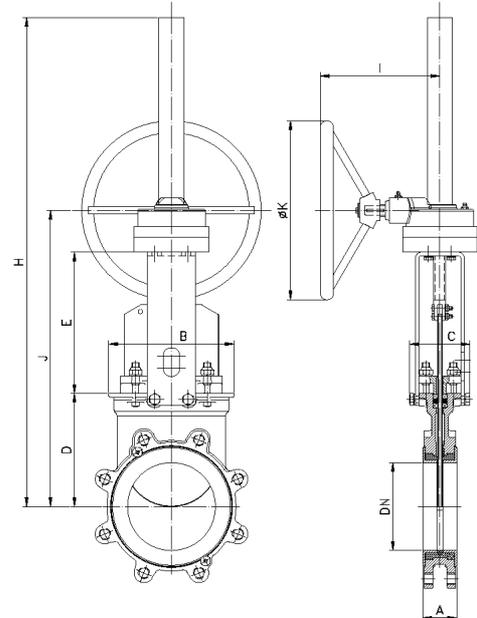
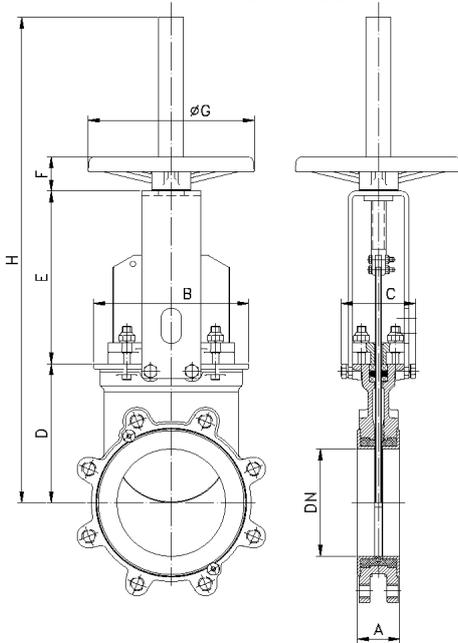
SERIES 22



HAND OPERATED (Rising stem)

HANDWHEEL

GEAR



• Standard handwheel actuator. Available from DN 2"/50mm to DN 10"/250mm

- Consists of:
 - Handwheel: Ductile iron
 - Stem
 - Stem nut
 - Yoke

- Options (on request):
 - Chainwheel
 - Locking Device
 - Extensions

• Gear is optional above DN 6"/150mm

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

- Options:
 - Chainwheel
 - Locking Device
 - Extensions

DN(" / mm)	A	B	C	D	E	F	J	ØG	ØK	H	I
2"/50	1,88/47,8	4,92/125	4,13/105	4,13/105	5,07/129	1,85/47	-	8,86/225	-	16,92/430	-
3"/80	2/50,8	6,06/154	4,13/105	4,68/119	6,37/162	1,85/47	-	8,86/225	-	18,70/475	-
4"/100	2/50,8	6,88/175	4,13/105	5,59/142	7,36/187	1,85/47	-	8,86/225	-	20,66/525	-
5"/125	2,25/57,2	7,08/180	4,13/105	6,49/165	8,30/211	1,85/47	-	8,86/225	-	24,40/620	-
6"/150	2,25/57,2	8,46/215	4,13/105	7,48/190	9,33/237	1,85/47	-	8,86/225	-	26,37/670	-
8"/200	2,74/69,8	10,23/260	4,80/122	9,44/240	12,16/309	2,63/67	24,37/619	12,20/310	12/300	40,51/1029	7,87/200
10"/250	2,74/69,8	13,33/338	4,80/122	11,41/290	13,54/344	2,63/67	27,67/703	12,20/310	12/300	43,81/1113	7,87/200
12"/300	3/76,2	14,40/366	4,80/122	14,17/360	15,43/392	2,63/67	32,36/822	16,14/410	12/300	48,62/1235	7,87/200

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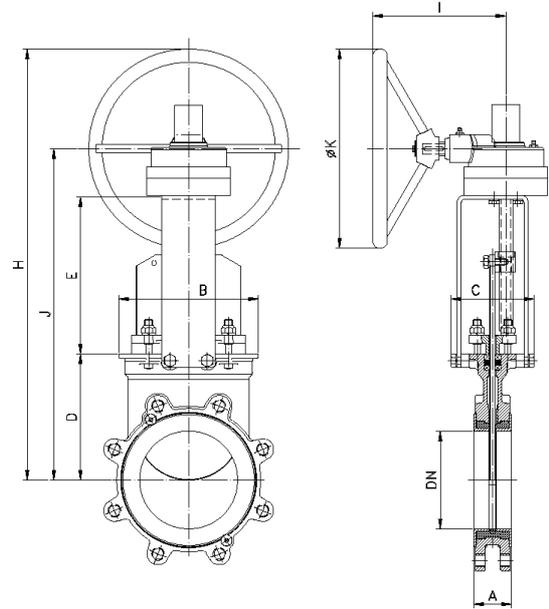
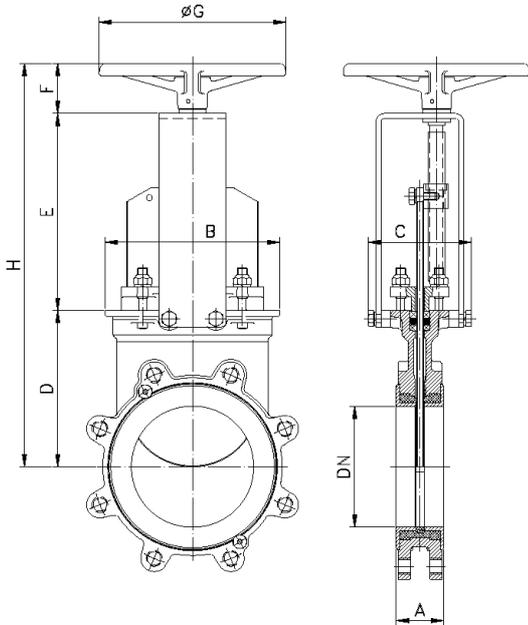
SERIES 22



HAND OPERATED (Non-rising stem)

HANDWHEEL

GEAR



• Standard handwheel actuator. Available from DN 2"/50mm to DN 10"/250mm

- Consists of:
 - Handwheel: Ductile iron
 - Stem
 - Yoke

- Options (on request):
 - Chainwheel
 - Locking Device
 - Extensions

• Gear is optimal above DN 6"/150mm

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

- Options:
 - Chainwheel
 - Locking Device
 - Extensions

DN("/mm)	A	B	C	D	E	F	J	ØG	ØK	H	M	I
2"/50	1,88/47,8	4,92/125	4,88/124	4,13/105	5,14/132	2,38/61	-	8,86/225	-	11,62/298	-	-
3"/80	2/50,8	6,06/154	4,88/124	4,68/119	6,43/165	2,38/61	-	8,86/225	-	13,45/345	-	-
4"/100	2/50,8	6,88/175	4,88/124	5,59/142	7,41/190	2,38/61	-	8,86/225	-	15,47/393	-	-
5"/125	2,25/57,2	7,08/180	4,88/124	6,49/165	8,35/214	2,38/61	-	8,86/225	-	17,32/440	-	-
6"/150	2,25/57,2	8,46/215	4,88/124	7,48/190	9,36/240	2,38/61	-	8,86/225	-	19,33/491	-	-
8"/200	2,74/69,8	10,23/260	5,59/142	9,44/240	12,28/312	2,38/61	24,48/622	12,20/310	12/300	24,13/613	30,51/775	7,87/200
10"/250	2,74/69,8	13,33/338	5,59/142	11,41/290	13,66/347	2,38/61	27,83/707	12,20/310	12/300	27,48/698	37,67/957	7,87/200
12"/300	3/76,2	14,40/366	5,59/142	14,17/360	15,55/395	2,77/71	32,48/825	16,14/410	12/300	32,52/826	38,38/975	7,87/200

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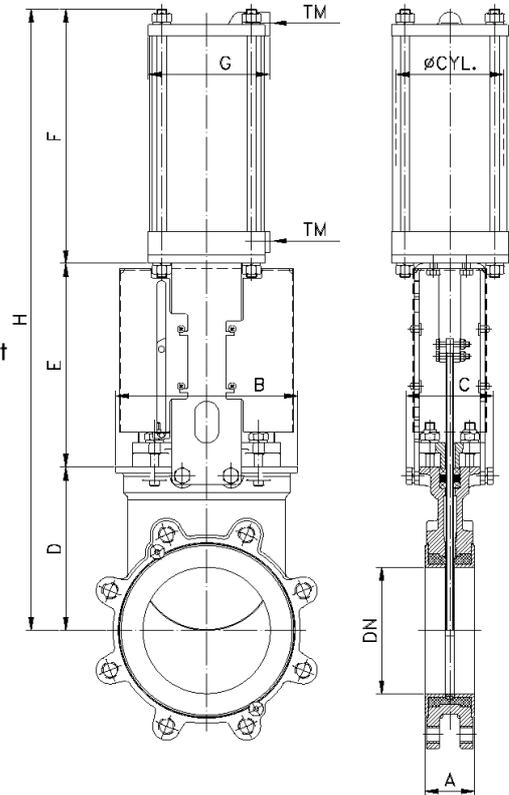
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PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
 - DN ≤ 10"/250mm: Aluminum barrels
 - DN ≥ 12"/300mm: Composite barrels
 - Aluminum end covers
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available from DN 2"/50mm to DN 12"/300mm
- Air supply pressure: Actuator is sized considering 85 psi / (6 kg/cm²)
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support
- Options (on request):
 - Hard anodized barrel and covers
 - Stainless Steel barrel and covers
 - Over / Undersized cylinder
 - 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	TM
2"/50	1,88/47,8	4,92/125	4,13/105	4,13/105	5,07/129	7,00/178	4,52/115	16,22/412	C4"-2.44"/(100-62)	¼" G
3"/80	2/50,8	6,06/154	4,13/105	4,68/119	6,37/162	8,31/211	4,52/115	19,37/492	C4"-3.74"/(100-95)	¼" G
4"/100	2/50,8	6,88/175	4,13/105	5,59/142	7,36/187	9,09/231	4,52/115	22,04/560	C4"-4.52"/(100-115)	¼" G
5"/125	2,25/57,2	7,08/180	4,13/105	6,49/165	8,30/211	10,67/271	5,51/140	25,47/647	C5"-5.63"/(125-143)	¼" G
6"/150	2,25/57,2	8,46/215	4,13/105	7,48/190	9,33/237	11,65/296	5,51/140	28,46/723	C5"-6.61"/(125-168)	¼" G
8"/200	2,74/69,8	10,23/260	4,80/122	9,44/240	12,16/309	14,09/358	6,88/175	35,70/907	C6.30"-8.66"/(160-220)	¼" G
10"/250	2,74/69,8	13,33/338	4,80/122	11,41/290	13,58/345	16,93/430	8,66/220	41,92/1065	C8"-10.63"/(200-270)	3/8" G
12"/300	3/76,2	14,40/366	4,80/122	14,17/360	15,47/393	18,89/480	8,66/220	48,54/1233	C8"-12.60"/(200-320)	3/8" G

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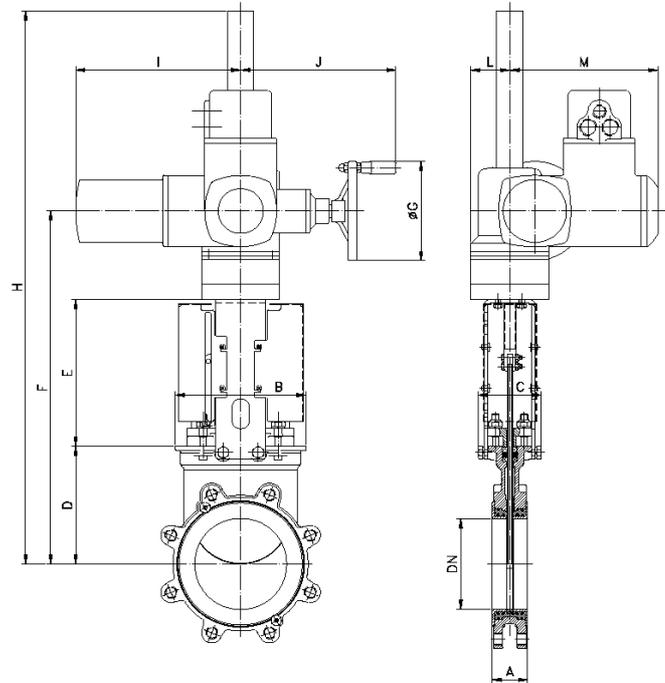
ELECTRIC ACTUATOR (Rising stem)

- 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"/50mm to DN 12"/300mm

- Wide range of types and makes available to meet customer's needs.



DN ("/mm)	A	B	C	D	E	F	ØG	H	I	J	L	M	StemØ x pitch	Torque (Nm)
2"/50	1,88/47,8	4,92/125	4,13/105	4,13/105	5,07/129	13,88/352	6,30/160	17,87/454	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	<25
3"/80	2/50,8	6,06/154	4,13/105	4,68/119	6,37/162	15,70/399	6,30/160	19,72/501	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	<25
4"/100	2/50,8	6,88/175	4,13/105	5,59/142	7,36/187	17,48/444	6,30/160	21,61/549	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	35
5"/125	2,25/57,2	7,08/180	4,13/105	6,49/165	8,30/211	18,85/479	6,30/160	24,44/621	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	40
6"/150	2,25/57,2	8,46/215	4,13/105	7,48/190	9,33/237	20,47/520	6,30/160	46,14/1172	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	45
8"/200	2,74/69,8	10,23/260	4,80/122	9,44/240	12,16/309	24,88/632	6,30/160	48,58/1234	10,43/265	9,80/249	2,44/62	9,33/237	0,94 x 0,2/24 x 5	55
10"/250	2,74/69,8	13,33/338	4,80/122	11,41/290	13,58/345	28,81/732	6,30/160	54,33/1380	10,43/265	9,80/249	2,44/62	9,33/237	0,94 x 0,2/24 x 5	70
12"/300	3/76,2	14,40/366	4,80/122	14,17/360	15,47/393	32,75/832	7,87/200	59,44/1510	11,10/282	10,08/256	2,55/65	9,72/247	0,94 x 0,2/24 x 5	110

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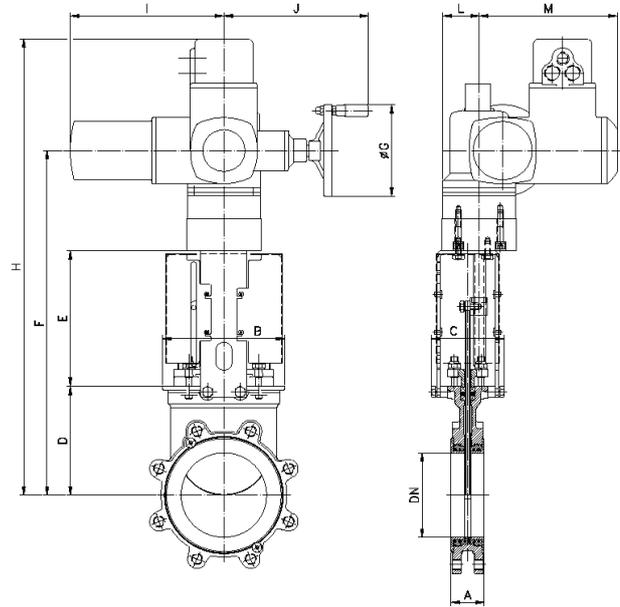
ELECTRIC ACTUATOR (Non-rising stem)

- Consists of:
 - Electric motor
 - Non-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"/50mm to DN 12"/300mm

- Wide range of types and makes available to meet customer's needs



DN(""/mm)	A	B	C	D	E	F	ØG	H	I	J	L	M	StemØ x pitch	Torque (Nm)
2"/50	1,88/47,8	4,92/125	4,13/105	4,13/105	5,07/129	7,00/178	6,30/160	21,33/547	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	<25
3"/80	2/50,8	6,06/154	4,13/105	4,68/119	6,37/162	8,31/211	6,30/160	23,17/594	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	<25
4"/100	2/50,8	6,88/175	4,13/105	5,59/142	7,36/187	9,21/234	6,30/160	25,27/642	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	35
5"/125	2,25/57,2	7,08/180	4,13/105	6,49/165	8,30/211	11,26/286	6,30/160	27,16/690	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	40
6"/150	2,25/57,2	8,46/215	4,13/105	7,48/190	9,33/237	12,63/321	6,30/160	29,13/740	10,43/265	9,80/249	2,44/62	9,33/237	0,79 x 0,16/20 x 4	45
8"/200	2,74/69,8	10,23/260	4,80/122	9,44/240	12,16/309	15,47/393	6,30/160	34,44/875	10,43/265	9,80/249	2,44/62	9,33/237	0,94 x 0,2/24 x 5	55
10"/250	2,74/69,8	13,33/338	4,80/122	11,41/290	13,58/345	18,42/468	6,30/160	38,58/980	10,43/265	9,80/249	2,44/62	9,33/237	0,94 x 0,2/24 x 5	70
12"/300	3/76,2	14,40/366	4,80/122	14,17/360	15,47/393	21,18/538	7,87/200	42,52/1080	11,10/282	10,08/256	2,55/65	9,72/247	0,94 x 0,2/24 x 5	110

MODEL

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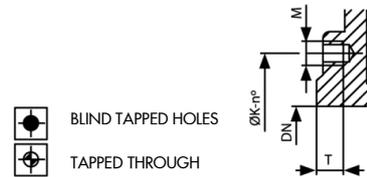
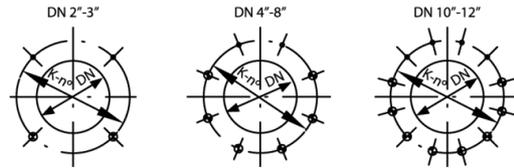
SERIES 22



FLANGE AND BOLTING DETAILS

ANSI B16.5, class 150

DN	K	N	M	T	 
2"	5"	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	3/8"	2 - 6
10"	14 1/4"	12	7/8" UNC	18/32"	4 - 8
12"	17"	12	7/8" UNC	18/32"	4 - 8



EN 1092-2 PN10

DN	K	N	M	T	 
50	125	4	M-16	11	2 - 2
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

