Knife gate valve HL

Stafsjö
SINCE 1666

Knife gate valve HL

Stafsjö's knife gate valve HL has a full bore with excellent flow characteristics. The valve is equipped with a through-going gate for secure bi-directional shut-off of concentrated and static media. This shut-off performance, along with its flow characteristics, makes it suitable for severe operating conditions with media such as pulp (pulp concentration > 5%), liquor, reject, powder and ash.

HL is supplied as standard with a valve body in stainless steel, which has integrated purge ports and guiding strips. To be able to cope with bi-directional pressures, the HL has the retainer ring system on both body halves. The valve is equipped with a gate in stainless steel, but Duplex material and hard chromed surface are options to increase the wear resistance. The gland boxes are equipped with Stafsjö's box packing TwinPack™, to secure that no media reaches surrounding environment.

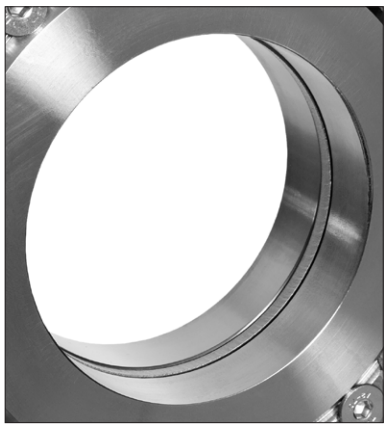
The top work consists of aluminium beams and stainless steel tie rods, which gives good corrosion resistance and a stable operation. The valve is modular designed and can easily be customized to specific processes requirements. There are several actuator types and accessories to choose from in our standard collection – all easily exchangeable between each other.

The HL valve is designed, manufactured, inspected and tested according to the European Pressure Equipment Directive (PED 97/23/EC) category I and II module A1. The valve is CE marked when it is applicable.

The HL valve is one out of four valves in Stafsjö's procuct range with through-going gate. The HL is a slim line version of our well known HG and HP is a high pressure version of HG. HPT is a high pressure version entirely made in Titanium.

Reliable shut-off and bi-directional sealing

The retainer ring system on both sides of the gate makes it independent of flow direction. The through-going gate assures a reliable shut-off of highly concentrated and static media.



A full bore with excellent flow characteristics

In open position, the HL valve's bore has almost no cavity at all, making the flow characteristics really excellent. In this position the PTFE seats are protected by the retainer rings and the gate.

Solid design to preserve a first class sealing

The gate is supported all the way from open to closed position which, together with a proper dimensioned top works, makes the shut-off reliable and repeatable.

Design data

Sizes	Flange drilling	Face-to-face dimension	ATEX design
DN 400 - DN 800	**EN 1092 PN 10** **EN 1092 PN 16** **JIS B 2238 10K** **ASME/ANSI B16.5** **Class 150** **ASME/ANSI B16.47** **Class 150, series A** **AS 2129 Table D** **AS 2129 Table E** **BS 10 Table D**	**Stafsjö manufacturing standard**	**ATEX 94/ 9/EC II cat 3 G/D for zone 2 and 22 on request**

Other sizes on request

Leakage rate	Pressure tests
EN 12266-1:2012 Rate A: no visually detectable leakage is allowed for duration of the test	Pressure tests are performed with water at 20° C according to EN 12266-1:2012. Pressure shell test: 1,5 times maximum allowable working pressure for open valve. Pressure seat tightness test: 1,1 times maximum allowable differential pressure for closed valve.

Maximum working pressure body at 20°C		Maximum differential pressure at 20°C	
DN	bar	DN	bar
400	**6**	**400**	**6**
500 - 800	**4**	**500 - 800**	**4**

Basic equipment

A. Valve Body			
Material	Code	Type	Maximum temperature °C
Stainless steel	**(E)**	**EN 1.4408**	**400**

B. Gate		
Material	Type	Option
Stainless steel	**EN 1.4404/AISI 316L/SS 2348**	**Hard chromed surface**
Option:		
Duplex stainless steel	**EN 1.4462/AISI 2205/SS 2377**	**Hard chromed surface**

C. Retainer rings	
Material	Type
Stainless steel	**EN 1.4408**

D. Seats		
Material	Code	Maximum temperature °C
PTFE with o-ring Nitrile	**(P)**	**100**
PTFE with o-ring Viton	**(PV)**	**180**

E. Box Packings		
Material	Code	Maximum temperature °C
TwinPack™	**(TY)**	**260**
WhitePack™	**(WP)**	**260**

Actuators

Manual	Code	Automatic	Code
Hand wheel[1)]	**(HW)**	**Pneumatic cylinder**	**(EC)**
Chain wheel[2)]	**(CW)**	**Electrical motor**	**(EM)**
Bevel gear[2)]	**(BG)**	**Hydraulic cylinder[2)]**	**(MH)**

[1)] For recommended size, see page 5 column E
[2)] For recommended size, see separate data sheet

Double-acting pneumatic cylinder			Electric motor (AUMA multi-turn)		
DN valve	EC type	Maximum Force (kN)	DN valve	AUMA type	Attachment
400	**EC 200**	**14.1**	**400**	**SA 10.2**	**F10/A**
500 - 600	**EC 250**	**22.1**	**500 - 600**	**SA 14.2**	**F14/A**
700 - 800	**EC 320**	**36,2**	**700 - 800**	**SA 14.6**	**F14/A**

The table above gives recommended cylinder sizes at normal operation with 5 bar air pressure. For other operating conditions, please contact Stafsjö or your local representative for advice.

Electric motors are mounted according to standard ISO 5210. The table above gives recommended motor sizes at normal operation. For other operating conditions, please contact Stafsjö or your local representative for advice.

The actuators are described in separate data sheets. For advice and information on other actuators or on ATEX-classified ones, please contact Stafsjö or your local representative.

Options and accessories

Knife gate valve			
Accessories	Code	Model	Design
Mechanical limit switch	**(MLS)**	**Omron D4V**	**12-250 V AC/12-125 V DC, IP 65**
Inductive limit switch	**(ILS)**	**ifm electronic IG0006**	**2-wire, 20-250 V AC/DC, IP 67**
		ifm electronic IG5401	**3-wire, 10-36 V DC PNP, IP 67**
Purge ports	**(PP)**	**HL are equipped with purge ports**	**Pipe thread G 1/2" acc. to ISO 228/1**

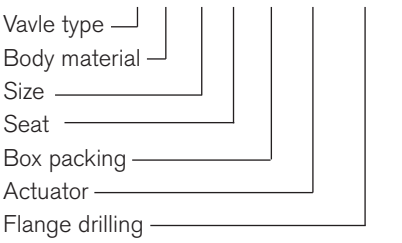
Pneumatic cylinder			
Accessories	Code	Model	Design
Solenoid valve	**(SV)**	**Parker Namur valves for EC 200 - EC 320**	**G1/2", Mono stable 5/2, Namur series VDI/VDE 3845, 24 V DC/110 V AC/220 V AC, IP 65**
Magnetic limit switch	**(MagLS)**	**KITA KT-50R for EC 100 - EC 320**	**2-wire, 5-240 V AC/DC, IP 65**
		KITA KT-50N for EC 100 - EC 320	**3-wire, 10-30 V DC, IP 65**

The accessories are described in detail in separate data sheets. For accessories classified according to ATEX, please contact Stafsjö or your local representative.

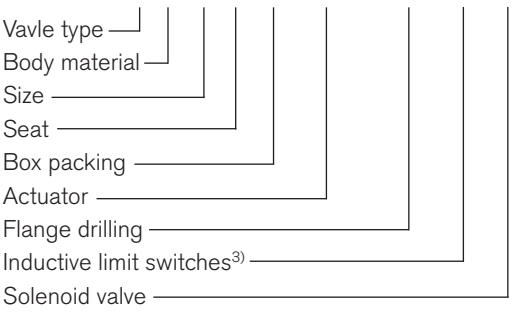
Specify the Stafsjö valve

Stafsjö's valves are modular designed and they can easily be customized with gate, seats and box packings according to media and requirements, as well for actuators and accessories. Below are examples of how you can specify your Stafsjö valve. Further information is available on www.stafsjo.com.

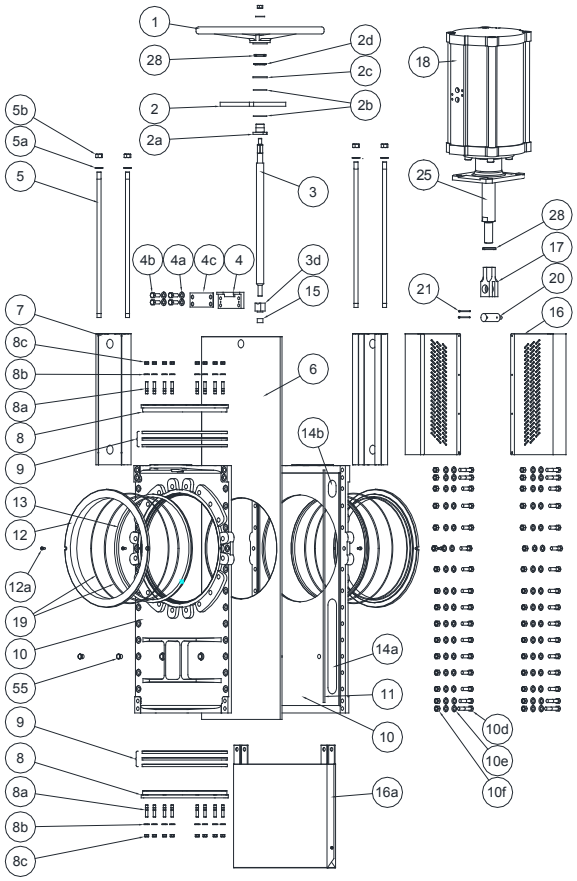
HL-E-400-P-TY-HW-PN10



HL-E-500-P-TY-EC250-PN10-ILS-SV



[3)] All electronics must be specified in detail.

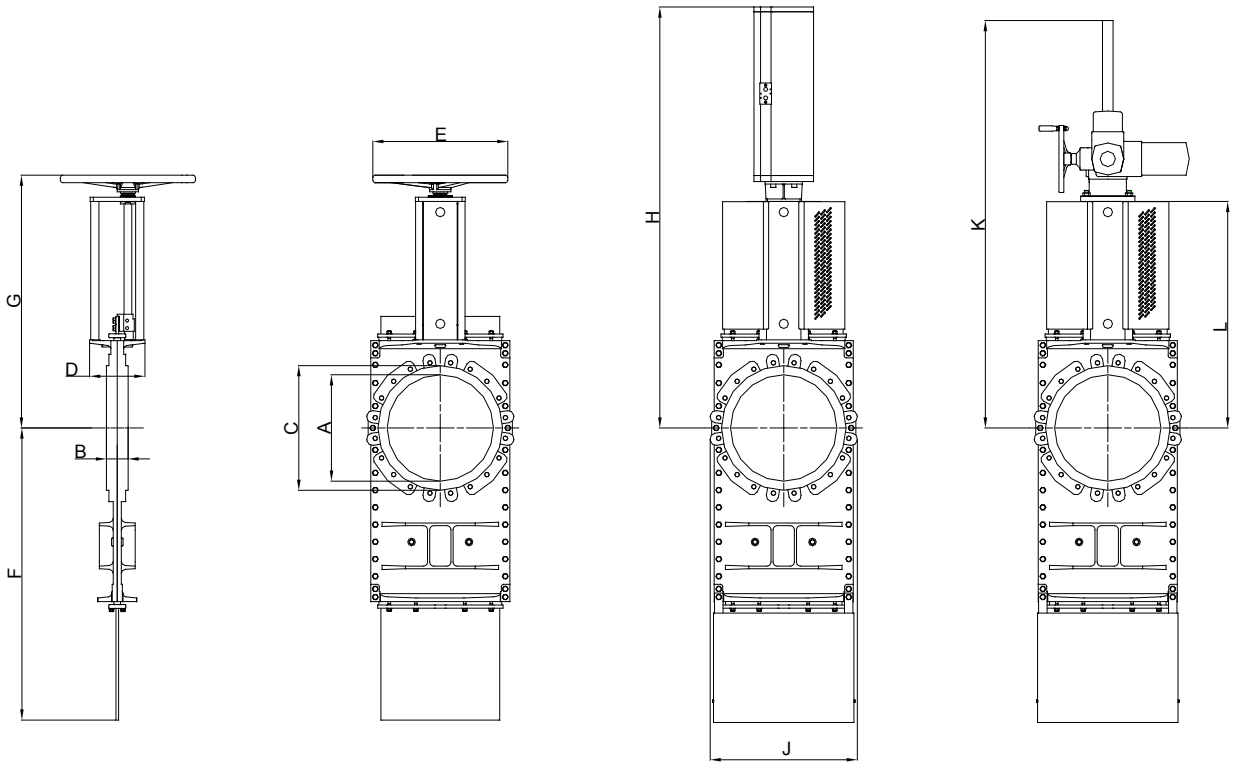


Part list

Pos.	Detail	Material (Name)
1	Hand wheel	Epoxy coated cast iron (EN-JL1030/GG20)
2	Yoke	Stainless steel (1.4301/SS2333)
2a	Bearing	Brass (CuZn39Pb3/SS5170)
2b	Slide washer	POM
2c	Bearing	Brass (CuZn39Pb3/SS5170-00)
2d	Locking washer	Stainless steel (EN 1.4301/SS 2333)
3	Stem	Stainless steel (EN 1.4305/SS 2346)
3d	Gate stopper	Brass (CuZn39Pb3/SS 5170)
4	Stem nut	Brass (CW603N)
4a	Washer	Stainless steel (A2)
4b	Screw	Stainless steel(A2)
4c	Distance plate	Stainless steel (EN 1.4301/SS 2333)
5	Tie rod	Stainless steel (EN 1.4301/SS 2333)
5a	Washer	Stainless steel (A2)
5b	Nut	Stainless steel (A2)
6	Gate	See basic equipment B
7	Beam	Aluminium (EN AW-6063-T6)
8	Gland	Stainless steel (EN 1.4408/SS 2343)
8a	Stud bolt	Stainless steel (A2), zinc coated
8b	Washer	Stainless steel (A2)
8c	Nut	Stainless steel (A2), zinc coated
9[4)]	Box packing	See basic equipment E

Pos.	Detail	Material (Name)
10	Valve body	See basic equipment A
10d	Screw	Stainless steel (A2), zinc coated
10e	Washer	Stainless steel (A2)
10f	Nut	Stainless steel (A2), zinc coated
11	Body gasket	PTFE
12	Retainer ring	See basic equipment C
12a	Locking screw	Stainless steel (A4)
13[4)]	Seat	See basic equipment D
14a	Guide strip	PTFE
14b	Guide strip	PTFE
15	Bushing	Oil bronze
16/a	Gate guard, not for HW	Stainless steel (EN 1.4301/SS 2333)
17	Gate clevis	Stainless steel (EN 1.4305/SS 2346)
18	Cylinder	See data sheet
19[4)]	O-ring	See basic equipment D
20	Clevis pin	Stainless steel (EN 1.4305/SS 2346)
21	Split pin	Stainless steel (EN 1.4436/SS 2343)
25	Piston rod	Stainless steel (EN 1.4104/SS 2383)
28	Locking nut	Stainless steel (EN 1.4305/SS 2346)
55	Plug	Stainless steel (A4)

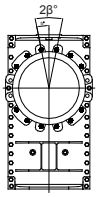
[4)] *Recommended spare parts*



Main dimensions

Dimensions (mm)											
DN	A	B	C	D	E	F	G	H	J	K	L
400	**400**	**84**	**481**	**181**	**520**	**1107**	**980**	**1536**	**571**	**1423**	**876**
500	**500**	**101**	**586**	**260**	**635**	**1373**	**1188**	**1834**	**693**	**1768**	**1065**
600	**600**	**106**	**685**	**260**	**635**	**1640**	**1356**	**2106**	**821**	**2035**	**1232**
700	**700**	**106**	**796**	**310**	**635**	**1884**	**1506**	**2343**	**916**	**2290**	**1382**
800	**800**	**128**	**901**	**310**	**635**	**2159**	**1701**	**2643**	**1041**	**2585**	**1582**

Main dimensions are only for information. Contact Stafsjö for certified drawings.



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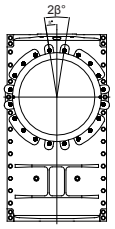

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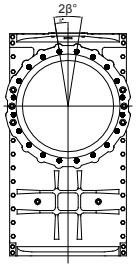

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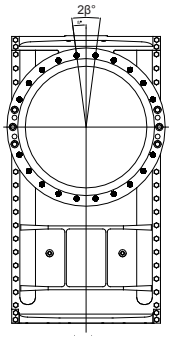
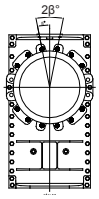


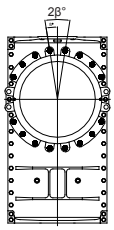
DN 700 - DN 800

Flange drilling according to EN 1092 PN 10

Flange drilling information (mm)					
DN	400	500	600	700	800
Outside flange diameter	**565**	**670**	**780**	**895**	**1015**
Bolt circle diameter	**515**	**620**	**725**	**840**	**950**
Number of throughgoing bolts (○)	**4**	**-**	**-**	**4**	**4**
Number of tapped hole/side (•)	**12**	**20**	**20**	**20**	**20**
Bolt size	**M24**	**-**	**-**	**M27**	**M30**
Size of throughgoing holes	**Ø26**	**Ø26**	**Ø30**	**Ø30**	**Ø33**
β°	**11,25**	**9**	**9**	**7,5**	**7,5**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**



DN 400



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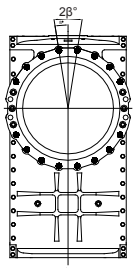

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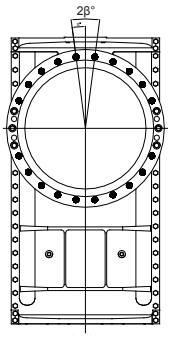


DN 700 - DN 800

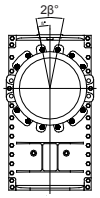
Flange drilling according to EN 1092 PN 16

Flange drilling information (mm)					
DN	400	500	600	700	800
Outside flange diameter	**580**	**715**	**840**	**910**	**1025**
Bolt circle diameter	**525**	**650**	**770**	**840**	**950**
Number of throughgoing bolts (○)	**4**	**4**	**4**	**4**	**4**
Number of tapped hole/side (•)	**12**	**16**	**16**	**20**	**20**
Bolt size	**M27**	**M30**	**M33**	**M33**	**M36**
Size of throughgoing holes	**Ø30**	**Ø33**	**Ø36**	**Ø36**	**Ø39**
β°	**11,25**	**9**	**9**	**7,5**	**7,5**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**

[5)] Add the values with the thickness of flanges, washers and gaskets.

○ Throughgoing holes

• Tapped holes



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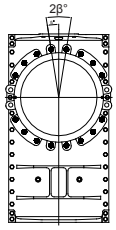

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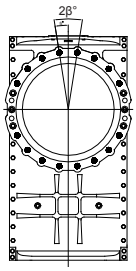

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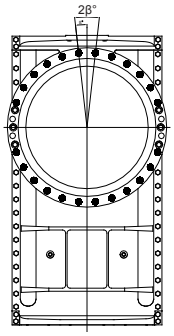
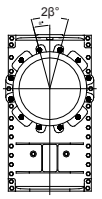


DN 700 - DN 800

Flange drilling according to ASME/ANSI B 16.5 and 16.47 Class 150 series A

Flange drilling information ≥ DN 700: ANSI B16.47 Class 150 series A (mm)					
DN	400	500	600	700	800
Outside flange diameter	**597**	**699**	**813**	**927**	**1060**
Bolt circle diameter	**540**	**635**	**749**	**863,6**	**978**
Number of throughgoing bolts (○)	**4**	**4**	**4**	**4**	**4**
Number of tapped hole/side (•)	**12**	**16**	**16**	**24**	**24**
Bolt size (UNC)	**1”**	**1 1/8”**	**1 1/4”**	**1 1/4”**	**1 1/2”**
Size of throughgoing holes	**Ø30**	**Ø33**	**Ø36**	**Ø36**	**Ø42**
β°	**11,25**	**9**	**9**	**6,43**	**6,43**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**



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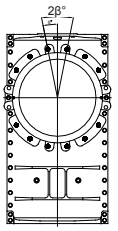

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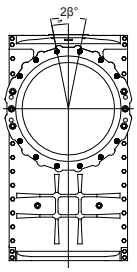

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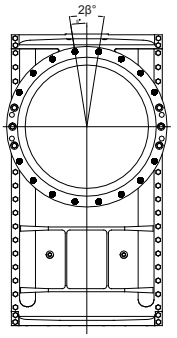


DN 700 - DN 800

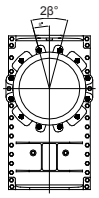
Flange drilling according to BS Table D

Flange drilling information (mm)					
DN	400	500	600	700	800
Outside flange diameter	**578**	**704,9**	**825,5**	**910**	**1060**
Bolt circle diameter	**520,7**	**641,4**	**755,7**	**845**	**984,2**
Number of throughgoing bolts (○)	**-**	**4**	**4**	**4**	**4**
Number of tapped hole/side (•)	**12**	**12**	**12**	**16**	**16**
Bolt size (UNC)	**7/8”**	**7/8”**	**1”**	**1”**	**1 1/4”**
Size of throughgoing holes	**-**	**Ø26**	**Ø30**	**Ø30**	**Ø36**
β°	**15**	**11,25**	**11,25**	**9**	**9**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**

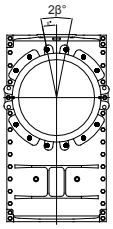
[1)] Add the values with the thickness of flanges, washers and gaskets.

○ Throughgoing holes

• Tapped holes



DN 400



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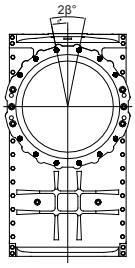
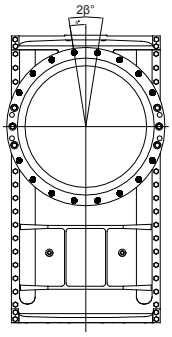


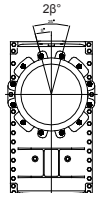
DN 600



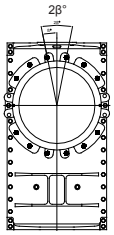
DN 700 - DN 800

Flange drilling according to AS 2129 Table D

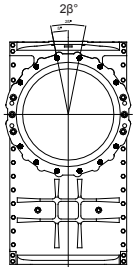
Flange drilling information (mm)					
DN	400	500	600	700	800
Outside flange diameter	**580**	**705**	**825**	**910**	**1060**
Bolt circle diameter	**521**	**641**	**756**	**845**	**984**
Number of throughgoing bolts (○)	**-**	**4**	**4**	**4**	**4**
Number of tapped hole/side (•)	**12**	**12**	**12**	**16**	**16**
Bolt size	**M24**	**M24**	**M27**	**M27**	**M33**
Size of throughgoing holes	**-**	**Ø26**	**Ø30**	**Ø30**	**Ø36**
β°	**15**	**11,25**	**11,25**	**9**	**9**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**



DN 400



DN 500



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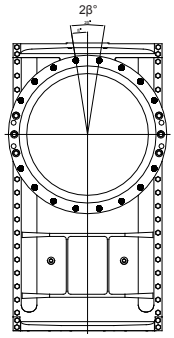


DN 700 - DN 800

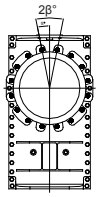
Flange drilling according to AS 2129 Table E

Flange drilling information (mm)					
DN	400	500	600	700	800
Outside flange diameter	**580**	**705**	**825**	**910**	**1060**
Bolt circle diameter	**521**	**641**	**756**	**845**	**984**
Number of throughgoing bolts (○)	**-**	**4**	**4**	**4**	**4**
Number of tapped hole/side (•)	**12**	**12**	**12**	**16**	**16**
Bolt size	**M24**	**M24**	**M30**	**M30**	**M33**
Size of throughgoing holes	**-**	**Ø26**	**Ø33**	**Ø33**	**Ø36**
β°	**15**	**11,25**	**11,25**	**9**	**9**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**

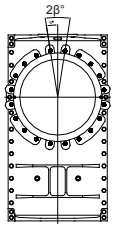
[1)] Add the values with the thickness of flanges, washers and gaskets.

○ Throughgoing holes

• Tapped holes



DN 400



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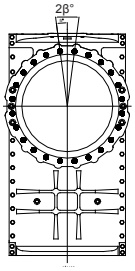

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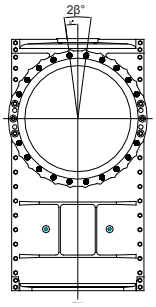
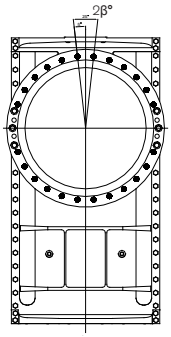


DN 700



DN 800

Flange drilling according to JIS B 2238 10K

Flange drilling information (mm)					
DN	400	500	600	700	800
Outside flange diameter	**560**	**675**	**795**	**905**	**1020**
Bolt circle diameter	**510**	**620**	**730**	**840**	**950**
Number of throughgoing bolts (○)	**-**	**-**	**-**	**4**	**4**
Number of tapped hole/side (•)	**16**	**20**	**24**	**20**	**24**
Bolt size	**M24**	**M24**	**M30**	**M30**	**M30**
Size of throughgoing holes	**-**	**-**	**-**	**Ø33**	**Ø33**
β°	**11,25**	**9**	**7,5**	**7,5**	**6,429**
Screw lengths[5)]	**24**	**29**	**29**	**31**	**38**

[1)] Add the values with the thickness of flanges, washers and gaskets.

○ Throughgoing holes

• Tapped holes

Further Information is available on www.stafsjo.com

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