

## Knife gate valve

## DN 50-1000

The Stafsjö MV knife gate valve is a valve designed for a wide range of process industry applications. Its main applications are fluids and suspensions up to 5%. It is also used in services with sludge, powder, pellets and other solid materials. Common applications are pulp, recycled pulp, waste water and in different types of food industry.

The MV is designed of a one piece or a two piece valve body in stainless steel, nodular or cast iron and a stainless steel gate. The retainer ring mechanically locks the seat, making it easy to replace. The unique Stafsjö box packing TwinPack™ gives high operation reliability.

Due to the flexible design of the MV, it can be provided with different types of manual and automatic actuators and accessories, such as limit switches. The MV knife gate valve can also be upgraded to be a control valve.

The Stafsjö knife gate valve MV is designed, manufactured, inspected and tested according to the European directive Pressure Equipment Directive (PED 97/23/EC) category II module A1 and is therefore CE marked.



# Knife gate valve

# DN 50-1000

### Design data

#### Maximum working pressure body at 20°C

DN	bar
50-125	16
150-300	10
350-600	6
700-1000	4

#### Maximum differential pressure preferred direction at 20°C

DN	bar
50-125	16
150-300	10
350-600	6
700-1000	4

The MV knife gate valves with seat in E/N/V, also manages a certain differential pressure in the reversed direction. The design varies between valve body in stainless steel (E) and nodular iron (L).

#### Maximum differential pressure reversed direction at 20°C

DN	Stainless steel (E) bar	Nodular iron (L) bar
50-200	3,5	3,5
250	3,0	3,5
300-450	-	3,0
500-1000	-	-

### Basic equipment

#### A. Valve body

	Material	Maximum temp. °C	Not recommended
Stainless steel	E W1.4408	300	
Nodular iron	L GGG50	200	Corrosive media
Cast iron DN 750, 900, 1000	A GG20	150	Corrosive media

Valve bodies in nodular and cast iron are painted with a wet epoxy colour to a minimum thickness of 80µm.

#### B. Gate

	Body	Material
Stainless steel	E/L/A	SS2347
Stainless steel	L DN 50-500	SS2333

#### C. Retainer ring

	Body	Material	Seat
Stainless steel	E	SS2343	E/N/V/P/PV/M
Cast iron	L/A	GG20	E/N/V/P/PV/M
Zincd carbon steel	E/L/A		U

Retainer rings in cast iron are painted with a wet epoxy colour to a minimum thickness of 80µm.

#### D. Seat

		Maximum temp. °C	Not recommended
EPDM	E	120	Oil, grease
Nitrile	N	100	
Viton	V	180	
PTFE with o-ring nitrile	P	100	
PTFE with o-ring viton	PV	180	
Polyurethane	U	90	
Metal with o-ring nitrile/viton	M	100/180	
Metal with Grafoil	MHT	300(E)/200(L)/150(A)	

#### E. Box packing

		pH	Maximum temp. °C
TwinPack™	TY	1-13	260
PTFE	TF	0-14	280
Garlock 127	TG	1-12	650

#### F. Flange drilling

EN 1092 PN 10
EN 1092 PN 16
ANSI B16.5 Class 150
JIS B 2238 10K
BS 10 Table D

#### G. Face-to-face dimensions

Stafsjö standard – see table p. 6
MSS SP-81, TAPPI TIS 405-8

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## Actuator

### Manual

Hand wheel		HW
Hand lever	DN 50-150	HL *
Ratchet wrench	DN 50-150	RW
Chain wheel		CW
Bevel gear		BG

### Automatic

Pneumatic cylinder	AC
Electric motor	EM
Hydraulic cylinder	MH

\* Differential pressures according to design data are not valid for hand lever (HL). For more information, please contact Stafsjö.

### Pneumatic cylinder – recommended sizes at 5 bar air pressure

DN	50	65	80	100	125	150	200	250	300	350
AC	100-80	100-80	100-100	100-100	100-150	100-150	160-250	160-250	160-300	200-350
Maximum force (kN)	3,5	3,5	3,5	3,5	3,5	3,5	9,0	9,0	9,0	14,1

DN	400	450	500	600	700	750	800	900	1000
AC	200-400	200-450	200-500	250-600	250-700	320-750	320-800	320-900	320-1000
Maximum force (kN)	14,1	14,1	14,1	22,1	22,1	36,2	36,2	36,2	36,2

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

### Electric motor – recommended sizes with AUMA multi-turn

DN	50	65	80	100	125	150	200	250	300	350
AUMA	SA 07.1	SA 07.1	SA 07.1	SA 07.1	SA 07.1	SA 07.1	SA 07.5	SA 07.5	SA 10.1	SA 10.1
Attachment	F10/A	F10/A	F10/A	F10/A	F10/A	F10/A	F10/A	F10/A	F10/A	F10/A

DN	400	450	500	600	700	750	800	900	1000
AUMA	SA 10.1	SA 10.1	SA 10.1	SA 10.1	SA 14.1	SA 14.1	SA 14.1	SA 14.5	SA 14.5
Attachment	F10/A	F10/A	F10/A	F10/A	F14/A	F14/A	F14/A	F14/A	F14/A

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

For other actuators, please contact Stafsjö or your local representative for advice.

## Accessories

### Limit switches

Mechanical	Ersce E100	
Inductive	ifm electronic IG-2008-ABOA / IG0006	2-wire 20-250 V AC/DC
	ifm electronic IG-3008-BPKG / IG5401	3-wire 10-36 V DC PNP

### Accessories to pneumatic cylinder

Solenoid valve	Metal Work SOV 35 SOS OO	1/4"
	Metal Work SOV 45 SOS OO	1/2"
Magnetic limit switch	Elobau 102 247	2-wire 10-250 V AC/DC
	Elobau 102 290 PE	3-wire 10-30 V DC

### Control valve

Retainer ring V-port	DN 50-600
Positioner	PMV Palmstierna

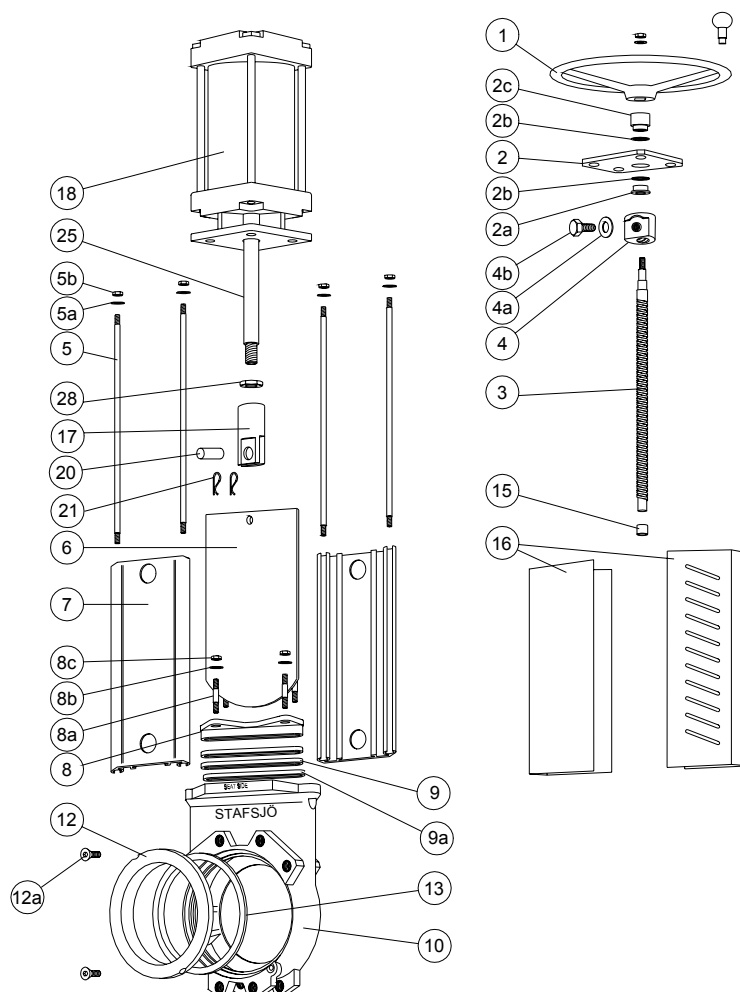
### Purge port

The MV knife gate valve DN 500-1000 is equipped with purge ports with pipe thread G1/2" acc. to ISO 228/1. Valve sizes DN 50-450 can be equipped with purge ports on order.

For advice regarding accessories, please contact Stafsjö or your local representative.

### Knife gate valve

### DN 50-1000

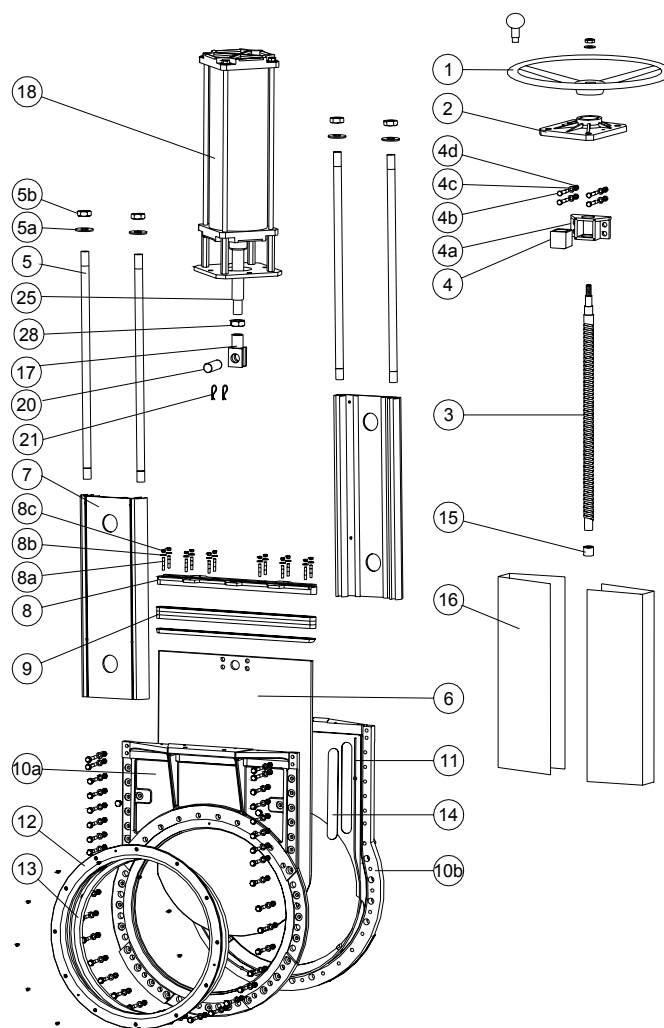


#### Part list DN 50-800 (one piece body)

Pos	Part	Material
1	Hand wheel	DN 50-300 Aluminium, ENAC-AISI9Cu3(Fe) DN>300 Cast iron GG20
2	Yoke	Stainless steel SS2333-02
2a	Bearing	Brass SS5170-00
2b	Slide washer	POM
2c	Bearing	Brass SS5170-00
3	Stem	Stainless steel DN50-250 SS2320-02 DN>250 SS2383-02
4	Stem nut	Brass SS5170-00
4a	Washer	A2
4b	Screw	A2
5	Tie rod	Stainless steel SS2333-02
5a	Washer	A2
5b	Nut	A2
6	Gate	See equipment B
7	Beam	Aluminium EN AW-6063-T6
8	Gland	Stainless steel SS2343
8a	Stud bolt	A2 + zinc

Pos	Part	Material
8b	Washer	A2
8c	Nut	A2 + zinc
9	Box packing*	See equipment E
9a	Box bottom	Plastic DN 500-800
10	Valve body	See equipment A
12	Retainer ring	See equipment C
12a	Locking screw	A2
13	Seat*	See equipment D
15	Bushing	Oil-bronze
16	Gate guard not for HW	Stainless steel SS2333-02
17	Gate clevis	Stainless steel SS2346-02
18	Cylinder	See data sheet
20	Clevis pin	Stainless steel SS2346-02
21	Split pin	Stainless steel SS2343-02
25	Piston rod	Stainless steel SS2383-02
28	Locking nut	Stainless steel SS2346-02

\* Recommended spare parts



### Part list DN 750, 900, 1000 (two piece body)

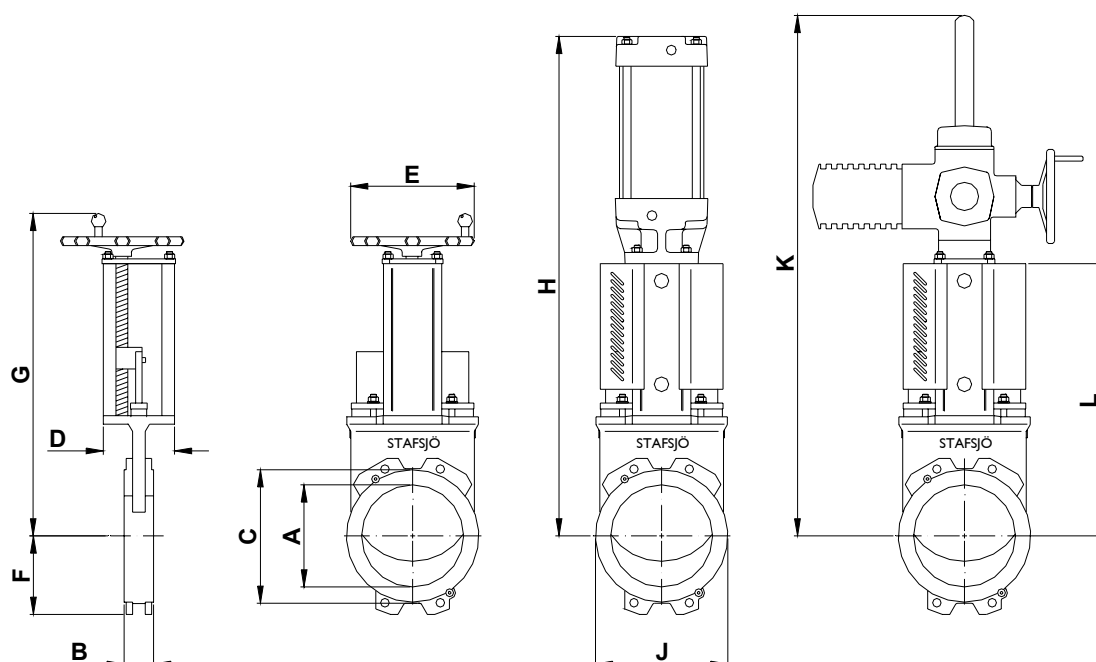
Pos	Part	Material
1	Hand wheel	Cast iron GG20
2	Yoke	Cast iron GG20
3	Stem	Stainless steel SS 2383-02
4	Stem nut	DN750 Brass SS5170-00 DN>800 Brass SS5453
4a	Stem nut holder	Stainless steel SS2333-02
4b	Screw	A2
4c	Washer	A2
4d	Nut	A2
5	Tie rod	Stainless steel SS2333-02
5a	Washer	A2
5b	Nut	A2
6	Gate	See equipment B
7	Beam	Aluminium EN AW-6063-T6
8	Gland	Stainless steel SS2343
8a	Stud bolt	A2 + zinc
8b	Washer	A2

Pos	Part	Material
8c	Nut	A2 + zinc
9	Box packing*	See equipment E
10a	Valve body	See equipment A
10b	Valve body	See equipment A
11	Body gasket	PTFE
12	Retainer ring	See equipment C
13	Seat*	See equipment D
14	Guide strip	HD-polyethylene
15	Bushing	Oil-bronze
16	Gate guard, not for HW	Stainless steel SS2333-02
17	Gate clevis	Stainless steel SS2346-02
18	Cylinder	See data sheet
20	Clevis pin	Stainless steel SS2346-02
21	Split pin	Stainless steel SS2343-02
25	Piston rod	Stainless steel SS2383-02
28	Locking nut	Stainless steel SS2346-02

\* Recommended spare parts

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## DN 50-1000



### Dimensions (mm)

DN	50	65	80	100	125	150	200	250	300	350	400	450
A	52	64	79	103	128	153	202	250	302	332	380	428
B	41	41	51	51	56	60	60	69	78	78	89	89
C	91	107	124	154	179	204	267	320	374	419	479	535
D	80	80	80	80	80	80	145	145	145	175	175	200
E	200	200	200	200	250	250	315	315	315	400	400	520
F	56	65	88	102	116	130	160	192	230	210	245	280
G	360	380	405	453	495	550	694	779	879	993	1083	1180
H	475	495	545	593	685	740	1017	1102	1252	1415	1555	1680
J	116	130	135	155	178	205	268	320	375	420	490	560
K	620	650	690	765	830	910	1115	1250	1400	1550	1690	1820
L	230	250	275	323	365	420	555	640	740	820	910	990

DN	500	600	700	750	800	900	1000
A	470	560	665	710	760	855	950
B	114	114	118	118	118	118	150
C	580	680	800	860	900	1010	1110
D	250	260	310	305	310	320	320
E	520	635	635	635	635	635	635
F	313	370	390	490	490	580	640
G	1315	1540	1750	1880	1970	2220	2400
H	1865	2355	2513	2900	3030	3380	3670
J	625	740	865	930	985	1160	1280
K	2010	2340	2650	2830	2970	3340	3630
L	1127	1352	1565	1635	1780	1985	2215

Actuator EM is rotated 45° for DN 50-150.

### Weight, valve incl. hand wheel (HW)

DN	50	65	80	100	125	150	200	250	300	350	400	450
kg	7	7	8	10	13	15	31	40	55	90	120	180

DN	500	600	700	750	800	900	1000
kg	245	340	460	700	540	900	1500

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### Pressure tests

Pressure tests are performed with water at 20°C according to ISO 5208 meaning:

1,5 x maximum working pressure for open valve – shell test

1,1 x maximum differential pressure for closed valve – obturator tightness test

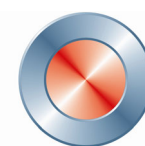
### Leakage rate

For soft sealed valves rate A according to ISO 5208 – no visible leakage for the duration of the test

TAPPI TIS 405-8, MSS SP-81

### Materials – corresponding foreign materials

Stafsjö standard	Type of material	Sweden	Germany		USA			England	Japan
		SS	W. Nr.	DIN	ASTM	AISI	UNS	BS	JIS
A2	Stainless	SS2333	W1.4301	X5CrNi18 M 10		304	S30400	304S15	SUS 304
AISI 304	Stainless	AISI 304	W1.4301	X5CrNi18 M 10		304	S30400	304S15	SUS 304
EN AW-6063-T6	Aluminium	EN AW-6063-T6		AlMgSi 0,5	AA 6063				
GG25	Cast iron	SS0125-00	0.6025	GG 25	A 48 No 40 B			Grade 260	FC 250
GGG50	Nodular iron	SS0727	0.7050	GGG 50				Grade 500/7	FCD 500
SS0120-00	Cast iron	SS0120-00	0.6020	GG 20	A 48 No 30 B			Grade 220	FC 200
SS1312	Carbon steel	SS1312		RSt 37-2	A 36			40 B	
SS2303-03	Stainless	SS2303-03	W1.4021	X20Cr13		420	S42010	420S37	SUS 420J1
SS2320-02	Stainless	SS2320-02	W1.4016	X6Cr17		430	S43000	430S17	SUS 430
SS2333-02	Stainless	SS2333-02	W1.4301	X5CrNi18 M 10		304	S30400	304S15	SUS 304
SS2343-12	Stainless	SS2343-12	W1.4408	G-X6CrNiMo 18 10	A 743-91 CF-8M			316 C 16	SCS 14
SS2343-28	Stainless	SS2343-28	W1.4436	X3CrNiMo17 13 3	A 240, Type 316			Gr 316 S 33	
SS2346-02	Stainless	SS2346-02	W1.4305	X10CrNiS 18-9		303		303S31	SUS303
SS2347-02	Stainless	SS2347-02	W1.4401	X5CrNiMo17 12 2		316	S31600	316S31	SUS 316
SS2383-02	Stainless	SS2383-02	W1.4104	X12CrNiOS17		430 F	S43020		430 F
SS5170-00	Brass	SS5170-00		CuZn39Pb3	C 36000			CZ 121	
SS2377-02	Stainless	SS2377-02	W1.4462	X2CrNiMoN22 5 3			S31803	318S13	
W1.4408	Stainless	W1.4408	W1.4408	G-X6CrNiMo 18 10	A 743-91 CF-8M			316 C 16	SCS 14



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All specifications subject to change without notice.

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