

**MODEL****EX**

## WAFER STYLE KNIFE GATE VALVE

The EX model knife gate is an 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 1200 (larger diameters on request)

**Working pressure:**

DN 50 to DN 250	10 bar
DN 300 to DN 400	6 bar
DN 450	5 bar
DN 500 to DN 600	4 bar
DN 700 to DN 1200	2 bar

**Standard flange connection:**

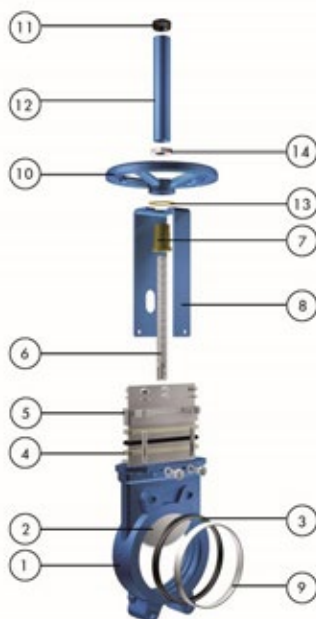
DIN PN 10 and ANSI B16.5 (class 150)  
Other flange connections available on request

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

**Directives:** 2006/42/EC (MACHINES)  
2014/68/EU (PED) Fluid: Group 1(b), 2 (Cat. I. mod. A)  
2014/34/EU (ATEX)

Certification EN 14432: 2014 tanks for the transport of dangerous goods (under request)

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	GJL250(GG25)	CF8M
2- Gate	AISI 304	AISI 316
3- Seat	Metal/Metal or EPDM	
4- Packing	PTFE Impreg. Synth. Fibre (With a EPDM O-Ring)	
5- Gland Follower	Alum. (DN 50 to DN 300) or Ductile Iron (DN 350 a DN 1200)	CF8M
6- Stem	Stainless Steel	
7- Stem nut	Brass	
8- Yoke	Epoxy-coated Carbon Steel	
9- "A" ring	AISI 304	AISI 316
10- Handwheel	GJS400 (GGG40)	
11.- Cap	Plastic	
12- Stem Protector	Epoxy-coated Carbon Steel	
13- Friction Washer	Brass	
14- Nut	Zinc Plated Carbon Steel	

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## DESIGN FEATURES

### **BODY:**

Wafer style cast monoblock with raised faces and reinforcing ribs in large diameters for extra body strength. Internal cast-in gate wedges and guides allow for a tighter shut-off between gate and seat. Full port design for greater flow capacity and minimal pressure drop. The internal body design avoids any accumulation of solids that would prevent the valve from closing.

### **GATE:**

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. The thickness and/or material of the gate can be changed on request for higher pressure requirements.

### **SEAT: (resilient)**

Unique design that mechanically locks the seal 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 layers 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. 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 for installation purposes 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 applied by means of an electrostatic process, 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 being caught accidentally while the gate is moving.



## OTHER OPTIONS

### Bonnet (Fig.1):

Assures tight sealing to atmosphere.  
Reduces packing maintenance.

### V-port:

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

### Flush ports (Fig.2):

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

### Other materials of construction:

Ductile iron, carbon steel, stainless steels (AISI 317, ...), special alloys (254SMO, Hastelloys, ...), etc.

### Fabricated valves:

ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures).

### EXT (full lug design):

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.

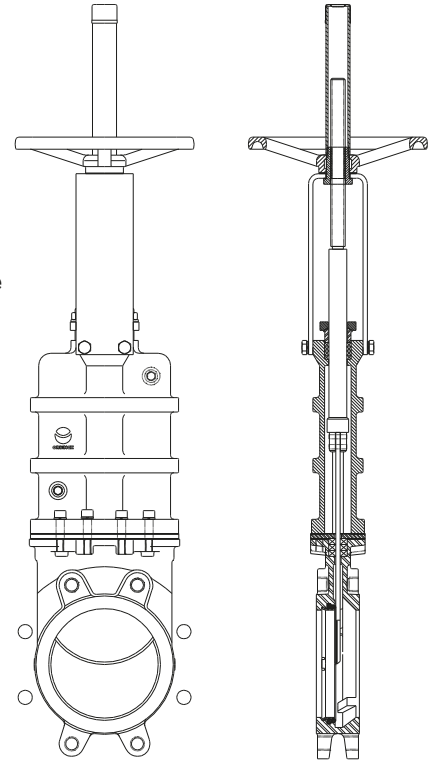


Fig.1

## SURFACE TREATMENTS

Valve components can be protected or coated for a longer life expectancy, depending on the application of the valves and the valve service conditions. At ORBINOX we can offer alternative treatments and coatings for the different valve components to improve their properties against abrasion (Stellite, Polyurethane...), against corrosion (Halar, Rilsan, Galvanised...) and against adherence (Polishing, PTFE...).

## ATEX



Please contact our ORBINOX representative for information and availability.

Some considerations:

- Hand operated EX valves have been subject to an ignition risk assessment according to the DIN EN 13463: 1-5 standard 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 subject to a conformity assessment of their own and also of the whole unit valve actuator to get EC Type Approval to Directive 2014/34.

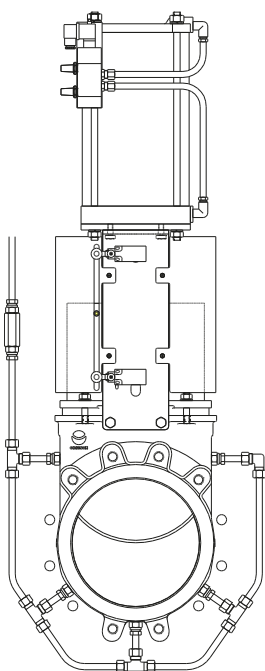


Fig.2

We recommend to contact our technical department.

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## ACTUATOR TYPES

**MANUAL:**

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

**AUTOMATIC:**

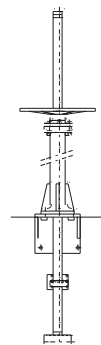
- Electric (rising & non-rising stem)
- Pneumatic (single & double-acting)
- Hydraulic

All actuators supplied by ORBINOX are interchangeable

**ACCESSORIES:**

- Mechanical Stops
- Actuator manual override
- Positioners
- Proximity Switches
- Stem Extensions

- Locking device
- Solenoid valves
- Limit Switches
- Floor stands



Wide range of valve extensions available

Please contact our Technical Department



**Standard Handwheel (Rising Stem)**



**Handwheel (Non Rising Stem)**



**Pneumatic Cylinder**



**Electric**



**Lever**

## TEMPERATURE CHART

### SEAT / SEALS

Material	Max.T (°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	Chemical service/High temp.
Silicone (S)	250	Food service/High temp.
PTFE (T)	250	Corrosion resistance

More details and other materials under request

### PACKING

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

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

## SEAT TYPES



### METAL/METAL

For applications with:

- High temperature
- High density media application
- In those cases when full tightness is not required



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

For applications with:

- High temperature
- High density media application
- In those cases when full tightness is not required
- Replaceable design without disassembling the valve



### DEFLECTION CONE "C"

- Deflects the media away from any valve internal exposed parts (gate, seat, .)
- Material: AISI 316, CA15, Ni-Hard, etc.
- Face-to-face dimension increases:  
DN 50 to DN 250 X = 9mm  
DN 300 to DN 600 X = 12mm  
Larger diameters on request



### RESILIENT TYPE "A"

- Standard resilient seat.
- Temperature limitations according to the selected seat material. Review the above chart or contact our Technical Department for more information.
- Seat with replaceable retainer ring



### TYPE "B" SEAT (resilient)

- Temperature limitations according to the selected seat material. Review the above chart or contact our Technical Department for more information.
- Replaceable and reinforced seat ring available in different materials such as: stainless steel, CA1 5, Ni Hard,...

**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**

- A pipe of the required length is added to the valve stem.
- Stem and yoke assembly remain in the original position.
- A floor stand is normally used at the top of the extension for actuator installation purposes.
- 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.

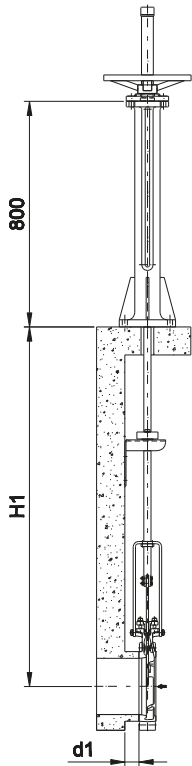


Fig.1

**Notes:**

- a- Any type of actuator can be mounted on the floor stand such as Handwheel, Gear, Electric, etc.
- b- A wall bracket (Fig. A) is recommended at every 1.5m. This prevents any deviation or buckling of the extension rod.
- c- Standard construction of the floor stand is fabricated carbon steel. Other materials are available on request. (Fig. 1)
- d- A position indicator (optional) can be installed for easy visibility of the percentage of opening of the valve.
- e- Availability of supports for actuator floor stands (Fig. 2) upon request.

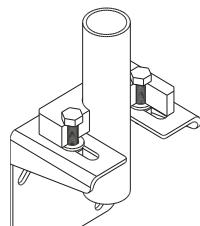


Fig. A

**STANDARD PARTS LIST**

Parts:	Material:
Spindle	Stainless Steel
Stem	Stainless Steel
Wall bracket	Carbon Steel- Epoxy coated
Slider	Nylon
Floor stand	Cast Iron- Epoxy coated

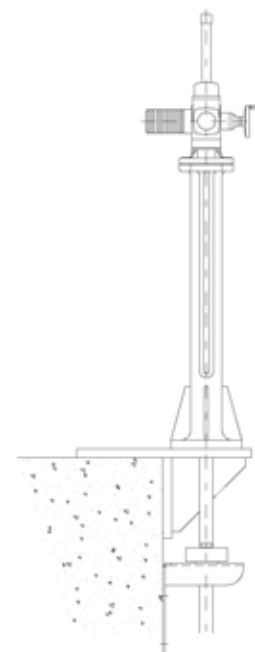
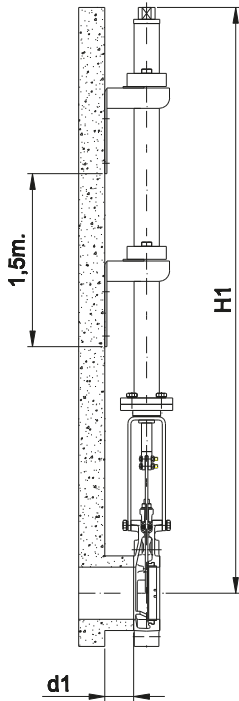


Fig.2

**2- Tube**

- Stem and yoke assembly remains in its original position.
- Handwheel is replaced by a tube, which rotates at the time of 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.

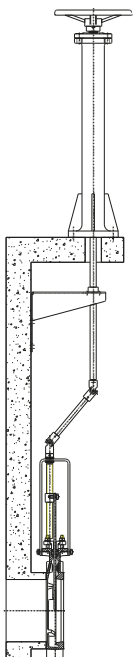


**Notes:**

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

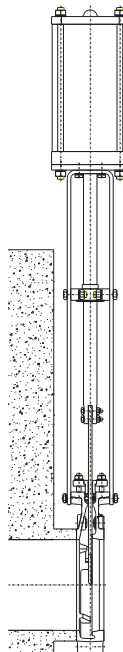
**3- Universal joint**

- Universal joints are used in those cases where the alignment of the extension between valve and actuator is not feasible.
- Please contact our technical department for more information.



**4 - Extended support plates**

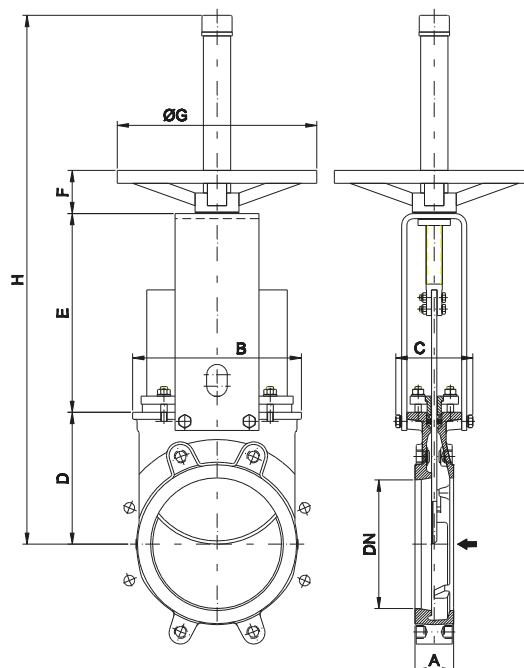
- Ideal where long extensions are not required.
- Guide bearing is installed at the mid point to prevent any deflection of the rod.



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## HANDWHEEL (rising stem)

- Standard manual actuator
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Stem
  - Stem nut
  - Stem protector
- Available from DN 50 to DN 1000
- Options:
  - Locking Device
  - Extensions



DN	A	B	C	D	E	F	ØG	H	Weight (kg.)
50	40	119	100	105	129	47	225	420	7
65	40	134	100	115	146	47	225	450	8
80	50	149	100	124	162	47	225	475	9
100	50	169	100	140	187	47	225	520	11
125	50	180	100	150	211	47	225	600	15
150	60	210	100	175	237	47	225	652	18
200	60	262	119	205	309	67	310	822	30
250	70	318	122	250	364	67	310	1022	44
300	70	372	122	300	414	67	310	1122	58
350	96	431	197	338	486	66	410	1323	96
400	100	486	197	392	536	66	410	1427	124
450	106	540	201	432	588	66	550	1594	168
500	110	602	201	485	648	66	550	1707	192
600	110	708	201	590	748	66	550	2022	245
700	110	834	380	686	890	74	800	2778	405
750	110	884	380	760	945	74	800	2900	455
800	110	1015	320	791	989	74	800	2980	512
900	110	1040	320	895	1118	74	800	3215	680
1000	110	1146	320	975	1220	74	800	3400	865



**HANDWHEEL (non-rising stem)**

- Recommended for installation where space is limited.

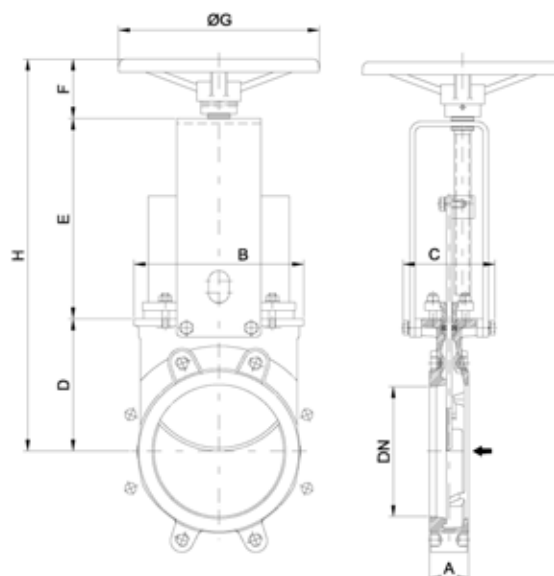
- Consists of:

- Handwheel
  - DN 50-300: Aluminium
  - DN ≥ 350: GJS400 (GGG40)
- Stem
- Yoke bushing
- Stem nut fixed to the gate

- Available from DN 50 to DN 1000

- Options:

- Locking Device
- Extension
- Square Nut Drive

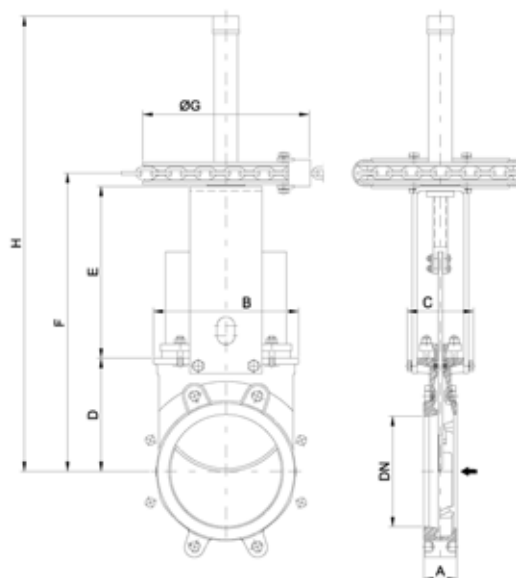


DN	A	B	C	D	E	F	ØG	H
50	40	119	125	105	144	63	225	312
65	40	134	125	115	161	63	225	339
80	50	149	125	124	177	63	225	364
100	50	169	125	140	202	63	225	405
125	50	180	125	150	226	63	225	439
150	60	210	125	175	252	63	225	490
200	60	262	142	205	317	73	310	595
250	70	318	142	250	372	73	310	695
300	70	372	142	300	422	73	310	795
350	96	431	197	338	509	98	410	945
400	100	486	197	392	559	98	410	1049
450	106	540	201	432	611	98	550	1141
500	110	602	201	485	671	98	550	1254
600	110	708	201	590	771	98	550	1459
700	110	834	380	686	900	151	800	1737
750	110	884	380	760	945	151	800	1856
800	110	1015	320	791	997	151	800	1939
900	110	1040	320	895	1128	151	800	2174
1000	110	1150	320	975	1255	151	800	2381

**MODEL****EX**

## CHAINWHEEL

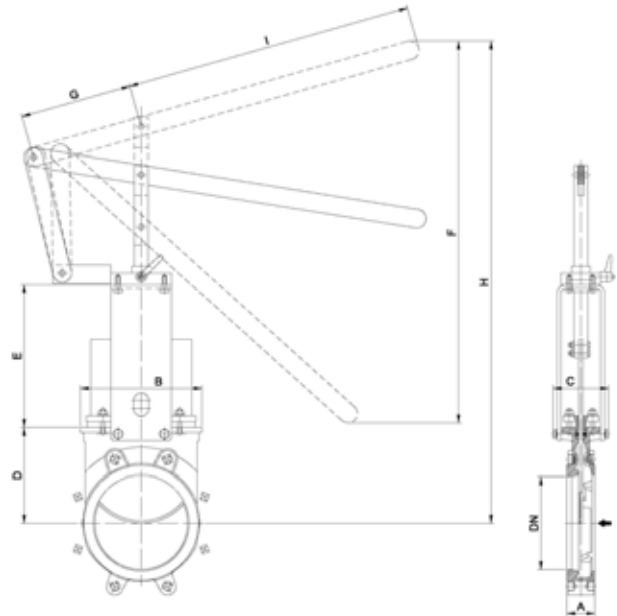
- Recommended for elevated installations.
  
- Consists of:
  - Chainwheel: Epoxy coated Cast Iron
  - Stem
  - Stem nut
  - Stem protector
  
- Available from DN 50 to DN 600
  
- Options:
  - Locking Device
  - Extension
  - Rising Stem and Non-rising Stem



DN	A	B	C	D	E	F	ØG	H
50	40	119	100	105	129	253	225	420
65	40	134	100	115	146	280	225	450
80	50	149	100	124	162	305	225	475
100	50	169	100	140	187	347	225	520
125	50	180	100	150	211	380	225	600
150	60	210	100	175	237	431	225	652
200	60	262	119	205	309	538	300	822
250	70	318	122	250	364	638	300	1022
300	70	372	122	300	414	738	300	1122
350	96	431	197	338	486	856	454	1323
400	100	486	197	392	536	960	454	1427
450	106	540	201	432	588	1052	454	1594
500	110	602	201	485	648	1165	454	1707
600	110	708	201	590	748	1370	454	2022

**LEVER**

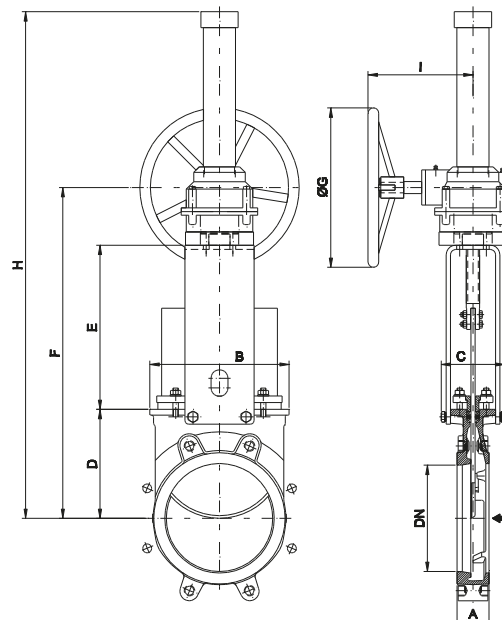
- Recommended for quick opening and closing.
- Consists of:
  - Lever
  - Stem
  - Yoke sleeve
  - Lever lock
- Available from DN 50 to DN 300



DN	A	B	C	D	E	F	G	H	I
50	40	119	100	105	129	256	150	408	315
65	40	134	100	115	146	259	150	435	315
80	50	149	100	124	162	307	150	509	315
100	50	169	100	140	187	439	150	637	415
125	50	180	100	150	211	529	150	755	415
150	60	210	100	175	237	620	150	895	415
200	60	262	119	205	309	822	235	1038	620
250	70	318	122	250	364	995	235	1307	620
300	70	372	122	300	414	1166	235	1578	620

**GEAR**

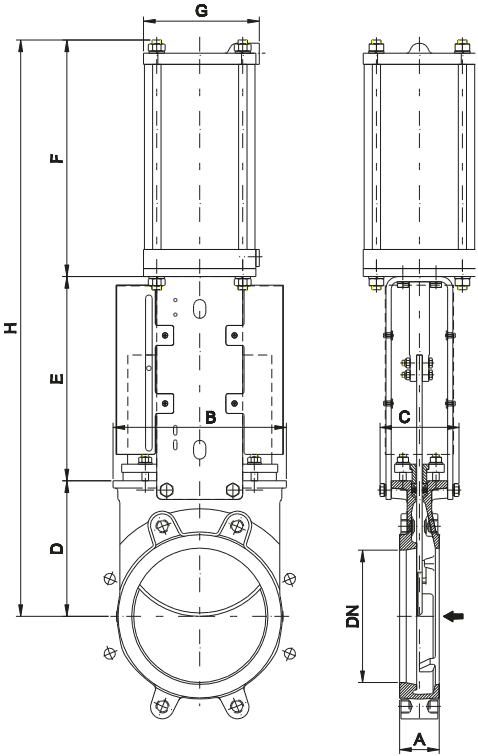
- Recommended for valves larger than DN 350 and working pressures greater than 3.5 bar
- Consists of:
  - Stem
  - Stem protector
  - Bevel Gear Actuator with Handwheel
- Available from DN 200 to DN1200
- Options:
  - Locking device
  - Extension
  - Chainwheel
  - Rising stem and non-rising stem
- Standard reduction ratio of 4:1



DN	A	B	C	D	E	F	ØG	H	I
200	60	262	119	205	309	584	300	994	200
250	70	318	122	250	364	684	300	1094	200
300	70	372	122	300	414	784	300	1194	200
350	96	431	197	338	472	857	450	1657	262
400	100	486	197	392	522	961	450	1761	262
450	106	540	201	432	574	1053	450	1853	262
500	110	602	201	485	634	1166	450	1966	262
600	110	708	201	590	734	1371	450	2171	262
700	110	834	380	686	890	1623	450	2423	262
750	110	884	380	760	945	1755	450	2555	262
800	110	1015	320	791	993	1886	650	2926	260
900	110	1040	320	895	1123	2120	650	3160	288
1000	110	1146	320	975	1220	2302	650	3342	288
1200	150	1390	450	1037	1522	2695	850	3935	365

**PNEUMATIC CYLINDER**

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - $\varnothing \leq 300$ : Aluminum barrels
  - $\varnothing \geq 350$ : Composite barrels
  - Aluminum end covers
  - Stainless steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50 to DN 1000
- Supply Pressure: min. 3.5 bar - max. 10 bar. Actuator designed with 6 bar air supply.
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
  - Hard anodized barrel and covers
  - Stainless steel barrel and covers
  - Over/Undersized cylinder
  - Manual override
  - Fail safe system (Page EX-14)
  - Limit switches
- 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	119	100	105	129	178	115	412	9	C100/62	1/4" G
65	40	134	100	115	146	193	115	454	10	C100/77	1/4" G
80	50	149	100	124	162	211	115	497	11	C100/95	1/4" G
100	50	169	100	140	187	231	115	558	14	C100/115	1/4" G
125	50	180	100	150	211	271	140	632	20	C125/143	1/4" G
150	60	210	100	175	237	296	140	708	25	C125/168	1/4" G
200	60	262	119	205	309	358	175	872	44	C160/220	1/4" G
250	70	318	122	250	364	428	220	1042	67	C200/270	3/8" G
300	70	372	122	300	414	478	220	1192	82	C200/320	3/8" G
350	96	431	197	338	500	549	277	1387	135	C250/375	3/8" G
400	100	486	197	392	550	599	277	1541	165	C250/425	3/8" G
450	106	540	270	432	598	680	382	1710	220	C300/475	1/2" G
500	110	602	270	485	658	730	382	1873	280	C300/525	1/2" G
600	110	708	270	590	758	830	382	2178	330	C300/625	1/2" G
700	110	834	380	686	875	985	444	2546	520	C350/730	3/4" G
750	110	884	380	760	930	1035	444	2725	585	C350/780	3/4" G
800	110	1015	320	791	974	1085	444	2850	650	C350/830	3/4" G
900	110	1040	320	895	1105	1202	515	3202	850	C400/930	3/4" G
1000	110	1146	320	975	1217	1296	515	3488	1060	C400/1030	3/4" G

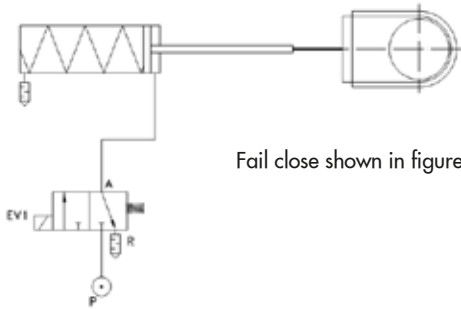
MODEL

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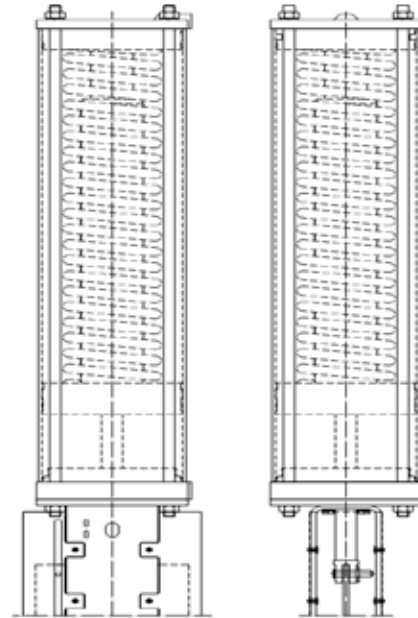
## FAIL SAFE SYSTEM

### SINGLE ACTING (SPRING RETURN)

- This actuator (single acting cylinder) consists of:
  - Aluminum barrel and covers
  - Steel spring
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50 to DN 300
- Supply pressure: min. 5 bar - max. 10 bar
- Options:
  - Fail open
  - Fail close

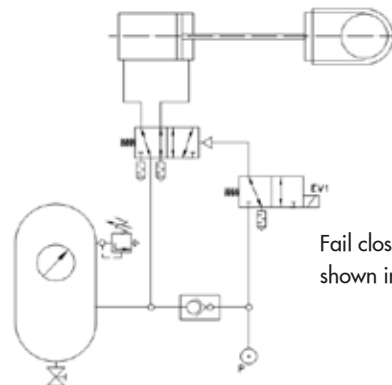
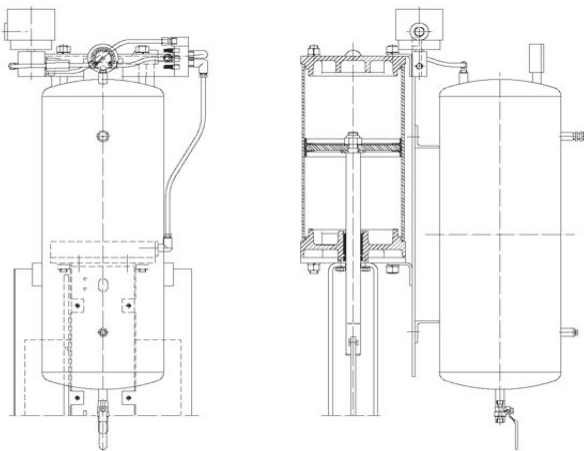


Fail close shown in figure



### DOUBLE ACTING WITH AIR TANK

- Fail safe systems consists of: double acting pneumatic cylinder, air tank and all the necessary elements according to the available options (solenoid valve, spool valve,...)
- Different solution available (pressure switches,...)
- Available for all diameters
- Supply Pressure: min. 3.5 bar - max.10 bar

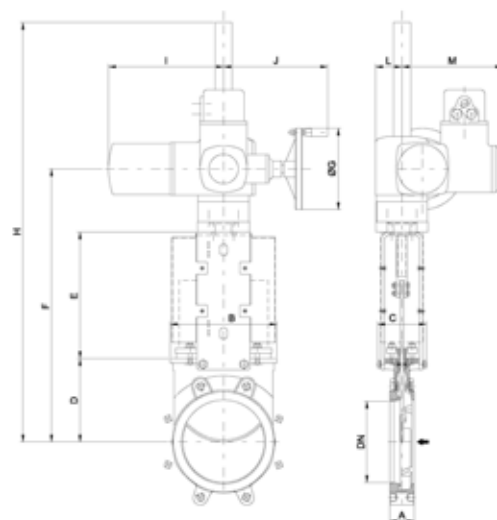


Fail close in power failure shown in figure

**MODEL****EX**

## ELECTRIC ACTUATOR

- Consists of:
  - Electric actuator
  - 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 from DN 50 to DN 1200
  
- Wide range of types and marks available to meet customer's needs.
  
- Option:
  - Non rising stem

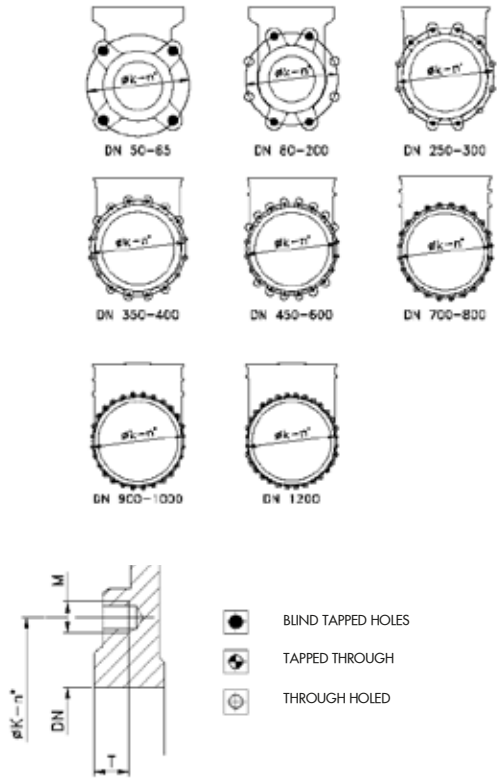


DN	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
50	40	119	100	105	129	377	160	547	265	249	62	238	20 x 4	10
65	40	134	100	115	146	404	160	574	265	249	62	238	20 x 4	10
80	50	149	100	124	162	429	160	599	265	249	62	238	20 x 4	10
100	50	169	100	140	187	470	160	640	265	249	62	238	20 x 4	10
125	50	180	100	150	211	504	160	674	265	249	62	238	20 x 4	15
150	60	210	100	175	237	555	160	1055	265	249	62	238	20 x 4	20
200	60	262	122	205	309	669	160	1169	265	249	62	238	25 x 5	30
250	70	318	122	250	364	769	160	1269	265	249	62	238	25 x 5	45
300	70	372	122	300	414	869	160	1369	265	249	62	238	25 x 5	40
350	96	431	197	338	472	940	200	1440	283	254	65	248	35 x 6	70
400	100	486	197	392	552	1044	200	1544	283	254	65	248	35 x 6	90
450	106	540	270	432	610	1172	200	1672	283	254	65	248	35 x 6	110
500	110	602	270	485	670	1280	200	1780	283	254	65	248	35 x 6	95
600	110	708	270	590	800	1565	315	2065	389	336	91	286	35 x 6	140
700	110	834	380	686	900	1763	315	2846	389	336	91	285	40 x 7	120
750	110	884	380	760	945	1882	315	2965	389	336	91	286	40 x 7	140
800	110	1015	320	791	980	1948	315	3031	389	336	91	286	50 x 8	180
900	110	1040	320	895	1087	2157	400	3240	389	339	91	286	50 x 8	220
1000	110	1146	320	975	1200	2350	400	3431	389	339	91	286	50 x 8	300
1200	150	1390	450	1037	1485	2732	500	4137	430	365	117	303	60 x 9	480

**FLANGE AND BOLTING DETAILS**

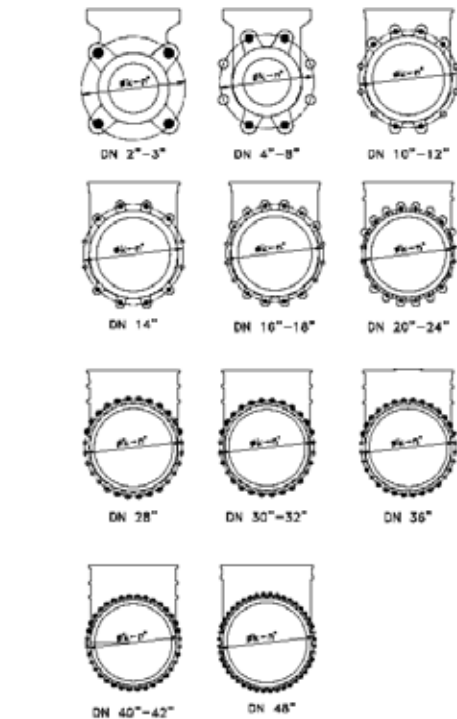
**EN 1092-2 PN10**

DN	K	n°	M	T	⊕ ⊖ ⊕
50	125	4	M-16	11	4 - 0 - 0
65	145	4	M-16	11	4 - 0 - 0
80	160	8	M-16	11	4 - 0 - 4
100	180	8	M-16	11	4 - 0 - 4
125	210	8	M-16	11	4 - 0 - 4
150	240	8	M-20	14	4 - 0 - 4
200	295	8	M-20	14	4 - 0 - 4
250	350	12	M-20	18	6 - 0 - 6
300	400	12	M-20	18	6 - 0 - 6
350	460	16	M-20	22	6 - 4 - 6
400	515	16	M-24	24	6 - 4 - 6
450	565	20	M-24	24	8 - 6 - 6
500	620	20	M-24	24	8 - 6 - 6
600	725	20	M-27	24	8 - 6 - 6
700	840	24	M-27	20	10 - 6 - 8
800	950	24	M-30	20	10 - 6 - 8
900	1050	28	M-30	20	12 - 8 - 8
1000	1160	28	M-33	20	12 - 8 - 8
1200	1380	32	M-36	30	22 - 6 - 4



**ANSI B16.5 , class 150 (\*)**

DN	K	n°	M	T	⊕ ⊖ ⊕
2"	4 3/4"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
2 1/2"	5 1/2"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
3"	6"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
4"	7 1/2"	8	5/8" - 11 UNC	3/8"	4 - 0 - 4
5"	8 1/2"	8	3/4" - 10 UNC	3/8"	4 - 0 - 4
6"	9 1/2"	8	3/4" - 10 UNC	1/2"	4 - 0 - 4
8"	11 3/4"	8	3/4" - 10 UNC	1/2"	4 - 0 - 4
10"	14 1/4"	12	7/8" - 9 UNC	3/4"	6 - 0 - 6
12"	17"	12	7/8" - 9 UNC	3/4"	6 - 0 - 6
14"	18 3/4"	12	1" - 8 UNC	7/8"	4 - 4 - 4
16"	21 1/4"	16	1" - 8 UNC	1"	6 - 4 - 6
18"	22 3/4"	16	1 1/8" - 7 UNC	1"	6 - 4 - 6
20"	25"	20	1 1/8" - 7 UNC	1"	8 - 6 - 6
24"	29 1/2"	20	1 1/4" - 7 UNC	1"	8 - 6 - 6
28"	34"	28	1 1/4" - 7 UNC	3/4"	12 - 6 - 10
30"	36"	28	1 1/4" - 7 UNC	3/4"	12 - 8 - 8
32"	38 1/2"	28	1 1/2" - 6 UNC	3/4"	12 - 8 - 8
36"	42 3/4"	32	1 1/2" - 6 UNC	3/4"	14 - 8 - 10
40"	47 1/4"	36	1 1/2" - 6 UNC	3/4"	14 - 12 - 10
42"	49 1/2"	36	1 1/2" - 6 UNC	3/4"	14 - 12 - 10
48"	56"	44	1 1/2" - 6 UNC	13/16"	26 - 10 - 8



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



**MODEL****EW**

## HEAVY DUTY KNIFE GATE VALVE

The EW model knife gate is an uni-directional lug type valve designed according to AWWA C520-14 for general industrial service applications. The design of the body and seat also assures non-clogging shut off on suspended solids in industries such as:

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

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

**Working pressure:**

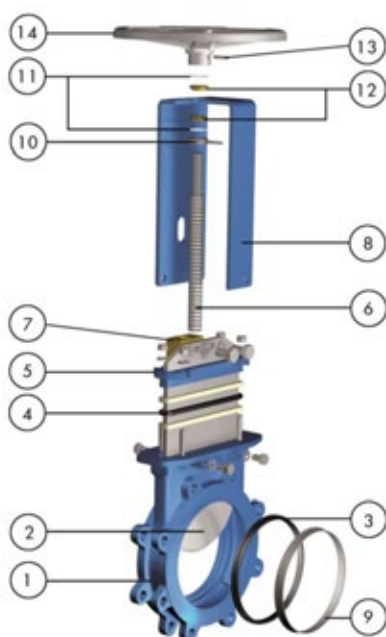
DN 50mm/ 2" to DN 600mm/24"      10 bar / 150 psi  
 DN 700mm/28" to DN 900mm/36"      7 bar / 100 psi

**Standard flange connection:**

DIN PN 10 and ANSI B16.5 / ASME B16.47  
 Other flange connections available on request



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



### STANDARD PARTS LIST

Part:	Ductile Iron:
1- Body	GJS 400 (GGG40)
2- Gate	AISI 304
3- Seat	Metal/Metal or EPDM
4- Packing	PTFE Impreg. Synth. Fibre with an EPDM O-Ring
5- Gland Follower	CF8 DN 50mm/2" to DN 300mm/12" or GJS400 (GGG40) DN 350mm/14" to DN 900mm/36"
6- Stem	Stainless Steel
7- Stem nut	Brass
8- Yoke	Epoxy-coated Carbon Steel
9- Seat Retainer Ring	AISI 304
10-Axial fixing bush	AISI 304 (1.4301)
11- Friction washer	PET + solid lubricant
12- Guide bush	Bronze
13- Spring pin	AISI 420 (1.4021) (ISO 8752)
14- Handwheel	DN≤310mm/12.20": Aluminium (AlSi12); DN>410mm/16.70": GJS400

**MODEL**

**EW**



## DESIGN FEATURES

### **BODY:**

Lug type monoblock ductile iron body with reinforced ribs in larger diameters for extra body strength. Internal cast gate wedges and guides allows for tighter shutoff. Port design follows the AWWA C520-14 standard

The internal design of the valve avoids any build up of solids that would prevent the valve from closing.

### **GATE:**

Standard AISI 304 stainless steel gate. The gates are polished and lapped to attain a greater seal between the gate and both the packing and the seat. The bottom of the gate edge is also machined to a bevel, so that it cuts through the solids for a tighter seal in the closed position.

### **SEAT: (resilient)**

Unique design that mechanically locks the seal 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 layers of PTFE impregnated fibre plus and 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. Non rising stem configuration as standard, for rising stem a stem protector is provided for additional protection against dust while the valve in the open position.

### **ACTUATORS:**

All actuators supplied by ORBINOX are interchangeable, and supplied with an standard mounting kit for installation purposes 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. Reduces packing maintenance. Two types of packing are available: packing type with layers of PTFE impregnated fibre (Fig.1-A) and also o-ring type solution (Fig.1-B)



Fig.1 - A



Fig.1 - B

### V-port:

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

### Flush ports (Fig.2):

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

### Other materials of construction:

Availability of other stainless steels such as AISI 316, Duplex (2205) and Superduplex (2507), 254SMO, Etc.

### Fabricated valves:

ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures).

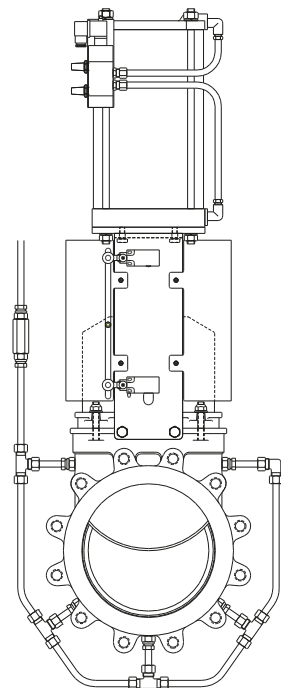


Fig.2

## SURFACE TREATMENTS

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

At ORBINOX we can offer alternative treatments and coatings for the different valve components to improve their properties against abrasion (Stellite, polyurethane...), against corrosion (Halar, Rilsan, galvanizing...) and against adherence (polishing, PTFE...).

MODEL

EW



## ACTUATOR TYPES

### MANUAL:

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

### AUTOMATIC:

- Electric (rising & non-rising stem)
- Pneumatic (single & double-acting)
- Hydraulic

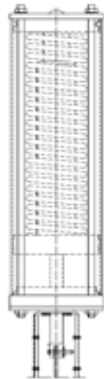
All actuators supplied by ORBINOX are interchangeable

## FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

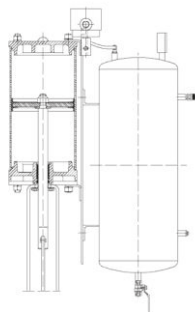
### SINGLE ACTING (SPRING RETURN)

- Available from  
DN 50mm/2" to DN 300mm/12"
- Supply pressure:  
min. 5 bar / 75 psi- max. 10 bar / 150 psi
- Options:
  - Pneumatic or electric fail open
  - Pneumatic or electric fail close
  - Other options on request



### DOUBLE ACTING WITH AIR TANK

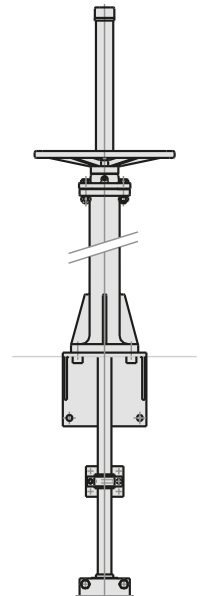
- Available for all valve sizes
- Supply pressure:  
min. 3.5 bar / 50 psi  
max. 10 bar/ 150 psi
- Options:
  - Pneumatic or electric fail open
  - Pneumatic or electric fail close
  - Other options on request



## 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 catalogue.*

We recommend to contact our technical department

**MODEL****EW**

## TEMPERATURE CHART

### SEAT / SEALS

Material	Max.T (°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	Chemical service /High temp.
Silicone (S)	250	Food service / High temp.
PTFE (T)	250	Corrosion resistance

### PACKING

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

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

More details and other materials upon request

## SEAT TYPES



#### METAL / METAL

For applications with:

- High temperature
- High density media application
- When full tightness is not required



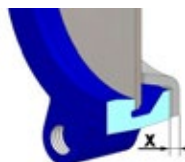
#### RESILIENT, TYPE "A"

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



#### RESILIENT, TYPE "B"

- Temperature limitations according to the selected seat material. Review the above chart or contact our Technical Department for more information.
- Replaceable and reinforced seat ring available in different materials such as: AISI 316 (1.4401), CA15, Ni Hard, etc.



#### DEFLECTION CONE "C"

- Deflects the media away from any valve internal exposed parts (gate, seat,...)
- Material: AISI 316 (1.4401), CA15, Ni-Hard, etc.
- Face-to-face dimension increases:  
 DN 50mm/2" to DN 250mm/10" X = 9mm/0.35"  
 DN 300mm/12" to DN 600mm/24" X = 12mm/0.47"  
 Larger diameters on request

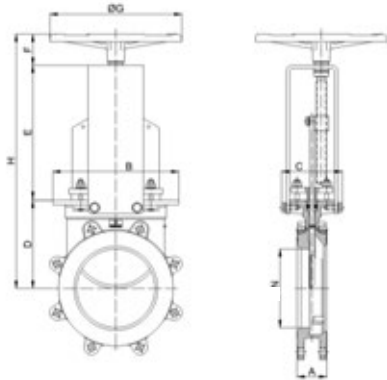
**MODEL**

**EW**

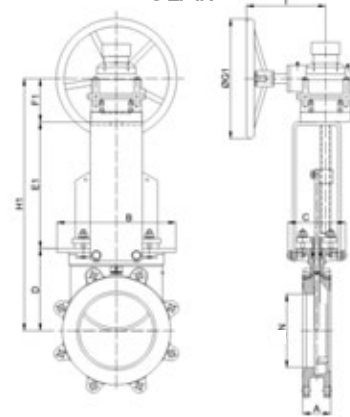


**HAND OPERATED (non rising stem)**

**HANDWHEEL**



**GEAR**



- Standard manual actuator
- Consists of:
  - Handwheel
    - DN 50-300: Aluminium
    - DN ≥ 350: GJS400 (GGG40)
  - Yoke
  - Stem
  - Yoke bushing
  - Stem nut fixed to the gate
- Available from DN 50mm/2" to DN 600mm/24"  
(larger sizes available upon request)
- Options (on request):
  - Rising stem
  - Chainwheel
  - Locking Device
  - Extensions

- Recommended for valves larger than DN 350/14" and working pressures greater than 3.5 bar / 50 psi
- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200mm/8" to DN 900mm/36"
- Options:
  - Rising Stem
  - Chainwheel
  - Locking Device
  - Extensions

DN (mm/")	N	A	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1
50/2"	50	48	142	100	-	98	136	-	63	-	225	-	297	-
80/3"	80	51	160	100	-	119	162	-	63	-	225	-	344	-
100/4"	97	51	190	100	-	139	187	-	63	-	225	-	389	-
125/5"	117	57	204	100	-	150	223	-	63	-	225	-	436	-
150/6"	140	57	230	100	-	165	237	-	63	-	225	-	465	-
200/8"	184	70	296	122	122	203	309	309	73	102	310	300	585	614
250/10"	230	70	357	122	122	233	345	345	73	102	310	300	651	680
300/12"	275	76	407	122	122	273	390	390	73	102	410	300	736	765
350/14"	305	76	461	193	193	312	433	433	98	102	410	450	843	847
400/16"	351,6	89	536	193	193	347	478	478	98	102	410	450	923	927
450/18"	390	89	593	197	197	415	552	552	98	102	550	450	1065	1069
500/20"	435	114	622	197	197	450	611	611	98	102	550	450	1159	1163
600/24"	522	114	700	197	197	501	697	697	98	102	550	650	1296	1300
700/28"	620	114	840	-	320	634	-	820	-	102	-	650	1556	1556
750/30"	670	117	892	-	320	644	-	870	-	102	-	650	1616	1616
800/32"	720	117	933	-	320	673	-	922	-	102	-	650	1697	1697
900/36"	810	117	1040	-	320	779	-	1046	-	102	-	650	1927	1927

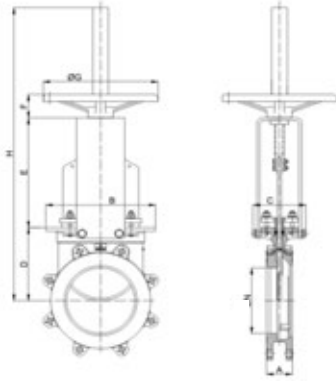
**MODEL**

**EW**

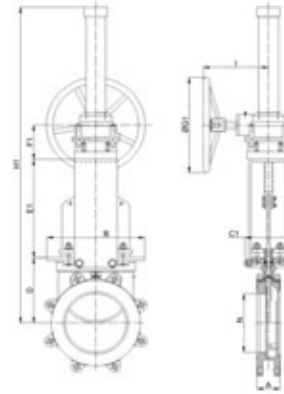


**HAND OPERATED (rising stem)**

**HANDWHEEL**



**GEAR**



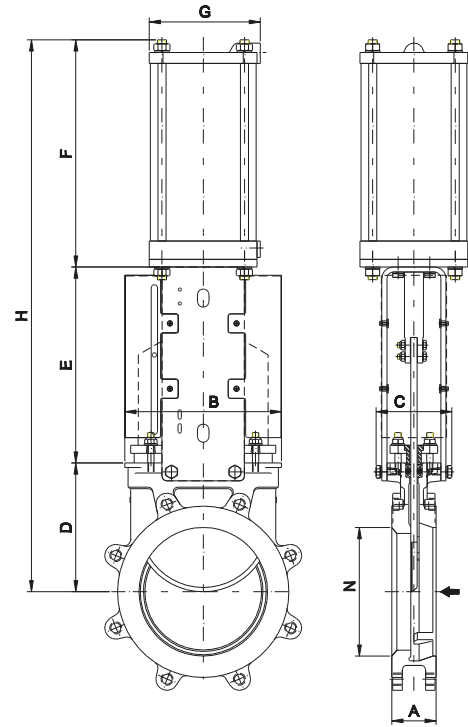
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Yoke
  - Stem
  - Yoke bushing
  - Stem nut fixed to the gate
- Available from DN 50mm/2" to DN 600mm/24" (larger sizes available upon request)
- Options (on request):
  - Non Rising Stem
  - Chainwheel
  - Locking Device
  - Extensions

- Recommended for valves larger than DN 350/14" and working pressures greater than 3.5 bar / 50 psi
- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200mm/8" to DN 900mm/36"
- Options:
  - Non Rising Stem
  - Chainwheel
  - Locking Device
  - Extensions

DN (mm/")	N	A	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1	I	Weight (kg.)
50/2"	50	48	142	124	-	108	126	-	47	-	225	-	428	-	-	8
80/3"	80	51	160	124	-	122	159	-	47	-	225	-	471	-	-	11
100/4"	97	51	190	124	-	145	181	-	47	-	225	-	516	-	-	14
125/5"	117	57	204	124	-	153	208	-	47	-	225	-	601	-	-	17
150/6"	140	57	230	124	-	168	234	-	47	-	225	-	642	-	-	20
200/8"	184	70	296	144	144	206	306	306	67	102	310	300	822	992	200	34
250/10"	230	70	357	144	144	243	335	335	67	102	310	300	988	1058	200	48
300/12"	275	76	407	144	144	283	380	380	66	102	410	300	1069	1143	200	67
350/14"	305	76	461	193	193	315	442	442	66	102	410	450	1280	1504	270	100
400/16"	351,6	89	536	193	193	350	486	486	66	102	410	450	1359	1584	270	130
450/18"	390	89	555	201	201	415	535	535	67	102	410	450	1576	1631	270	165
500/20"	435	114	622	201	201	450	607	607	67	102	550	450	1683	1859	280	210
600/24"	522	114	700	201	201	504	674	674	67	102	550	650	1901	1980	280	300
700/28"	620	114	840	-	320	634	-	890	-	102	-	650	-	2423	280	455
750/30"	670	117	892	-	320	644	-	945	-	102	-	650	-	2555	280	610
800/32"	720	117	933	-	320	673	-	993	-	102	-	650	-	2926	280	572
900/36"	810	117	1040	-	320	779	-	1123	-	102	-	650	-	3160	280	750

**PNEUMATIC CYLINDER**

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - $\varnothing \leq 300\text{mm}/12''$ : Aluminum barrels
  - $\varnothing \geq 350\text{mm}/14''$ : Composite barrels
  - Aluminum end covers
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50mm/2" to DN 900mm/36"
- Supply Pressure: min. 3.5 bar / 50 psi - max. 10 bar / 145 psi. Actuator designed with 6 bar / 85 psi air supply.
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
  - Hard anodized barrel and covers
  - Stainless Steel barrel and covers
  - Over/Undersized cylinder
  - Manual override
  - Fail safe systems
  - Limit switches
- Instrumentation (on request):
  - Positioners
  - Solenoid valves
  - Flow regulators
  - Air preparation units



DN(mm/")	N	A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl.	Connect.
50/2"	50	48	124	100	98	136	178	115	412	10	C100/62	1/4" G
80/3"	80	51	149	100	119	162	211	115	492	12	C100/95	1/4" G
100/4"	97	51	169	100	139	187	231	115	557	15	C100/115	1/4" G
125/5"	117	57	169	100	150	223	271	140	644	21	C125/143	1/4" G
150/6"	140	57	197	100	165	237	296	140	698	27	C125/168	1/4" G
200/8"	184	70	247	122	203	309	358	175	870	46	C160/220	1/4" G
250/10"	230	70	298	122	233	345	428	220	1006	70	C200/270	3/8" G
300/12"	275	76	349	122	273	390	478	220	1141	89	C200/320	3/8" G
350/14"	305	76	391	193	312	459	549	277	1320	135	C250/375	3/8" G
400/16"	351,6	89	439	193	347	478	599	277	1424	162	C250/425	3/8" G
450/18"	390	89	483	197	415	552	680	382	1647	212	C300/475	1/2" G
500/20"	435	114	542	197	450	611	730	382	1791	290	C300/525	1/2" G
600/24"	522	114	637	197	501	697	830	382	2028	375	C300/625	1/2" G
700/28"	620	114	840	320	576	830	935	444	2459	610	C350/730	3/4" G
750/30"	670	117	842	320	624	880	985	444	2549	645	C350/780	3/4" G
800/32"	720	117	933	320	673	928	1035	444	2700	730	C350/830	3/4" G
900/36"	810	117	970	320	775	1100	1202	515	3077	780	C400/930	3/4" G

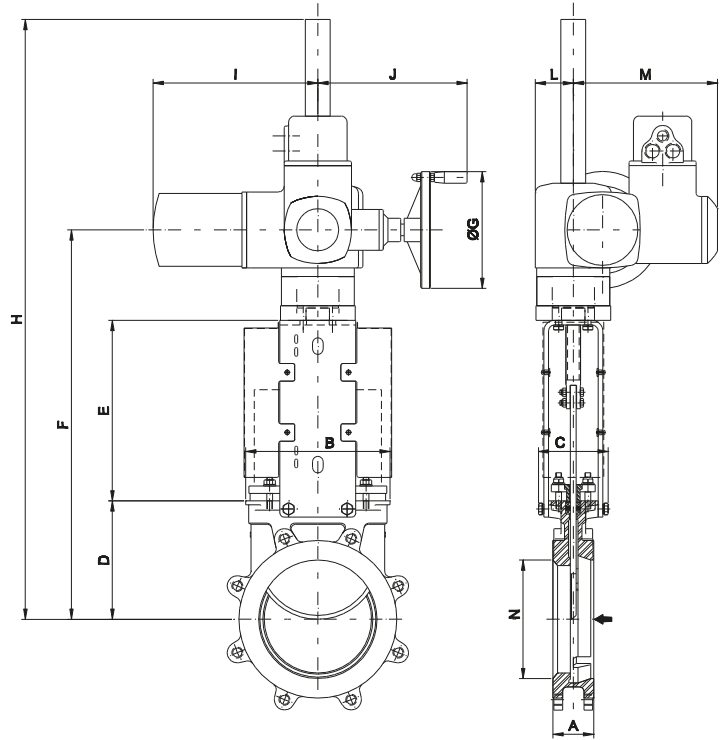
\* For sizes DN 300mm/12" and above, actuator diameter may need to be oversized depending on the actual working pressure.



**MODEL****EW**

## ELECTRIC ACTUATOR (rising stem)

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



DN(mm/"	N	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
50/2"	50	48	124	100	98	136	377	160	454	265	249	62	238	20 x 4	10
80/3"	80	51	149	100	119	162	424	160	501	265	249	62	238	20 x 4	10
100/4"	97	51	169	100	139	187	469	160	546	265	249	62	238	20 x 4	10
125/5"	117	57	169	100	150	223	516	160	593	265	249	62	238	20 x 4	15
150/6"	140	57	197	100	165	237	545	160	1122	265	249	62	238	20 x 4	20
200/8"	184	70	247	122	203	309	667	160	1255	265	249	62	238	25 x 5	30
250/10"	230	70	298	122	233	345	733	160	1321	265	249	62	238	25 x 5	45
300/12"	275	76	349	122	273	390	793	200	1381	283	254	65	248	25 x 5	70
350/14"	305	76	391	193	312	433	875	200	1463	283	254	65	248	35 x 6	110
400/16"	351,6	89	439	193	347	478	955	315	1543	389	336	91	286	35 x 6	160
450/18"	390	89	483	270	415	552	1142	315	1870	389	336	91	286	35 x 6	190
500/20"	435	114	542	270	450	611	1222	400	1950	389	339	91	286	35 x 6	270
600/24"	522	114	637	270	501	697	1444	400	2172	389	339	91	286	40 x 7	450
700/28"	620	114	840	320	576	820	1631	500	2614	430	365	114	303	50 x 8	500
750/30"	670	117	842	320	624	883	1779	500	2832	430	365	117	303	50 x 8	550
800/32"	720	117	933	320	673	922	1867	500	2920	430	365	117	303	50 x 8	600
900/36"	810	117	970	320	779	1046	2035	500	3080	430	365	117	303	60 x 9	850

\* For sizes 300mm/12" and above, Torque figures calculated based on pressure rate for EX valve model.



MODEL

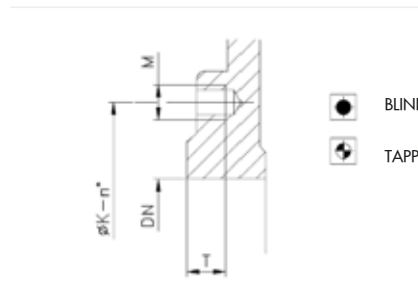
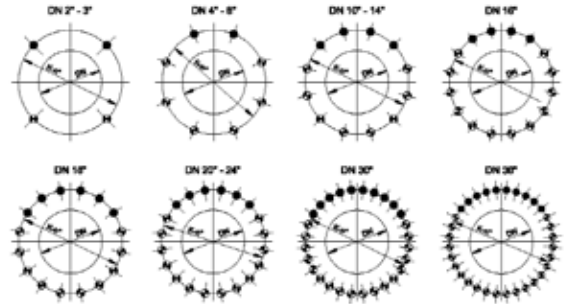
**EW**





**FLANGE AND BOLTING DETAILS**



**ANSI B16.5 / B16.47 , class 150**

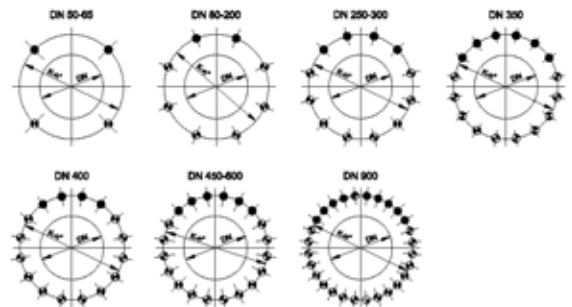
DN	K	n°	M	T	 
2"	4 3/4"	4	5/8" - 11 UNC	7/16"	2 - 2
3"	6"	4	5/8" - 11 UNC	11/32"	2 - 2
4"	7 1/2"	8	5/8" - 11 UNC	11/32"	2 - 6
5"	8 1/2"	8	3/4" - 10 UNC	3/8"	2 - 6
6"	9 1/2"	8	3/4" - 10 UNC	3/8"	2 - 6
8"	11 3/4"	8	3/4" - 10 UNC	15/32"	2 - 6
10"	14 1/4"	12	7/8" - 9 UNC	15/32"	4 - 8
12"	17"	12	7/8" - 9 UNC	15/32"	4 - 8
14"	18 3/4"	12	1" - 8 UNC	19/32"	4 - 8
16"	21 1/4"	16	1" - 8 UNC	19/32"	4 - 12
18"	22 3/4"	16	1 1/8" - 7 UNC	19/32"	6 - 10
20"	25"	20	1 1/8" - 7 UNC	7/8"	6 - 14
24"	29 1/2"	20	1 1/4" - 7 UNC	7/8"	6 - 14
28"	34"	28	1 1/4" - 7 UNC	1"	10 - 18
30"	36"	28	1 1/4" - 7 UNC	1 1/8"	10 - 18
32"	38.5"	28	1 1/2" - 6 UNC	1 1/8"	10 - 18
36"	42 3/4"	32	1 1/2" - 6 UNC	1 1/4"	10 - 22



-  BLIND TAPPED HOLES
-  TAPPED THROUGH

**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	4 - 12
450	565	20	M-24	15	6 - 14
500	620	20	M-24	22	6 - 14
600	725	20	M-27	22	6 - 14
700	840	24	M-27	24	8 - 16
800	950	24	M-30	28	8 - 16
900	1050	28	M-30	32	10 - 18



**MODEL****EK**

## WAFER STYLE KNIFE GATE VALVE

The EK model knife gate is an 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 1200 (larger diameters on request)

**Working pressure:**

DN 50 to DN 125	16 bar
DN 150 to DN 250	10 bar
DN 300 to DN 400	6 bar
DN 450	5 bar <sup>(1)</sup>
DN 500 to DN 600	4 bar <sup>(1)</sup>
DN 700 to DN 1200	2 bar

(1) 6 bar with duplex gate

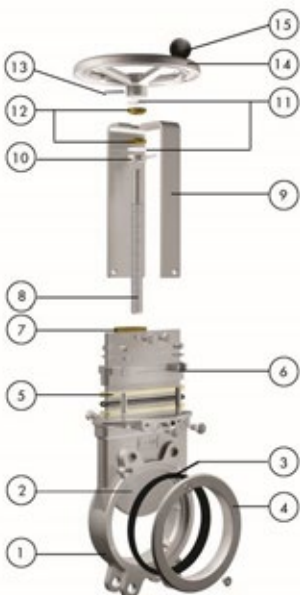
**Standard flange connection:**

DIN PN 10		
Other flange connections available on request		
ANSI B16.5 (class 150)	DIN PN 6	DIN PN 16
DIN PN 25	BS "D" and "E"	ANSI 125

**Directives:** 2006/42/CE (MACHINES)  
2014/68/EU (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)  
2014/34/EU (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 (1.4408)
2- Gate	AISI 316 (1.4401)
3- Seat	EPDM
4- "K" Ring	CF8M (1.4408)
5- Packing	Dynapack (Graphite impregnated PTFE and Aramid yarn combination with an elastomeric core)+ (EPDM O-ring)
6- Gland Follower	CF8M (1.4408)
7- Stem nut	Brass
8- Stem	Stainless Steel
9- Yoke	AISI 304 (1.4301)
10- Axial fixing bush	AISI 304 (1.4301)
11- Friction washer	PET + solid lubricant
12- Bushing	Bronze
13- Spring Pin	AISI 420 (1.4021) (ISO 8752)
14- Handwheel	Ø≤310: Aluminium (AlSi12); Ø≥410 GJS400 (GGG40)
15- Knob	Black bakelite

## DESIGN FEATURES

### BODY:

Wafer style cast stainless steel 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:

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. The thickness and/or material of the gate can be changed on request for higher pressure requirements.

### SEAT: (resilient)

Unique design that mechanically locks the seal in the internal of the valve body with a cast, easy to replace, stainless steel seat ring. Standard EPDM also available in different materials such as PTFE, etc.(Fig.1)

### PACKING:

Long-life packing with several graphite impregnated PTFE / Aramid yarn combination with an elastomeric core, plus an EPDM O-ring, with an easy access packing gland ensuring a tight seal.

Long-life packing is available in a wide range of materials.

### STEM:

The standard stainless steel stem offers a long corrosion resistant life. Standard configuration is non-rising stem. For those pneumatic actuated valves, stem linkage is provided by means of a stainless steel coupling and a pin (Fig. 2).

### ACTUATORS:

All actuators supplied by ORBINOX are interchangeable, and supplied with an standard mounting kit for installation purposes on site.

### YOKE or ACTUATOR SUPPORT:

Made of stainless steel (EPOXY coated 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 components is electrostatically 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 being caught accidentally while the gate is moving.



Fig.1



Fig.2

## OTHER OPTIONS

### Gate guards for actuators with proximity switches:

It has been made a special design which allows horizontal and parallel mounting of the proximity switches including protection to them.

### Bonnet (Fig.1):

Assures tight sealing to atmosphere for using with hazardous gas or fluids.  
Reduces packing maintenance.

### Flush ports:

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

### Other materials of construction:

Special alloys such as AISI 317 (1.4449), 254SMO (1.4547), Hastelloys, etc.

### Fabricated valves:

ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures).

### V-port (Fig.2):

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

### Double packing:

Alternative solution to bonnet



Fig.1



Fig.2

## SURFACE TREATMENTS

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

At ORBINOX we can offer alternative treatments and coatings for the different valve components to improve their properties against abrasion (Stellite, polyurethane...), against corrosion (Halar, Rilsan, galvanizing...) and against adherence (polishing, PTFE...).

## ATEX



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

- Hand operated EK 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 assessment of their own and also of the whole unit valve-actuator to get EC Type Approval to Directive 2014/34.

**MODEL**

**EK**



**ACTUATOR TYPES**

**MANUAL:**

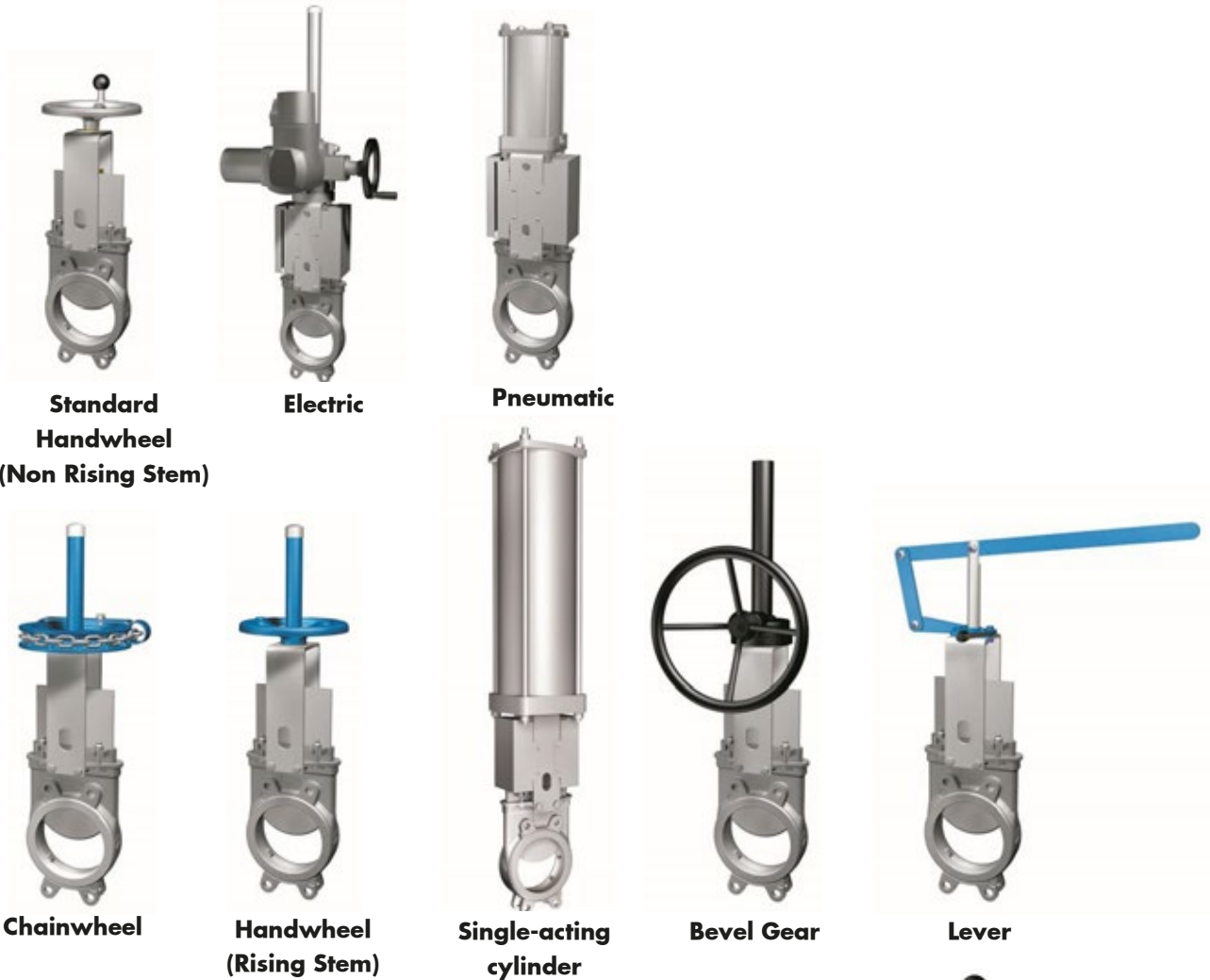
- Handwheel (rising stem)
- Handwheel (non-rising stem)
- Chainwheel
- Lever
- Bevel Gear
- Other (square nut)

**AUTOMATIC:**

- Electric (rising & non-rising stem)
- Pneumatic (single & double-acting)
- Hydraulic



All actuators supplied by ORBINOX are interchangeable.



**Standard Handwheel (Non Rising Stem)**

**Electric**

**Pneumatic**

**Chainwheel**

**Handwheel (Rising Stem)**

**Single-acting cylinder**

**Bevel Gear**

**Lever**

**ACCESSORIES:**

- Mechanical Stops
- Actuator manual override
- Positioners
- Proximity Switches
- Stem extensions

- Gate block (Fig.1)
- Solenoid valves
- Limit Switches
- Floor stands



Fig.1

Please consult our technical department.

**MODEL****EK**

## TEMPERATURE CHART

### SEAT / SEALS

### PACKING

Material	Max.T (°C)	Applications
EPDM (E)	120	Acids and non mineral oils.
NBR (N)	120	Resistance to petroleum products.
FKM-FPM (V)	200	Chemical service / High temp.
VMQ (S)	250	Food service / High temp.
PTFE (T)	250	Corrosion resistance
Polyurethane	90	Abrasion resistance

Material	Max.T (°C)	pH
Dynapack (DP)	270	2-14
Braided PTFE (TH)	260	0-14
Graphited (GR)	600	0-14
Ceramic fibre (FC)	1200	--

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



### TYPE "K" SEAT (EPDM)

- Standard replaceable resilient EPDM seat
- Replaceable stainless steel ring



### TYPE "K" SEAT (PTFE)

- Replaceable resilient PTFE + O-ring seat
- Replaceable stainless steel ring



### POLYURETHANE

- Replaceable polyurethane seat ring

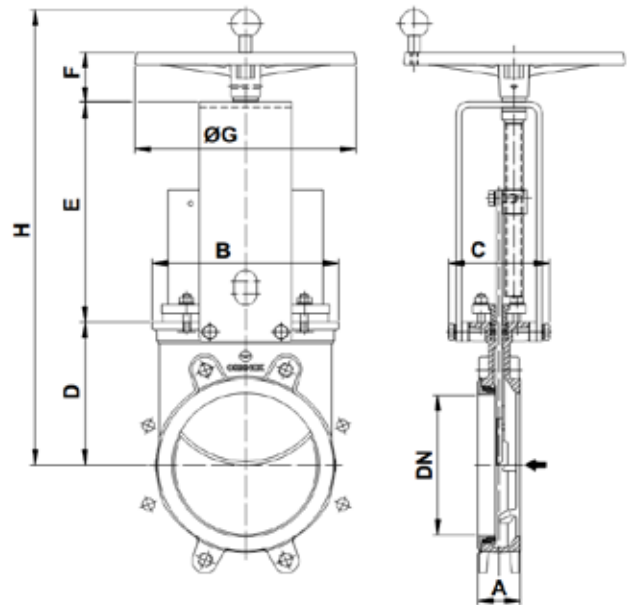


### DEFLECTION CONE "C"

- Deflects the media away from any valve internal exposed parts (gate guides, seat, .)
- Material: AISI 316 (1.4401), CA15, Ni-Hard, etc.
- Face-to-face dimension increases:
  - DN 50 to DN 250 X = 9mm
  - DN 300 to DN 600 X = 12mm
  - Larger diameters on request

**HANDWHEEL (non- rising stem)**

- Standard handwheel actuator
  - DN 50-300: Aluminium handwheel
  - DN ≥ 350: GJS400 handwheel
- Recommended for installation where space is limited
- Consists of:
  - Handwheel with knob
  - Stem
  - Yoke bushing
  - Stem nut fixed to the gate
- Available from DN 50 to DN 1000
- Options:
  - Locking Device
  - Extension
  - Square Nut Drive
- Gear is recommended above DN350

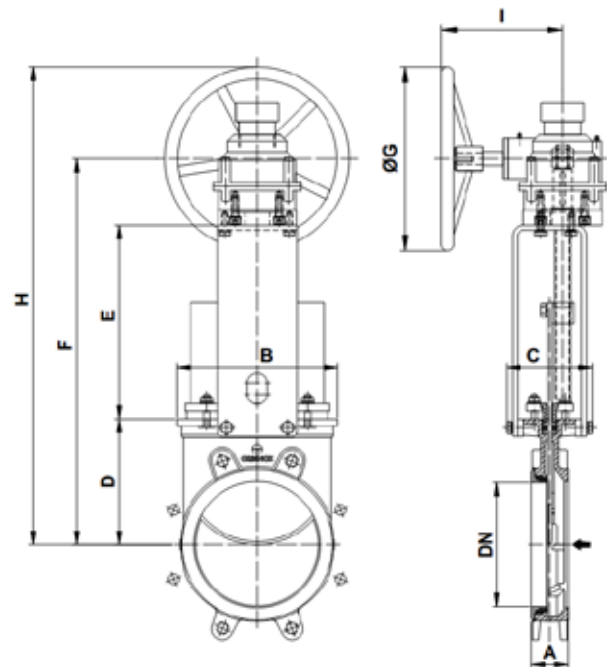


DN	A	B	C	D	E	F	ØG	H	Weight (kg.)
50	41	119	125	105	144	63	225	373	7
65	41	134	125	115	161	63	225	400	8
80	51	149	125	124	177	63	225	425	9
100	51	169	125	140	202	63	225	466	11
125	56	180	125	150	226	63	225	500	15
150	60	206	125	175	252	63	225	551	20
200	60	262	142	205	317	73	310	656	32
250	69	318	142	250	372	73	310	756	46
300	78	372	142	300	422	73	310	856	62
350	78	431	197	338	516	98	410	1013	96
400	89	486	197	392	572	98	410	1123	124
450	89	540	201	432	635	98	550	1226	168
500	114	602	201	485	698	98	550	1342	192
600	114	708	201	590	797	98	550	1546	245
700	118	834	380	686	890	150	800	1723	405
750	118	884	380	760	945	150	800	1855	455
800	118	1015	320	795	989	150	800	1934	512
900	118	1040	320	900	1118	150	800	2168	630
1000	118	1150	320	980	1220	150	800	2350	732



**GEAR**

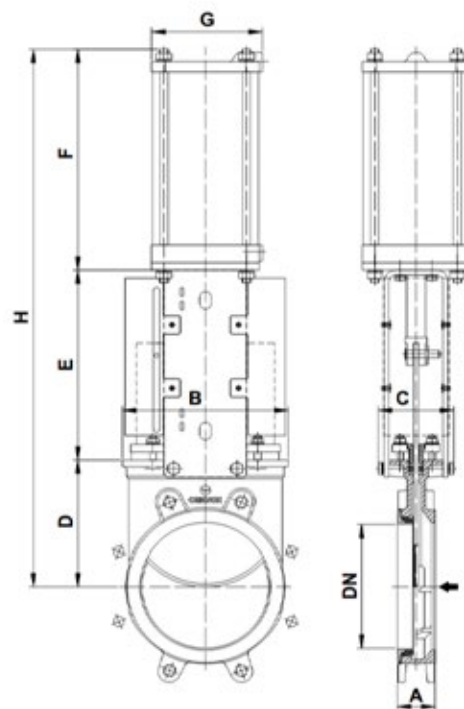
- Recommended for valves larger than DN 350 and working pressures greater than 3.5 bar
- Consists of:
  - Stem
  - Stem protector
  - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200 to DN 1200
- Options:
  - Locking device
  - Extension
  - Chainwheel



DN	A	B	C	D	E	F	ØG	H	I
200	60	262	142	205	305	585	300	735	200
250	69	318	142	250	360	685	300	835	200
300	78	372	142	300	410	790	300	940	200
350	78	431	197	338	487	872	450	1097	262
400	89	486	197	392	540	1044	450	1269	262
450	89	540	201	432	589	1068	450	1293	262
500	114	602	201	485	652	1249	450	1474	262
600	114	708	201	590	754	1419	450	1644	262
700	118	834	380	683	900	1693	450	1918	262
750	118	884	380	760	945	1752	450	1977	262
800	118	1015	320	791	968	1886	650	2111	260
900	118	1040	320	895	1118	2157	650	2482	288
1000	118	1150	320	975	1225	2350	650	2675	288
1200	150	1400	450	1230	485	3025	850	3450	455

## PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists on:
  - $\varnothing \leq 300$ : Aluminum barrels
  - $\varnothing \geq 350$ : Composite barrels
  - Aluminum covers
  - Stainless steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50 to DN 1000
- Supply Pressure: min. 3.5 bar - max. 10 bar. Actuator designed with 6 bar air supply and for standard catalogue differential pressure
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
  - Gate guards for proximity switches
  - Hard anodized barrel and covers
  - Stainless steel barrel and covers
  - Over/Undersized cylinder
  - Manual override
  - Fail safe system
  - Limit switches
- 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	41	119	125	105	129	178	115	412	9	C100/62	1/4" G
65	41	134	125	115	146	193	115	454	10	C100/77	1/4" G
80	51	149	125	124	162	211	115	497	11	C100/95	1/4" G
100	51	169	125	140	187	231	115	558	14	C100/115	1/4" G
125	56	180	125	150	211	271	140	632	20	C125/143	1/4" G
150	60	206	125	175	237	296	140	708	27	C125/168	1/4" G
200	60	262	142	205	309	358	175	872	46	C160/220	1/4" G
250	69	318	142	250	364	428	220	1042	69	C200/270	3/8" G
300	78	372	142	300	414	478	220	1192	86	C200/320	3/8" G
350	78	431	197	338	500	541	220	1379	135	C200/375	3/8" G
400	89	486	197	392	577	599	277	1568	165	C250/425	3/8" G
450	89	540	270	432	643	641	277	1715	220	C250/475	3/8" G
500	114	602	270	485	706	691	277	1882	280	C250/525	3/8" G
600	114	708	270	590	805	791	277	2196	330	C250/625	3/8" G
700	118	834	380	686	875	985	277	2571	520	C250/730	3/8" G
750	118	884	380	760	930	1035	382	2740	585	C300/780	1/2" G
800	118	1015	320	791	974	1085	382	2844	650	C300/830	1/2" G
900	118	1040	320	895	1105	1202	382	3220	850	C300/930	1/2" G
1000	118	1146	320	975	1217	1296	382	3496	1060	C300/1030	1/2" G

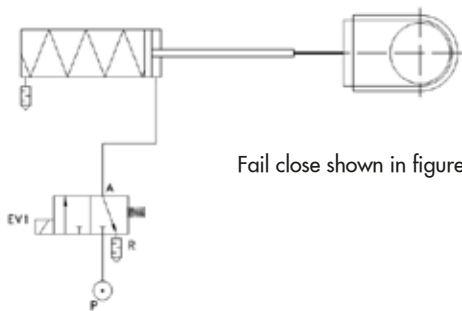
MODEL

EK

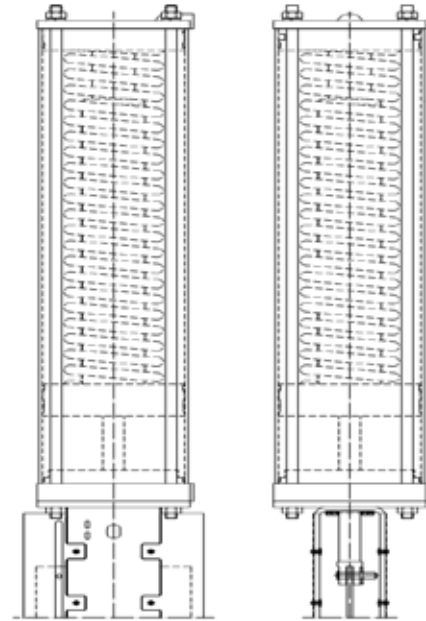
## FAIL SAFE SYSTEM

### SINGLE ACTING (SPRING RETURN)

- This actuator (single acting cylinder) consists of:
  - Aluminum barrel and covers
  - Steel spring
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50 to DN 300
- Supply pressure: min. 5 bar - max. 10 bar
- Options:
  - Fail open
  - Fail close

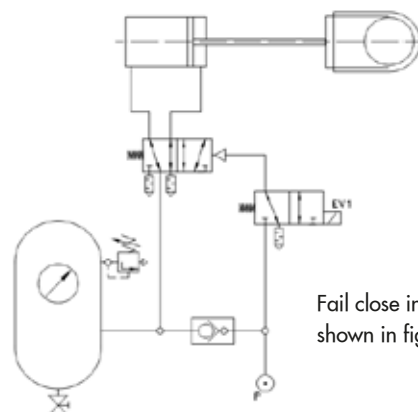
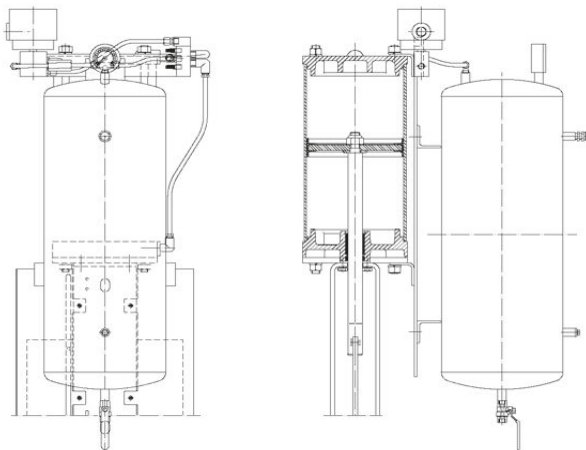


Fail close shown in figure



### DOUBLE ACTING WITH AIR TANK

- Fail safe systems consists of: double acting pneumatic cylinder, air tank and all the necessary elements according to the available options (solenoid valve, spool valve,...)
- Different solution available (pressure switches,...)
- Available for all diameters
- Supply Pressure: min. 3.5 bar - max. 10 bar

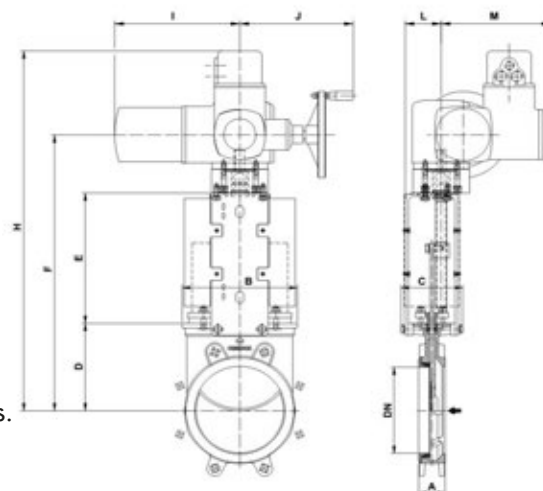


Fail close in power failure shown in figure

**MODEL****EK**

## ELECTRIC ACTUATOR (non- rising stem)




- Consists of:
  - Electric actuator
  - 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 from DN 50 to DN 1200
  
- Wide range of types and marks available to meet customer's needs.



DN	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
50	41	119	125	105	129	377	160	552	265	249	72	238	20 x 3	10
65	41	134	125	115	146	404	160	579	265	249	72	238	20 x 3	10
80	51	149	125	124	162	429	160	604	265	249	72	238	20 x 3	10
100	51	169	125	140	187	470	160	645	265	249	72	238	20 x 3	10
125	56	180	125	150	211	504	160	679	265	249	72	238	20 x 3	15
150	60	206	125	175	237	560	160	730	265	249	72	238	20 x 3	20
200	60	262	142	205	309	669	160	814	265	249	82	238	25 x 4	30
250	69	318	142	250	364	799	160	944	265	249	82	238	25 x 4	45
300	78	372	142	300	414	904	160	1044	265	249	82	238	25 x 4	40
350	78	431	197	338	472	940	200	1115	283	254	128	248	35 x 6	70
400	89	486	197	392	552	1044	200	1219	283	254	128	248	35 x 6	90
450	89	540	270	432	610	1172	200	1347	283	254	130	248	35 x 6	110
500	114	602	270	485	670	1280	200	1455	283	254	130	248	35 x 6	95
600	114	708	270	590	800	1565	315	1750	389	336	130	286	35 x 6	140
700	118	834	380	686	900	1763	315	1948	389	336	202	285	40 x 7	120
750	118	884	380	760	945	1882	315	2067	389	336	202	286	40 x 7	140
800	118	1015	320	791	980	1948	315	2133	389	336	202	286	50 x 8	180
900	118	1040	320	895	1087	2157	400	2342	389	339	202	286	50 x 8	220
1000	118	1150	320	975	1200	2350	400	2535	389	339	202	286	50 x 8	300
1200	150	1400	450	1037	1485	2732	500	2917	430	365	284	303	60 x 9	480

FLANGE AND BOLTING DETAILS

EN 1092-2 PN10

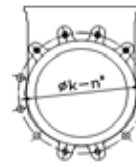
DN	K	n°	M	T	  
50	125	4	M-16	11	2 - 2 - 0
65	145	4	M-16	11	2 - 2 - 0
80	160	8	M-16	11	2 - 2 - 4
100	180	8	M-16	11	2 - 2 - 4
125	210	8	M-16	11	2 - 2 - 4
150	240	8	M-20	14	2 - 2 - 4
200	295	8	M-20	14	2 - 2 - 4
250	350	12	M-20	18	4 - 2 - 6
300	400	12	M-20	18	4 - 2 - 6
350	460	16	M-20	18	6 - 4 - 6
400	515	16	M-24	20	6 - 4 - 6
450	565	20	M-24	20	8 - 6 - 6
500	620	20	M-24	24	8 - 6 - 6
600	725	20	M-27	24	8 - 6 - 6
700	840	24	M-27	20	10 - 6 - 8
800	950	24	M-30	20	10 - 6 - 8
900	1050	28	M-30	20	12 - 8 - 8
1000	1160	28	M-33	20	12 - 8 - 8
1200	1380	32	M-36	30	22 - 6 - 4



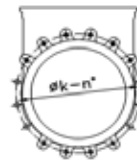
DN 50-65



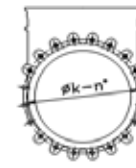
DN 80-200



DN 250-300



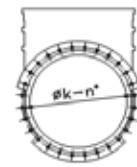
DN 350-400



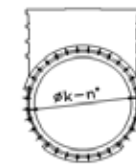
DN 450-600



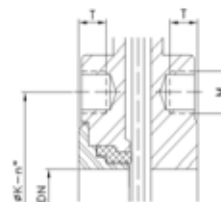
DN 700-800






DN 900-1000






DN 1200



-  BLIND TAPPED HOLES
-  TAPPED THROUGH
-  THROUGH HOLED

AISI B16.5, class 150 (\*)

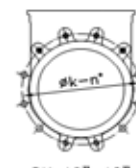
DN	K	n°	M	T	  
2"	4 3/4"	4	5/8" - 11 UNC	1/2"	2 - 2 - 0
2 1/2"	5 1/2"	4	5/8" - 11 UNC	1/2"	2 - 2 - 0
3"	6"	4	5/8" - 11 UNC	1/2"	2 - 2 - 0
4"	7 1/2"	8	5/8" - 11 UNC	1/2"	2 - 2 - 4
5"	8 1/2"	8	3/4" - 10 UNC	1/2"	2 - 2 - 4
6"	9 1/2"	8	3/4" - 10 UNC	1/2"	2 - 2 - 4
8"	11 3/4"	8	3/4" - 10 UNC	1/2"	2 - 2 - 4
10"	14 1/4"	12	7/8" - 9 UNC	18/32"	4 - 2 - 6
12"	17"	12	7/8" - 9 UNC	18/32"	4 - 2 - 6
14"	18 3/4"	12	1" - 8 UNC	7/8"	4 - 4 - 4
16"	21 1/4"	16	1" - 8 UNC	3/4"	6 - 4 - 6
18"	22 3/4"	16	1 1/8" - 7 UNC	3/4"	6 - 4 - 6
20"	25"	20	1 1/8" - 7 UNC	1/2"	8 - 6 - 6
24"	29 1/2"	20	1 1/4" - 7 UNC	1/2"	8 - 6 - 6



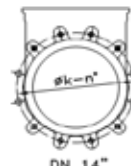
DN 2"-3"



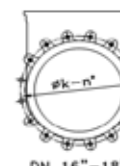
DN 4"-8"



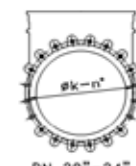
DN 10"-12"



DN 14"



DN 16"-18"



DN 20"-24"



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