

MODEL**HG****SERIES 68**

RUBBER SLEEVE KNIFE GATE VALVE

The HG(SER.68) model knife gate is a bi-directional full flanged valve equipped with two metal reinforced rubber sleeves designed for use in the handling of abrasive slurries, mainly in industries such as:

- Mining
- Chemical plants
- etc.
- Power plants
- Wastewater treatment

Sizes:

DN 3"/80mm to DN 24"/600mm (larger DN on request)

Working pressure:

DN 3"/80mm to DN 24"/600mm 300 psi / (20 bar)
Higher pressures and/or diameters on request

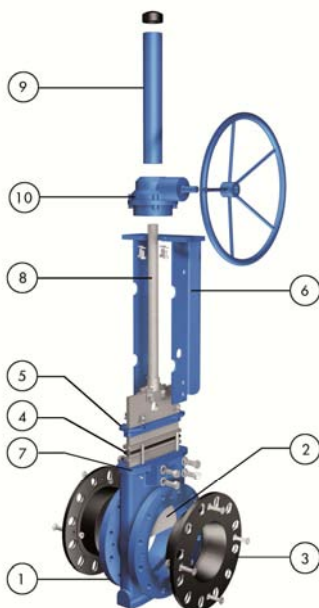
Standard Flange connection:

ANSI B 16.5 (class 300)
DIN PN 25
Others available

Directives:

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

All ORBINOX valves are tested prior to shipping



STANDARD PARTS LIST

Part:	Materials:
1- Body	Ductile iron A536 (60-40-18) / Carbon Steel S275JR
2- Gate	AISI 304 (1.4301) + Chrome / Duplex 2205 + Chrome
3- Sleeves	Natural rubber / EPDM
4- Packing	PTFE Impreg. Synth. Fibre (with a EPDM O-Ring)
5- Gland Follower	A570 GR.40 / 1.0044 Epoxy coated
6- Yoke	A570 GR.40 / 1.0044 Epoxy coated
7- Grease Nipple	Zinc coated carbon-steel
8- Stem	AISI 430 / 1.4016
9- Stem protector	A570 GR.40 / 1.0044 Epoxy coated
10- Bevel Gear	-



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DESIGN FEATURES

BODY:

Full flange style cast monoblock, for installation between flanges, with reinforced ribs in larger diameters, providing the body with extra strength. Internal body design allows the gate to be fully guided. The grease nipples allow the gate to be lubricated, thus enhancing its capacity to slide between the sleeves. Additionally, the design allows draining through the lower part, where a cover or a bottom splash guard can be installed. Some leakage will occur from the bottom of the valve during operation, this allows solids to be flushed from body cavity and will ensure the full stroke of the valve.

GATE:

Made of stainless steel, polished on both sides, and of rectangular shape, the gate is machined to an edge. As well as reducing friction and damage to the seats, this design allows to cut perfectly through the fluid. The gate material can be changed upon request, thus allowing greater working pressures.

RUBBER SLEEVES:

The seat is made up of two highly resistant, long-lasting sleeves, made of rubber with a metal core. Its solid sleeve design allows for maximum flexibility during gate travel, minimising the effort necessary for operation. In the open position, the two sleeves are in permanent contact with each other, assuring full bore flow. There are no seat cavities which may cause material build-up, and the fluid does not come into contact with the metallic parts of the valve. This design allows for easy replacement of damaged sleeves. See available materials on page HG(SER.68)-6.

PACKING:

Made of EPDM, it eliminates possible leaks to the exterior as well as minimising the maintenance needs of traditional packings. In combination with the grease nipples, it guarantees an optimal functioning of the gate.

STEM:

Made of stainless steel, which provides a high resistance to corrosion and a long life. In rising stem valves the stem protector protects the stem against dirt build up.

ACTUATORS:

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

YOKE or ACTUATOR SUPPORT:

Made of steel (stainless steel available on request) and EPOXY coated. Reinforced design is standard and its robust design provides it with great rigidity, withstanding the most adverse operating conditions.

EPOXY COATING:

The epoxy coating on all ORBINOX cast iron and carbon steel components is electrostatically applied making them corrosion resistant with a high quality surface finish.
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.* ONLY IN EUROPE



OTHER OPTIONS

Bottom splash guard (Fig. 1 and 2):

There are two types of splash guards that can be installed on the lower part of the valve body. They permit either periodic or continuous removal of solids that may accumulate during operation of the valve. They shall always be connected to a drain line.



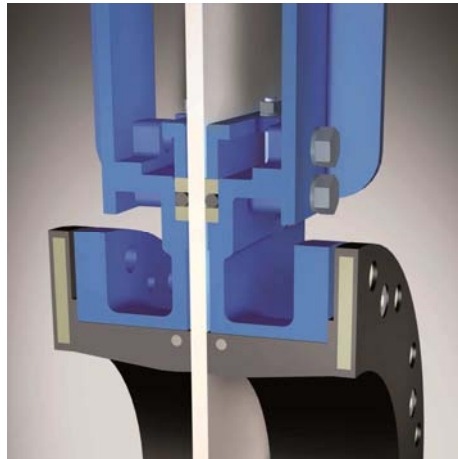
(Fig. 1) Flat plate



(Fig. 2) Tubular design

Conventional leak proof packing (Fig. 3):

The HG(SER.68) can use conventional leak proof packing and packing gland follower which guarantee full tightness at maximum design pressure.



(Fig. 3) Conventional leak proof packing

OTHER OPTIONS

Open-closed lockout system (Fig. 4):

The standard valve is ready to install a lockout pin for emergency or maintenance situations.



(Fig. 4)

Other materials of construction:

Other materials may be used, such as carbon steel, different stainless steels (AISI 316, AISI 317, 2205, ...), 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)

Flush ports (Fig. 5):

Allows flushing out of solids trapped within the body cavity and the sleeves. This option can be used in conjunction with splash guards



(Fig. 5)

Gate coatings:

Gates can be provided with different coatings to improve wear and corrosion resistance, non-adherence properties, etc.

We recommend to contact our technical department

MODEL

HG

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ACTUATOR TYPES

MANUAL:

Handwheel (rising stem)
Bevel Gear
Others (on request)

AUTOMATIC:

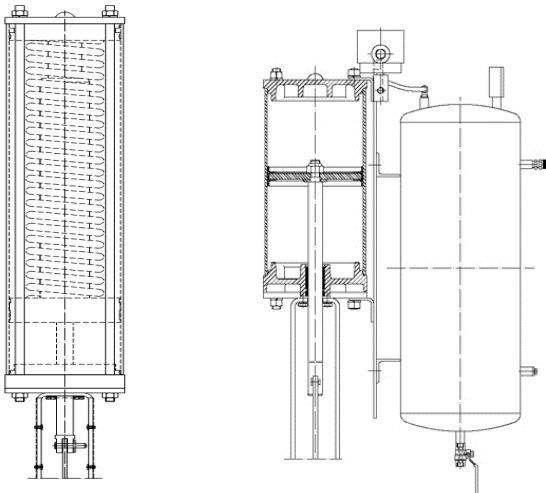
Electric (rising stem)
Pneumatic (single & double-acting)
Hydraulic



All actuators supplied by ORBINOX are interchangeable

FAIL SAFE SYSTEMS

Used on pneumatic actuated valves
Different pneumatic solutions available
Fail open/ Fail close
DN < 8"/200mm Single acting spring return cylinder
DN => 8"/200mm Air tank



ACCESSORIES

Open-closed lockout
Mechanical stops
Manual override actuators
Solenoid valves
Positioners
Limit switches
Proximity switches
Floor stand
Stem extensions

For further information, please see EX (SER. 10) catalogue

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MODEL**HG****SERIES 68**

TEMPERATURE CHART

SEAT / SLEEVES

Material	Min/Max T.(F°)	Min/Max T.(°C)	Applications
Natural rubber	-22/167	-30/75	General
EPDM	-22/248	-30/120	Acids/Non-mineral oils
Neoprene	-22/194	-30/90	Oils/Solvents
Chlorobutyl	-22/257	-30/125	High temperatures
Nitrile	-22/248	-30/120	Hydrocarbons/Oils/Greases

PACKINGS

Material	Max T. (F°)	(°C)
EPDM	248	120
PTFE impregn. synth. fiber (ST)	464	240

All are reinforced with a metal core. For other temperatures and applications, contact our technical department

SEAT

The closure of the HG(SER.68) valve is achieved by its two characteristic high resistance elastomer sleeves, which improve the tight seal both in the adjustment with the flanges and in the closure. These sleeves have a metal core which provides them with a great resistance to demanding working conditions and pressures.



OPEN



INTERMEDIATE



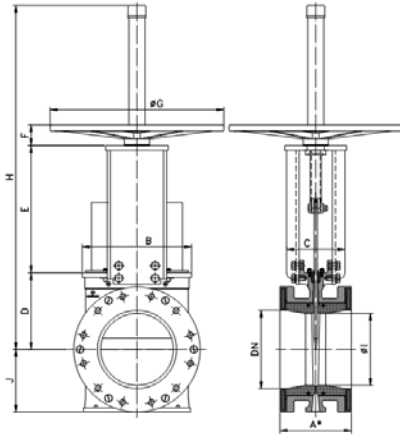
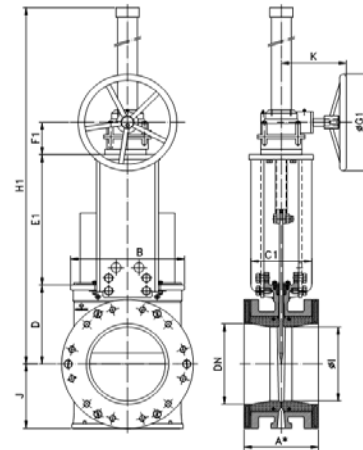
CLOSED

ATEX



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

- Hand operated HG(SER.68) 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.
- Electrically, pneumatically 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**HG****SERIES 68****HAND OPERATED (rising stem)****HANDWHEEL****GEAR**

- Consists of:
 - Epoxy coated cast iron handwheel
 - Yoke
 - Stem and stem nut
 - Stem protector
- Available from DN 3"/80mm to DN 4"/100mm
- Options (on request):
 - Open-closed lockout
 - Extensions and floor stands
 - PVC bellows
 - Splash guards
- Note: bevel gear is recommended for valve sizes DN>4"/100mm (full force on handwheel > 56lb/250 N)

- Recommended for valves larger than DN 4"/100mm
- Consists of:
 - Stem and stem protector
 - Yoke
 - Bevel Gear Actuator with Handwheel
- Available from DN 6"/150mm
- Options (on request):
 - Chainwheel
 - Open-closed lockout
 - Extensions and floor stands
 - PVC bellows
 - Splash guards

DN	GEAR	A1*	A2*	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1	J	K	Ø1
3"/80	-	6,88/175	7,20/183	6,89/175	4/100	-	4,88/124	6,89/175	-	2,63/67	-	8,86/225	-	21,45/545	-	3,54/90	-	2,75/70
4"/100	-	6,88/175	7,20/183	6,70/170	4/100	-	5,52/140	8/200	-	2,63/67	-	12,20/310	-	24,40/620	-	3,93/100	-	3,34/85
6"/150	FL 0.4	7/178	7,32/186	9,05/230	6,50/165	6,50/165	6,89/175	10,43/265	10,35/263	2,63/67	3,30/84	12,20/310	12/300	29,72/755	36/900	5,11/130	-	5,31/135
8"/200	FL 0.4	7,24/184	7,55/192	11,02/280	-	-	8,07/205	-	12,68/322	-	3,30/84	16,14/410	12/300	-	38,97/990	6,30/160	10,35/263	7,08/180
10"/250	FL 0.4	8,88/225,5	9,17/233	13,18/335	-	7,28/185	9,64/245	-	15,62/397	-	3,30/84	-	12/300	-	59,44/1510	7,87/200	10,35/263	9,05/230
12"/300	FL 0.4	10,11/257	10,39/264	15,37/390	-	10,47/266	11,02/280	-	17,36/441	-	3,30/84	-	18/450	-	62,60/1590	9,13/232	10,35/263	11,02/280
14"/350	FL 0.4	10,11/257	10,39/264	17,32/440	-	10,63/270	12,79/325	-	20/508	-	3,30/84	-	18/450	-	66,93/1700	10,15/258	10,35/263	12,99/330
16"/400	FL 0.4	11/279,5	11,29/287	19,88/505	-	10,63/270	14/350	-	22,32/567	-	3,30/84	-	18/450	-	70,07/1780	11,50/292	10,35/263	14,96/380
18"/450	FL 1.6	12,24/311	12,55/319	22,04/560	-	10,63/270	16,53/420	-	24,84/631	-	4,01/102	-	18/450	-	85,63/2175	12,51/318	10,35/263	16/400
20"/500	FL 1.6	14,13/359	14,44/367	24,40/620	-	10,63/270	18,19/462	-	28/700	-	4,01/102	-	25,60/650	-	90,74/2305	13,58/345	10,35/263	18/450
24"/600	FL 1.6	14,62/371,5	14,96/380	28,74/730	-	10,63/270	20,08/510	-	31,69/805	-	4,01/102	-	25,60/650	-	99,21/2520	16/400	10,35/263	21,65/550

A1*: installed face to face

A2*: minimum required dimension for installation

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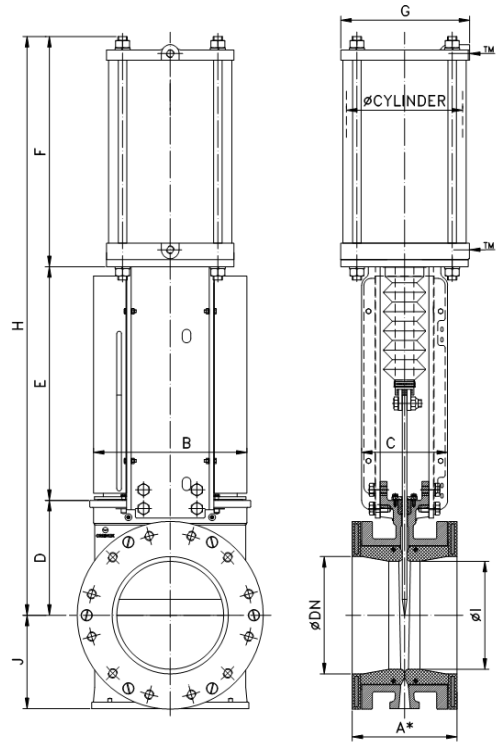
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MODEL**HG****SERIES 68****PNEUMATIC ACTUATOR**

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
 - $DN \leq 10''/250mm$: Aluminum barrels
 - $DN \geq 12''/300mm$: Composite barrels
 - Aluminum end caps
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
 - PVC bellows
- Available from $DN 3''/80mm$ to $DN 16''/400mm$
- Supply Pressure: 90psi/(6 bar)
- Reinforced design of support plates is standard starting from $DN 8''/200mm$
- Options (on request):
 - Hard anodized barrel and covers
 - Stainless steel barrel and covers on request
 - Open-closed lockout
 - Manual override actuator
 - Fail-safe systems
 - Splash guards
- Instrumentation (on request):
 - Positioners
 - Flow regulators
 - Solenoid valves
 - Air preparation unit
 - Limit/proximity switches
- Note: in order to guarantee the correct functioning of the pneumatic cylinder for the catalogue pressures, a supply pressure of 90psi (6 bar) is required. For lower pressures, we recommend to contact our technical department



DN(″/mm)	ØCYL.	TM	A1*	A2*	B	C	D	E	F	G	H	J	ØI
3″/80	C5″-4.76″/(125-121)	1/4″ G	6,88/175	7,20/183	6,88/175	4/100	4,88/124	6,88/175	10,23/260	6,89/175	22,01/559	3,5/90	2,75/70
4″/100	C6.30″-5.51″/(160-140)	3/8″ G	6,88/175	7,20/183	6,69/170	6,50/165	5,52/140	7,79/198	11,02/280	8,66/220	24,33/618	4/100	3,34/85
6″/150	C8″-7.63″/(200-194)	3/8″ G	7/178	7,32/186	9,05/230	7,28/185	6,89/175	10,43/265	13,58/345	10,90/277	30,90/785	5,12/130	5,31/135
8″/200	C10″-9.92″/(250-252)	3/4″ G	7,24/184	7,55/192	11,02/280	10,47/266	8,07/205	12,67/322	16,53/420	15,04/382	37,28/947	6,30/160	7,08/180
10″/250	C12″-12.48″/(300-317)	3/4″ G	8,75/222,5	9,17/233	13,19/335	10,63/270	9,64/245	16,33/415	19,88/505	17,48/444	45,87/1165	8/200	9,05/230
12″/300	C14″-14.80″/(350-376)	3/4″ G	10,11/257	10,39/264	15,35/390	10,63/270	11,02/280	18,58/472	22,83/580	20,27/515	52,44/1332	9,14/232	11,02/280
14″/350	C16″-17.32″/(400-440)	3/4″ G	10,11/257	10,39/264	17,32/440	10,63/270	12,79/325	21,85/555	27,95/710	17,48/444	62,59/1590	10,15/258	12,99/330
16″/400	C16″-19.29″/(400-490)	3/4″ G	1/279,5	11,29/287	19,88/505	10,63/270	13,77/350	23,81/605	29,92/760	17,48/444	67,51/1715	11,50/292	14,96/380

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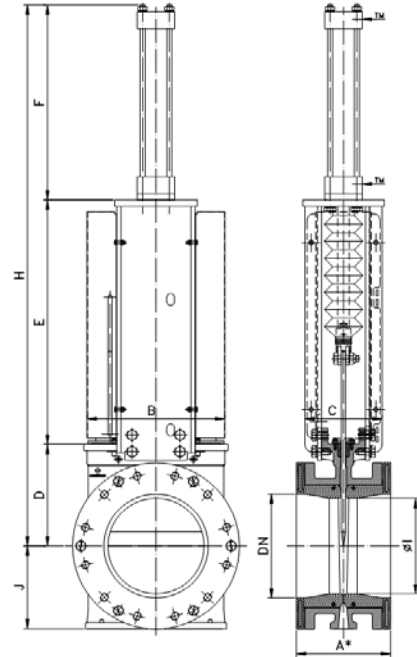
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MODEL**HG****SERIES 68****HYDRAULIC ACTUATOR**

- The hydraulic actuator consists of a double acting cylinder in accordance with ISO 6020/2
- Available from DN 3"/80mm to DN 24"/600mm with PVC bellows
- Hydraulic pressure: 1450psi/(100 bar)
- Maximum hydraulic pressure: 2320psi/(160 bar)
- Options:
 - Pressure indicators: mechanical and inductive
 - Open-closed lockout
 - Position transducers
 - Hydraulic groups
 - Electrical cabinets
 - Splash guards
 - Limit/proximity switches



DN("/mm)	ØCYL.	TM	A1*	A2*	B	C	D	E	F	H	J	ØI
3"/80	C1.26"-4.76"/(32-121)	¼" G	6,88/175	7,20/183	6,88/175	4/100	4,88/124	11,14/283	9,05/230	25,07/637	3,5/90	2,75/70
4"/100	C1.57"-5.51"/(40-140)	¼" G	6,88/175	7,20/183	6,69/170	4/100	5,52/140	12,01/305	9,76/248	27,28/693	4/100	3,34/85
6"/150	C2.48"-7.63"/(63-194)	3/8" G	7/178	7,32/186	9,05/230	6,50/165	6,89/175	14,57/370	13,31/338	34,76/883	5,12/130	5,31/135
8"/200	C3.14"-9.92"/(80-252)	3/8" G	7,24/184	7,55/192	11,02/280	7,28/185	8,07/205	16,81/427	15,94/405	40,83/1037	6,30/160	7,08/180
10"/250	C4"-12.48"/(100-317)	¾" G	8,75/222,5	9,17/233	13,19/335	10,47/266	9,64/245	22,83/580	19,05/484	51,53/1309	8/200	9,05/230
12"/300	C5"-14.80"/(125-376)	¾" G	10,11/257	10,39/264	15,35/390	10,63/270	11,02/280	25,16/639	21,92/557	58,26/1480	9,14/232	11,02/280
14"/350	C5"-17.32"/(125-440)	¾" G	10,11/257	10,39/264	17,32/440	10,63/270	12,79/325	27,67/703	23,58/599	64,05/1627	10,15/258	12,99/330
16"/400	C5"-19.29"/(125-490)	¾" G	1/279,5	11,29/287	19,88/505	10,63/270	13,77/350	30,67/779	25,55/649	70/1778	11,50/292	14,96/380
18"/450	C5,51"-21.34"/(140-542)	¾" G	12,24/311	12,55/319	22,04/560	10,63/270	16,53/420	32,91/836	27,95/710	77,40/1966	12,51/318	16/400
20"/500	C6,30"-37,40"/(160-950)	¾" G	14,13/359	14,44/367	24,41/620	10,63/270	18,19/462	37,48/952	31,10/790	86,14/2188	13,58/345	18/450
24"/600	C8"-23.03"/(200-712)	1" G	14,62/371,5	14,96/380	28,74/730	10,63/270	20,08/510	46,26/1175	37,01/940	102,13/2594	16/400	21,65/550

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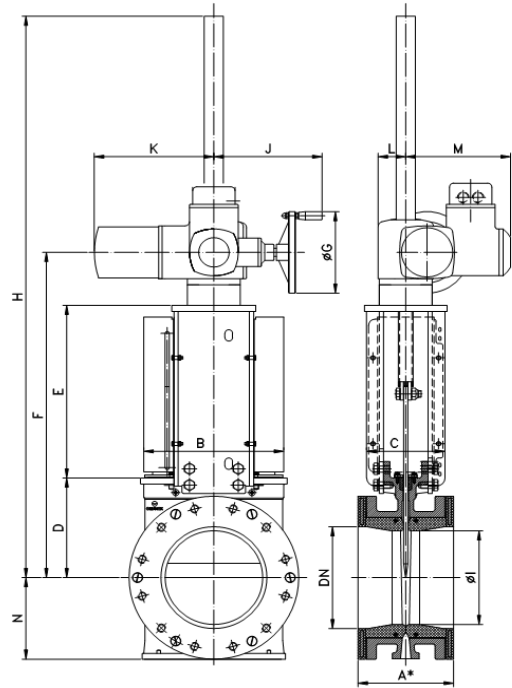
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MODEL**HG****SERIES 68**

ELECTRIC ACTUATOR (rising stem)

- Automatic actuator which consists of:
 - Electric motor
 - Motor support yoke flange (standardised flanges as per ISO 5210/DIN 3338)
- The standard electric motor is equipped with:
 - Manual emergency handwheel
 - Limit switches (open/closed)
 - Torque switches
- Available from DN 3"/80mm to DN 24"/600mm
- Wide range of types and brands available to meet customer requirements
- Options: (on request)
 - Open-closed lockout
 - Splash guards



DN ("/mm)	A1*	A2*	B	C	D	E	F	ØG	H	K	J	L	M	N	ØI	TORQUE (ft.LBS/Nm)
3"/80	6,88/175	7,20/183	6,88/175	4/100	4,88/124	6,89/175	17,40/442	6,30/160	40/1000	10,43/265	9,80/249	2,44/62	9,37/238	3,54/90	2,75/70	22,2/30
4"/100	6,88/175	7,20/183	6,69/170	4/100	5,52/140	7,80/198	18,93/481	6,30/160	40,74/1035	10,43/265	9,80/249	2,44/62	9,37/238	3,93/100	3,34/85	29,50/40
6"/150	7/178	7,32/186	9,05/230	4/100	6,89/175	10,43/265	22,95/533	6,30/160	44,68/1135	10,43/265	9,80/249	2,44/62	9,37/238	5,11/130	5,31/135	55,32/75
8"/200	7,24/184	7,55/192	11,02/280	6,50/165	8,07/205	12,67/322	26,85/682	7,87/200	49,02/1245	11,10/282	10/254	2,55/65	9,76/248	6/150	7,08/180	110,63/150
10"/250	8,75/222,5	9,17/233	13,19/335	7,28/185	9,64/245	16,33/415	31,10/790	7,87/200	54,25/1378	11,10/282	10/254	2,55/65	9,76/248	8/200	9,05/230	206,51/280
12"/300	10,11/257	10,39/264	15,35/390	10,47/266	11,02/280	18,58/472	34,72/882	7,87/200	57,87/1470	11,10/282	10/254	2,55/65	9,76/248	9,13/232	11,02/280	239,70/325
14"/350	10,11/257	10,39/264	17,32/440	10,63/270	12,79/325	21,85/555	41,53/1055	12,40/315	65,24/1657	15,15/385	13,22/336	3,58/91	11,25/286	10,15/258	12,99/330	265,52/360
16"/400	1/279,5	11,29/287	19,88/505	10,63/270	13,77/350	23,81/605	44,49/1130	12,40/315	68,19/1732	15,15/385	13,22/336	3,58/91	11,25/286	11,49/292	14,96/380	368,78/500
18"/450	12,24/311	12,55/319	22,04/560	10,63/270	16,53/420	26,65/677	50,07/1272	12,40/315	77,71/1974	15,15/385	13,22/336	3,58/91	11,25/286	12,51/318	16/400	442,48/600
20"/500	14,13/359	14,44/367	24,41/620	10,63/270	18,19/462	29,21/742	54,29/1379	16/400	97,67/2481	15,15/385	13,34/339	3,58/91	11,25/286	13,58/345	18/450	516,29/700
24"/600	14,62/371,5	14,96/380	28,74/730	10,63/270	20,08/510	33,19/843	60,15/1528	16/400	103,54/2630	15,15/385	13,34/339	3,58/91	11,25/286	16/400	21,65/550	700,68/950

A1*: installed face to face

A2*: minimum required dimension for installation

Reserves the right to change specifications without notice

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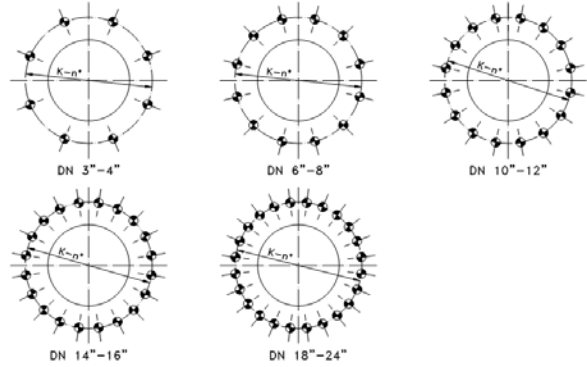
Rev.3

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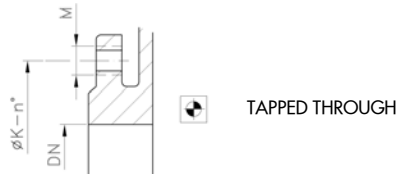
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MODEL**HG****SERIES 68****FLANGE AND BOLTING DETAILS****ANSI B16.5, class 300(*)**

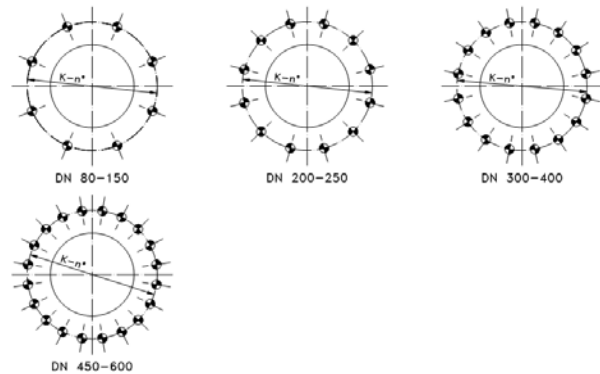
DN	K	n°	M	⌀
3"	6 5/8"	8	3/4" - 10 UNC	8
4"	7 7/8"	8	3/4" - 10 UNC	8
6"	10 5/8"	12	3/4" - 10 UNC	12
8"	13"	12	7/8" - 9 UNC	12
10"	15 1/4"	16	1" - 8 UNC	16
12"	17 3/4"	16	1 1/8" - 7 UNC	16
14"	20 1/4"	20	1 1/8" - 7 UNC	20
16"	22 1/2"	20	1 1/4" - 7 UNC	20
18"	24 3/4"	24	1 1/4" - 7 UNC	24
20"	27"	24	1 1/4" - 7 UNC	24
24"	32"	24	1 1/2" - 6 UNC	24



(*) From DN 28", acc. to ANSI B16.47 "series A"(class 300)

**EN 1092-2 PN25**

DN	K	n°	M	⌀
80	160	8	M-16	8
100	190	8	M-20	8
150	250	8	M-24	8
200	310	12	M-24	12
250	370	12	M-27	12
300	430	16	M-27	16
350	490	16	M-30	16
400	550	16	M-33	16
450	600	20	M-33	20
500	660	20	M-33	20
600	770	20	M-36	20



Reserves the right to change specifications without notice

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