

Technical manual

Sylax

Butterfly valves

DN25 to 350 mm

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Applications and main characteristics

Industrial processes and general services

Applications :

- Water distribution and supply with the main European approvals, water treatment, most of the fluids of general services.
- Industrial applications such as : *Metallurgical, mining, paper-making, shipbuilding, nuclear, environmental and mechanical, food industry (see our list of approvals).*
- For special applications, especially for particularly difficult media, contact our technical back office team.

Main characteristics :

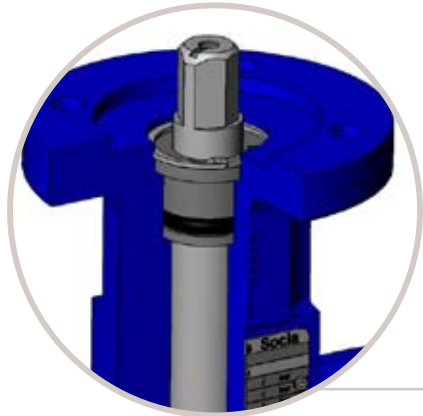
- Multiple connections : centering lugs, tapped lugs, central and double flange.
- Vertical and horizontal operating position.
- High power transmission with robust grooved connection between the shaft and the disc.
- Easy maintenance by removing the circlips
- Interchangeable disc and liner.
- Body in cast iron GJL1040, ductile iron GJS1030, steel and stainless steel.
- Body epoxy coated 80 μ m colour blue RAL 5017 (a lot of other coatings on option, please ask our sales department)
- Wide choice of actuators.

An **instruction notice** specifying the installation characteristics and the commission of the Sylax is added to every product when the ATEX version is specified; It is available on our web site www.danfoss-socla.com or on request by our sales department.

Sale leaflet

By concentrating the technologies and by integrating technical solutions of the highest levels, **Danfoss Socla** fulfils its ambition :

- competitiveness of a standard range,
- reliability,
- comprehensive range thanks to a multiplicity of solutions.

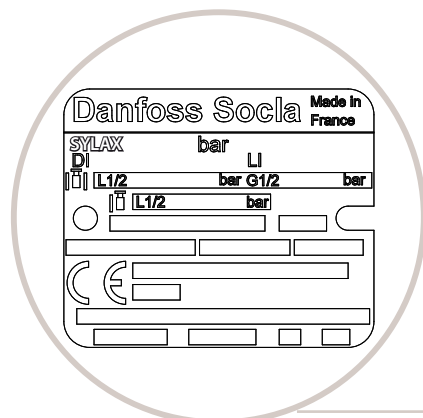


- Safety anti-ejection circlip keeps shaft in place and allows easy maintenance
- Safety reinforced by a secondary water-tightness.
- Spline driven one piece shaft connected to floating disc :

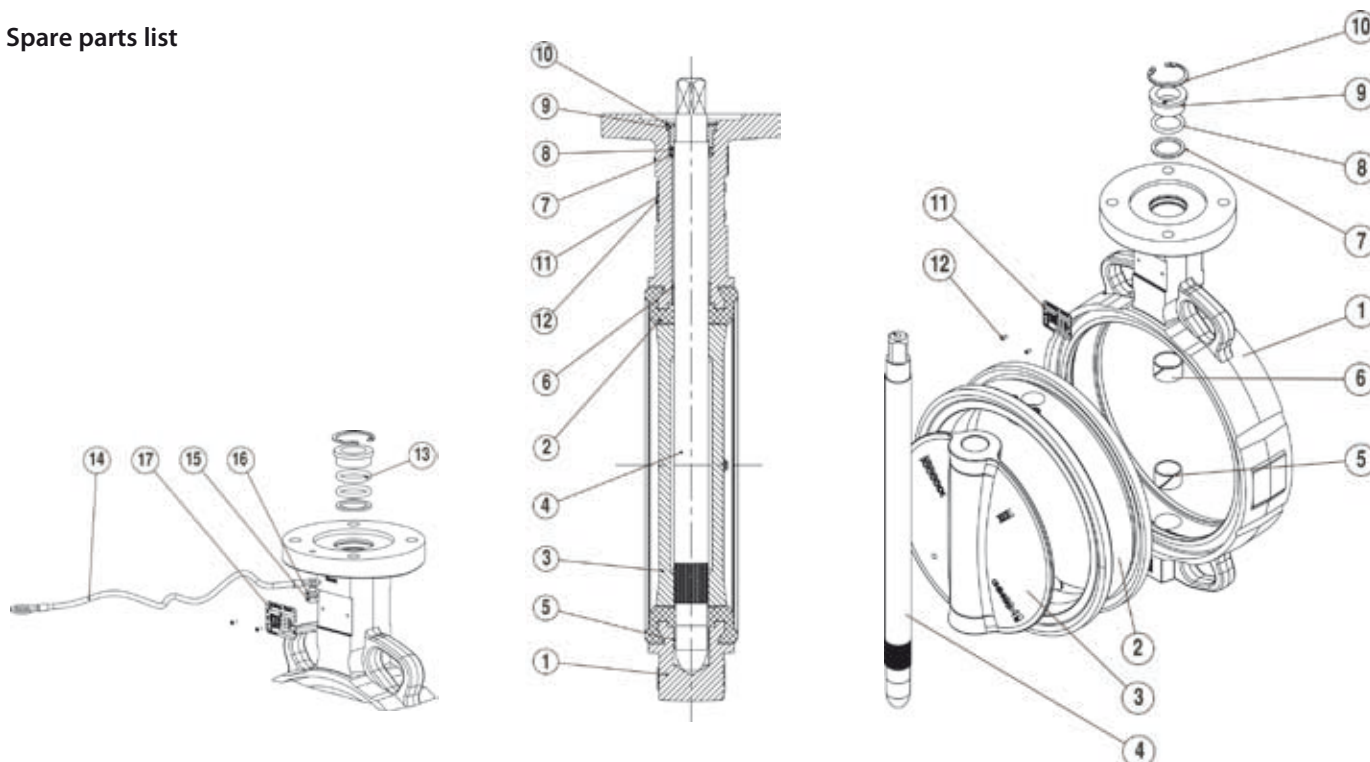
. high reliability of tightness and torque transmission in the long term.



- High power transmission with robust grooved connection between the shaft and the disc.
- Complete protection of the shaft and valve body from fluids.
- Reliability of movements with self-lubricating bearings.



- Identification and traceability ensured by riveted metal tag : see on page 14.

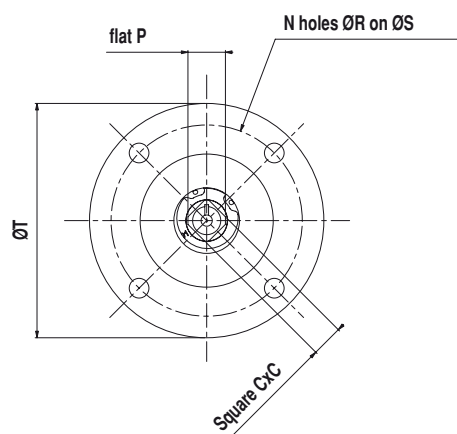
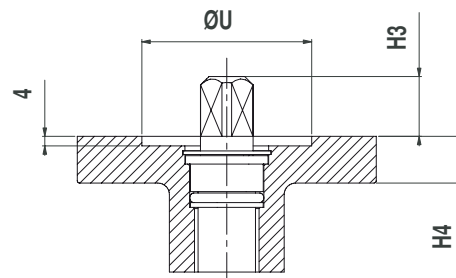
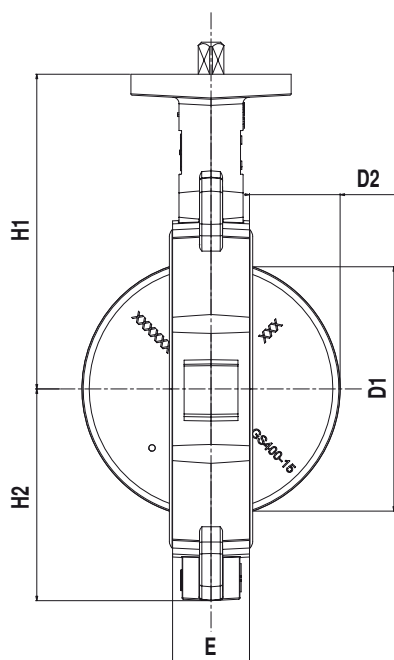
Spare parts list


Nb	DESCRIPTION	Qty	MATERIALS ACCORDING TO NORMS			
			Materials	EN	ASTM	JIS
1	Body	1	Ductile iron	EN GJS 400-15 (JS 1030)	-	FCD40
			Cast iron	EN GJL 250 (JL 1040)	-	FC25
			Steel	GE 280 (E280 - 480M)	gr WCB	-
			Stainless steel	GX5 CrNiMo 19-11-2 (1.4408)	316	SUS 316
2	Liner	1	EPDM	-	-	-
			White EPDM	-	-	-
			High content nitrile	-	-	-
			White nitrile	-	-	-
			Carboxylated nitrile	-	-	-
			Hypalon	-	-	-
			Silicone	-	-	-
			FKM	-	-	-
			Buthyl	-	-	-
			Natural rubber	-	-	-
			3	Disc	1	Ductile iron
Stainless steel	GX5 CrNiMo 19-11-2 (1.4408)	316				SUS 316
Stainless steel	X2 CrNiMo 17-12-2 (1.4404)	316L				SUS 316L
Alu-bronze	CuAl10Fe5Ni5 (CC333G)	-				-
Alu-bronze Annealing with protective gas/Epoxy	CuAl10Fe5Ni5 (CC333G)	-				-
4	Stem	1	Stainless steel	X5 CrNiCuNb 16-4 (1.4542)	630	SUS 630
			Stainless steel	X2 CrNiMo 17-12-2 (1.4404)	316L	SUS 316L
			Stainless steel	X30 Cr13 (1.4028)	420	SUS 420 J2
5 - 6	Anti-friction bearing	1	Zinc coated steel + PTFE	-	-	-
7	Anti-extrusion bush	1	Stainless steel	X5 CrNi 18-10 (1.4301)	304	SUS 304
			Plastic	IXEF 50 FV	-	-
8	O-ring	1	Nitrile/FKM	-	-	-
9	Sealing washer	1	Plastic	IXEF 50 FV	-	-
			Stainless steel	X5 CrNi 18-10 (1.4301)	304	SUS 304
			Brass	CuZn39Pb2 (CW612N)	-	-
10	Circlips	1	Stainless steel	X30 Cr13 (1.4028)	420	SUS 420 J2
			Steel	XC 75	-	-
11	Identification plate	1	Aluminium	EN AW - AL995 (EN AW - 1050A)	-	-
12	Rivet	2	Alu / Stainless steel	-	-	-

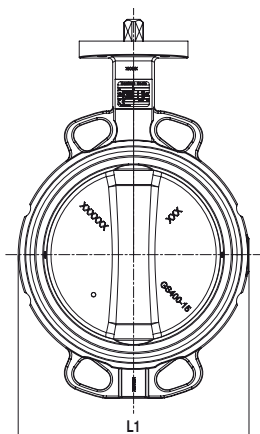
ATEX special spare parts list

13	Braid	1	Tinned copper	-	-	-
14	Discharge electro-static braid	1	Tinned copper	-	-	-
15	Screw	1	Stainless steel	A2 - 70	304	SUS 304
16	Stop washer	1	Stainless steel	X5 CrNi 18-10 (1.4301)	304	SUS 304
17	ATEX identification plate	1	Aluminium	EN AW - AL995 (EN AW - 1050A)	-	-

Overall dimensions



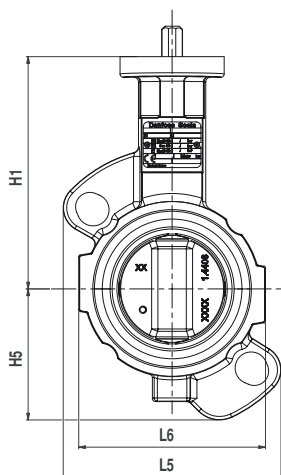
• 4 Centring lugs



Diameter		Face to face	Overall dimensions				Iso top according to ISO 5211					Square drive outlet			Travel of the disc		Weight Kg		
DN	NPS	E	L1	H1	H2	H4	N	Ø R	Ø S	Ø T	Ø U	N°	□C	H3	Flat P	D1	D2	(1)	(2)
25	1	32	100	125	50	12	4	6,5	50	65	36	F05	11	16	11	6	1	-	1,6
32/40	1 1/2	32	144	130	57	12	4	6,5	50	65	36	F05	11	16	11	31	6,5	1,9	1,7
50	2	43	121	136	62	12	4	6,5	50	65	36	F05	11	16	11	29	4,5	2,5	2,5
65	2 1/2	46	136	145	70	12	4	6,5	50	65	36	F05	11	16	11	48	10	2,7	2,9
80	3	46	127	151	89	12	4	6,5	50	65	36	F05	11	16	11	67	18	2,8	3,2
100	4	52	153	175	106	12	4	8,5	70	90	56	F07	14	19	14	88	25	4,9	5,2
125	5	56	182	190	120	12	4	8,5	70	90	56	F07	14	19	14	113	35	6,2	6,3
150	6	56	209	203	131	12	4	8,5	70	90	56	F07	14	19	14	141	48	7,1	7,3
200	8	60	265	245,5	164	15,5	4	10,5	102	125	71	F10	17	24	20	192	71	15,4	13,7
250	10	68	317	271	200	16	4	10,5	102	125	71	F10	22	24	26	242	91,5	19	20,1
300	12	78	370	296	235	16	4	12,5	125	150	87	F12	22	29	26	291	112	30,2	29,2
350	14	78	424	305	270	16	4	12,5	125	150	87	F12	27	29	-	331	132	35,9	36,2

(1) Ductile iron body (J51030), ductile iron disc (J51030), EPDM liner.
 (2) Cast iron body (JL1040), ductile iron disc (J51030), EPDM liner.

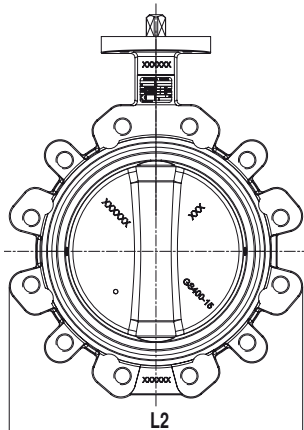
• 2 Centring lugs



Diameter		Face to face	Overall dimensions				Iso top according to ISO 5211					Square shaft outlet			Travel of the disc		Weight Kg			
DN	NPS	E	L5	L6	H1	H5	H4	N	Ø R	Ø S	Ø T	Ø U	N°	□C	H3	Flat P	D1	D2	(1)	(2)
32/40	1 1/2	32	106	99	130	56	12	4	6,5	50	65	36	F05	11	16	11	31	6,5	1,7	1,6
50	2	43	121	99	136	73	12	4	6,5	50	65	36	F05	11	16	11	29	4,5	2,6	2,1
65	2 1/2	46	136	117	145	82	12	4	6,5	50	65	36	F05	11	16	11	48	10	3,1	2,4
80	3	46	150	136	151	93	12	4	6,5	50	65	36	F05	11	16	11	67	18	3,2	2,8
100	4	52	166	167	175	106	12	4	8,5	70	90	56	F07	14	19	14	88	25	5,3	4,4
125	5	56	132	194	190	127	12	4	8,5	70	90	56	F07	14	19	14	113	35	6,6	5,7
150	6	56	139	225	203	147	12	4	8,5	70	90	56	F07	14	19	14	141	48	8,1	6,8
200	8	60	164	279	245,5	174	15,5	4	10,5	102	125	71	F10	17	24	20	192	71	13,5	12,1
250	10	68	187	332	271	210	16	4	10,5	102	125	71	F10	22	24	26	242	91,5	20,5	18,1
300	12	78	166	382	296	239	16	4	12,5	125	150	87	F12	22	29	26	291	112	29,2	26
350	14	78	185	435	305	267	16	4	12,5	125	150	87	F12	27	29	-	331	132	37,5	-

(1) Stainless steel body (1.4408), stainless steel disc (1.4408), EPDM liner.
 (2) Steel body (WCB), stainless steel disc (1.4408), EPDM liner.

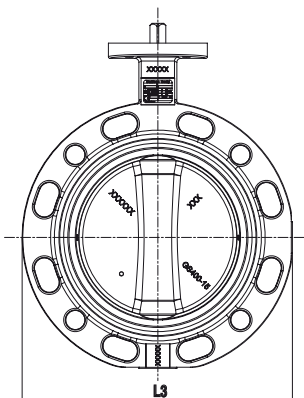
Overall dimensions



Tapped lugs

Diameter		Face to face		Overall dimensions				Iso top according to ISO 5211					Square shaft outlet			Travel of the disc		Weight Kg	
DN	NPS	E	L2	H1	H2	H4	N	Ø R	Ø S	Ø T	Ø U	N°	□C	H3	Flat P	D1	D2	(1)	(2)
32/40	1 1/2	32	146	130	57	12	4	6,5	50	65	36	F05	11	16	11	31	6,5	1,9	2,7
50	2	43	121	136	62	12	4	6,5	50	65	36	F05	11	16	11	29	4,5	2,5	3,3
65	2 1/2	46	165	145	70	12	4	6,5	50	65	36	F05	11	16	11	48	10	2,7	3,9
80	3	46	179	151	89	12	4	6,5	50	65	36	F05	11	16	11	67	18	2,8	4,8
100	4	52	206	175	103	12	4	8,5	70	90	56	F07	14	19	14	88	25	4,9	7,2
125	5	56	238	190	119	12	4	8,5	70	90	56	F07	14	19	14	113	35	6,2	9,7
150	6	56	265	203	133	12	4	8,5	70	90	56	F07	14	19	14	141	48	7,1	11,2
200	8	60	336	245,5	168	15,5	4	10,5	102	125	71	F10	17	24	20	192	71	15,4	21,6
250	10	68	396	271	198	16	4	10,5	102	125	71	F10	22	24	26	242	91,5	19	28,1
300	12	78	462	296	227	16	4	12,5	125	150	87	F12	22	29	26	291	112	30,2	38,2
350	14	78	497	305	248	16	4	12,5	125	150	87	F12	27	29	-	331	132	46	-

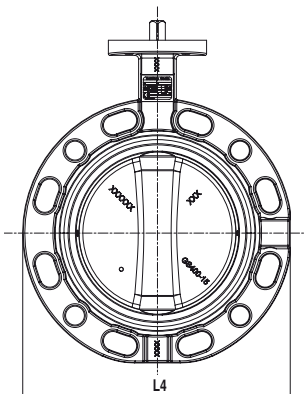
(1) Ductile iron body (JS1030), ductile iron disc (JS1030), EPDM liner.
 (2) Stainless steel body (1.4408), stainless steel disc (1.4408), EPDM liner.



• Double flange

Diameter		Face to face		Overall dimensions				Iso top according to ISO 5211					Square shaft outlet			Travel of the disc		Weight Kg
DN	NPS	E	L3	H1	H2	H4	N	Ø R	Ø S	Ø T	Ø U	N°	□C	H3	Flat P	D1	D2	(1)
150	6	56	280	203	134	12	4	8,5	70	90	56	F07	14	19	14	141	48	12,8
200	8	60	343,5	245,5	164	15,5	4	10,5	102	125	71	F10	17	24	20	192	71	18
250	10	68	406	271	200	16	4	10,5	102	125	71	F10	22	24	26	242	91,5	28
300	12	78	482,5	296	235	16	4	12,5	125	150	87	F12	22	29	26	291	112	44,4
350	14	78	533	305	270	16	4	12,5	125	150	87	F12	27	29	-	331	132	57,5

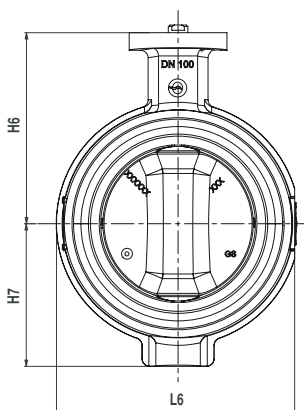
(1) Ductile iron body (JS1030), ductile iron disc (JS1030), EPDM liner.



• Central flange

Diameter		Face to face		Overall dimensions				Iso top according to ISO 5211					Square shaft outlet			Travel of the disc		Weight Kg
DN	NPS	E	L4	H1	H2	H4	N	Ø R	Ø S	Ø T	Ø U	N°	□C	H3	Flat P	D1	D2	(1)
80	3	46	190,5	151	90	12	4	6,5	50	65	36	F05	11	16	11	67	18	3,9
100	4	52	226,5	175	107	12	4	8,5	70	90	56	F07	14	19	14	88	25	6,5
125	5	56	252	190	120,5	12	4	8,5	70	90	56	F07	14	19	14	113	35	8,1
150	6	56	276,5	203	132	12	4	8,5	70	90	56	F07	14	19	14	141	48	9,3
200	8	60	340,5	245,5	165	15,5	4	10,5	102	125	71	F10	17	24	20	192	71	16,3

(1) Ductile iron body (JS1030), ductile iron disc (JS1030), EPDM liner.

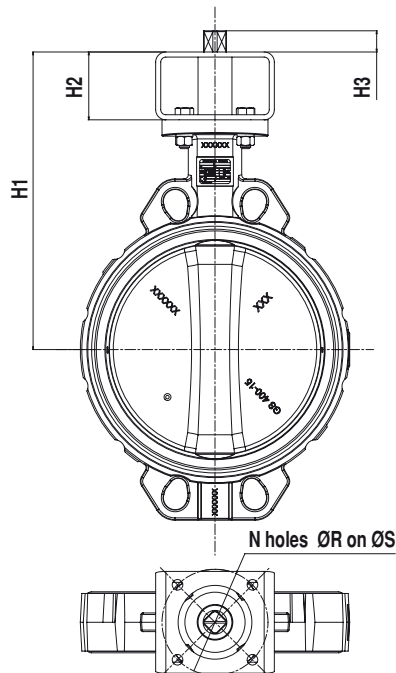


• Ring shaped type body

Diameter		Face to face		Overall dimensions				Iso top according to ISO 5211					Square shaft outlet			Travel of the disc		Weight Kg
DN	NPS	E	L6	H6	H7	H4	N	Ø R	Ø S	Ø T	Ø U	N°	□C	H3	Flat P	D1	D2	(1)
50	2	43	104	99	66	12	4	6,5	50	65	36	F05	11	16	11	29	4,5	1,9
65	2 1/2	46	124	109	75	12	4	6,5	50	65	36	F05	11	16	11	48	10	2,4
80	3	46	140	115	82	12	4	6,5	50	65	36	F05	11	16	11	67	18	2,8
100	4	52	160	127	95	12	4	8,5	70	90	56	F07	14	19	14	88	25	4

(1) Ductile iron body (JS1030), ductile iron disc (JS1030), EPDM liner.

Connecting kit for actuations



We recommend direct mounting of the actuation, otherwise see table below.

DN	NPS	Iso top of the valve	Iso top of the actuation															
			F03		F04		F05		F07		F10		F12		F14		F16	
			H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
32	1 1/4	F05/□11	190		190		190		190		210							
40	1 1/2		190		190		190		190		210							
50	2		199	60	199		199	60	199	60	219							
65	2 1/2		204,5		204,5	60	204,5		204,5	60	224,5							
80	3		210		210	60	210		210		230	80						
100	4	F07/□14		236,5		236,5		236,5		256,5		256,5		256,5		256,5		
125	5		249		249	60	249	60	269		269		269	80	269	80		
150	6		262		262		262		282		282		282		282			
200	8	F10/□17				324,5	80	324,5		324,5	80	324,5		324,5		334,5		334,5
250	10	F10/□22				350		350	80	350	80	350	80	350		360		360
300	12	F12/□22						375		385		385		385		385	90	385
350	14	F12/□27								395	90	395	90	395	90	395		395

DN	NPS	Iso top of the valve	Kit	Exceeding length of the shaft H3								
				□9	□11	□14	□17	□22	□27	□36	□46	
32	1 1/4	F05/□11	F03									
40	1 1/2		F04									
50	2		F05	7	9	12	15	20	25			
65	2 1/2		F07									
80	3		F10									
100	4	F07/□14	F04									
125	5		F05									
150	6		F07		9	12	15	20	25	34		
			F10									
200	8	F10/□17	F12									
			F14									
			F05									
			F07		9	12	15	20	25	34		
250	10	F10/□22	F10									
			F12									
			F14									
			F14			12	15	20	25	34		
300	12	F12/□22	F07									
			F10									
			F12									
			F14			12	15	20	25	34	44	
350	14	F12/□27	F16									
			F07									
			F10									
			F12				15	20	25	34	48	

N°	N	øR	øS
F03	4	5,5	36
F04	4	5,5	42
F05	4	6,5	50
F07	4	8,5	70
F10	4	10,5	102
F12	4	12,5	125
F14	4	17	140
F16	4	22	165

Reminder of the iso top dimensions EN ISO 5211 (see also the overall dimensions).

Other special executions on request : actuated by par square drive and flat according to EN ISO 5211 , subjected to technical feasibility.

Actuations

Find below the different standard assembly combinations.

For any other information, please ask our technical Department.

<p>ASSEMBLY LEVEL 2</p>	<ul style="list-style-type: none"> • 1 or 2 mechanical limit switch • Switchbox : <ul style="list-style-type: none"> . mechanical . inductive . inductive + solenoid valve . mechanical + solenoid valve • Inductive limit switch • Positioners (1) <ul style="list-style-type: none"> . BURKERT 1067 	<p><i>For other options, please consult us.</i></p>
<p>ASSEMBLY LEVEL 1</p>	<ul style="list-style-type: none"> • Adjustable ductile iron hand lever (PRF) • Notched ductile iron hand lever (PCF) • Notched hand lever polyamide (PCX) • Manual gearbox in cast iron • Danfoss hydraulic actuation 	<ul style="list-style-type: none"> • Remote control + emergency hand wheel • Actubar • Rotork • Valpes • Belimo • Auma • Bernard
<p>HAND LEVER GEAR BOX HYDRAULIC ACTUATOR PNEUMATIC ACTUATOR ELECTRIC ACTUATOR</p>		



(1) Pneumatic actuator only

Connecting flanges

The Sylax butterfly valve can be mounted with the following connections (other types on request) :

- ✓ : possible mounting
- : possible mounting with re-machining
- : possible mounting but special reference
- : impossible mounting

• 4 Centering lugs

DN	NPS	EN 1092-1 & EN 1092-2					ASME/ANSI B16.1 Class 125	ASME/ANSI B16.5 Class 150	ASME/ANSI B16.5 Class 300	BS10		JIS B2238 & JIS B2239		
		PN6	PN10	PN16	PN25	PN40				Table D	Table E	5K	10K	16K
25	1	✓(1)	✓(1)	✓(1)	✓(1)	✓(1)	✓(1)	✓(1)	✓(1)	✓(1)	●	✓	●	
32	1 1/4	✓	✓	✓	✓	✓	✓(2)	✓(2)	✓	●	●	●	✓	●
40	1 1/2	✓	✓	✓	✓	✓	✓	✓	●	✓	✓	●	✓	●
50	2	✓	✓	✓	✓	✓	✓	✓	●	✓	✓	●	●	●
65	2 1/2	✓	✓	✓	●	●	✓	✓	●	●	●	●	●	●
80	3	✓	✓	✓	✓	✓	✓	✓	●	✓	✓	✓	●	●
100	4	✓	✓	✓	●	●	✓	✓	●	✓	✓	●	●	●
125	5	✓	✓	✓	●	●	✓	✓	●	✓	✓	✓	✓	●
150	6	✓	✓	✓	●	●	✓	✓	●	✓	●	✓	✓	●
200	8	✓	✓	✓	●	●	✓	✓	●	●	●	●	✓	●
250	10	✓	✓	✓	●	●	✓	✓	■	●	✓	✓	✓	●
300	12	✓	✓	✓	●	●	✓	✓	■	✓	✓	●	●	●
350	14	✓	✓	✓	✓	●	✓	✓	■	✓	✓	●	●	●

(1) Cast iron body GJL-250 (JL1040) only.
 (2) Cast iron body GJL-250 (JL1040) only; re-machining for ductile iron body GJS 400-15 (JS1030)

• 2 Centering lugs (3)

DN	NPS	EN 1092-1 & EN 1092-2					ASME/ANSI B16.1 Class 125	ASME/ANSI B16.5 Class 150	ASME/ANSI B16.5 Class 300	BS10		JIS B2238 & JIS B2239		
		PN6	PN10	PN16	PN25	PN40				Table D	Table E	5K	10K	16K
32	1 1/4	✓	✓	✓	✓	✓	✓	✓	○	✓	✓	✓	✓	✓
40	1 1/2	✓	✓	✓	✓	✓	✓	✓	○	✓	✓	✓	✓	✓
50	2	○	✓	✓	✓	✓	✓	○	○	○	○	○	○	○
65	2 1/2	○	✓	✓	○	○	✓	✓	○	✓	○	○	✓	○
80	3	○	✓	✓	✓	✓	✓	○	○	○	○	○	○	○
100	4	○	✓	✓	○	○	✓	✓	○	○	○	○	○	○
125	5	○	✓	✓	○	○	✓	✓	○	○	○	○	○	○
150	6	○	✓	✓	○	○	✓	✓	○	✓	○	○	○	○
200	8	○	✓	✓	○	○	✓	○	○	✓	✓	○	○	○
250	10	○	✓	✓	○	○	✓	○	■	○	✓	○	✓	○
300	12	○	✓	✓	○	○	✓	○	■	✓	○	○	○	○
350(4)	14	○	✓	✓	○	○	○	○	■	✓	✓	○	○	○

(3) Body in stainless steel (1.4408) and in steel (WCB)
 (4) Stainless steel version only

• Tapped lugs

DN	NPS	EN 1092-1 & EN 1092-2					ASME/ANSI B16.1 Class 125	ASME/ANSI B16.5 Class 150	ASME/ANSI B16.5 Class 300	BS10		JIS B2238 & JIS B2239		
		PN6	PN10	PN16	PN25	PN40				Table D	Table E	5K	10K	16K
32	1 1/4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
40	1 1/2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50	2	✓	✓	✓	✓	✓	✓	✓	■	✓	✓	■	✓	✓(4)
65	2 1/2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
80	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100	4	■	✓	✓	✓	✓	✓	✓	✓	✓(5)	✓	■	✓	✓
125	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
150	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
200	8	✓	✓	✓	✓	■	✓	✓	✓	✓	✓	✓	✓	✓
250	10	✓	✓	✓	✓	✓	✓	✓	✓	■	✓	✓	✓	✓
300	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
350	14	■	✓	✓	■	■	■	■	■	■	■	■	■	■

(4) Possible mounting for ductile iron body GJS 400-15 (JS1030), impossible mounting for body in cast iron GJL-250 (JL1040) and in stainless steel.
 (5) Possible mounting if the butterfly valve is inclined at 22,5°

Attention : the Sylax lug type body is not a multi-connection body (connection to many flanges of different sizes). Generally, every connection relates to a different reference of finished products.

Connecting flanges

- ✓ : possible mounting
- : possible mounting with re-machining
- : possible mounting but special reference
- : impossible mounting

• Double flange

DN	NPS	EN 1092-1 & EN 1092-2					ASME/ANSI B16.1 Class 125	ASME/ANSI B16.5 Class 150	ASME/ANSI B16.5 Class 300	BS10		JIS B2238 & JIS B2239		
		PN6	PN10	PN16	PN25	PN40				Table D	Table E	5K	10K	16K
150	6	●	✓	✓			✓	✓		●	●		✓	
200	8		✓	✓	●		✓	✓		✓	●		●	
250	10		✓	✓			✓	✓		●	●		✓	
300	12		✓	✓			✓	✓		✓	✓			
350	14		✓	✓			●	●		●	●			

• Central flange

DN	NPS	EN 1092-1 & EN 1092-2					ASME/ANSI B16.1 Class 125	ASME/ANSI B16.5 Class 150	ASME/ANSI B16.5 Class 300	BS10		JIS B2238 & JIS B2239		
		PN6	PN10	PN16	PN25	PN40				Table D	Table E	5K	10K	16K
80	3	✓	✓	✓	●	●	✓	✓		●	●	●	●	●
100	4		✓	✓	●	●	✓	✓		●	●	●	●	●
125	5	●	✓	✓	●	●	✓	✓		✓	✓	●	●	
150	6	●	✓	✓			✓	✓		●	●	●	✓	
200	8	●	✓	✓			✓	✓		✓	●	●	●	●

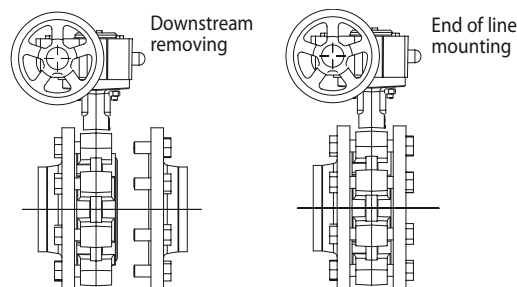
• Ring shaped type body

DN	NPS	EN 1092-1 & EN 1092-2					ASME/ANSI B16.1 Class 125	ASME/ANSI B16.5 Class 150	ASME/ANSI B16.5 Class 300	BS10		JIS B2238 & JIS B2239		
		PN6	PN10	PN16	PN25	PN40				Table D	Table E	5K	10K	16K
50	2	●	✓	✓	✓	✓	●	●	✓	●	●		●	●
65	2 1/2	●	✓	✓	●	●	●	●	✓			●	●	●
80	3	●	✓	✓	✓	✓	●	●	✓	●	●	●	●	●
100	4		✓	✓	✓	✓	✓	✓	✓	●	●		●	✓

• End of line mounting and downstream removing

The end of line mounting and the downstream removing, at ambient temperature, of the Sylax butterfly valve is limited to the pressure mentioned on page 11 according to the PED directive 97/23/CE.

These mountings are only possible on tapped lugs, double flanges and central flange bodies



For wafer type bodies with 4 centering lugs, the end of line mounting can be done in the following conditions :

- ambient temperature
- For water or non dangerous liquids (L2)
- For butterfly valves PFA 16 bar between flanges
- For butterfly valves with ductile iron body
- For butterfly valves with liners in EPDM or high content nitrile
- Within a short period (such as maintenance, ...), 15 days maximum
- In pressure conditions (PFA or PS) such as : see table

DN	PFA or PS (bar)
32 to 150	10
200 to 300	8

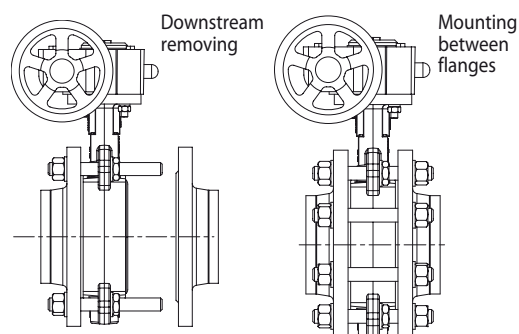
Use nuts with reduced face-to-face dimensions between the flange to be dismantled and the centering lugs. Use washers, wide ones if needed, in order to mount the nuts on the lugs.

The mounting and the removing must be done successively and in opposite way on each nut.

For the mounting, apply a reasonable torque on the nuts, in order not to damage the lugs, until metal-metal contact between flange and body.

For flanges with 8 rods, only 4 are used to maintain the valve in downstream removing ; the 8 rods must be re-mounted for a normal use between flanges .

In case of unexpected downstream removing, integrate and screw successively and in opposite way, between the lugs and the flange to be removed, the 4 nuts which hold the butterfly valve.



Normalisation

- **Design :**
According to EN 593 and marking according to EN 19
- **ISO top connection for actuations :**
According to EN ISO 5211
- **Face to face :**
According to 558-1 series 20
ISO 5752 series 20
API 609 table 2
- **Connecting flanges :** see on page 8
According to EN1092-1 and EN1092-2
ASME/ANSI B16.5
BS10-d and BS10-e
JIS B2238 and JIS B2239
- **Tests :**
According to EN12266-1
Resistance and tightness of the body : test P11(1,5 x allowable operating pressure)
Tightness of the seat : test P12 rate A (1,1 x allowable operating pressure)

According to EN12266-2
Anti-static design : test F21

- **European Directives :**
Our butterfly valves are in accordance to the safety requirements of the following directives. :

Directive 97/23/CE : Equipments under pressure PED (Pressure Equipment Directive)
Applies to the design, manufacturing and the assessment of the conformity of pressure equipment, the maximum allowable pressure of which is 0,5 bar.

Pressure equipment for water supply, distribution, and disposal of water is excluded.
Depending on the type of pressure equipment, maximum allowable temperature (PS), DN, physical nature of the fluid (liquid, gas or vapour) and the degree of danger of the fluid (group1/2)*, the directive classifies this same equipment into different categories (article 3.3, I, II, III, IV), required for the assessment of conformity with CE marking.
The equipment defined in article 3.3 of the directive must not bear the CE marking.
(*) Group 1 : hazardous fluids (directive 67/548/EEC) / explosive / highly flammable / easily flammable / flammable / very toxic / toxic / combustion agents.
Group 2 : all other fluids


Important notice : the indicated pressure for the different categories of fluids (L1/L2/G1/G2) is under no condition a guarantee of use. Therefore, it is essential to validate the use of products under given operating conditions. Danfoss Socla is not responsible for alteration of the products to working conditions not previously specified by the customer.
In order to facilitate your choice regarding these new regulatory requirements, Danfoss Socla has put the necessary information concerning products with CE marking, specification sheets and product identification plates at your disposal in the price list (+ see additional explanations on the detachable slip).
In addition, the operating instructions are available on our web site www.danfoss-socla.com or by simple request from our sales department.

Directive 94/9/CE : ATEX (EXplosive ATmospheres)

This directive is only applicable for the following atmospheric conditions : -20°C < T < +60°C ; 0,8 bar ≤ P ≤ 1,2 bar.


In this risk analysis, the fluid which passes through the valve is not taken into account. It is under the responsibility of the user to take into consideration the risks generated by the fluid like : heating of the surface of the valve, internal chocks generated by granulates, wave of chocks due to the installation (water hammering), or the risks due to foreign bodies which are inside the installation.

Classification of the bare shaft valve :

The marking of the bare shaft valve is :  II 2 DG.

Classification of the set valve + actuation :

- **Valve with a hand lever :**

The use of hand levers produced by Danfoss Socla within an ATEX area do not represent additional risks. The valve with a hand lever is in conformity to the marking :  II 2 DG.

- **Valve with other actuations :**

The classification of the valve + actuation supplied by Danfoss Socla is similar to the lowest classification of the components which composed the assembly.

No additional marking will be used to indicate the classification of the assembly.

If only one component of the assemblyset is not market with ATEX label, therefore the complete assemblyset is not conformed to ATEX directive.

The classification of the equipment allows its use in a determinate area; an use in another area is under the responsibility of the user.

Machinery Directive 2006/42/CE : Machinery Directive

In its Appendix I it sets a certain number of Essential Health and Safety Requirements which must be met. It applies to motorised butterfly valves, (with electric, pneumatic or hydraulic actuators). According to this Directive, these sets are "Partly Completed Machineries" designed for being integrated into a machine.

"Partly Completed Machinery" means an assembly which is almost machinery but which cannot in itself perform a specific application. A drive system is partly completed machinery. Partly completed machinery is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which this Directive applies.

An instruction notice specifying the installation characteristics and the commission of the Sylax is added to every product when the ATEX version is specified; It is available on our web site www.danfoss-socla.com or on request by our sales department.

Pressure
DIRECTIVE 97/23/CE Equipments under pressure.

Products manufactured in conformity with the requirements of the directive, according to pressure, DN and fluid (see on the precedent page).

LINERS		DN mm	Cat.	MOUNTING	PFA	PS			
						L1	L2	G1	G2
6 bar	EPDM, Nitrile (CC333G disc), White EPDM	32 to 150	3,3	Flanges	6	6	6		6
				End of line	4	4	4		4
	Nitrile (except CC333G disc), Neoprene, Butyl, Hypalon, Natural rubber, White natural rubber.	200 to 350	I	Flanges	6	6	6		6
				End of line	4	4	4		4
		32 to 100	I	Flanges	6	6	6	6	6
				End of line	4	4	4		4
125 to 350	II	Flanges	6	6	6	6	6		
		End of line	4	4	4		4		
10 bar	EPDM, Nitrile (CC333G disc), White Nitrile, Carboxylated Nitrile , White EPDM	25 to 100	3,3	Flanges	10	10	10		10
				End of line	6	6	6		6
		125 & 150	I	Flanges	10	10	10		10
				End of line	6	6	6		6
		200 to 350	I	Flanges	10	10	10		10
				End of line	6	6	6		6
	Nitrile (except CC333G disc), FKM	25	3,3	Flanges	10	10	10	10	10
				End of line	6	6	6		6
		32 to 100	I	Flanges	10	10	10	10	10
				End of line	6	6	6		6
		125 to 350	II	Flanges	10	10	10	10	10
				End of line	6	6	6		6
	Silicone	32 to 100	I	Flanges	10	10	10	10	10
				End of line	6	6	6		6
		125 to 150	II	Flanges	10	10	10	10	10
				End of line	6	6	6		6
		200 to 350	II	Flanges	6	6	6	6	6
				End of line	4	4	4		4
16 bar	EPDM, Nitrile (CC333G disc)	32 to 100	3,3	Flanges	16	16	16		10
				End of line	12	12	12		10
		125	I	Flanges	16	16	16		10
				End of line	12	12	12		10
		150	I	Flanges	16	10	16		10
				End of line	12	6	12		10
		200 to 300	I	Flanges	16	10	16		10
				End of line	10	6	10		10
		350	I	Flanges	16	10	16		10
	End of line			8	6	8		8	
	Nitrile (except CC333G disc), Neoprene, Butyl, Hypalon, Natural rubber, White natural rubber	32 to 100	I	Flanges	16	16	16	10	16
				End of line	12	12	12		12
		125 & 150	II	Flanges	16	16	16	10	16
				End of line	12	12	12		12
		200 to 300	II	Flanges	16	16	16	10	10
				End of line	10	10	10		10
		350	II	Flanges	16	16	16	10	10
				End of line	8	8	8		8
20 bar		EPDM, Nitrile (CC333G disc)	32 to 250	3,3	Flanges	20		20	
	End of line				12		12		
	300 & 350		I	Flanges	20		20		
		End of line		12		12			
	Nitrile (except CC333G disc), Neoprene, Butyl, Natural rubber, White natural rubber	32 to 100	3,3	Flanges	20	20	20		
				End of line	12	12	12		
125 to 350		II	Flanges	20	20	20			
	End of line		12	12	12				
25 bar	EPDM, Nitrile (CC333G disc)	32 to 150	3,3	Flanges	25		25		
				End of line	16		16		
	Nitrile (except CC333G disc)	32 to 80	3,3	Flanges	25	25	25		
				End of line	16	16	16		
		100 to 150	II	Flanges	25	25	25		
				End of line	16	16	16		

ATTENTION
 Gas G1 and G2 : The max. pressure is 6 bar when using cast iron GGG25 bodies (FGL 250)

PS : Maximum allowable pressure (in bar) according to Directive 97/23/CE

PFA : Allowable operating pressure (in bar) for supply, distribution and disposal of water.

Torque values

Torques for water (Nm)		25	32	40	50	65	80	100	125	150	200	250	300	350
PS6	EPDM	10	10	10	10	15	20	35	65	83	100	200	280	400
	NBR	10	15	15	18	23	30	50	93	115	150	255	380	560
PS16	EPDM	10	15	15	18	30	32	50	83	115	180	280	430	500
	NBR	10	15	15	24	35	40	66	100	155	220	340	500	720
PS20			20	20	32	45	65	100	130	190	350	560	850	1250
PS25			25	25	50	70	120	240	270	460				

NOTE:

Torques for liner in EPDM and High Content Nitrile (except DN250 to 350 for PS20).
One actuation minimum per month.

Flow rate (Kv)

OPENING STAGE - Stainless steel disc

DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
25	-	-	-	3	8	16	27	35	40
32/40	-	-	-	5	12	25	40	56	62
50	-	-	1	8	18	33	54	71	79
65	-	-	6	19	41	76	118	158	174
80	-	3	18	43	79	138	211	252	275
100	-	15	38	83	154	253	368	458	496
125	-	20	61	134	249	399	599	792	883
150	5	37	100	200	374	600	863	1109	1212
200	15	76	200	399	680	1099	1666	2196	2500
250	40	150	333	621	1084	1765	2652	3517	3948
300	60	219	500	989	1736	2770	4097	5118	5635
350	145	420	882	1676	2850	4462	6000	7431	8520

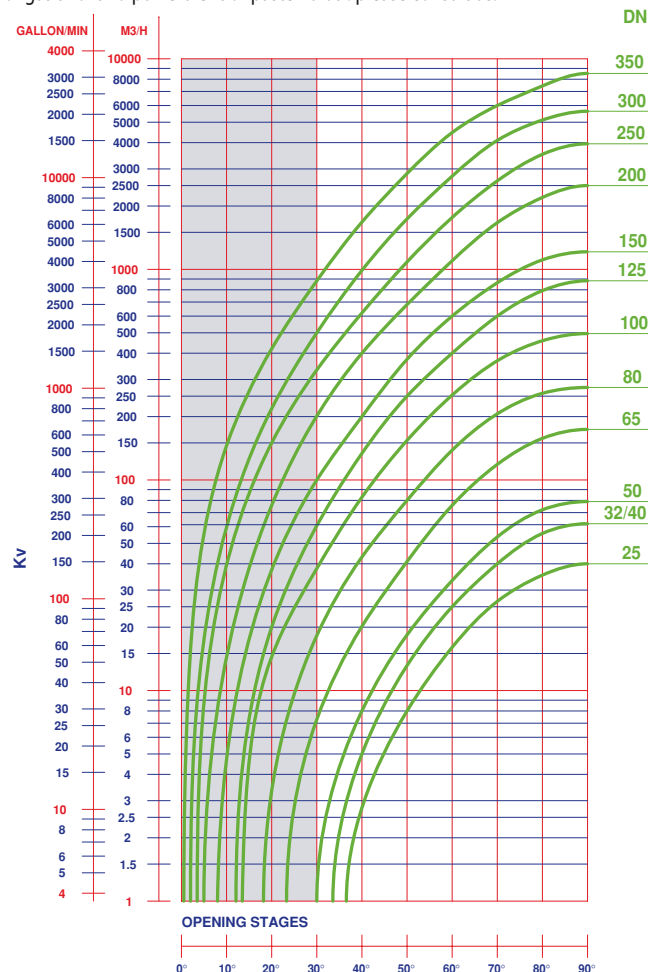
The butterfly valve is not the best product for regulating. Nevertheless, the Sylax butterfly valve can be used to regulate by an opening stage between 30° and 90°.

A regulation in the opening stage lower than 30° is not advisable because of over speed, cavitation effect, which could damage prematurely the valve.

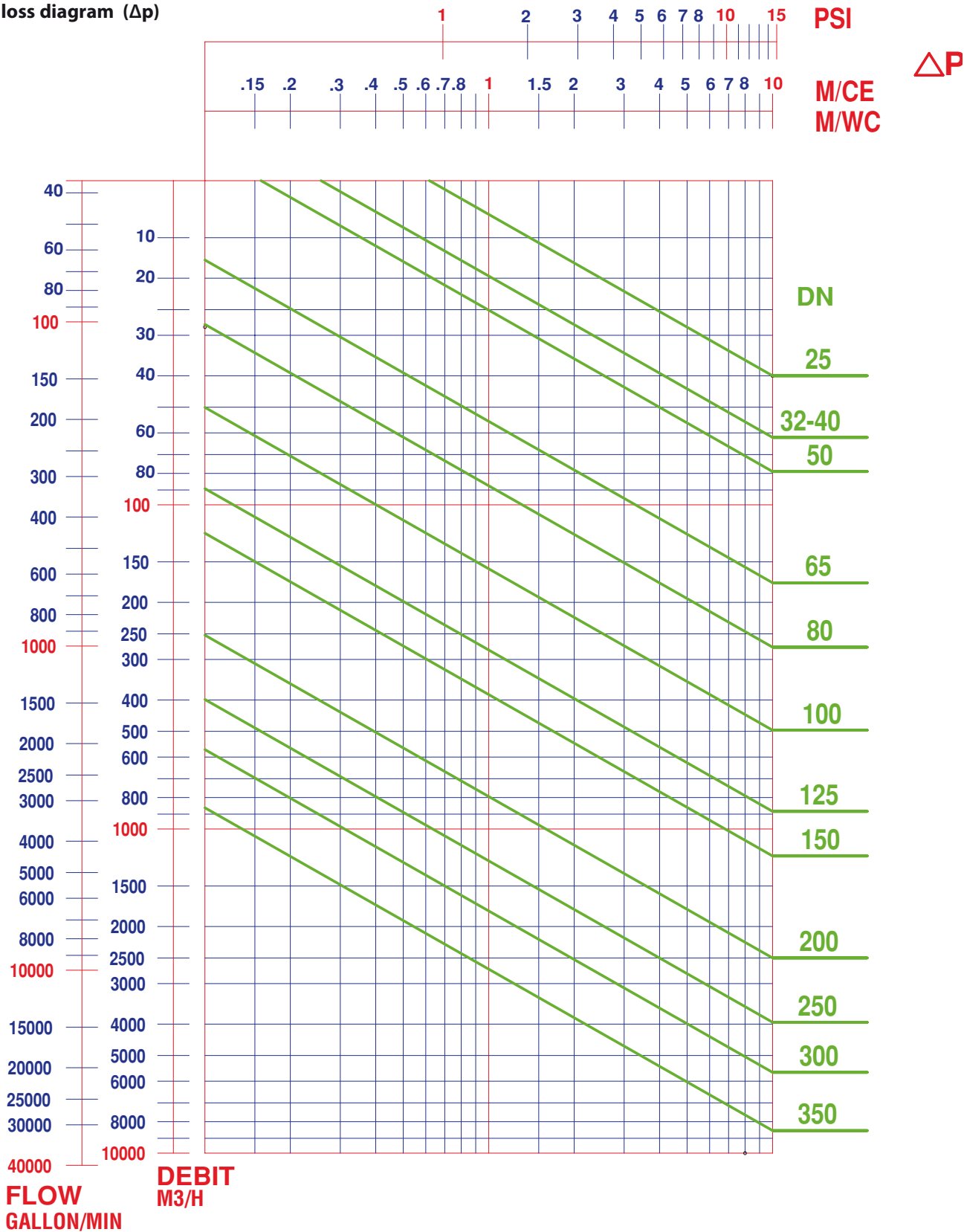
Kv = volume of water in m³/h through a valve at a preset opening stage and under a head loss of 1 bar.

The maximum flow velocity of the fluid through the valve must not exceed :

- 3 m/s for liquid fluids. Between 3 and 5m/s, the use of the Sylax butterfly valve is possible, but the phenomena of cavitation, noise, vibration and water hammering increase.
- 20m/s for gas. Between 20 and 25m/s, the use of the Sylax butterfly valve is possible, but the phenomena of cavitation, noise, vibration and water hammering increase.
- for gas and pulverulent or paste fluids : please consult us.



Head loss diagram (Δp)

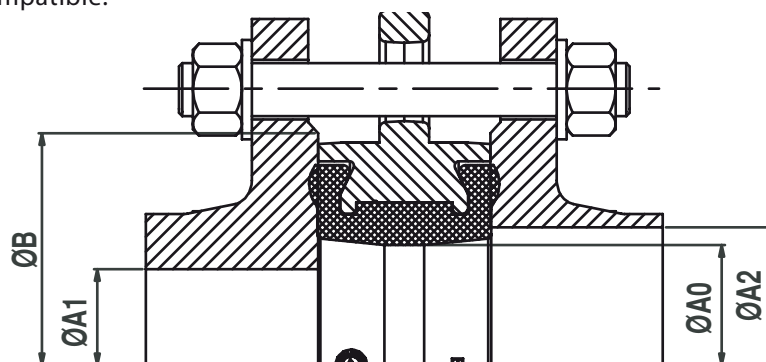


Type of flange

The Sylax butterfly valve has been designed to be mounted on normalised standard flanges. Only standard flanges type 11, 21 and 34 according to EN 1092 are quite compatible.

For other types of flanges, refer to the table below.

Non appropriate connections will cancel our guarantee.



DN		Ø A0	Ø A1 mini	Ø A2 maxi	Ø B mini
25	1	32	-	44	60
32	1 1/4	43	33	51	80
40	1 1/2	43	33	51	80
50	2	50	36	59	90
65	2 1/2	65	54	74	110
80	3	80	73	88	128
100	4	100	93	116	148
125	5	125	119	143	178
150	6	150	146	166	202
200	8	200	196	224	258
250	10	250	246	280	312
300	12	300	296	329	365
350	14	340	335	369	415

NOTE :

The use of expansion seals, as well as the use of elastomer coated flanges, between the flange and the valve are strictly forbidden.

Tag / traceability


Rep	Description
1	Name of the valve
2	Reference
3	Material of the disc
4	Material of the liner
5	Pressure PS between flanges L1/L2 (liquid)
6	Pressure PS between flanges G1/G2 (gas)
7	Pressure PS end flange L1/L2 (liquid)
8	Pressure PFA water 20°C
9	Number of manufacturing order
10	Notified Body Number for the Directive PED 97/23/CE
11	Manufacturing date
12	Connecting flanges
13	Limit of use
14	Approval information zone
15	Marking relating to the Directive ATEX 94/9/CE

Bolts and nuts
Note : Bolts and nuts are not part of our standard supply.

DN	NPS	a	e	EN 1092 PN6			EN 1092 PN10			EN 1092 PN16			EN 1092 PN25			ASME / ANSI B16.5 Class 150			
				*Nb rods or Nb screw	ØV	c	*Nb rods or Nb screw	ØV	c	*Nb rods or Nb screw	ØV	c	*Nb rods or Nb screw	ØV	c	*Nb rods or Nb screw	ØV metric	ØV UNC**	c
25	1	32	--	4	M10	16	4	M12	18	4	M12	18	4	M12	18	4	M14	1/2»	18
32/40	1 1/2	32	14	4	M12	18	4	M16	24	4	M16	24	4	M16	24	4	M14	1/2»	18
50	2	43	18	4	M12	18	4	M16	24	4	M16	24	4	M16	24	4	M16	5/8»	24
65*	2 1/2	46	20	4	M12	18	8*	M16	24	8*	M16	24	8	M16	24	4	M16	5/8»	24
80	3	46	20	4	M16	24	8	M16	24	8	M16	24	8	M16	24	4	M16	5/8»	24
100	4	52	24	4	M16	24	8	M16	24	8	M16	24	8	M20	26	8	M16	5/8»	24
125	5	56	26	8	M16	24	8	M16	24	8	M16	24	8	M24	32	8	M20	3/4»	26
150	6	56	26	8	M16	24	8	M16	24	8	M20	26	8	M24	32	8	M20	3/4»	26
200	8	60	28	8	M16	24	8	M20	26	12	M20	26	12	M24	32	8	M20	3/4»	26
250	10	68	32	12	M16	24	12	M20	26	12	M24	32	12	M27	32	12	M24	7/8»	26
300	12	78	36	12	M20	26	12	M20	26	12	M24	32	16	M27	32	12	M24	7/8»	26
350	14	78	36	12	M20	26	16	M20	26	16	M24	32	16	M30	36	12	M27	1»	32

* For flanges in cast or ductile iron 4 holes M16 and for flanges in steel 8 holes M16 on the same drilling circle.

DN	NPS	a	e	BS10-d			BS10-e			JIS2238 & JIS2239 5K			JIS2238 & JIS2239 10K			JIS2238 & JIS2239 16K		
				*Nb rods or Nb screw	ØV UNC	c	*Nb rods or Nb screw	ØV UNC	c	*Nb rods or Nb screw	ØV	c	*Nb rods or Nb screw	ØV	c	*Nb rods or Nb screw	ØV	c
25	1	32	--	4	1/2»	18	4	1/2»	18	4	M10	16	4	M16	24	4	M16	24
32/40	1 1/2	32	14	4	1/2»	18	4	1/2»	18	4	M12	18	4	M16	24	4	M16	24
50	2	43	18	4	5/8»	24	4	5/8»	24	4	M12	18	4	M16	24	8	M16	24
65	2 1/2	46	20	4	5/8»	24	4	5/8»	24	4	M12	18	4	M16	24	8	M16	24
80	3	46	20	4	5/8»	24	4	5/8»	24	4	M16	24	8	M16	24	8	M20	26
100	4	52	24	4	5/8»	24	8	5/8»	24	8	M16	24	8	M16	24	8	M20	26
125	5	56	26	8	5/8»	24	8	5/8»	24	8	M16	24	8	M20	26	8	M22	26
150	6	56	26	8	5/8»	24	8	3/4»	26	8	M16	24	8	M20	26	12	M22	26
200	8	60	28	8	5/8»	24	8	3/4»	26	8	M20	26	12	M20	26	12	M22	26
250	10	68	32	8	3/4»	26	12	3/4»	26	12	M20	26	12	M22	26	12	M24	32
300	12	78	36	12	3/4»	26	12	7/8»	26	12	M20	26	16	M22	26	16	M24	32
350	14	78	36	12	7/8»	26	12	7/8»	26	12	M22	26	16	M22	26	16	M30 x 3	36

* WAFER TYPE BODY, CENTRAL FLANGE BODY AND RING SHAPED TYPE BODY :

Assembly by rods : number of nuts and washer = 2 x Number of rods (above)

Assembly by bolts : Number of nuts = Number of screws (above) and number of washer = 2 x Number of nuts

* LUG TYPE BODY :

Assembly by screws : Number of screw per face (above) and number of washer is the same

* DOUBLE FLANGE BODY :

Assembly by rods : number of nuts and washers= 2 x Number of rods (above)

Assembly by rods + central nut :

Number of nuts = 2 x Number of rods (above)

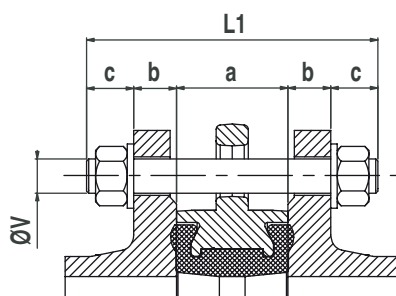
Number of washers = 4 x Number of rods (above)

Number of thin nuts for central position = 1 x Number of rods (above)

** ASME / ANSI B16.5 Class 150 : **Standard** version : metric threading; UNC threading : please consult us.

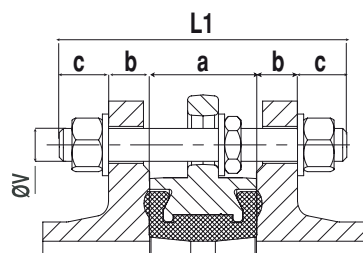
Bolts and nuts

For wafer type and central flange type body ; assembly by rods :



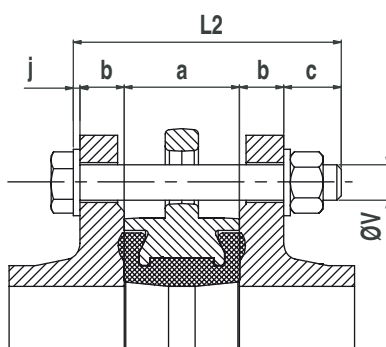
$$L1 = a + 2(b+c)$$

- L1 = minimum length of rods
- a = width of the butterfly valve (face to face dimension)
- b = thickness of the flange (customer)
- c = thickness of washer + thickness of nut + exceeding length of the rod.



Mounting in case of downstream pipework dismantling (see page 9).

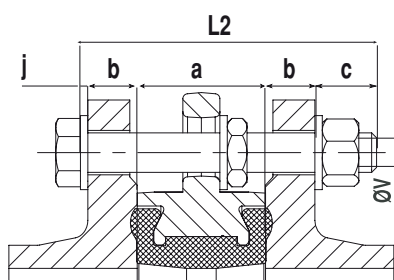
Use nuts with reduced face-to-face dimensions between the butterfly valve and the downstream flange.



For wafer type and central flange type body ; assembly by bolts :

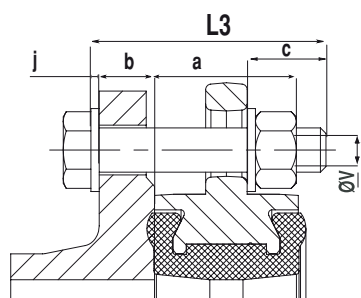
$$L2 = a + 2b + c + j$$

- L2 = minimum length under head of screw
- a = width of the butterfly valve
- b = thickness of the flange (customer)
- c = thickness of washer + thickness of nut + exceeding length of the rod
- j = thickness of washer at the head of the screw.



Mounting in case of downstream pipework dismantling (see page 9).

Use nuts with reduced face-to-face dimensions between the butterfly valve and the downstream flange.

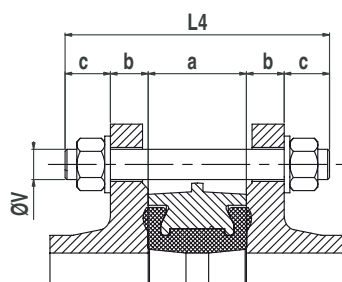


For ring shaped type body ; assembly by rods :

$$L3 = a + 2(b+c)$$

- L3 = minimum length under head of screw
- a = width of the butterfly valve (face to face dimension)
- b = thickness of the flange (customer)
- c = thickness of washer + thickness of nut + exceeding length of the rod

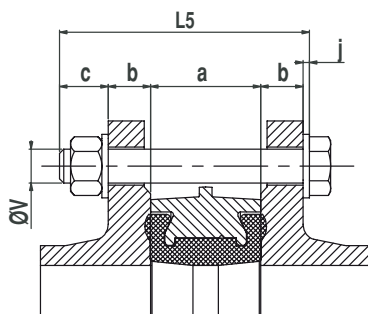
Bolts and nuts



For ring shaped type body ; assembly by bolts :

$$L4 = a + 2b + c + j$$

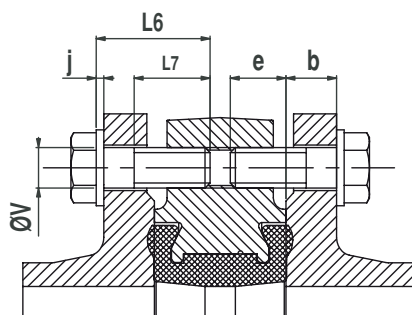
- L4 = minimum length of rods
- a = width of the butterfly valve
- b = thickness of the flange (customer)
- c = thickness of washer + thickness of nut + exceeding length of the rod
- j = thickness of washer at the head of the screw.



For lug type body and double flange body DN350; assembly by bolts :

$$L5 \leq b + e + j \text{ with } L6 \geq L5 - (b + j)$$

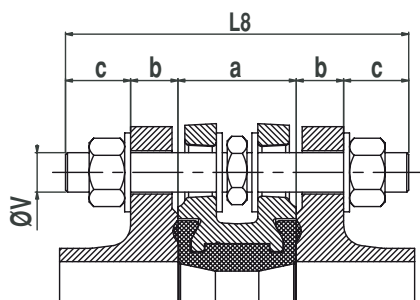
- L5 = maximum length under head of screw
- L6 = minimum length of the threading of the screw
- a = width of the butterfly valve (face to face dimension)
- b = thickness of the flange (customer)
- e = maxi depth of screw
- j = thickness of washer



For lug type body and double flange body DN350; assembly by screws :

$$L6 \leq b + e + j \text{ with } L7 \geq L6 - (b + j)$$

- L6 = maximum length under head of screw
- L7 = minimum length of the threading of the screw
- a = width of the butterfly valve (face to face dimension)
- b = thickness of the flange (customer)
- e = maxi depth of screw
- j = thickness of washer



For double flange body ; assembly by rods :

$$L8 = a + 2(b+c)$$

- L8 = minimum length of rods
- a = width of the butterfly valve
- b = thickness of the flange (customer)
- c = thickness of washer + thickness of nut + exceeding length of the rod

Installation

• General remarks :

For safety reasons, the installation must take place under the supervision of authorised people taking account of local safety instructions and advice.

The handling of butterfly valves and their controls must be done by staff trained in all technical aspects of their operation.

Before installation the pipes must be depressurised and purged (empty of its fluid) in order to avoid any danger to the operator.

The pipe work must be correctly aligned so that no extra stress is exerted on the valve casing.

In ATEX zone, check that the pipes are connected to the earth. Do not use insulating pipes (PVC....)

against the operating pressure : the PN number of the flanges must be greater or equal to the operating pressure.

The valve is a machined piece of equipment and must not be used to prise apart the flanges.

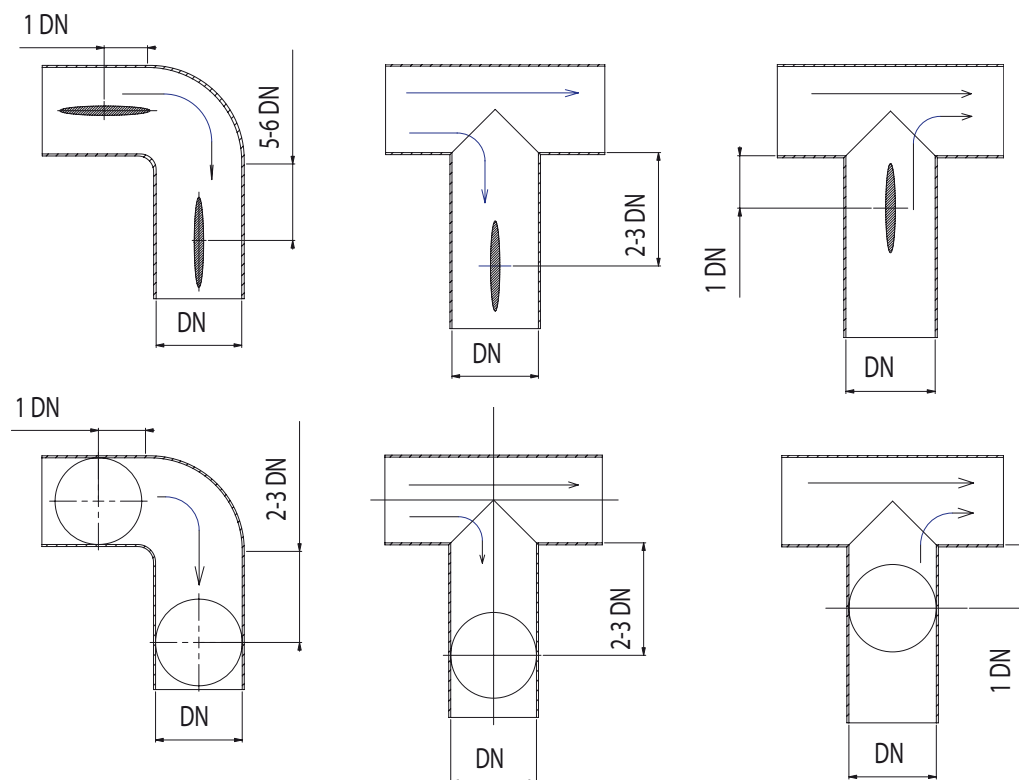
An **instruction notice** specifying the installation characteristics and the commission of the Sylax is added to every product. It is available on our web site www.danfoss-socla.com or on request by our sales department.

Check the compatibility of the connection flanges

• Installation conditions :

It is recommended that the distances mentioned below be respected in order to prolong the life time of the valve.

Mounting the valve close to pipe work junctions places it in turbulent zones which increase its wear.



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Danfoss Socla

365 rue du lieutenant Putier
71530 VIREY LE GRAND
Postal address : BP 10273
71107 CHALON SUR SAONE Cedex

Tel : 33 3 85 97 42 52
Fax : 33 3 85 97 97 42
<http://www.danfoss-socla.com>
e-mail: commer@danfoss.com