

MODEL**TK**

THROUGH CONDUIT KNIFE GATE VALVE

The **TK** model knife gate is a bi-directional wafer valve designed for media with high consistency. The double seat design assures a non-clogging shut off on either normal or reverse flow. The valve is used in a wide range of demanding applications in industries such as:

- Pulp & Paper
- Wastewater Treatment
- Power
- Chemical
- etc.

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

Working pressure:

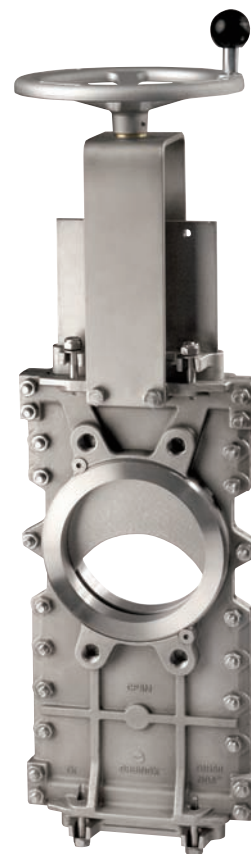
DN 50 to DN 125:	10 kg/cm ²
DN 150 to DN 250:	8 kg/cm ²
DN 300 to DN 400:	6 kg/cm ²
DN 450:	5 kg/cm ²
DN 500 to DN 600:	4 kg/cm ²
DN 700 to DN 1000:	2 kg/cm ²

Standard flange connection: DIN PN 10.

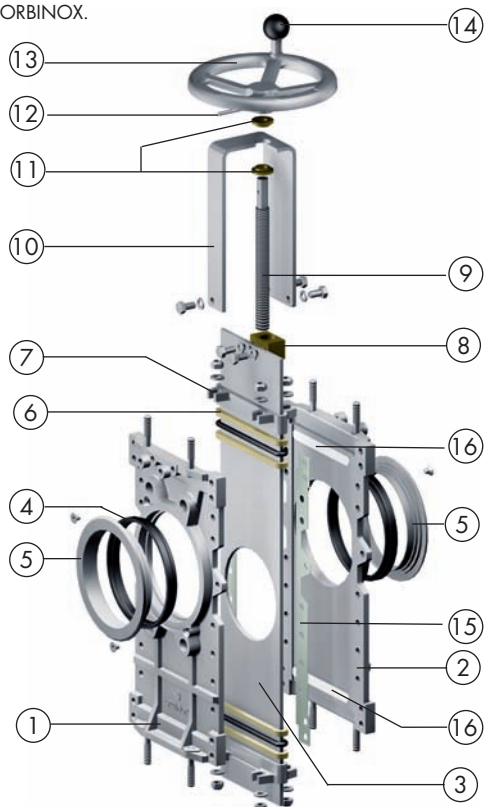
Note: other flange connections are available on request such as:

ANSI B16.5 (class 150)	DIN PN 6	DIN PN 16
DIN PN 25	BS "D" and "E"	ANSI 125

Directives: DIR 2006/42/EC (MACHINES)
 DIR 97/23/EC (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)
 DIR 94/9/EC (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:	Material:
1- Body	CF8M (1.4408) / GJL 250 (0.6025)*
2- Body	CF8M (1.4408) / GJL 250 (0.6025)*
3- Gate	AISI 316 (1.4404) / AISI 304 (1.4301)*
4- Seat	EPDM/PTFE
5- "K" Ring	AISI 316 (1.4404)
6- Packing	Dynapack (Graphite impregnated PTFE and Aramid yam combination with an elastomeric core)+(EPDM O-ring).
7- Gland Follower	CF8M (1.4408)
8- Stem nut	Brass
9- Stem	AISI 430
10- Yoke	AISI 304
11- Bushing	Brass
12- Spring Pin	Steel DIN1481
13- Handwheel	∅ ≤310: Aluminium ∅ ≥ 410: GJL250(GG25)
14- Knob	Black bakelite
15- Gasket	Aramid fibres
16- Sliders	UHWMP

*On request

MODEL

TK

DESIGN FEATURES

BODY:

Wafer style cast two-part bolted body, internally machined, with reinforced ribs in larger diameters for extra body strength.

Internal UHMW Polyethylene sliders for smoother gate travel (stainless steel version only).

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

SELF-CLEANING GATE:

Stainless steel gate as standard. One piece gate with o-port design.

While closing, the gate moves a disc of material laterally which returns to the flow when opening.

Gate is polished on both sides for a greater seal between the gate with both packing and seat.

On request: thickness and/or material of the gate can be changed for higher pressure requirement.

SEAT: (resilient)

Unique design that mechanically locks the seat 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 and Aramid yarn combination with an elastomeric core, 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 an standard mounting kit to allow for installation 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:

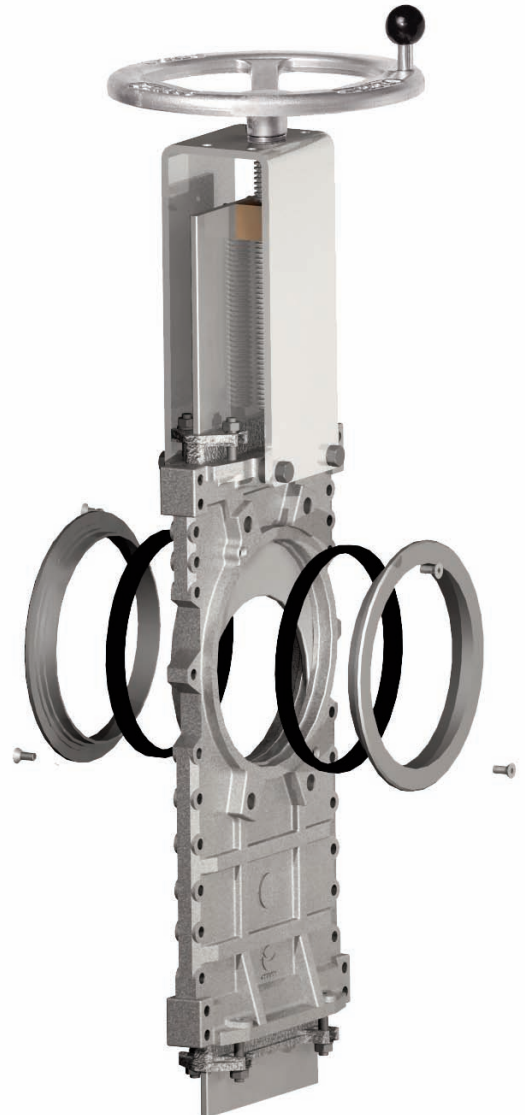
The epoxy coating on all **ORBINOX** cast iron and carbon steel components is electrostatically applied making the valves to be corrosion resistant with a high quality finished surface.

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

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.

Diamond port:

Excellent flow regulation.

Flush ports:

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

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

Other materials of construction:

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

Fabricated valves:

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

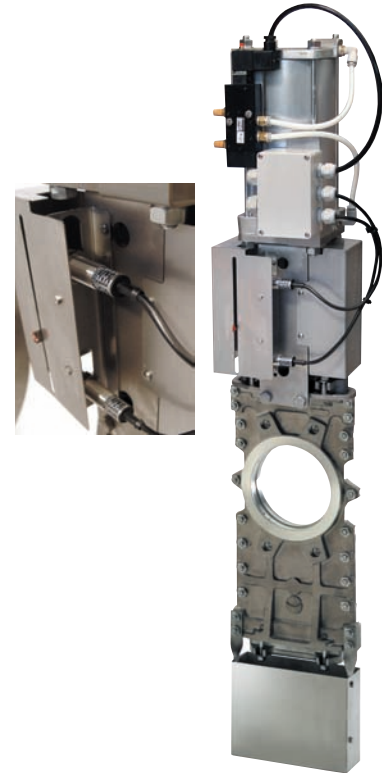


Fig. 1

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 to improve the properties against **abrasion** (Stellite, Polyurethane...), **corrosion** (Halar, Rilsan, Galvanised...) and **adherence** (Polishing, PTFE...).

ATEX



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

- Hand operated TK 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 assesment of their own and also of the whole unit valve-actuator to get EC Type Approval to Directive 94/9.

ACTUATOR TYPES

Manual:

Handwheel (rising & non-rising stem)
 Chainwheel
 Lever
 Bevel Gear
 Others (square nut...)

Automatic:

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 from DN 50 to DN 200.

Options:

- Fail open
- Fail closed

SINGLE ACTING / VOLUME TANK

Available for all sizes (DN>200).

Options:

- Pneumatic Failsafe
- Pneumatic or Electric Failsafe

ACCESSORIES

Mechanical stops
 Locking device (**Fig.1**)
 Manual override
 Solenoid valves
 Positioners
 Limit switches
 Proximity switches
 Floor stands
 Stem extensions

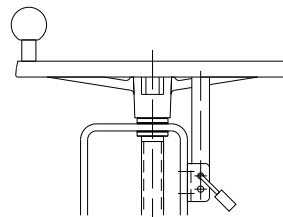
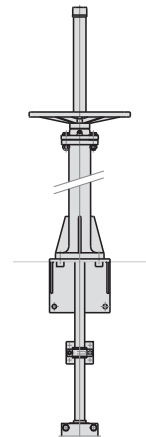


Fig. 1.



Wide range of extensions available.

For further information about fail safe systems and valve extensions, see EK chapter.

We recommend consultation with our technical department.

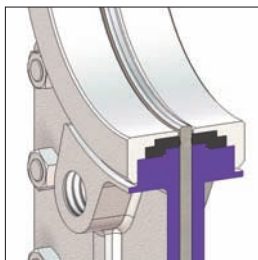
TEMPERATURE CHART

SEAT / SEALS			PACKING		
Material	Max.Temp.(°C)	Applications	Material	Max. Temp. (°C)	pH
Metal/Metal	>250	High temp. Low tightness.	Dynapack (DP)	270	2 - 14
EPDM (E)	120	Acids and non mineral oils.	Braided PTFE (TH)	260	0 - 14
Nitrile (N)	120	Resistance to petroleum products.	Graphited (GR)	600	0 - 14
Viton (V)	200	General chemical service. High temperature.	Ceramic fibre (FC)	1200	—
Silicone (S)	250	Food service. / High temperature.	NOTE: all types include an elastomere O-ring (same material as seal).		
PTFE (T)	250	Corrosion resistance.			
Polyurethane	90	Abrasion resistance.			

More details and other materials under request.

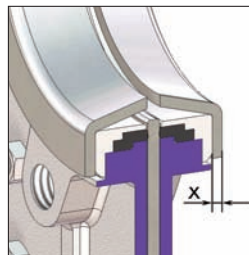
SEAT TYPES

TYPE "K" SEAT (EPDM)



- Standard replaceable resilient EPDM seats
- Replaceable stainless steel rings

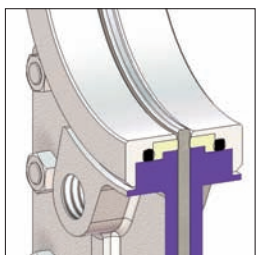
DEFLECTION CONE "C"



- Deflects the media away from any internal exposed parts of the valve such as gate guides, seat, etc.
- Different types of material available such as AISI 316 stainless, CA15, Ni-Hard, etc.

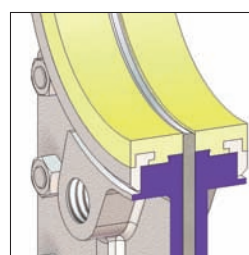
Face to face dimension increase:
 DN 50 to DN 250 X = 9mm
 DN 300 to DN 600 X = 12mm
 Larger diameters on request.

TYPE "K" SEAT (PTFE)



- Replaceable resilient PTFE + O-ring seats
- Replaceable stainless steel rings

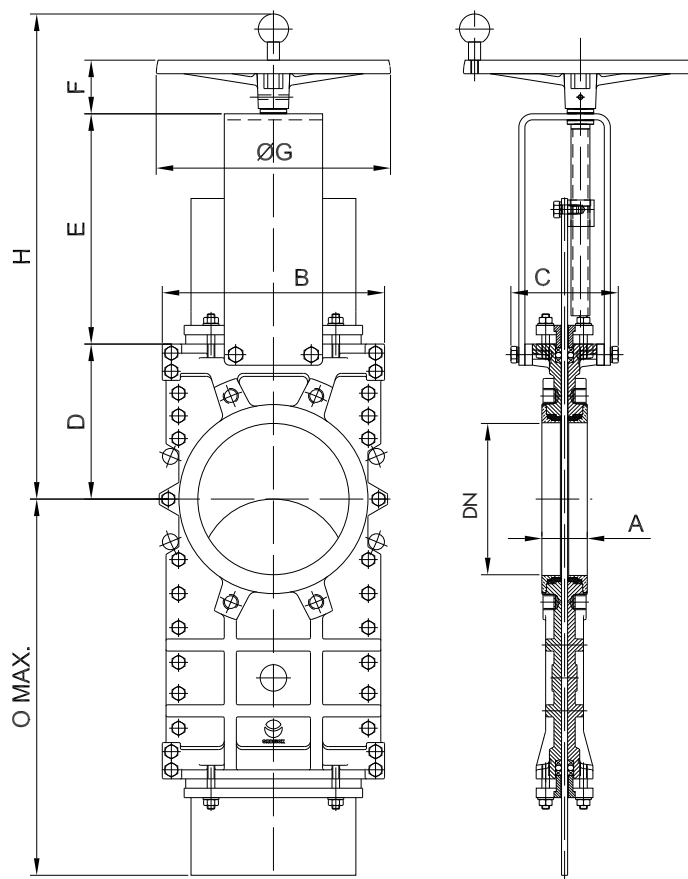
POLYURETHANE



- Replaceable polyurethane seat ring.

HANDWHEEL (non-rising stem)

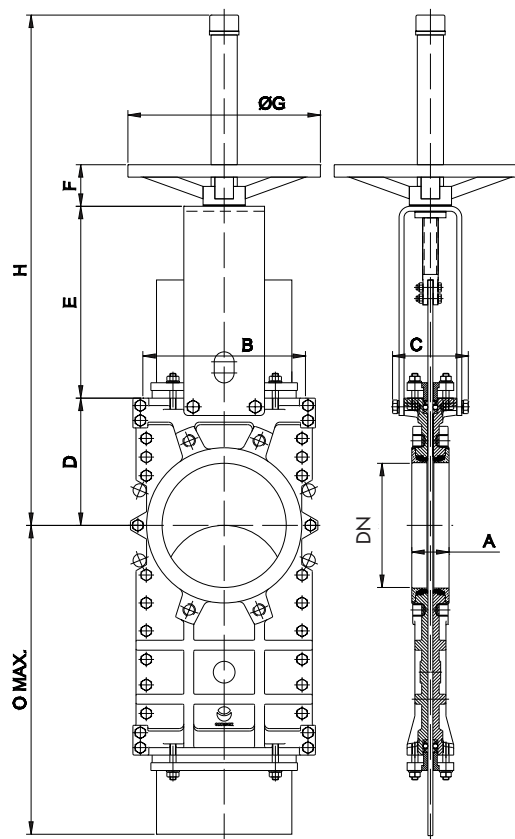
- Standard handwheel actuator:
DN 50-300: Aluminium handwheel
DN ≥ 350: GJL250 (GG25) handwheel
- Recommended for installation where space is limited.
- Consists of:
 - Handwheel with knob
 - Stem
 - Yoke bushing
 - Stem nut fixed to the gate
- Available from DN 50 to DN 600.
- Options (on request):
 - Locking Device
 - Extension
 - Square Nut Drive



DN	A	B	C	D	E	F	ØG	H	O max.	Weight (kg.)
50	41	152	100	110	132	57	225	360	232	12
65	41	167	100	115	149	57	225	382	255	14
80	51	182	100	124	165	57	225	407	310	16
100	51	202	100	140	190	57	225	448	367	20
125	56	216	100	150	214	57	225	482	432	29
150	60	241	100	175	240	57	225	533	497	35
200	60	294	122	205	305	71	310	642	635	62
250	69	356	122	245	360	71	310	737	777	89
300	78	410	122	280	410	71	310	822	905	110
350	78	473	197	300	487	110	410	897	1047	174
400	89	538	197	350	537	110	410	997	1171	266
450	89	588	201	420	589	111	550	1120	1301	326
500	114	646	201	450	649	111	550	1210	1461	372
600	114	754	201	530	748	111	550	1389	1711	445

HANDWHEEL (rising stem)

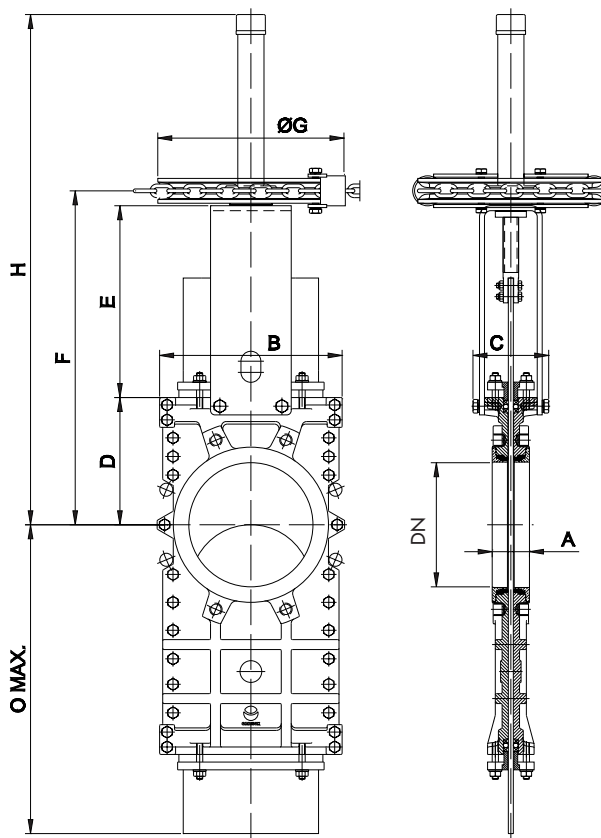
- Consists of:
 - Handwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
- Available from DN 50 to DN 600.
- Options (on request):
 - Locking Device
 - Extensions



DN	A	B	C	D	E	F	ØG	H	O max.
50	41	152	100	110	129	47	225	429	232
65	41	167	100	115	146	47	225	451	255
80	51	182	100	124	162	47	225	476	310
100	51	202	100	140	187	47	225	517	367
125	56	216	100	150	211	47	225	601	432
150	60	241	100	175	237	47	225	652	497
200	60	294	122	205	309	67	310	822	635
250	69	356	122	245	364	67	310	1017	777
300	78	410	122	280	414	67	310	1102	905
350	78	473	197	300	486	66	410	1286	1047
400	89	538	197	350	536	66	410	1386	1171
450	89	588	201	420	588	66	550	1583	1301
500	114	646	201	450	648	66	550	1673	1461
600	114	754	201	530	748	66	550	1963	1711

CHAINWHEEL

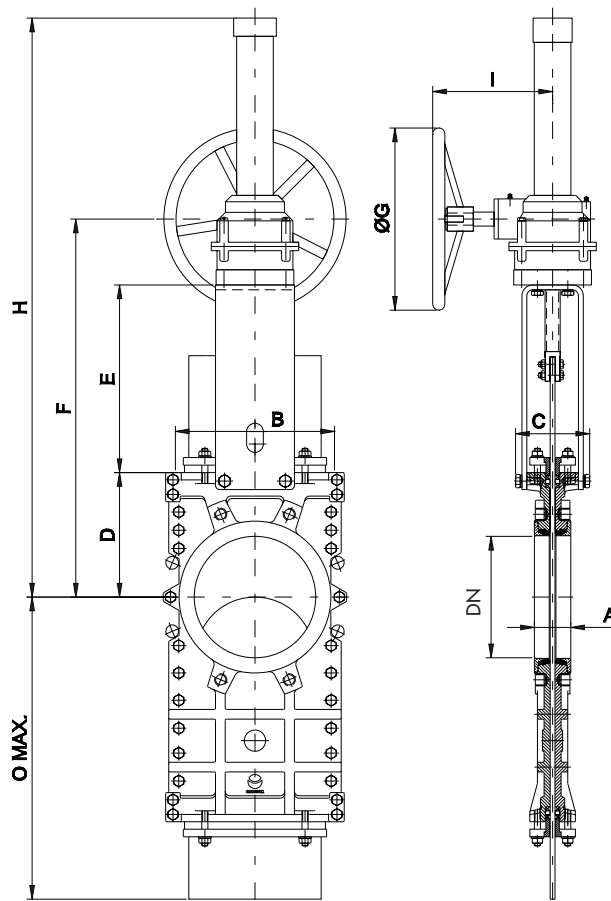
- Recommended for elevated installations.
- Consists of:
 - Chainwheel: Epoxy coated Cast Iron
 - Stem
 - Stem nut
 - Stem protector
- Available from DN 50 to DN 600.
- Options (on request):
 - Locking Device
 - Extension
 - Non-rising Stem



DN	A	B	C	D	E	F	ØG	H	O max.
50	41	152	100	110	129	258	225	429	232
65	41	167	100	115	146	280	225	451	255
80	51	182	100	124	162	305	225	476	310
100	51	202	100	140	187	347	225	518	367
125	56	216	100	150	211	380	225	601	432
150	60	241	100	175	237	431	225	652	497
200	60	294	122	205	309	538	300	822	635
250	69	356	122	245	364	633	300	1017	777
300	78	410	122	280	414	718	300	1102	905
350	78	473	197	300	486	818	454	1285	1047
400	89	538	197	350	536	918	454	1385	1171
450	89	588	201	420	588	1040	454	1577	1301
500	114	646	201	450	648	1130	454	1672	1461
600	114	754	201	530	748	1310	454	1962	1711

GEAR

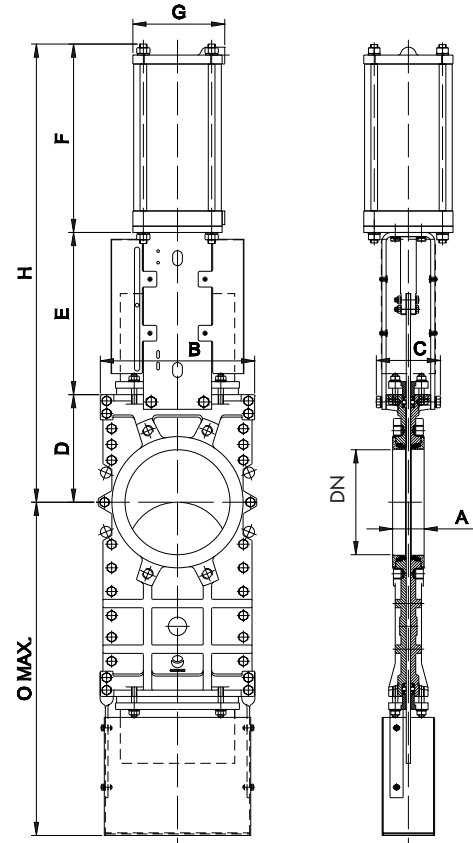
- Recommended for valves larger than DN 350 and working pressures greater than 3.5 kg/cm².
- Consists of:
 - Stem
 - Yoke
 - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200 to DN 600.
- Options (on request):
 - Locking Device
 - Extension
 - Chainwheel
 - Non-rising stem



DN	A	B	C	D	E	F	ØG	H	I	O max.
200	60	294	122	205	309	623	300	954	198	635
250	69	356	122	245	364	718	300	1049	198	777
300	78	410	122	280	414	803	300	1134	198	905
350	78	473	197	300	486	884	450	1515	218	1047
400	89	538	197	350	536	984	450	1614	218	1171
450	89	588	201	420	588	1102	450	1733	218	1301
500	114	646	201	450	648	1192	450	1823	218	1461
600	114	754	201	530	748	1372	450	2003	218	1711

PNEUMATIC CYLINDER

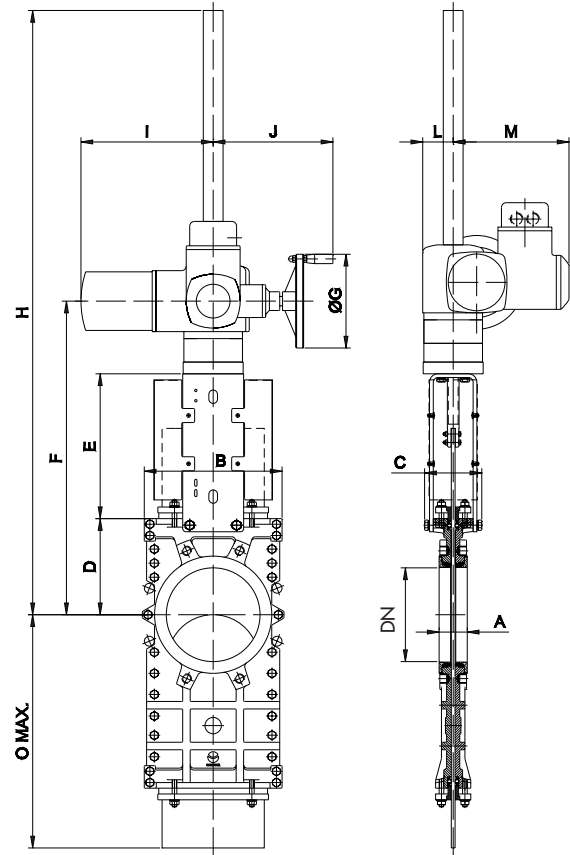
- The standard pneumatic actuator (double acting on-off cylinder) consists of:
 - DN 50-250: Aluminum barrels
 - DN ≥ 300: Composite barrels
 - Aluminium covers
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available in DN 50 to DN 600.
Supply Pressure: minimum 3.5 kg/cm² - maximum 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 jacket and covers
 - Over / Undersized cylinder
 - Stainless Steel jacket and covers
 - Manual override
 - Fail Safe System
 - Travel stops
- Instrumentation (on request):
 - Positioners
 - Solenoid valves
 - Flow regulators
 - Air preparation units



DN	A	B	C	D	O max.	E	F	G	H	Weight (kg.)	Standard Cyl.	Connect.
50	41	152	100	110	232	129	178	115	417	14	C100/62	1/4" G
65	41	167	100	115	255	146	193	115	454	16	C100/77	1/4" G
80	51	182	100	124	310	162	211	115	497	18	C100/95	1/4" G
100	51	202	100	140	367	187	231	115	558	23	C100/115	1/4" G
125	56	216	100	150	432	211	271	140	632	34	C125/143	1/4" G
150	60	241	100	175	497	237	296	140	708	41	C125/168	1/4" G
200	60	294	122	205	635	309	358	175	872	73	C160/220	1/4" G
250	69	356	165	245	777	364	428	220	1037	105	C200/270	3/8" G
300	78	410	165	280	905	414	478	220	1172	128	C200/320	3/8" G
350	78	473	270	300	1047	510	535	277	1344	207	C250/375	3/8" G
400	89	538	270	350	1171	560	585	277	1494	300	C250/425	3/8" G
450	89	588	270	420	1301	608	665	382	1693	378	C300/475	1/2" G
500	114	646	270	450	1461	668	715	382	1833	445	C300/525	1/2" G
600	114	754	290	530	1711	796	880	444	2206	619	C350/625	3/4" G

ELECTRIC ACTUATOR



- Consists of:
 - Electric motor
 - Rising stem
 - Motor support yoke
(Acc. to ISO 5210/DIN 3338)
- The standard electric motor is equipped with:
 - Manual emergency operation
 - Limit switches (open/closed)
 - Torque switches
- Available from DN 50 to DN 600.
- Wide range of types and marks available to meet customer's needs.
- Option:
 - Non rising stem

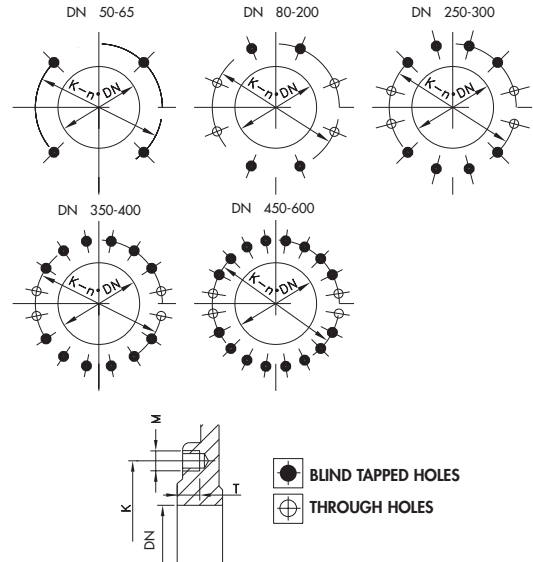


DN	A	B	C	D	E	F	ØG	H	O max.	I	J	L	N	stem Ø x pitch	Torque(Nm)
50	41	152	100	110	129	382	160	552	232	265	249	62	237	20 x 4	10
65	41	167	100	115	146	404	160	574	255	265	249	62	237	20 x 4	10
80	51	182	100	124	162	429	160	599	310	265	249	62	237	20 x 4	10
100	51	202	100	140	187	470	160	640	367	265	249	62	237	20 x 4	10
125	56	216	100	150	211	504	160	674	432	265	249	62	237	20 x 4	15
150	60	241	100	175	237	555	160	1125	497	265	249	62	237	20 x 4	25
200	60	294	122	205	309	669	200	1289	635	282	256	65	247	25 x 5	35
250	69	356	165	245	364	764	200	1344	777	282	256	65	247	25 x 5	60
300	78	410	165	280	414	849	200	1434	905	282	256	65	247	25 x 5	70
350	78	473	270	300	500	930	200	1515	1047	282	256	85	247	35 x 6	100
400	89	538	270	350	550	1030	200	1615	1171	282	256	85	247	36 x 6	140
450	89	588	270	420	598	1193	315	1793	1301	385	325	90	285	36 x 6	180
500	114	646	270	450	658	1283	315	1883	1461	385	325	90	285	36 x 6	170
600	114	754	290	530	738	1443	315	2143	1711	385	325	90	285	36 x 6	220



FLANGE AND BOLTING DETAILS

EN 1092-2 PN10

DN	K	n°	M	T	 
50	125	4	M-16	11	4 - -
65	145	4	M-16	11	4 - -
80	160	8	M-16	14	4 - 4
100	180	8	M-16	14	4 - 4
125	210	8	M-16	14	4 - 4
150	240	8	M-20	18	4 - 4
200	295	8	M-20	18	4 - 4
250	350	12	M-20	22	8 - 4
300	400	12	M-20	22	8 - 4
350	460	16	M-20	28	12 - 4
400	515	16	M-24	28	12 - 4
450	565	20	M-24	32	16 - 4
500	620	20	M-24	32	16 - 4
600	725	20	M-27	32	16 - 4



ANSI B16.5, class 150

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

