

**MODEL****HB**

## BI-DIRECTIONAL KNIFE GATE VALVE

The HB model knife gate is a bi-directional 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:

- Wastewater treatment plants
- Food and Beverage
- Chemical plants
- Etc.

**Sizes:**

DN 50 to DN 300 (larger diameters on request)

**Working pressure:**

DN 50 to DN 300     16 bar

**Standard flange connection:**

DIN PN 16  
Other flange connections on request

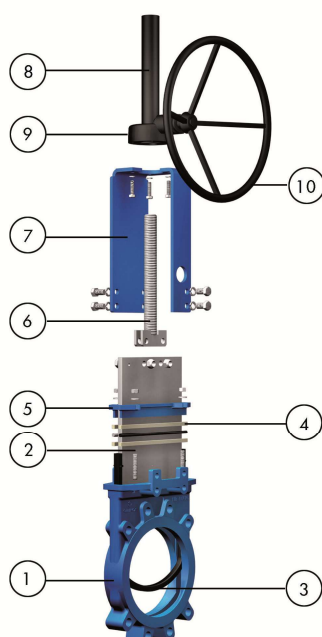
**Directives:**

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



Face to face dimensions acc. to EN558-1 series 20 (replaces K1 DIN3202) up to DN300

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



### STANDARD PARTS LIST

Part:	Materials:
1- Body	GJS400 (GGG40)
2- Gate	AISI 304
3- Seat	EPDM / Nitrile
4- Packing	PTFE Impreg. Synth. Fibre (ST)+O-ring
5- Gland Follower	GJS400 (GGG40)
6- Stem	AISI 430
7- Yoke	Carbon Steel - Epoxy Coated
8- Stem protector	A570 GR.40 / 1.0044 Epoxy coated
9- Bevel Gear	-
10- Handwheel	A570 GR.40 / 1.0044 Epoxy coated

## DESIGN FEATURES

### BODY:

Wafer style cast monoblock design internally machined up to DN 300 with reinforced ribs in larger diameters for extra body strength. It allows its installation as end of line from DN50 to DN300. The design has been developed by a new manufacturing process that machines the inside part of the body, allowing more control in the different dimension tolerances. This allows a perfect adjustment of the body-gate-seal, reducing the torque that keeps the tightness and avoiding any build up of solids that would prevent valve from closing.

### GATE:

Stainless steel gate, as standard. Gate is polished on both sides for a greater seal between the gate with both the packing and the seat. Gate is fully guided in the body along the whole valve stroke in order to avoid gate fluttering and to ensure maximum tightness.

### PACKING:

Standard PTFE impregnated synthetic fibre (ST) with 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.

### NON RISING STEM:

The standard stainless steel stem offers a high and long corrosion resistant life.

### ACTUATORS:

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

### YOKE or ACTUATOR SUPPORT:

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

### EPOXY COATING:

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

On request, following materials can be also supplied:

#### Body:

CF8M

#### Gate:

AISI 316 or 316Ti  
2205

#### Stem:

AISI 316 or 316 Ti



## ACTUATOR TYPES

### MANUAL

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

### AUTOMATIC:

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

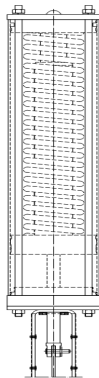
All actuators supplied by ORBINOX are interchangeable

## FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

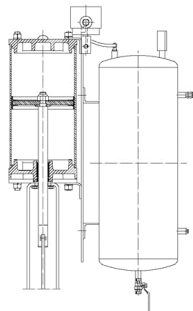
### SINGLE ACTING (SPRING RETURN)

- Available from DN 50 to DN 300
- Supply pressure:  
min. 5 bar - max. 10 bar
- Options:
  - Pneumatic or electric fail open
  - Pneumatic or electric fail close
  - Other options on request



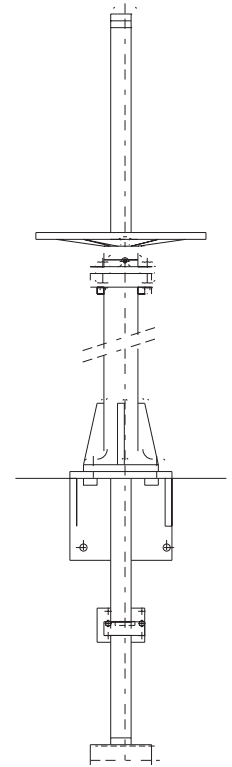
### DOUBLE ACTING WITH AIR TANK

- Available for all valve sizes
- Supply pressure:  
min. 3.5 bar - max. 10 bar
- 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*

For more detailed information, please contact our Technical Department

## TEMPERATURE CHART

### SEAT / SEALS

Material	Max.Temp.(°C)	Applications
EPDM (E)	120	Acid and non mineral oils
Nitrile (N)	120	Resistance to petroleum products
On request:		
Viton (V)	200	Chemical service / High temp.

More details and other materials on request

### PACKING

Material	Max.Temp.(°C)	pH
PTFE impregn.synth fibre (ST)	240	2-13
Dynapack (DP)	270	2-14
Dry cotton (AS)	50	6-8
Braided PTFE (TH)	260	0-14

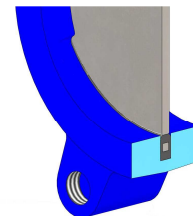
NOTE: All types include an elastomere O-ring (same material as seal), excluding TH. Standard packing: ST

## SEAT TYPES

### RESILIENT SEAT

This is the standard seat. The joint is seated on the body, fitted with a metallic core, in contact with the gate all over its perimeter. This layout provides an adequate watertightness and seamless liquid flow on both ways, avoiding at the same time any build-up of solids that would prevent the valve from closing. The o-ring is protected by the body itself.

\* DN 50-300: Moulded seal with an internal steel core.



## ATEX

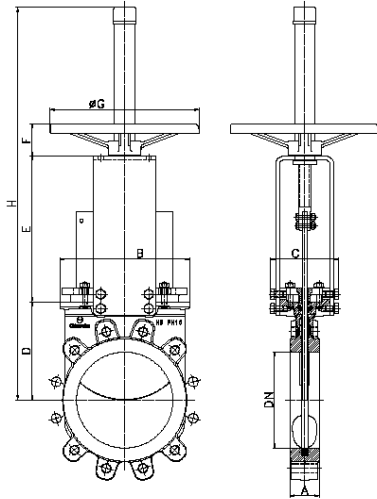


Please contact our ORBINOX representative for info and availability. Some considerations:

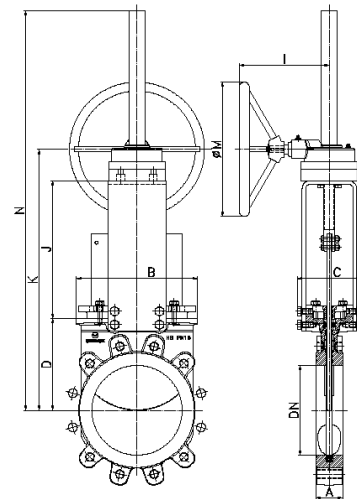
- Hand operated HB valves have been subjected to an ignition risk assessment according to DIN EN 13463: 1-5 and they are out the scope of application of ATEX Directive. Therefore hand operated valves are suitable for ALL ATEX zones.
- Electrical, pneumatical and hydraulically operated valves must be 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.

**HAND OPERATED (rising stem)**

HANDWHEEL



GEAR

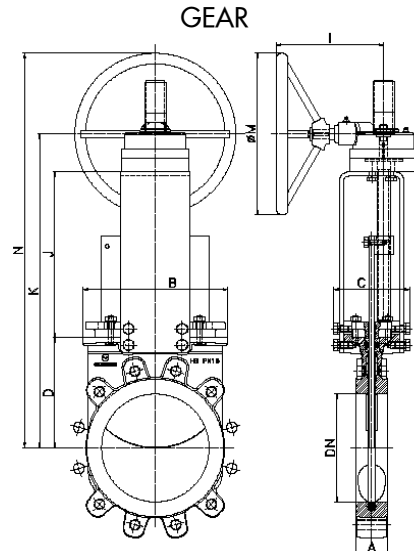
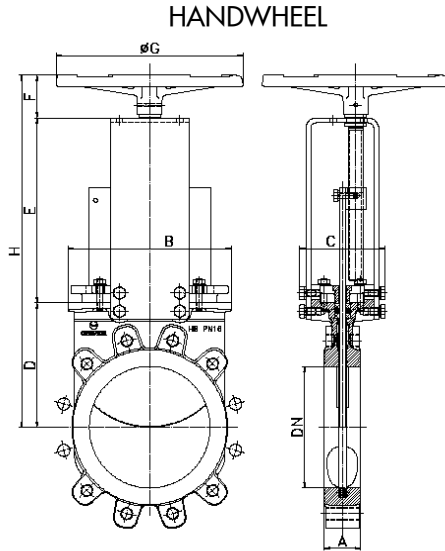


- Standard manual actuator
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Stem
  - Stem nut
  - Stem protector
  - Yoke
- Available from DN 50 to DN 200
- Options:
  - Locking device
  - Extensions
  - Chainwheel
  - Non-rising stem

- Recommended for valves larger than DN 200 and working pressures greater than 3.5 bar
- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200 to DN 300
- Options:
  - Locking device
  - Extensions
  - Chainwheel
  - Non-rising stem

DN	A	B	C	D	E	J	F	K	ØG	ØM	H	N	I
50	43	113	124	105	132	-	47	-	225	-	460	-	-
65	46	128	124	115	149	-	47	-	225	-	490	-	-
80	46	143	124	124	165	-	47	-	225	-	515	-	-
100	52	162	124	140	190	-	47	-	225	-	555	-	-
125	56	181	124	150	214	-	47	-	225	-	640	-	-
150	56	209	124	170	240	-	47	-	225	-	685	-	-
200	60	270	142	205	305	309	67	585	310	300	820	985	200
250	68	320	230	250	-	364	-	684	-	300	-	1115	200
300	78	425	230	290	-	414	-	805	-	300	-	1205	200

**HAND OPERATED (non-rising stem)**



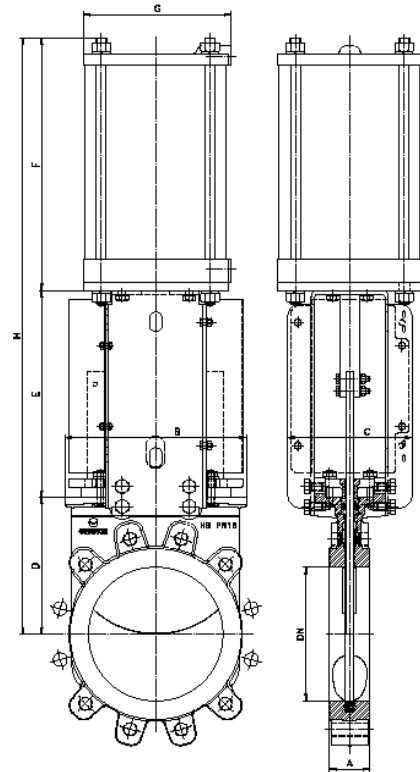
- Standard manual actuator
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Stem
  - Stem nut
  - Yoke
- Available from DN 50 to DN 200
- Options:
  - Locking device
  - Extensions
  - Chainwheel
  - Rising stem

- Recommended for valves larger than DN 200 and working pressures greater than 3.5 bar
- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel (Standard Ratio 4:1)
- Available from DN 200 to DN 300
- Options:
  - Locking device
  - Extensions
  - Chainwheel
  - Rising stem

DN	A	B	C	D	E	J	F	K	ØG	ØM	H	N	I
50	43	113	124	105	132	-	78	-	225	-	315	-	-
65	46	128	124	115	149	-	78	-	225	-	342	-	-
80	46	143	124	124	165	-	78	-	225	-	367	-	-
100	52	162	124	140	190	-	78	-	225	-	408	-	-
125	56	181	124	150	214	-	78	-	225	-	442	-	-
150	56	209	124	170	240	-	78	-	225	-	488	-	-
200	60	270	142	205	305	305	75	585	310	300	-	735	200
250	68	320	230	250	-	364	-	680	-	300	-	830	200
300	78	425	250	290	-	432	-	805	-	300	-	955	200

**PNEUMATIC CYLINDER**

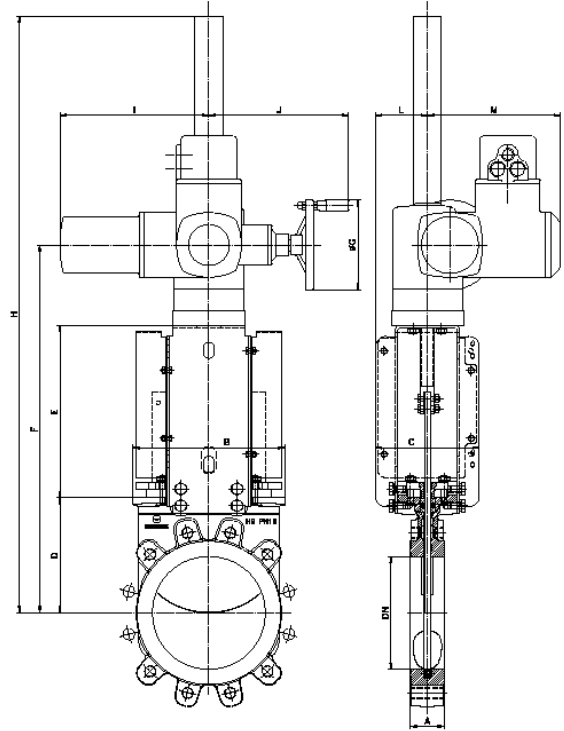
- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - DN ≤ 250: Aluminum barrels
  - DN ≥ 300: Composite barrels
  - Aluminum end covers
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from DN 50 to DN 300
- Supply Pressure: min. 3.5 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 (on request):
  - Hard anodized barrel and covers
  - Over / Undersized cylinder
  - Stainless Steel barrel and covers
  - 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	43	113	124	105	129	178	115	412	9	C100/62	1/4" G
65	46	128	124	115	146	193	115	454	10	C100/77	1/4" G
80	46	143	124	124	162	211	115	497	11	C100/95	1/4" G
100	52	162	124	140	187	231	115	558	13.5	C100/115	1/4" G
125	56	181	124	150	213,5	271	140	64	19	C125/143	1/4" G
150	56	209	142	170	237	296	175	703	22	C160/168	1/4" G
200	60	270	185	205	385	385	220	900	47	C200/220	3/8" G
250	68	320	230	250	450	450	277	1097	58	C250/270	3/8" G
300	78	425	250	290	510	510	382	1244	84	C300/320	1/2" G

**ELECTRIC ACTUATOR (rising stem)**

- Consists of:
  - Electric motor
  - 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 300
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support
- Wide range of types and brands available to meet customer's needs

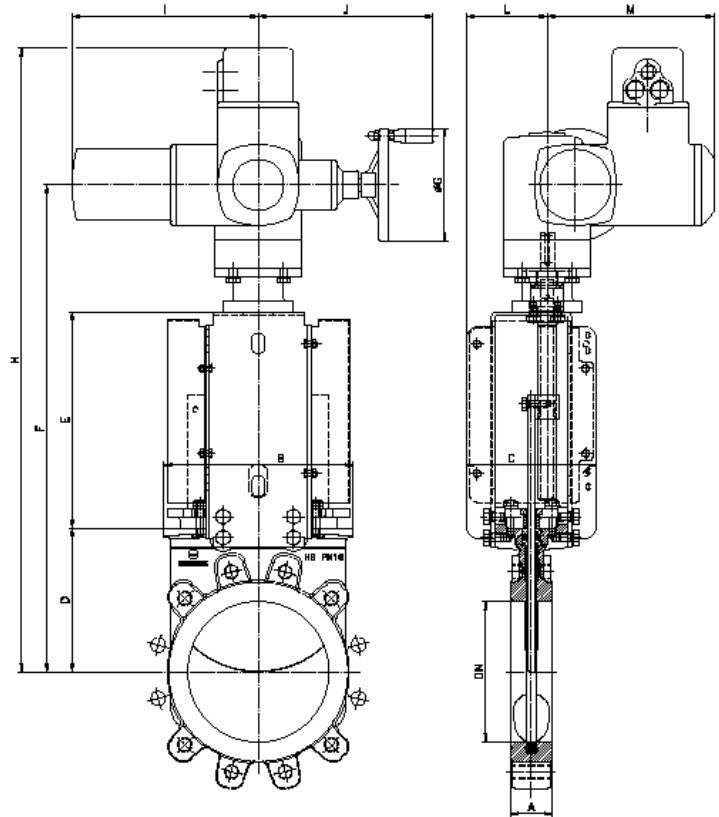


DN	A	B	C	D	E	F	ØG	H	I	J	L	M	StemØxpitch	Torque(Nm)
50	43	113	124	105	132	380	140	955	265	234	62	237	20 x 4	10
65	46	128	124	115	149	407	140	980	265	234	62	237	20 x 4	10
80	46	143	124	124	165	432	140	1005	265	234	62	237	20 x 4	10
100	52	162	124	140	190	473	140	1050	265	234	62	237	20 x 4	10
125	56	181	124	150	214	510	140	1085	265	234	62	237	20 x 4	20
150	56	209	124	170	240	555	140	1130	265	234	62	237	20 x 4	25
200	60	270	185	205	310	660	160	1235	265	250	135	237	24 x 5	50
250	68	320	230	250	397	790	160	1365	265	250	135	237	24 x 5	75
300	78	425	250	290	444	890	200	1470	282	256	135	237	24 x 5	105



**ELECTRIC ACTUATOR (non-rising stem)**




- Consists of:
  - Electric motor
  - 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 300
- For valves installed in a horizontal position, we recomm U-type support plates and/or actuator support
- Wide range of types and brands available to meet customer's needs

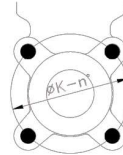


DN	A	B	C	D	E	F	ØG	H	I	J	L	M	StemØxpitch	Torque(Nm)
50	43	113	124	105	132	370	140	545	265	234	72	237	20 x 3	10
65	46	128	124	115	149	397	140	572	265	234	72	237	20 x 3	10
80	46	143	124	124	165	422	140	597	265	234	72	237	20 x 3	10
100	52	162	124	140	190	463	140	638	265	234	72	237	20 x 3	10
125	56	181	124	150	214	497	140	672	265	234	72	237	20 x 3	20
150	56	209	124	170	240	543	140	718	265	234	72	237	20 x 3	25
200	60	270	185	205	310	695	160	895	265	250	115	237	24 x 5	50
250	68	320	230	250	397	835	160	1030	265	250	140	237	24 x 5	75
300	78	425	250	290	444	920	200	1090	282	256	150	247	24 x 5	105

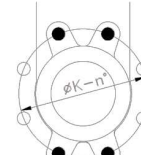
**FLANGE AND BOLTING DETAILS**

**EN 1092-2 PN 16**

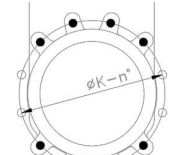
DN	K	n°	M	T	  
50	125	4	M-16	10	4 - 0 - 0
65	145	4	M-16	10	4 - 0 - 0
80	160	8	M-16	12	4 - 0 - 4
100	180	8	M-16	12	4 - 0 - 4
125	210	8	M-16	14	4 - 0 - 4
150	240	8	M-20	14	4 - 0 - 4
200	295	12	M-20	14	8 - 0 - 4
250	355	12	M-24	18	8 - 0 - 4
300	410	12	M-24	18	8 - 0 - 4



DN 50-65

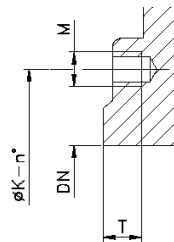





DN 80-150



DN 200-300

NOTE: Other flanges on request



-  BLIND TAPPED HOLES
-  TAPPED THROUGH
-  THROUGH HOLES