

HOPPER SHAPE KNIFE GATE VALVE

The **SERIES 14** knife gate is a uni-directional wafer valve designed for industrial bulk handling service applications (powdered and granular products). The special internal body design allows easy flow of the media which prevents any build up. It also allows the valve to close properly and reduces premature wear of the seat. Ideal for installations on silo discharge in industries such as:

- Power Plants
 - Food and Beverage
 - etc.
- Chemical Plants
 - Mining

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

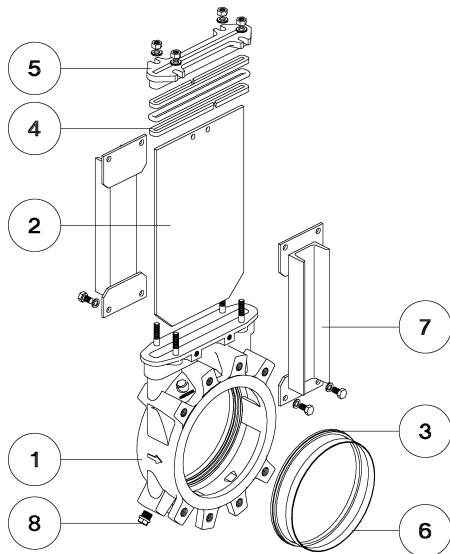
Working Pressure:	OPPOSITE SEAT SIDE PRESSURE	
Sizes 2" to 10" : 150 PSI	43 PSI	
Sizes 12" to 16" : 85 PSI	28 PSI	
Size 18" : 70 PSI	21 PSI	
Sizes 20" to 24" : 60 PSI	14 PSI	

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

Note: Other flange connections are available on request.



All valves are tested prior to shipping in accordance with the manufacturers specification 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 (EPDM Std.)	
4- Packing	AH	NT
5- Gland Follower	Aluminum (2" to 12") Cast Iron (14" to 24")	CF8M
6- Seat Retainer Ring	AISI 304	AISI 316
7- Support Plates	Carbon Steel - Epoxy coated	
8- Cap	Carbon Steel	

DESIGN FEATURES

BODY:

- Wafer style cast monoblock design with reinforced ribs in larger diameters for extra body strength.
- Internally cast gate wedges and guides allow for tighter shut off.
- Cast body internal gate support prevents seat from deflecting off the gate when valve is installed in the reverse position of the flow direction.
- Wide internal body design avoids any build up of solids that could prevent valve from closing.
- Full port design for greater flow capacity and minimal pressure drop.
- Standard body flush ports allows cleaning of solids trapped within the body cavities that can obstruct the flow or sealing in the closed position if necessary.
- Purge ports can be injected with air, steam, liquids, etc. depending on the media.

GATE:

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

SEAT: (resilient)

- Stainless EPDM also available in different materials such as Viton, PTFE, etc.

PACKING CHAMBER:

- Braided long life packing with EPDM O-ring for a tighter packing chamber 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:

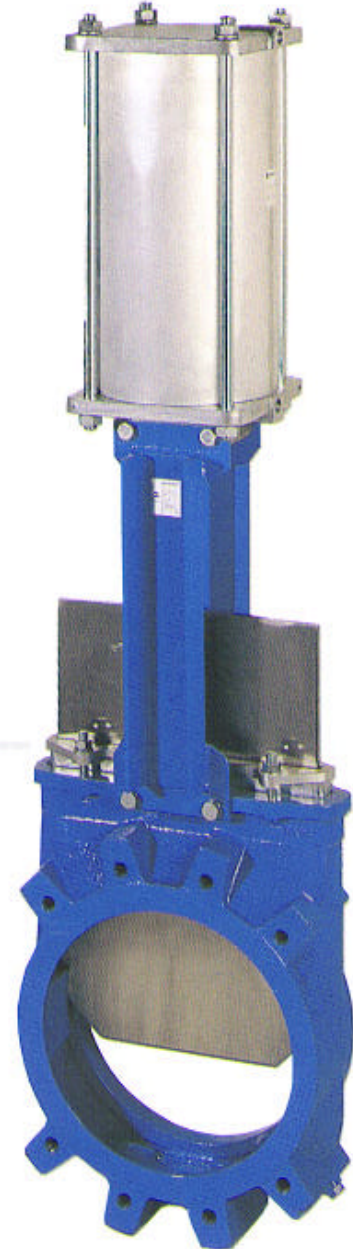
- EPOXY coated steel (stainless steel available on request).
- Compact design makes it extremely robust even in the most severe conditions.

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:

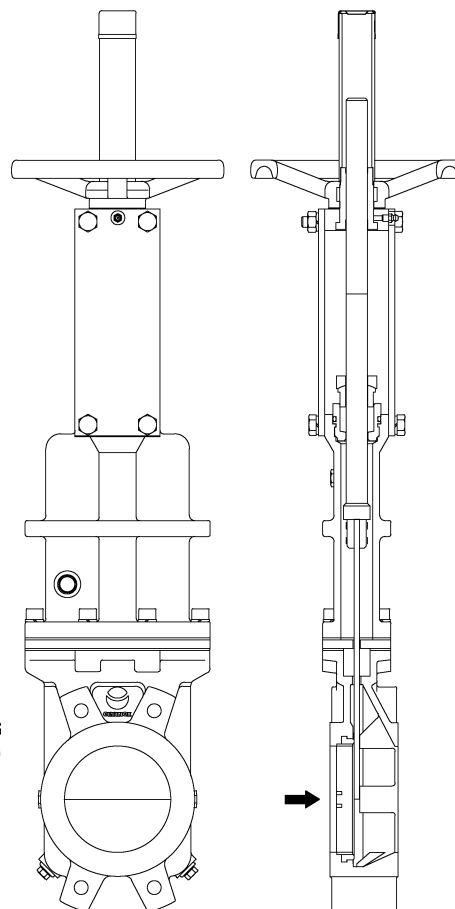
- Reduces risk of leakage to atmosphere where contamination of the environment is a concern.¹⁴⁻³
- Leak proof stem seal can be easily re-packed in line.

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 the valve components 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 close

SINGLE ACTING / VOLUME TANK

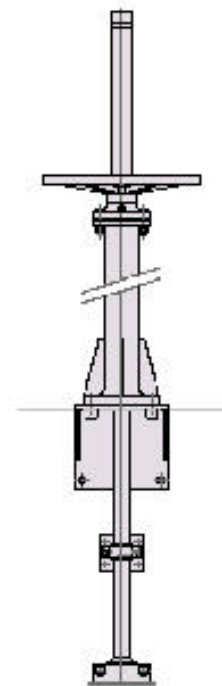
Available in all sizes.

Supply Pressure: Minimum 50 PSI
Maximum 100 PSI

Options: Pneumatic Fail safe
Electropneumatic 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.	Tallowed cotton (AH)	120	6 - 8
EPDM (E)	250	Acids and non mineral oils.	Dry cotton (AS)	120	6 - 8
Nitrile (N)	250	Petroleum products.	PTFE impregn. Natural fiber (NT)	250	4 - 12
Viton (V)	390	General chemical service. High temperature.	PTFE impregn. Synth. fiber (ST)	465	2 - 13
Silicone (S)	482	Food service / High temperature	Braided PTFE (TH)	500	0 - 14
PTFE (T)	482	Corrosion resistance.	Graphite (AG)	575	4 - 12
			Ceramic fiber (FC)	2200	--

More details and other materials on request.

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

SEAT TYPES



TYPE "A" (metal/metal) standard

- High temperature
- High density media application
- 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.
- Replaceable seat retainer ring.



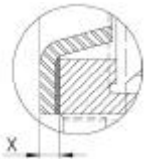
TYPE "B" SEAT (metal/metal)

- 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

- Deflects the media away from any exposed internal 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:

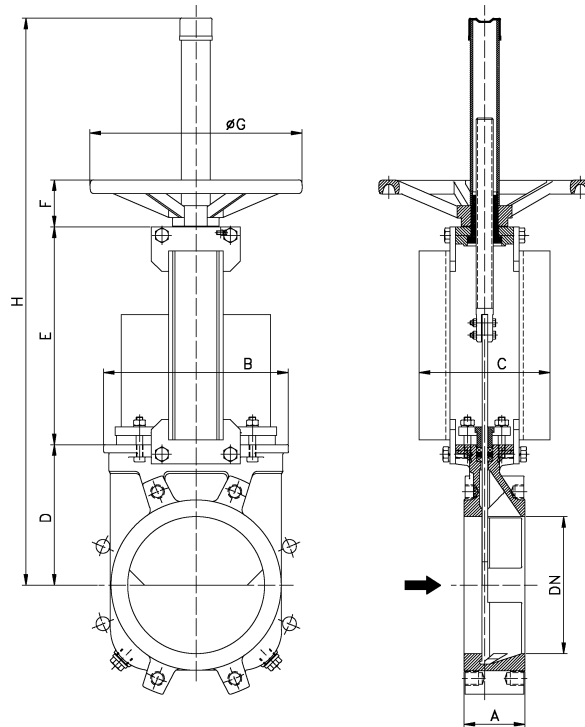
Sizes 2" to 10" = .375"

Sizes 12" to 24" = .50"



HANDWHEEL (rising stem)

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

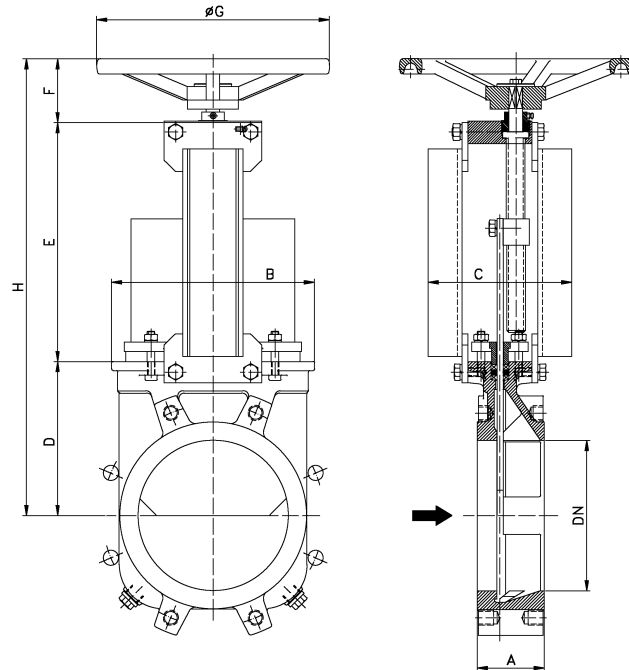


SIZE	A	B	C	D	E	F	OG	H	Weight(lbs)
2"	1.8	4.9	3.5	4.1	5.3	1.9	7.9	16.9	15
2.5"	1.8	5.5	3.5	4.5	6.0	1.9	7.9	17.9	18
3"	2.5	6.1	3.5	4.9	6.6	1.9	7.9	18.9	20
4"	2.5	6.9	3.5	5.5	7.6	1.9	7.9	20.6	24
5"	2.8	7.6	4.1	5.9	8.5	2.0	9.8	23.8	33
6"	3.0	8.5	4.1	6.7	9.6	2.0	9.8	25.7	40
8"	3.5	10.6	7.4	8.1	12.5	2.5	11.8	32.7	66
10"	4.5	12.8	7.4	9.4	14.7	2.5	11.8	40.2	97
12"	4.5	15.0	7.4	11.0	16.7	2.5	11.8	43.7	128
14"	5.0	17.2	11.4	12.6	19.8	2.7	16.1	52.1	211
16"	5.5	19.4	11.4	13.8	21.8	2.7	16.1	54.9	273
18"	6.0	21.5	11.4	16.5	23.7	2.7	21.7	62.9	370
20"	6.0	24.4	11.4	17.7	26.1	2.7	21.7	66.5	422
24"	7.0	28.1	11.4	20.9	30.0	2.7	21.7	77.9	539



HANDWHEEL (non-rising stem)

- Recommended for installation where space is limited.
- Options:
 - Locking Device
 - Stem Extension
 - Square Nut Drive
- Valve sizes available in 2" to 24", larger on request.
- For other options and dimensions, please consult our technical department.

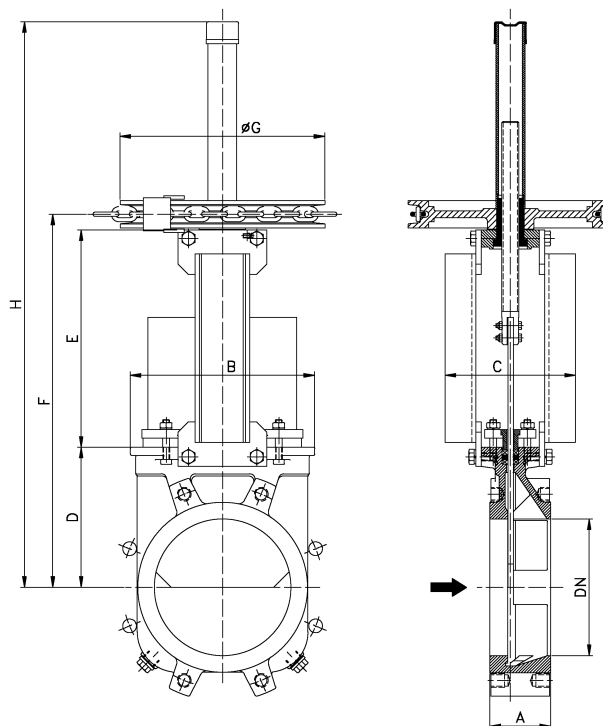


SIZE	A	B	C	D	E	F	OG	H
2"	1.8	4.9	4.1	4.1	5.3	2.4	7.9	11.9
2.5"	1.8	5.5	4.1	4.5	6.0	2.4	7.9	13.0
3"	2.5	6.1	4.1	4.9	6.6	2.4	7.9	13.9
4"	2.5	6.9	4.1	5.5	7.6	2.4	7.9	15.6
5"	2.8	7.6	4.1	5.9	8.5	2.6	9.8	17.0
6"	3.0	8.5	4.1	6.7	9.6	2.6	9.8	18.9
8"	3.5	10.6	7.4	8.1	12.5	3.1	11.8	23.7
10"	4.5	12.8	7.4	9.4	14.7	3.1	11.8	27.3
12"	4.5	15.0	7.4	11.0	16.7	3.1	11.8	30.8
14"	5.0	17.2	11.4	12.6	19.8	3.2	16.1	35.6
16"	5.5	19.4	11.4	13.8	21.8	3.2	16.1	38.4
18"	6.0	21.5	11.4	16.5	23.7	3.2	21.7	43.5
20"	6.0	24.4	11.4	17.7	26.1	3.2	21.7	47.0
24"	7.0	28.1	11.4	20.9	30.0	3.2	21.7	54.1



CHAINWHEEL

- Recommended for elevated installations.
- Options:
 - Locking Device
 - Stem Extension
 - Non-rising Stem
- Valve sizes available in 2" to 24", larger on request.
- For other options and dimensions, please consult our technical department.

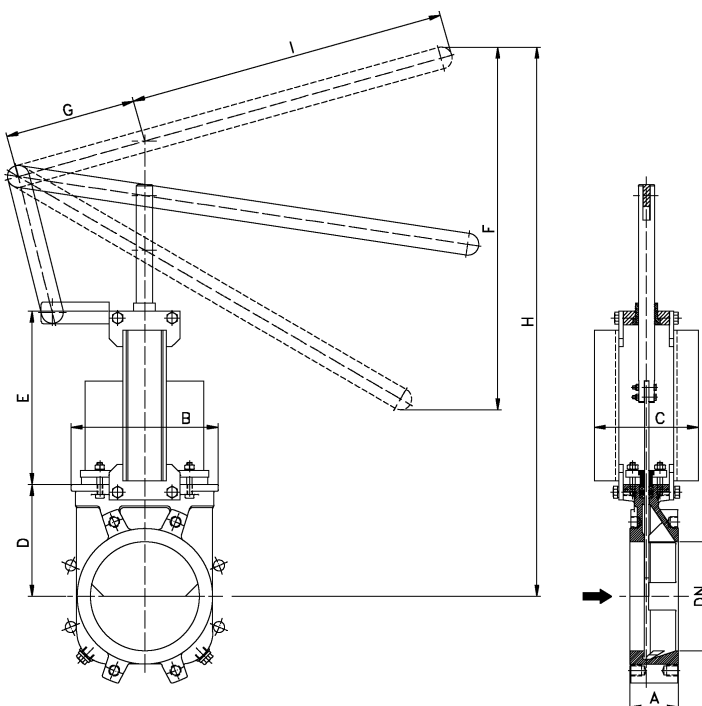


SIZE	A	B	C	D	E	F	OG	H
2"	1.8	4.9	3.5	4.1	5.3	10.2	8.9	16.9
2.5"	1.8	5.5	3.5	4.5	6.0	11.2	8.9	18.0
3"	2.5	6.1	3.5	4.9	6.6	12.2	8.9	18.9
4"	2.5	6.9	3.5	5.5	7.6	13.8	8.9	20.6
5"	2.8	7.6	4.1	5.9	8.5	15.2	8.9	23.8
6"	3.0	8.5	4.1	6.7	9.6	17.0	8.9	25.6
8"	3.5	10.6	7.4	8.1	12.5	21.5	11.8	32.7
10"	4.5	12.8	7.4	9.4	14.7	25.0	11.8	40.2
12"	4.5	15.0	7.4	11.0	16.7	28.6	11.8	43.7
14"	5.0	17.2	11.4	12.6	19.8	33.7	17.9	52.2
16"	5.5	19.4	11.4	13.8	21.8	36.5	17.9	54.9
18"	6.0	21.5	11.4	16.5	23.7	41.6	17.9	63.0
20"	6.0	24.4	11.4	17.7	26.1	45.1	17.9	66.5
24"	7.0	28.1	11.4	20.9	30.0	52.2	17.9	77.9



LEVER

- Recommended for quick opening and closing.
- Options:
 - Locking Device
- Valve sizes available in 2" to 12".

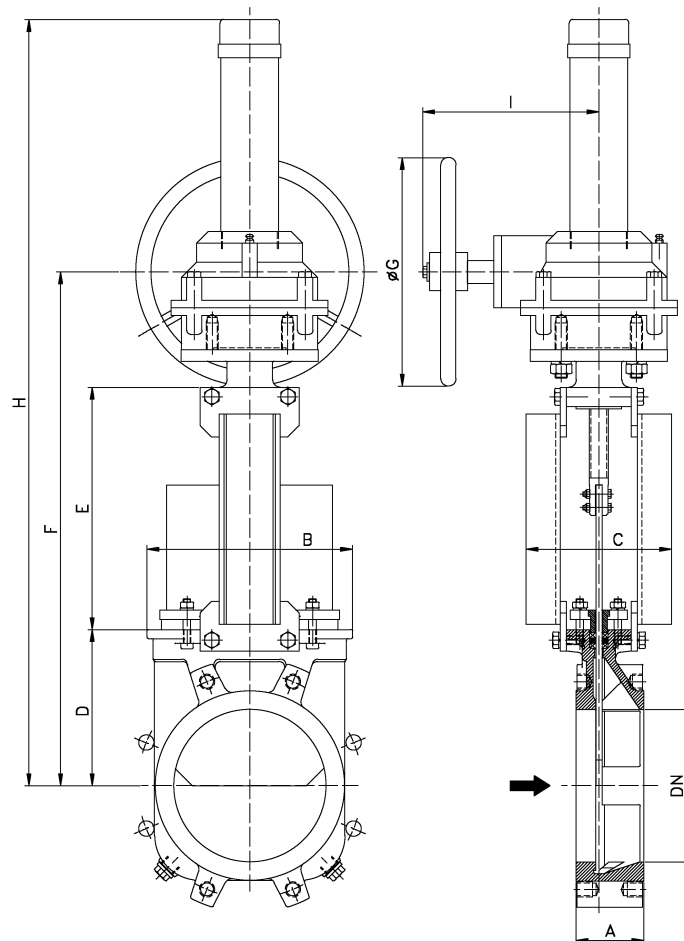


SIZE	A	B	C	D	E	F	G	H	I
2"	1.8	4.9	3.5	4.1	5.3	8.2	5.9	15.4	12.4
2.5"	1.8	5.5	3.5	4.5	6.0	8.4	5.9	16.7	12.4
3"	2.5	6.1	3.5	4.9	6.6	10.2	5.9	19.7	12.4
4"	2.5	6.9	3.5	5.5	7.6	14.9	5.9	24.5	16.3
5"	2.8	7.6	4.1	5.9	8.5	17.9	5.9	28.9	16.3
6"	3.0	8.5	4.1	6.7	9.6	20.5	5.9	33.1	16.3
8"	3.5	10.6	7.4	8.1	12.5	26.2	9.3	39.7	24.4
10"	4.5	12.8	7.4	9.4	14.7	32.7	9.3	49.1	24.4
12"	4.5	15.0	7.4	11.0	16.7	37.1	9.3	57.2	24.4



GEAR

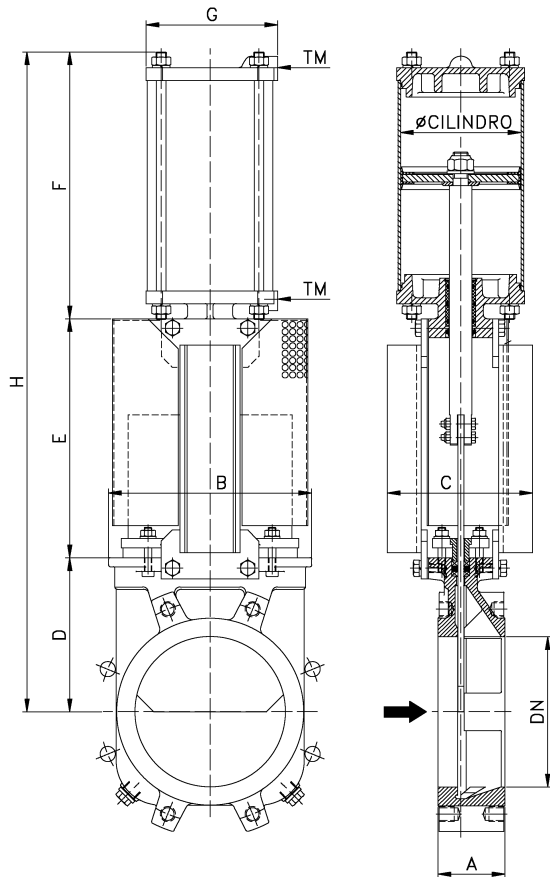
- Recommended for valves larger than 14" and working pressures greater than 50 PSI.
- Options:
 - Locking Device
 - Stem Extension
 - Chainwheel
 - Non-rising Stem
- Valve sizes available in 8" to 24".
- For other options and dimensions, please consult our technical department.



SIZE	A	B	C	D	E	F	G	H	I
8"	3.5	10.6	7.4	8.1	12.5	26.6	11.8	40.0	9.8
10"	4.5	12.8	7.4	9.4	14.7	30.1	11.8	43.5	9.8
12"	4.5	15.0	7.4	11.0	16.7	33.7	11.8	47.1	9.8
14"	5.0	17.2	11.4	12.6	19.8	38.8	17.7	64.1	9.8
16"	5.5	19.4	11.4	13.8	21.8	41.7	17.7	66.9	9.8
18"	6.0	21.5	11.4	16.5	23.7	46.7	17.7	72.0	9.8
20"	6.0	24.4	11.4	17.7	26.1	50.2	17.7	75.5	9.8
24"	7.0	28.1	11.4	20.9	30.0	57.3	17.7	82.6	9.8

PNEUMATIC CYLINDER

- Standard pneumatic actuator:
 - Carbon steel construction
 - Stainless steel tie rods and nuts
 - Nitrile Seats
 - 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 instrumentation and options, please consult our technical department.

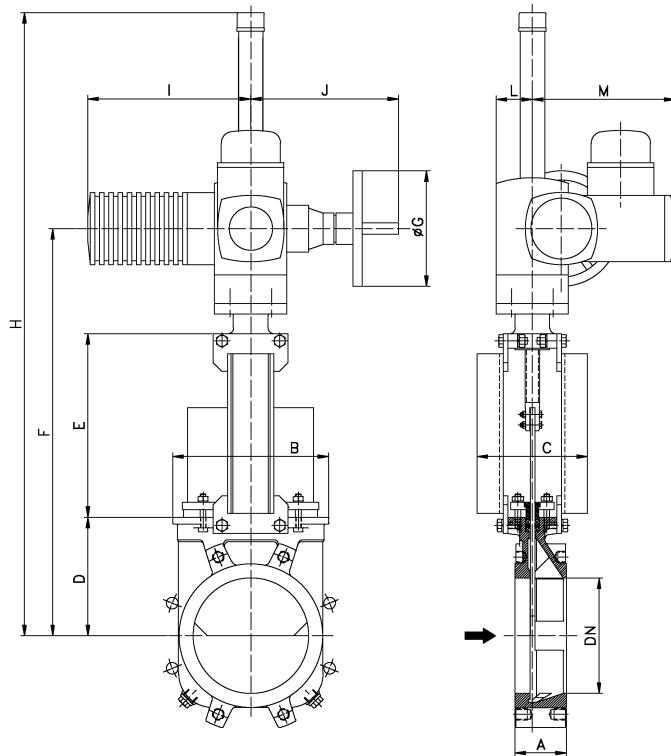


SIZE	A	B	C	D	E	F	G	H	Weight (lbs)	Standard Cyl.	Connect.
2"	1.8	4.9	3.5	4.1	5.3	6.7	3.7	16.1	20	4" Bore	1/4" NPT
2.5"	1.8	5.5	3.5	4.5	6.0	7.3	3.7	17.8	22	4" Bore	1/4" NPT
3"	2.5	6.1	3.5	4.9	6.6	8.0	3.7	19.5	24	4" Bore	1/4" NPT
4"	2.5	6.9	3.5	5.5	7.6	8.9	4.5	22.0	31	4" Bore	1/4" NPT
5"	2.8	7.6	4.1	5.9	8.5	10.6	5.5	25.0	44	5" Bore	1/4" NPT
6"	3.0	8.5	4.1	6.7	9.6	11.5	5.5	27.8	55	5" Bore	1/4" NPT
8"	3.5	10.6	7.4	8.1	12.5	14.0	6.9	34.6	97	6" Bore	1/4" NPT
10"	4.5	12.8	7.4	9.4	14.7	16.3	8.7	40.4	147	7" Bore	3/8" NPT
12"	4.5	15.0	7.4	11.0	16.7	18.2	8.7	45.9	180	8" Bore	3/8" NPT
14"	5.0	17.2	11.4	12.6	19.8	21.3	10.9	53.7	297	10" Bore	3/8" NPT
16"	5.5	19.4	11.4	13.8	21.8	23.3	10.9	58.8	363	10" Bore	3/8" NPT
18"	6.0	21.5	11.4	16.5	23.7	26.3	15.0	66.6	484	10" Bore	1/2" NPT
20"	6.0	24.4	11.4	17.7	26.1	28.3	15.0	72.1	616	12" Bore	1/2" NPT
24"	7.0	28.1	11.4	20.9	30.0	32.2	15.0	83.1	726	12" Bore	1/2" NPT



ELECTRIC ACTUATOR

- Standard Electric Actuator:
 - Electric Motor (manufacture standard)
 - Rising Stem or Non-rising Stem
 - Motor Support Yoke Flange (Acc. To ISO 5210 / DIN 3338)
- Standard Electric Motor:
 - Manual Override
 - Limit Switches (open / close)
 - Torque Switches
- Valve sizes available in 2" to 24".
- NOTE: Please consult our technical department for specifications and options on electric motors.



SIZE	A	B	C	D	E	F	H	OG	I	J	L	M	Stem \times pitch	Torque(ft/lbs)
2"	1.8	4.9	3.5	4.1	5.3	15.5	22.2	5.5	10.4	9.2	2.4	9.3	20 x 4	20
2.5"	1.8	5.5	3.5	4.5	6.0	16.5	23.2	5.5	10.4	9.2	2.4	9.3	20 x 4	25
3"	2.5	6.1	3.5	4.9	6.6	17.5	24.2	5.5	10.4	9.2	2.4	9.3	20 x 4	30
4"	2.5	6.9	3.5	5.5	7.6	19.1	33.4	5.5	10.4	9.2	2.4	9.3	20 x 4	40
5"	2.8	7.6	4.1	5.9	8.5	20.5	34.8	6.3	10.4	9.8	2.4	9.3	20 x 4	50
6"	3.0	8.5	4.1	6.7	9.6	22.3	36.8	6.3	10.4	9.8	2.4	9.3	20 x 4	60
8"	3.5	10.6	4.6	8.1	12.5	27.8	42.7	7.9	11.1	10.1	2.6	9.7	25 x 5	70
10"	4.5	12.8	4.6	9.4	14.7	31.3	46.3	7.9	11.1	10.1	2.6	9.7	25 x 5	80
12"	4.5	15.0	4.6	11.0	16.7	34.8	49.8	7.9	11.1	10.1	2.6	9.7	25 x 5	90
14"	5.0	17.2	7.6	12.6	19.8	40.0	66.8	7.9	11.1	10.1	2.6	9.7	35 x 6	105
16"	5.5	19.4	7.6	13.8	21.8	42.9	69.6	7.9	11.1	10.1	2.6	9.7	35 x 6	120
18"	6.0	21.5	7.8	16.5	23.7	49.7	76.8	12.4	15.2	12.8	3.5	11.2	35 x 6	160
20"	6.0	24.4	7.8	17.7	26.1	53.2	80.4	12.4	15.2	12.8	3.5	11.2	35 x 6	180
24"	7.0	28.1	7.8	20.9	30.0	60.3	87.5	12.4	15.2	12.8	3.5	11.2	35 x 6	210



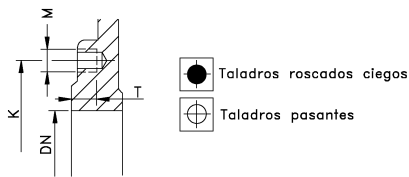
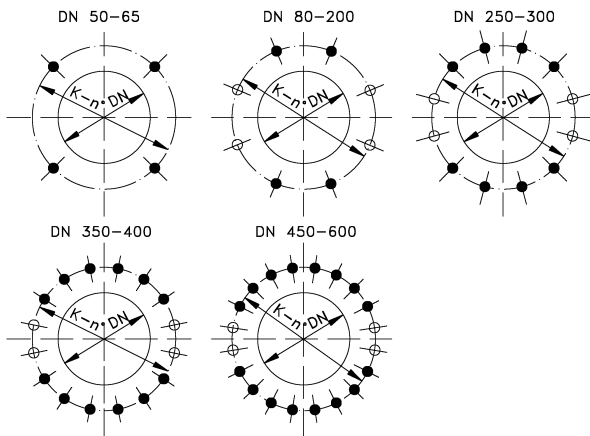
FLANGE AND BOLTING DETAILS

DIN PN10

DN	K	n°	M	T	
50	125	4	M-16	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	8 - 4
300	400	12	M-20	18	8 - 4
350	460	16	M-20	22	12 - 4
400	515	16	M-24	24	12 - 4
450	565	20	M-24	24	16 - 4
500	620	20	M-24	24	16 - 4
600	725	20	M-27	24	16 - 4

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"	8 - 4
12"	17"	12	7/8" UNC	3/4"	8 - 4
14"	18 3/4"	12	1" UNC	7/8"	8 - 4
16"	21 1/4"	16	1" UNC	1"	12 - 4
18"	22 3/4"	16	1 1/8" UNC	1"	12 - 4
20"	25"	20	1 1/8" UNC	1"	16 - 4
24"	29 1/2"	20	1 1/4" UNC	1"	16 - 4



ORBINOX reserves the right to change specifications without notice. OBX 1/01 4TH EDITION



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