

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 250	10 kg/cm ²
DN 300 to DN 400	6 kg/cm ²
DN 450	5 kg/cm ²
DN 500 to DN 600	4 kg/cm ²
DN 700 to DN 1200	2 kg/cm ²

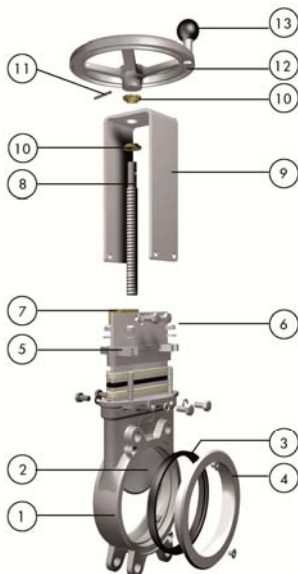
Standard flange connection:

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)
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 (1.4408) / GJL 250 (0.6025)*
2- Gate	AISI 316 (1.4404) / AISI 304 (1.4301)*
3- Seat	EPDM
4- "K" Ring	AISI 316 (1.4404)
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	AISI 430 (1.4016)
9- Yoke	AISI 304 (1.4301)
10- Bushing	Brass
11- Spring Pin	AISI 304 (1.4301) (ISO 8752)
12- Handwheel	Ø≤310: Aluminium (AlSi12); Ø≥410 GJS400 (GGG40)
13- Knob	Black bakelite

* On request

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.

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. For rising stem handwheel actuators only, a stem protector is provided for additional protection against dust while the valve is in the open position.

ACTUATORS:

All actuators supplied by ORBINOX are interchangeable, and supplied with an standard mounting kit 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.



OTHER OPTIONS

Gate guards for actuators with proximity switches (Fig.1):

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

Bonnet:

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, Titanium, 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.



Fig.1



Fig.2

Double packing (Fig. 3/4):

For high demand tightness applications at packing area.



Fig.3



Fig.4

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 94/9.

We recommend to contact our technical department.

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.

TEMPERATURE CHART

SEAT / SEALS

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

PACKING

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.

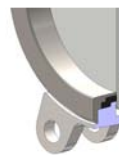
SEAT TYPES



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



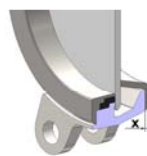
TYPE "K" SEAT (PTFE)

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



POLYURETHANE

- Replaceable polyurethane seat ring

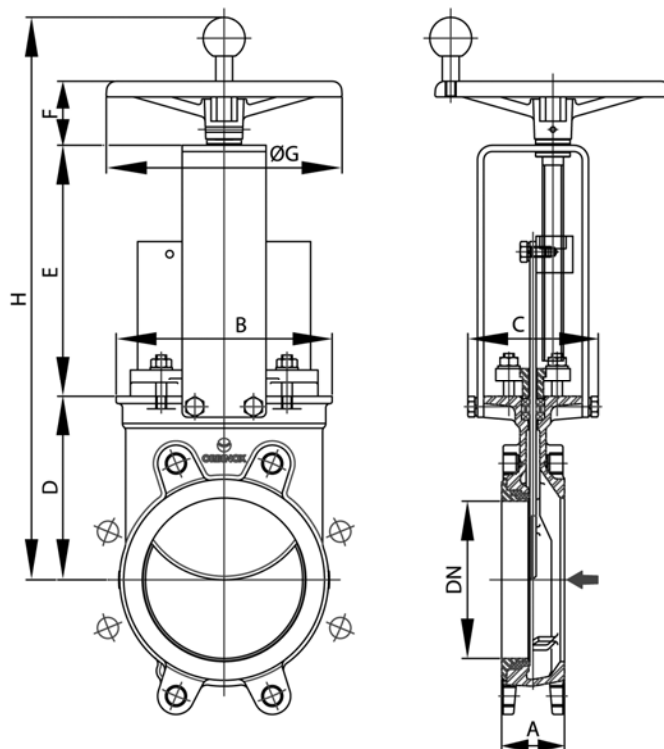


DEFLECTION CONE "C"

- 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)

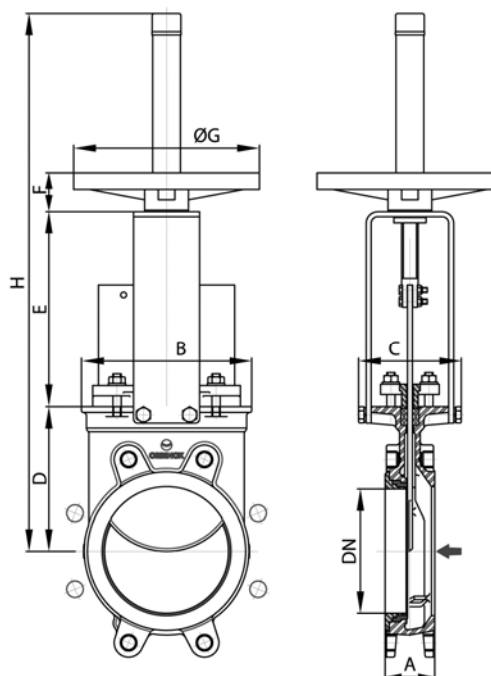
- Standard handwheel actuator
 - DN 50-300: Aluminium handwheel
 - DN ≥ 350: GJL250 (GG25) handwheel
- Recommended for installation where space is limited
- Consists of:
 - Handwheel with knob
 - Stem
 - Yoke bushing
 - Stem nut fixed to the gate
- Available from DN 50 to DN 1000
- Options:
 - Locking Device
 - Extension
 - Square Nut Drive



DN	A	B	C	D	E	F	ØG	H
50	41	119	125	105	132	61	225	359
65	41	134	125	115	149	61	225	386
80	51	149	125	124	165	61	225	411
100	51	169	125	140	190	61	225	452
125	56	180	125	150	214	61	225	486
150	60	210	125	175	240	61	225	537
200	60	262	142	205	305	71	310	642
250	69	318	142	250	360	71	310	742
300	78	372	142	300	410	71	310	842
350	78	431	197	338	487	110	410	975
400	89	486	197	392	537	110	410	1079
450	89	540	201	432	589	111	550	1172
500	114	602	201	485	649	111	550	1285
600	114	708	201	590	748	111	550	1489
700	118	834	380	686	890	150	800	1723
750	118	884	380	760	945	150	800	1855
800	118	1015	320	795	989	150	800	1934
900	118	1040	320	900	1118	150	800	2168
1000	118	1150	320	980	1220	150	800	2350

HANDWHEEL (rising stem)

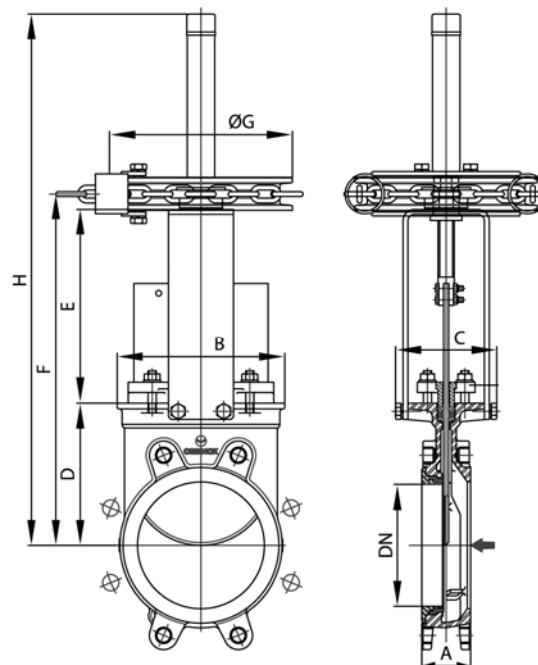
- Consists of:
 - Handwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
- Available from DN 50 to DN 1000
- Options:
 - Locking Device
 - Extensions



DN	A	B	C	D	E	F	ØG	H	Weight (kg.)
50	41	119	125	105	129	47	225	420	7
65	41	134	125	115	149	47	225	450	8
80	51	149	125	124	162	47	225	475	9
100	51	169	125	140	187	47	225	520	11
125	56	180	125	150	211	47	225	600	15
150	60	210	125	175	237	47	225	652	18
200	60	262	142	205	309	67	310	822	30
250	69	318	142	250	364	67	310	1022	44
300	78	372	142	300	414	67	310	1122	58
350	78	431	197	338	486	66	410	1323	96
400	89	486	197	392	536	66	410	1427	124
450	89	540	201	432	588	66	550	1594	168
500	114	602	201	485	648	66	550	1707	192
600	114	708	201	590	748	66	550	2022	245
700	118	834	380	686	890	74	800	2575	405
750	118	884	380	760	945	74	800	2704	455
800	118	1015	320	791	989	74	800	2970	512
900	118	1040	320	900	1118	74	800	3200	630
1000	118	1150	320	980	1220	74	800	3380	732

CHAINWHEEL

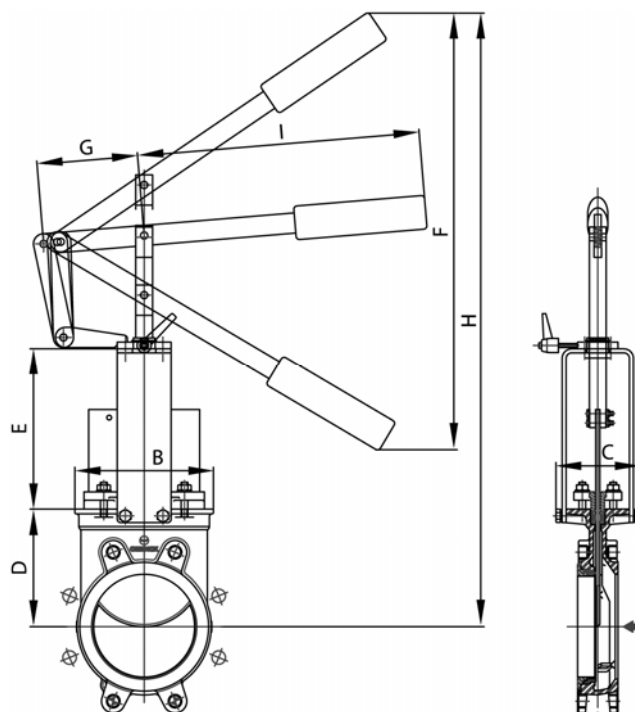
- Recommended for elevated installations
- Consists of:
 - Chainwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
- Available from DN 50 to DN 600
- Options (on request):
 - Locking Device
 - Extension
 - Non-rising Stem



DN	A	B	C	D	E	F	ØG	H
50	41	119	125	105	129	253	225	420
65	41	134	125	115	146	280	225	450
80	51	149	125	124	162	305	225	475
100	51	169	125	140	187	347	225	520
125	56	180	125	150	211	380	225	600
150	60	210	125	175	237	431	225	652
200	60	262	142	205	309	538	300	822
250	69	318	142	250	364	638	300	1022
300	78	372	142	300	414	738	300	1122
350	78	431	197	338	486	856	454	1323
400	89	486	197	392	536	960	454	1427
450	89	540	201	432	588	1052	454	1589
500	114	602	201	485	648	1165	454	1707
600	114	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	41	119	125	105	129	256	150	408	315
65	41	134	125	115	146	259	150	435	315
80	51	149	125	124	162	307	150	509	315
100	51	169	125	140	187	378	150	637	415
125	56	180	125	150	211	439	150	755	415
150	60	210	125	175	237	529	150	895	415
200	60	262	142	205	309	620	235	1038	620
250	69	318	142	250	364	822	235	1307	620
300	78	372	142	300	414	995	235	1578	620

GEAR

- Recommended for valves larger than DN 350 and working pressures greater than 3.5 kg/cm²

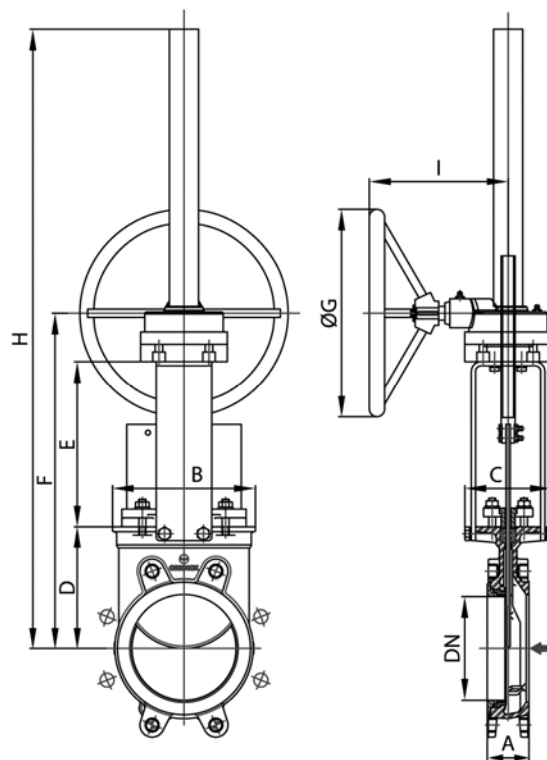
- Consists of:

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

- Available from DN 200 to DN 1200

- Options:

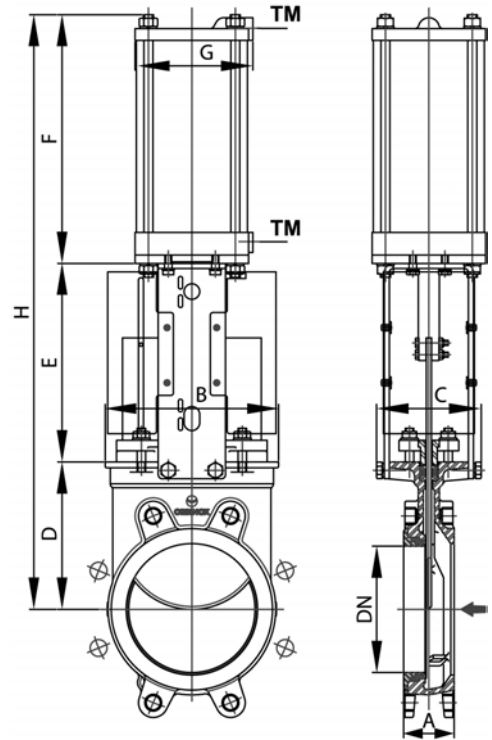
- Locking device
- Extension
- Chainwheel
- Non-rising stem



DN	A	B	C	D	E	F	ØG	H	I
200	60	262	142	205	305	555	300	964	200
250	69	318	142	250	360	655	300	1064	200
300	78	372	142	300	410	755	300	1164	200
350	78	431	197	338	487	872	450	1563	262
400	89	486	197	392	537	974	450	1668	262
450	89	540	201	432	589	1068	450	1754	262
500	114	602	201	485	649	1181	450	1868	262
600	114	708	201	590	748	1385	450	2074	262
700	118	834	380	683	900	1693	450	2846	262
750	118	884	380	760	945	1752	450	2965	262
800	118	1015	320	791	968	1886	450	3031	260
900	118	1040	320	895	1118	2157	650	3240	288
1000	118	1150	320	975	1225	2350	650	3431	288
1200	150	1400	450	1230	485	3025	850	4330	455

PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists on:
 - DN ≤ 250: Aluminum barrels
 - DN ≥ 300: 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 kg/cm² - max. 10 kg/cm². Actuator designed with 6 kg/cm² air supply.
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
 - Gate guards for proximity switches (see pag. 3)
 - Hard anodized barrel and covers
 - Stainless steel barrel and covers
 - Over/Undersized cylinder
 - Manual override
 - Fail safe system (Page EK-12)
 - Limit switches
- Instrumentation (on request):
 - Positioners
 - Flow regulators
 - Solenoid valves
 - Air preparation units

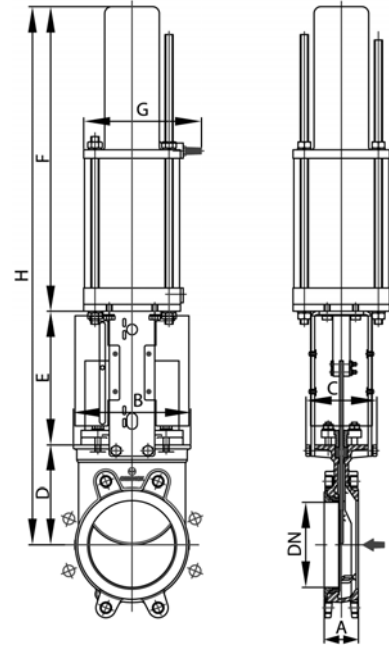


DN	A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl.	Connect.
50	40	119	100	105	129	178	115	412	9	C100/62	1/4" G
65	40	134	100	115	146	193	115	454	10	C100/77	1/4" G
80	50	149	100	124	162	211	115	497	11	C100/95	1/4" G
100	50	169	100	140	187	231	115	558	14	C100/115	1/4" G
125	50	180	100	150	211	271	140	632	20	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	2571	520	C350/730	3/4" G
750	110	884	380	760	930	1035	444	2740	585	C350/780	3/4" G
800	110	1015	320	791	974	1085	444	2844	650	C350/830	3/4" G
900	110	1040	320	895	1105	1202	515	3220	850	C400/930	3/4" G
1000	110	1146	320	975	1217	1296	515	3496	1060	C400/1030	3/4" G

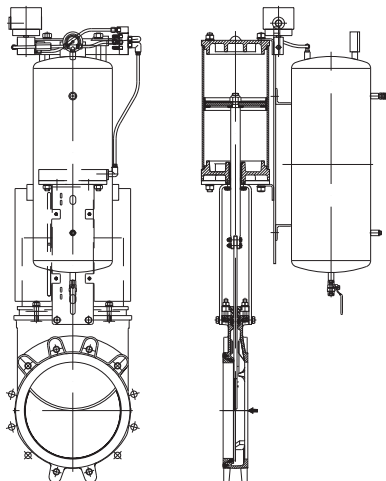
FAIL SAFE SYSTEM

SINGLE ACTING (SPRING RETURN)

- This actuator (single acting cylinder) consists of:
 - Aluminum barrel and covers
 - Ductile Iron or carbon steel spring cap
 - Steel spring
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available from DN 50 to DN 200
- Supply pressure: min. 5 kg/cm² - max. 10 kg/cm²
- Options:
 - Fail open
 - Fail close



DN	A	B	C	D	E	F	G	H	Standard Cyl.	Tm(8SP)
50	41	119	125	105	129	480	172	714	C125/62	1/4"
65	41	134	125	115	146	485	172	746	C125/77	1/4"
80	51	149	125	124	162	514	172	800	C125/95	1/4"
100	51	169	125	140	187	533	172	860	C125/115	1/4"
125	56	180	125	150	211	512	207	873	C160/143	1/4"
150	60	210	125	175	237	538	207	950	C160/168	1/4"
200	60	262	142	205	309	821	252	1335	C200/220	3/8"

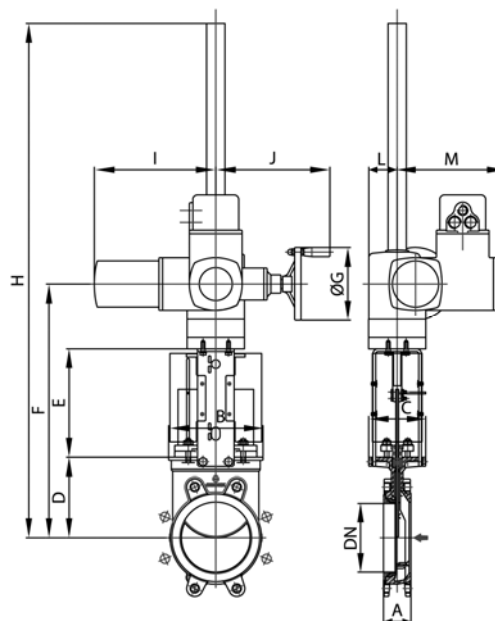


SINGLE ACTING (VOLUME TANK)

- Safety system consists of: double acting pneumatic cylinder, volume tank and all the necessary elements according to the available options (solenoid valve, spool valve,...)
- Available for all diameters
- Supply Pressure: min. 3.5kg/cm² - max.10 kg/cm²

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

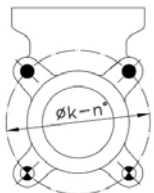


DN	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
50	41	119	125	105	129	377	160	547	265	249	62	238	20 x 4	10
65	41	134	125	115	146	404	160	574	265	249	62	238	20 x 4	10
80	51	149	125	124	162	429	160	599	265	249	62	238	20 x 4	10
100	51	169	125	140	187	470	160	640	265	249	62	238	20 x 4	10
125	56	180	125	150	211	504	160	674	265	249	62	238	20 x 4	15
150	60	210	125	175	237	555	160	1125	265	249	62	238	20 x 4	20
200	60	262	142	205	309	669	160	1289	265	249	62	238	24 x 5	30
250	69	318	142	250	364	769	160	1349	265	249	62	238	24 x 5	45
300	78	372	142	300	414	869	160	1454	265	249	62	238	24 x 5	40
350	78	431	197	338	472	940	200	1553	283	254	65	248	36 x 6	70
400	89	486	197	392	552	1044	200	1657	283	254	65	248	36 x 6	90
450	89	540	270	432	610	1172	200	1805	283	254	65	248	36 x 6	110
500	114	602	270	485	670	1280	200	1918	283	254	65	248	36 x 6	95
600	114	708	270	590	800	1565	315	2223	389	336	91	286	36 x 6	140
700	118	834	380	686	900	1763	315	2846	389	336	91	285	40 x 7	120
750	118	884	380	760	945	1882	315	2965	389	336	91	286	40 x 7	140
800	118	1015	320	791	980	1948	315	3031	389	336	91	286	50 x 8	180
900	118	1040	320	895	1087	2157	400	3240	389	339	91	286	50 x 8	220
1000	118	1150	320	975	1200	2350	400	3431	389	339	91	286	50 x 8	300
1200	150	1400	450	1037	1485	2732	500	4330	430	365	117	303	60 x 9	480

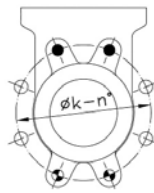
FLANGE AND BOLTING DETAILS

EN 1092-2 PN10

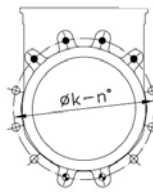
DN	K	n°	M	T	  
50	125	4	M-16	11	2 - 2 - 0
65	145	4	M-16	11	2 - 2 - 0
80	160	8	M-16	11	2 - 2 - 4
100	180	8	M-16	11	2 - 2 - 4
125	210	8	M-16	11	2 - 2 - 4
150	240	8	M-20	14	2 - 2 - 4
200	295	8	M-20	14	2 - 2 - 4
250	350	12	M-20	18	4 - 2 - 6
300	400	12	M-20	18	4 - 2 - 6
350	460	16	M-20	18	6 - 4 - 6
400	515	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



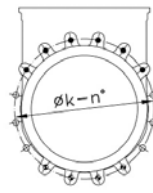
DN 50-65



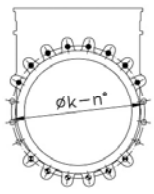
DN 80-200



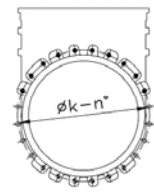
DN 250-300



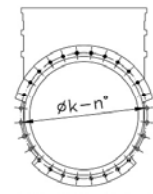
DN 350-400



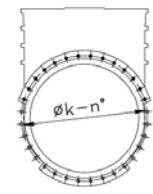
DN 450-600



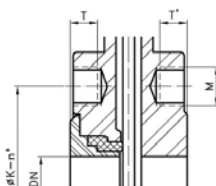
DN 700-800






DN 900-1000



DN 1200



-  BLIND TAPPED HOLES
-  TAPPED THROUGH
-  THROUGH HOLED