

Emaris butterfly valves

DN 50 up to 300 mm

Technical manual



Description

A product which is simple but rich in technology, essential in the chain of fluid circulation. Technical alignment with the component parts of the installation and the fluids conveyed, reliability and a high level of safety are the essential features provided by our butterfly valves.

Emaris butterfly valves

DN 50 up to 300 mm (DN350 upto 900 mm, available on request)

- Available in tapped lug version
- Vertical and horizontal mounting of the shaft
- Easy access to the packing gland without removing the actuator
- Tightness seal in RTFE 15% graphite
- Reliable technology : no need of spring or tightness bearing



> Body with long neck and integrated arcade, designed to allow insulation.

- > Excellent dynamic tightness due to easy adjustment of the packing gland.
- > Direct mounting of the actuators on an integrated arcade with large normalised surface.
- > Safety anti-ejection circlip keeps shaft in place

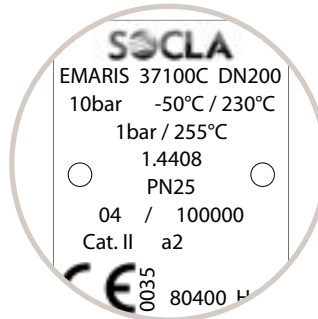


> Body : Full range of mounting thanks to centring lug with multiple connections

- > Fixation of the guide plate outside of the seal bearing which guarantees an optimal tightness on the flange
- > Disc : long life durability due to double off set disc operating principle minimizing seat wear
- > Low torque values
- > Tightness zone extended out of the shaft way.

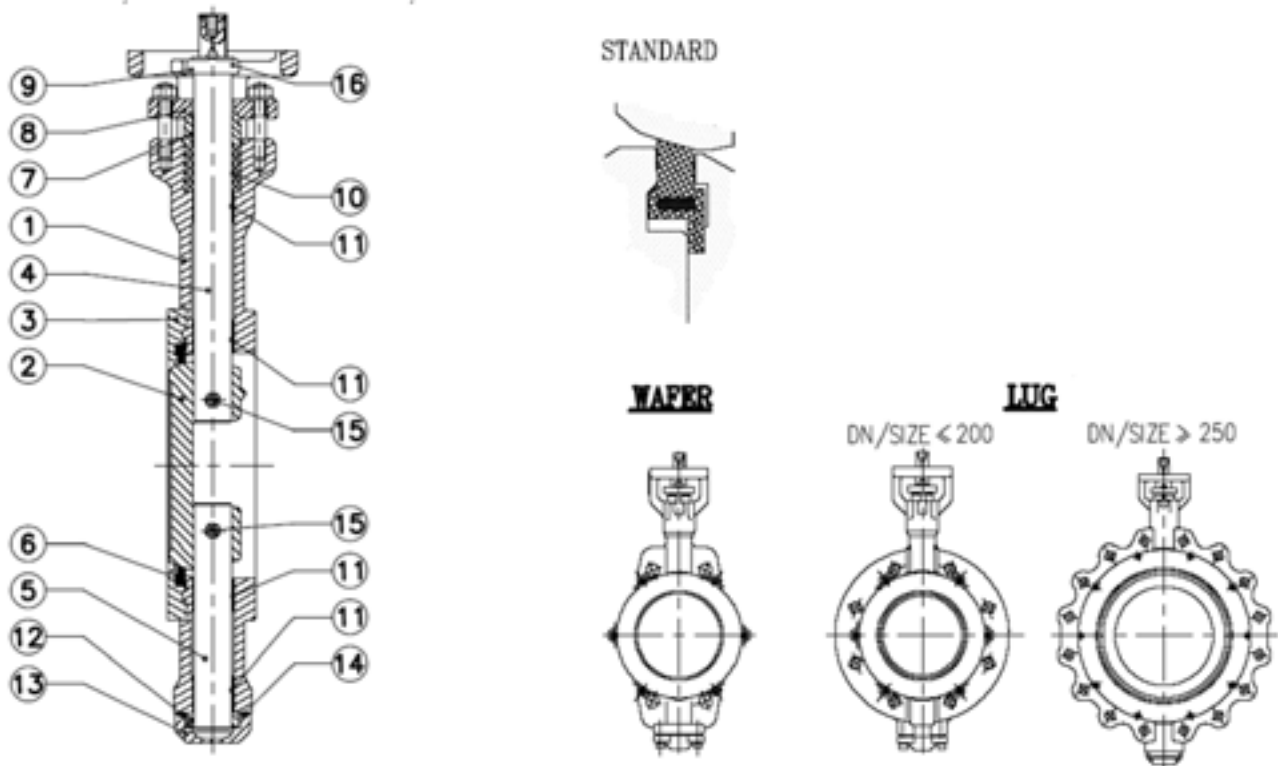


- > Excellent guiding and centring of the shaft due to anti-friction bearings
- > Double-direction butterfly valve
- > Easy-directional maintenance due to a simple design to avoid any mistake by mounting the seal.
- > Assembly of the guide plate by screws ensuring an easy access to the seal.
- > The external tightness allows a security at the lower shaft way thanks to the o-ring.



> Identification and traceability ensured by riveted metal tag : see page 10

Spare parts list and materials



N°	Description	Nb	Materials	EN
1	Body	1	Carbon steel	1.0619 / A216 WCB
			Stainless steel	1.4408 / A351 CF8M
2	Disc	1	Stainless steel	1.4408 / A351 CF8M
3	Seat ring	1	Carbon steel	1.0619 / A216 WCB
			Stainless steel	1.4408 / A351 CF8M
4	Upper stem	1	Stainless steel	1.4021 / A276 Gd420
5	Lower stem	1	Stainless steel	1.4542 / A564 Gd630
6	Seat	1	Standard : RTFE 15% Graphite	
7	Packing gland	1	Stainless steel	1.4307
8	Gland follower	1	Carbon steel	1.1149
			Stainless steel	1.4401
9	Travel stop	1	Stainless steel	1.4306
10	Packing	4 to 6	Graphite	
11	Bearing	4	Carbon steel + PTFE	
			Stainless steel + PTFE	
12	Disc locating shoulder	1	Stainless steel	1.4307
13	Cover	1	Carbon steel	1.0619 / A216 WCB
			Stainless steel	1.4408 / A351 CF8M
14	Bottom seal	1	Graphite / PTFE 25% glass	
15	Pin	1	Stainless steel	1.4404
16	Circlips	1	Carbon steel	
			Stainless steel	

Normalisation

DESIGN

According to EN 593 and marking according to EN 19

CONNECTING FLANGES (see on page 9 and 10)

According to EN 1092-1 and EN1092-2 : PN10-16-25-40
ASME/ANSI B16.5 : ASA 150 and 300

ISO TOP CONNECTION FOR ACTUATIONS

According to EN ISO 5211

FACE TO FACE

According to 558 series 20
ISO 5752 series 20
API 609 table 2 Class 300

TESTS

According to EN12266-1

- Resistance and tightness of the body (directive PED 2014/68/UE) : 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 2014/68/UE : 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 : according to rule CE 1272/2008.

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. Socla is not responsible for alteration of the products to working conditions not previously specified by the customer.


Directive 2014/34/UE : ATEX (EXplosive ATmospheres)

This directive is only applicable for the following atmospheric conditions : $-20^{\circ}\text{C} < T < +60^{\circ}\text{C}$; $0,8 \text{ bar} \leq P \leq 1,2 \text{ bar}$.

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 Socla within a 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 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 a single element of the combination does not carry the ATEX mark, then the entire valve/control combination does not conform to the 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.

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.

Pressure

DIRECTIVE 2014/68/UE 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
40 bar	RTFE 15% graphite	50 up to 300	II	Flanges	40	25	40	25	25
			I	End of line	40	18	18	18	18
II			Flanges	25	25	25	25	25	
I			End of line	25	18	18	18	18	
25 bar			II	Flanges	16	16	16	16	16
			I	End of line	16	16	16	16	16
16 bar			II	Flanges	10	10	10	10	10
			I	End of line	10	10	10	10	10
10 bar	II	Flanges	10	10	10	10	10		
	I	End of line	10	10	10	10	10		

PS : Maximum allowable pressure (in bar) according to Directive 2014/68/UE

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

NOTE : Butterfly valves of category II used as «end of line», please consult us.

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....)

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

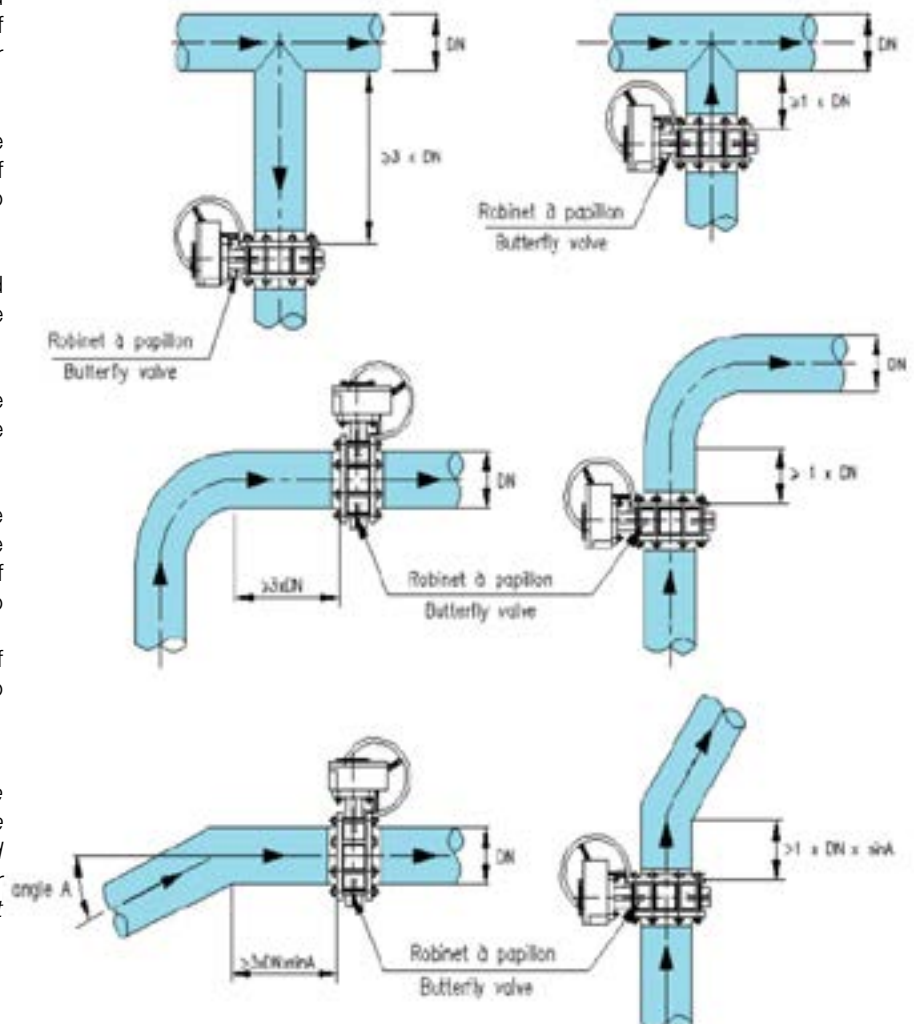
The valve is a machined piece of equipment and must not be used to prise apart the flanges.

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

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.



Application

- Any application requiring the use of butterfly valve with double off set disc and fluid controls up to 50 bar pressure and temperatures from -50°C till +220°C for stainless steel body and from -29°C till +220°C for cast iron body.
- Application fields : Steam, district heating, geothermal, industrial processes and refrigeration, pumping, offshore, ship buildings, sugar processing industry, petrochemical, nuclear, paper industry, etc...

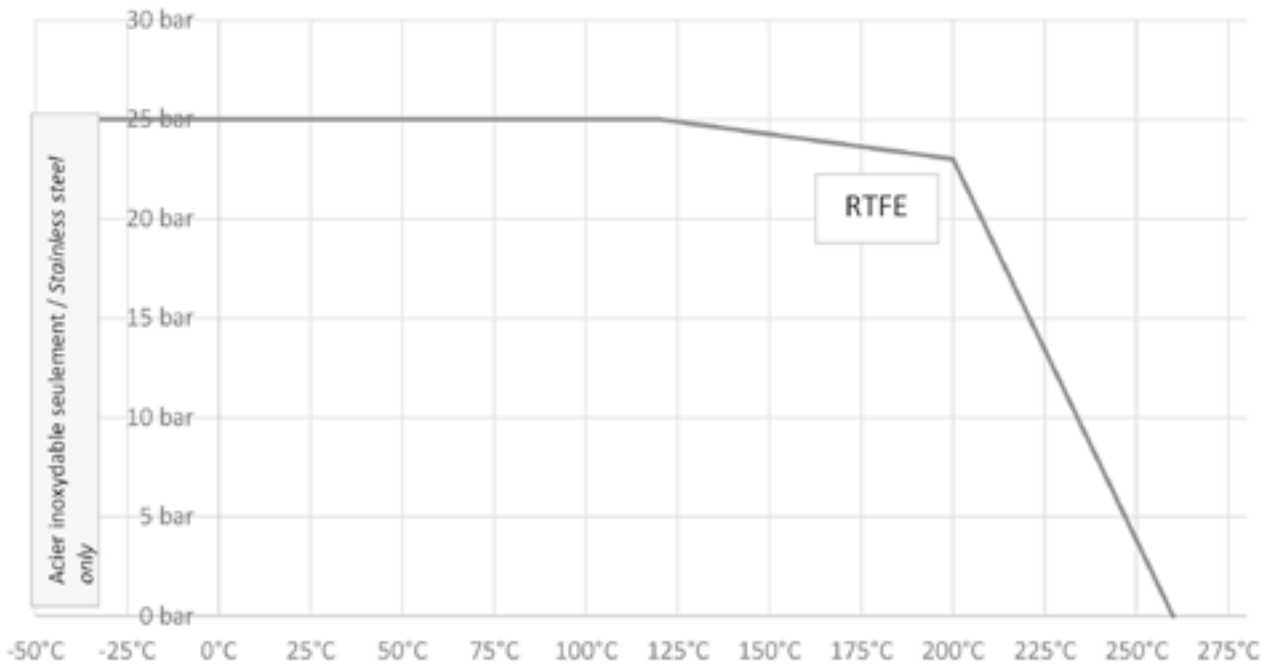
Functioning characteristics

Torque values

DN	TORQUES	PS10	PS16	PS25	PS40
50	F07/11	27	27	27	36
65	F07/11	33	33	33	44
80	F07/11	38	45	45	60
100	F10/14	62	73	73	96
125	F10/14	97	115	115	150
150	F10/19	143	170	170	221
200	F10/19	265	320	320	416
250	F12/27	390	480	480	620
300	F12/27	595	720	720	920

NOTE : One actuation minimum per month.

Pressure/temperature diagram



Flow rate (Kv)

DN	OPENING STAGE							
	20°	30	40°	50°	60°	70	80°	90°
50	5	14	25	37	50	70	95	115
65	9	25	41	64	93	130	180	210
80	19	42	62	98	149	213	274	320
100	37	70	116	174	244	328	442	500
125	61	115	190	285	400	538	725	820
150	72	126	210	342	520	786	1050	1200
200	137	241	364	574	893	1389	1986	2300
250	180	368	612	1005	1503	2182	3012	3600
300	265	521	981	1548	2254	3232	4250	5200

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

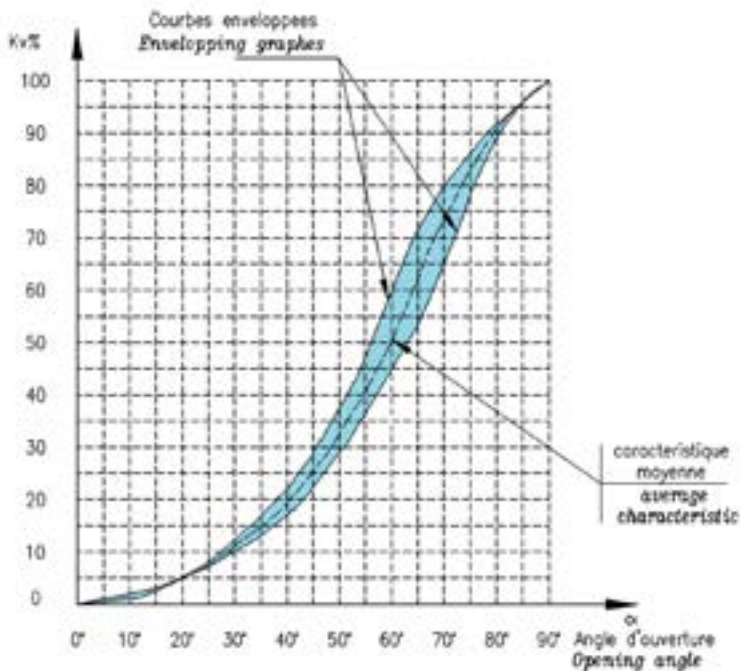
The butterfly valve is not the best product for regulating. Nevertheless, the Emaris butterfly valve can be used to regulate by an opening stage between 20° and 90°.

A regulation in the opening stage lower than 20° is not advisable because of over speed, cavitation effect, which could damage prematurely the valve.

The maximum flow velocity of the fluid through the valve is defined according to NF EN 593

For gas and and pulverulent or paste fluids : please consult us.

Flow rate (Kv)

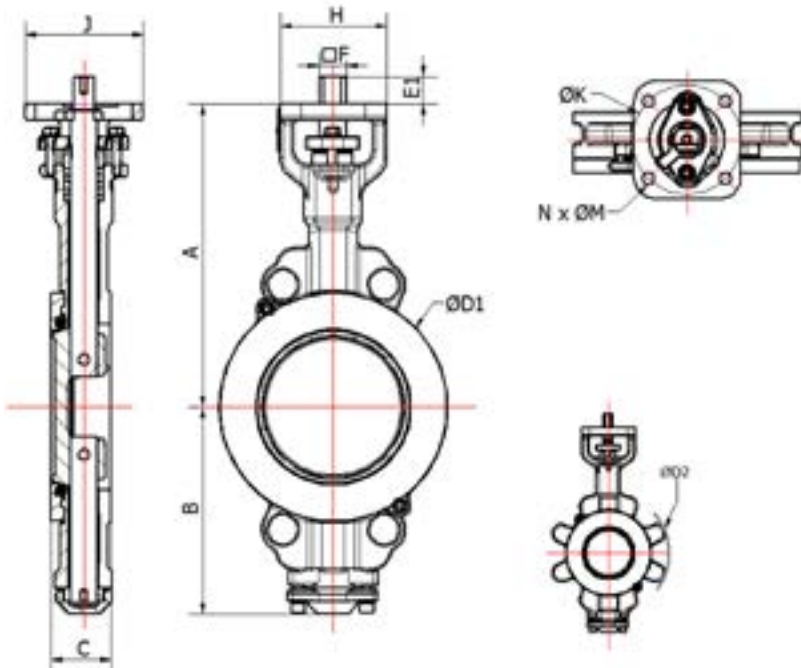


Simplified formula to calculate the pressure drop of the valve (Δp)

Perte de charge dans un robinet Headloss in the valve	KV	Fluides incompressibles incompressible fluids	
$\Delta P < \frac{P_1}{2}$ $P_2 > \frac{P_1}{2}$			$= \frac{Q}{514} \sqrt{\frac{\rho_w \cdot T}{\Delta P \cdot P_2}}$
$\Delta P > \frac{P_1}{2}$ $P_2 < \frac{P_1}{2}$		$= \frac{Q}{31,6} \sqrt{\frac{\rho_1}{\Delta P}}$	$= \frac{Z \cdot \rho_w}{514 \cdot P_1} \sqrt{\rho_w \cdot T}$

KV: flow coefficient of the valve
 Q : flow in m³/h
 ΔP : headloss for the valve in bar
 P₁ : Upstream absolute pressure in bar
 P₂ : Downstream absolute pressure in bar
 Q : flow in standard conditions (0°C, 760 mm HG) m³/h
 T : absolute temperature of the fluid °K
 ρ₁ : specific weight of the fluid (kg/m³)
 ρ_w : specific weight in standard conditions

Overall dimensions



DN	A	B	C	ØD1	ØD2	SQUARE		TOP FLANGE				ISO5211 ISO5210		WEIGHT KG	
						E1	F	N°	H	J	K	N	M	WAFER	LUG
50	175	102	43	97	153	25,5	11	F07	70	80	70	4	9	3,9	4,6
65	191	116	46	117	173	25,5	11	F07	70	80	70	4	9	5	7,1
80	197	122	46	130	190	25,5	11	F07	70	80	70	4	9	5,4	7,9
100	233	149	52	158	225	25,5	14	F10	100	100	102	4	11	9,1	11,6
125	245	160	56	188	261	25,5	14	F10	100	100	102	4	11	11	14,9
150	283	193	56	212	294	25,5	19	F10	100	110	102	4	11	15,7	20,1
200	307	217	60	267	365	25,5	19	F10	100	110	102	4	14	21,9	33,7
250	371	254	68	321	420	36	27	F12	132	140	125	4	14	37,1	51,6
300	399	302	78	372	476	36	27	F12	132	140	125	4	14	54	87

Connecting flanges

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

- ✓ : possible mounting
- : impossible mounting

Centring lugs

DN	NPS	ISO 7005 & EN 1092					ASME/ANSI B16.5		JIS B2210		
		PN6	PN10	PN16	PN25	PN40	Class 150	Class 300	10K	16K	20K
50	2"	■	✓	✓	✓	✓	✓	✓	✓	✓	✓
65	2" 1/2	■	✓	✓	✓	✓	✓	✓	✓	✓	✓
80	3"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100	4"	■	✓	✓	✓	✓	✓	✓	■	✓	✓
125	5"	■	✓	✓	✓	✓	✓	✓	✓	✓	✓
150	6"	■	✓	✓	✓	✓	✓	✓	✓	✓	✓
200	8"	■	✓	✓	✓	✓	✓	✓	✓	✓	✓
250	10"	■	✓	✓	✓	✓	✓	✓	✓	✓	✓
300	12"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Tapped lugs

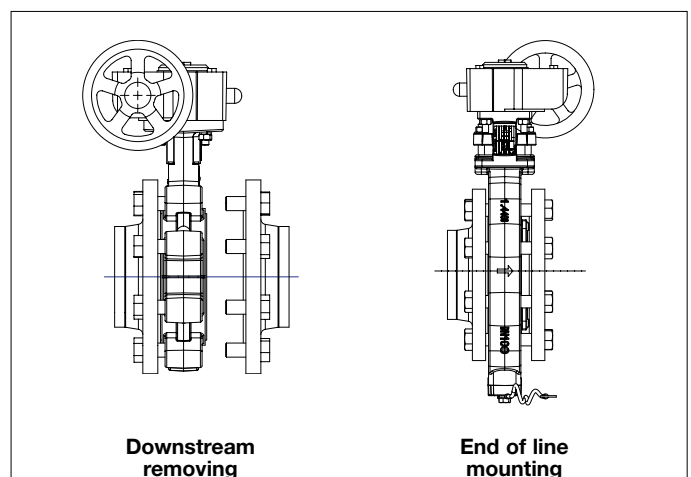
DN	NPS	ISO 7005 & EN 1092					ASME/ANSI B16.5		JIS B2210		
		PN6	PN10	PN16	PN25	PN40	Class 150	Class 300	10K	16K	20K
50	2"	■	✓	✓	✓	✓	✓	■	✓	✓	✓
65	2" 1/2	■	✓	✓	✓	✓	✓	■	✓	✓	✓
80	3"	✓	✓	✓	✓	✓	✓	■	■	■	■
100	4"	■	✓	✓	✓	✓	✓	■	✓	✓	✓
125	5"	■	✓	✓	✓	✓	✓	■	✓	✓	✓
150	6"	■	✓	✓	✓	✓	✓	■	✓	✓	✓
200	8"	■	✓	✓	✓	✓	✓	■	✓	✓	✓
250	10"	■	✓	✓	✓	✓	✓	■	✓	✓	✓
300	12"	✓	✓	✓	✓	✓	✓	■	✓	✓	✓

ATTENTION : the Emaris 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.

End of line mounting and downstream removing

The end of line mounting and the downstream removing, at ambient temperature, of the Emaris butterfly valve is limited to the pressure mentioned on page 5 according to the PED directive 2014/68/UE.

These mountings are only possible on tapped lugs bodies.

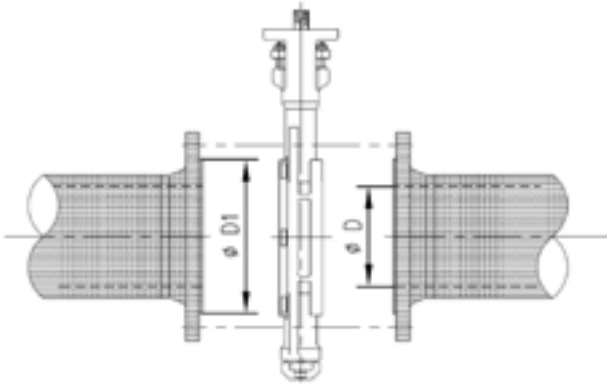


Type of flange

The Emaris butterfly valve has been designed to be mounted on 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.

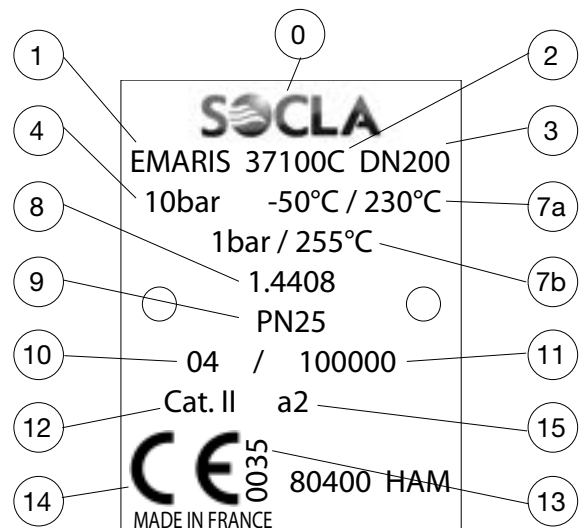
Non appropriate connections will cancel our guarantee.



DN	Ø D mini	Ø D maxi	Ø D1 mini
50	49	In accordance with ISO 7005 / EN1759 / EN1092 / ANSI B16.5 / ANSI B16.47-A	
65	59		
80	74		
100	97		
125	122		
150	146		
200	194		
250	243		
300	289		

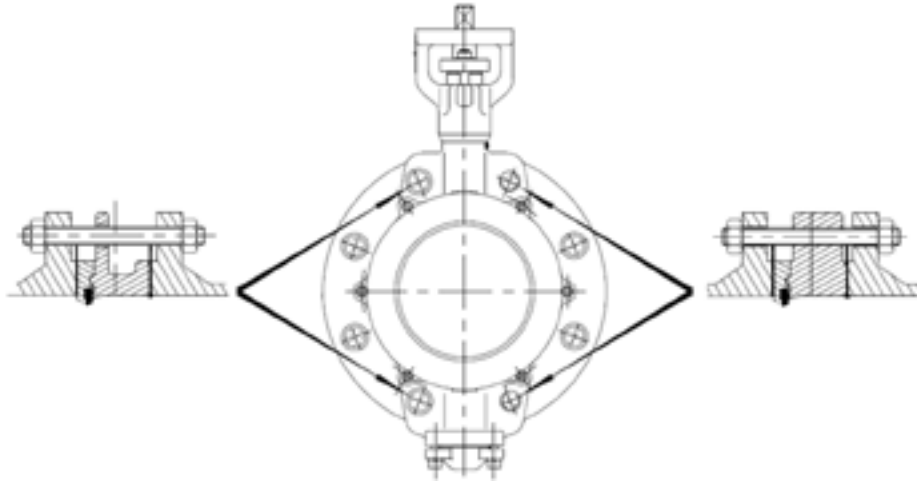
Tag and traceability

N°	Description
0	Manufacturer
1	Name of the valve
2	SOCLA reference
3	Nominal diameter
4	Pressure PS in bar
7a	PS temperature limit
7b	Pressure-temperature extrem limit
8	Body material
9	Connection
10	Year of manufacturing order
11	Number of manufacturing order
12	DESP category
13	Notified organism number
14	CE marking
15	a2 marking – antistatic conception



Bolts and nuts

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

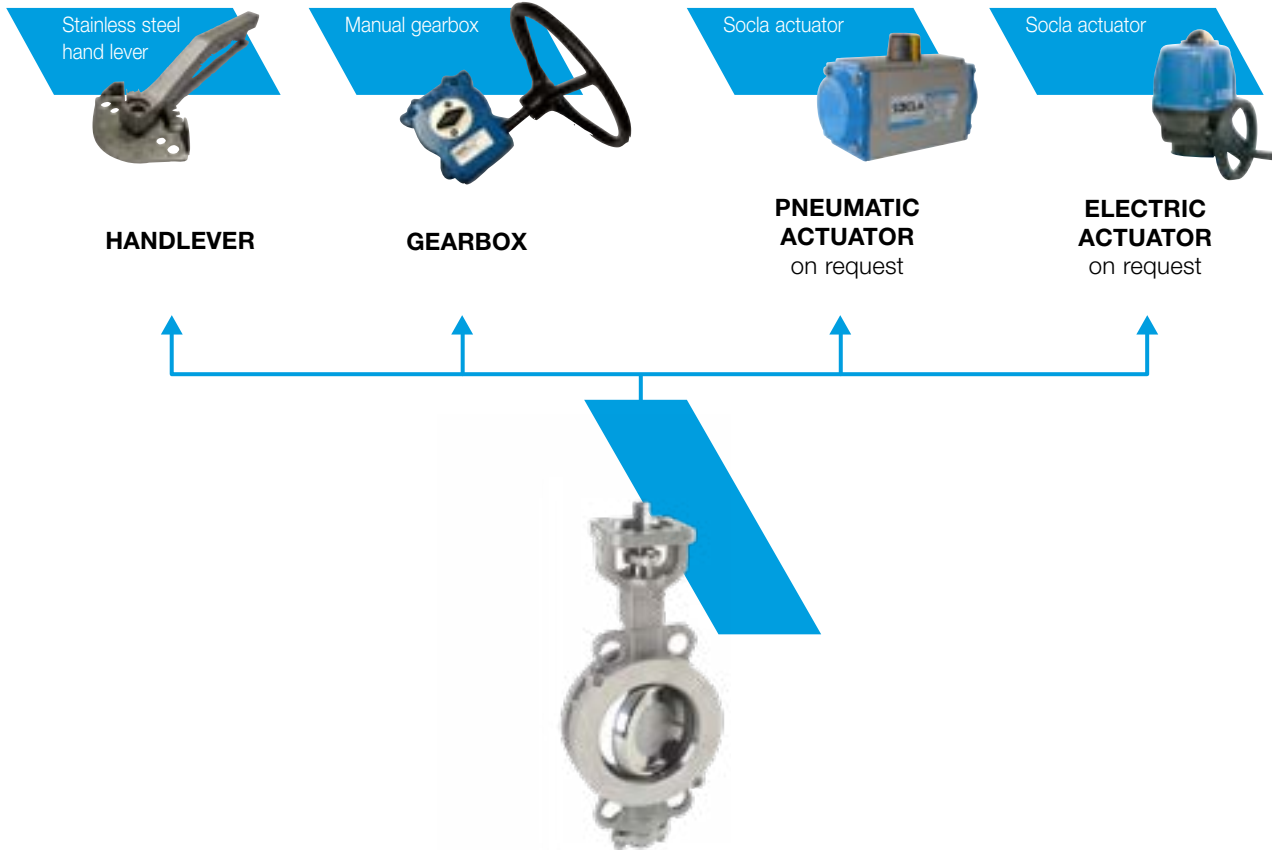


		DN 50			DN 65			DN 80			DN 100			DN 125		
		Bolt size	Nb	L	Bolt size	Nb	L	Bolt size	Nb	L	Bolt size	Nb	L	Bolt size	Nb	L
ISO 7005-1	PN10	M16	4	120	M16	4	120	M16	8	120	M16	8	130	M16	8	130
	PN16	M16	4	120	M16	4	120	M16	8	120	M16	8	130	M16	8	130
	PN25	M16	4	120	M16	8	120	M16	8	130	M20	8	150	M24	8	150
	PN40	M16	4	120	M16	8	120	M16	8	130	M20	8	150	M24	8	150
EN1759 B16.5 B16.47-A	PN20	M16	4	120	M16	4	120	M16	4	130	M16	8	130	M20	8	150
	CI150	5/8"	4	120	5/8"	4	120	5/8"	4	130	5/8"	8	130	3/4"	8	150
	PN50	M16	8	120	M20	8	130	M20	8	150	M20	8	150	M20	8	170
	CI300	5/8"	8	120	3/4"	8	130	3/4"	8	150	3/4"	8	150	3/4"	8	170
JIS B2210	JIS10K	M16	4	135	M16	4	140	M16	8	140	M16	8	150	M20	8	165
	JS16K	M16	8	135	M16	8	140	M20	8	155	M20	8	165	M22	8	170
	JIS20K	M16	8	135	M16	8	145	M20	8	160	M20	8	170	M22	8	180

		DN 150			DN 200			DN 250			DN 300		
		Bolt size	Nb	L	Bolt size	Nb	L	Bolt size	Nb	L	Bolt size	Nb	L
ISO 7005-1	PN10	M20	8	150	M20	12	150	M20	12	170	M20	12	170
	PN16	M20	8	150	M20	12	150	M24	12	170	M24	12	190
	PN25	M24	8	170	M24	12	170	M27	12	200	M27	16	200
	PN40	M24	8	170	M27	12	180	M30	12	240	M30	16	240
EN1759 B16.5 B16.47-A	PN20	M20	8	150	M20	8	170	M24	12	180	M24	12	180
	CI150	3/4"	8	150	3/4"	8	170	7/8"	12	180	7/8"	12	180
	PN50	M20	12	170	M24	12	190	M27	16	220	M30	16	240
	CI300	3/4"	12	170	7/8"	12	190	1"	16	220	1 1/8"	16	240
JIS B2210	JIS10K	M20	8	170	M20	12	175	M22	16	195	M22	16	205
	JS16K	M22	12	175	M22	12	185	M24	16	205	M24	16	220
	JIS20K	M22	12	185	M22	12	195	M24	16	215	M24	16	230

Actuations

Find below the different standard assembly combinations.
For any other information, please ask our technical Department.



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ISO 9001 version 2015 / ISO 18001