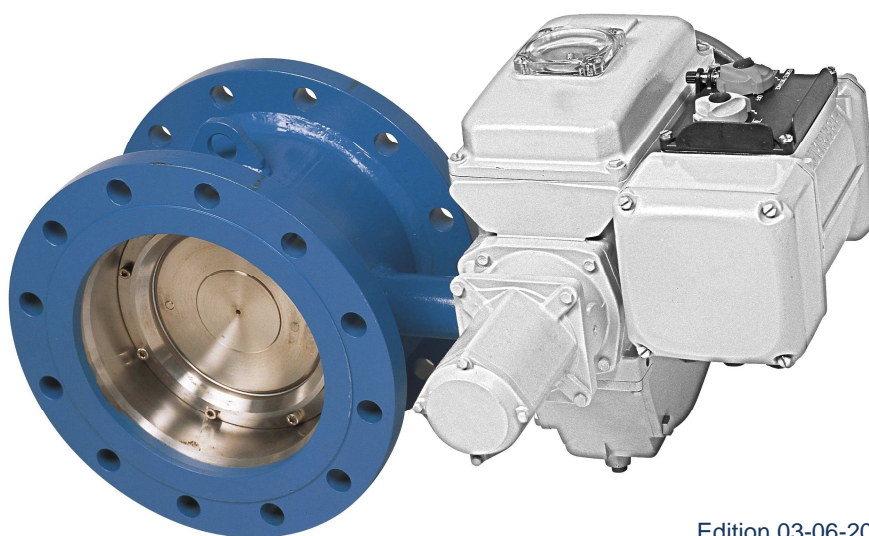


BUTTERFLY VALVE
of carbon steel
with flanges
31500 series

CONTROL



Edition 03-06-2009

Operation

The welded butterfly valve 31500 with flanges is used for example in district heating, district cooling and industry. It can be used as an on-off or control valve. Högfors butterfly valve is tight in both flow directions.

The body of the butterfly valve is of carbon steel. The double eccentric disc and shafts are made of stainless steel. Replaceable seat ring is also stainless steel. The shaft packing box is a combination of graphite rings and O-rings which are possible to tighten while in pipeline and are also replaceable.

Nominal dimensions:	DN 200 - 1200
Nominal pressure	PN 16bar or 25bar
Disk seal	Stainless steel (CS)
Closing pressure (ΔP)	ΔP 16bar or 25bar
* Tightness class ISO 5208, EN 12266-1	RATE B
** Working temperature of liquid media (version for steam also available)	DN 200 – 1000 max+260°C/ min -40°C DN1200 max + 260°C/ min -20°C
Face-to-face length according to EN 558-1	series 14
Connection	between flanges: EN1092-1 Type B, PN 25, PN 16 and PN 10 ANSI CLASS 150
Safety	Conform to the requirements of the Council Directive 97/23/EC on Pressure Equipment, marking: Class: gas, group 1. CE 0575

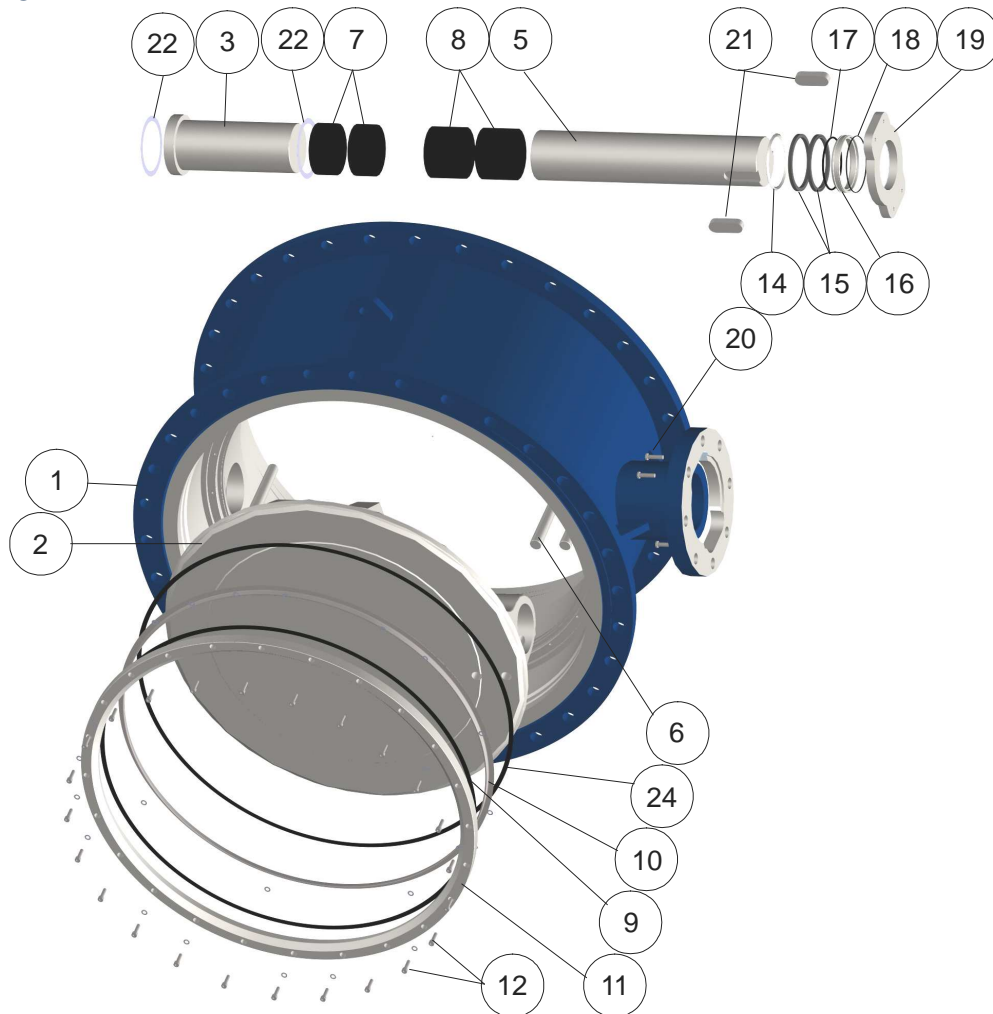
*) Option with Rate A is available also.

**) Wider temperature range is available.

Consult factory for details.

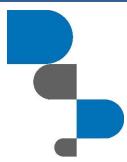


Exploded view

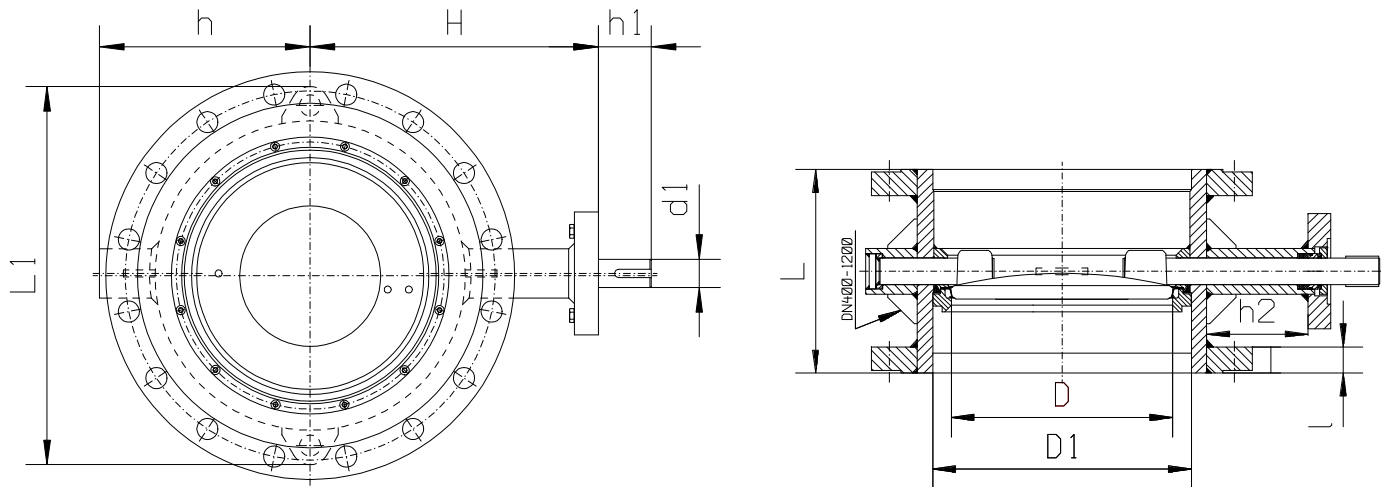


Parts list and standard materials

Part	Material		
1	Body	Carbon steel EN 10028-2 P265GH	
2	Disk	Stainless steel EN10213-4 1.4408, ASTM A351 CF8M	
3	Subshaft	Stainless steel EN 10088-3 1.4460	
5	Main shaft	Stainless steel EN 10088-3 1.4460	
6	Conical pin	Stainless steel EN10088-3 1.4462	
7	Subshaft bearing	PTFE on stainless steel net	
8	Stem bearing	PTFE on stainless steel net	
9,24	Shim	Carbon Fiber SFS5811	Graphite for steam version
10	Seat ring	Stainless steel AISI 316, AISI 904L	
11	Retaining ring	Carbon steel P265GH	
12	Socket screw	Stainless steel ISO 3506 A4-80	
13	Washer	Stainless steel	
14	Back-up-ring	Stainless steel 1.4404	
15	Box packing	Graphite	
16	Shaft seal bushing	Stainless steel 1.4404	
17,18	O-ring	EPDM	Absent in version for steam
19	Gland	Stainless steel 1.4436	
20	Hexagonal screw	Stainless steel ISO 3506 A4-80	
21	Key	Carbon steel	
22	Bearing plate	PTFE on stainless steel net	



Dimensions



DN	L	D	D1	l	h	H	h1	d1	h2	L1	Flange ISO5211	Weight, kg
200	230	138	210	30	154	259	58	25	115	233	F10	71
250	250	187	263	32	193	298	63	30	125	385	F12	87
300	270	238	313	34	229	323	69	35	125	435	F12	109
350	290	286	344	38	255	352	75	40	125	465	F14	158
400	310	337	394	40	300	409	75	40	155	540	F14	194
450	330	386	444	42	326	445	86	50	163	590	F16	268
500	350	437	495	44	351	470	86	50	163	660	F16	326
600	390	483	594	46	376	548	103	60	186	760	F16	505
700	430	582	694	46	440	601	119	70	186	860	F25	628
800	470	682	795	47	490	651	119	70	187	955	F30	758
900	510	775	894	58	575	718	125	90	200	1070	F30	1'251
1000	550	855	994	62	636	764	130	100	183	1200	F30	1'646
1200	630	1054	1195	70	755	873	160	140	183	1440	F35	2'513

Actuating

According to customer's needs the butterfly valve is delivered with:

- bare shaft (not recommended),
- manual gear,
- electric actuator,
- pneumatic or hydraulic actuator.

Operation torque.

DN	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400
Torque*, Nm	240	400	700	1'100	1'600	2'200	3'000	4'200	6'800	10'000	13'000	16'000	24'000	34'000

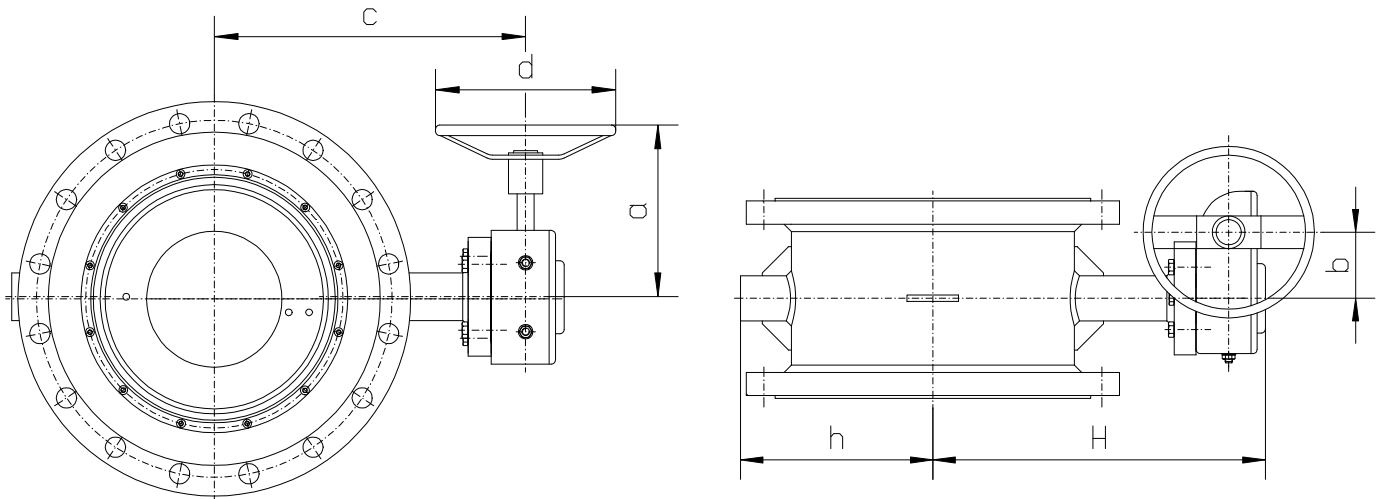
*) the operation torque for steam is the same as for liquid but one size bigger.



Manual gear.

Opening and closing of the valves from the handwheel.

The position of disc can be seen on a position indicator on top of the gear.



DN	H	h	a	b	c	d	Weight*, kg
200	349	154	202	67	301	203	71
250	379	193	247	67	340	305	87
300	417	229	264	90	373	305	109
350	446	255	264	90	402	305	158
400	503	300	264	90	459	305	194
450	573	326	405	138	500	500	268
500	576	351	362	123	520	457	326
600	675	376	387	154	598	457	505
700	761	440	505	181	687	457	628
800	811	490	505	181	737	457	758
900	887	575	592	237	792	457	1251
1000	942	636	615	431	807	500	1'646
1200	1051	755	615	431	962	600	2'513

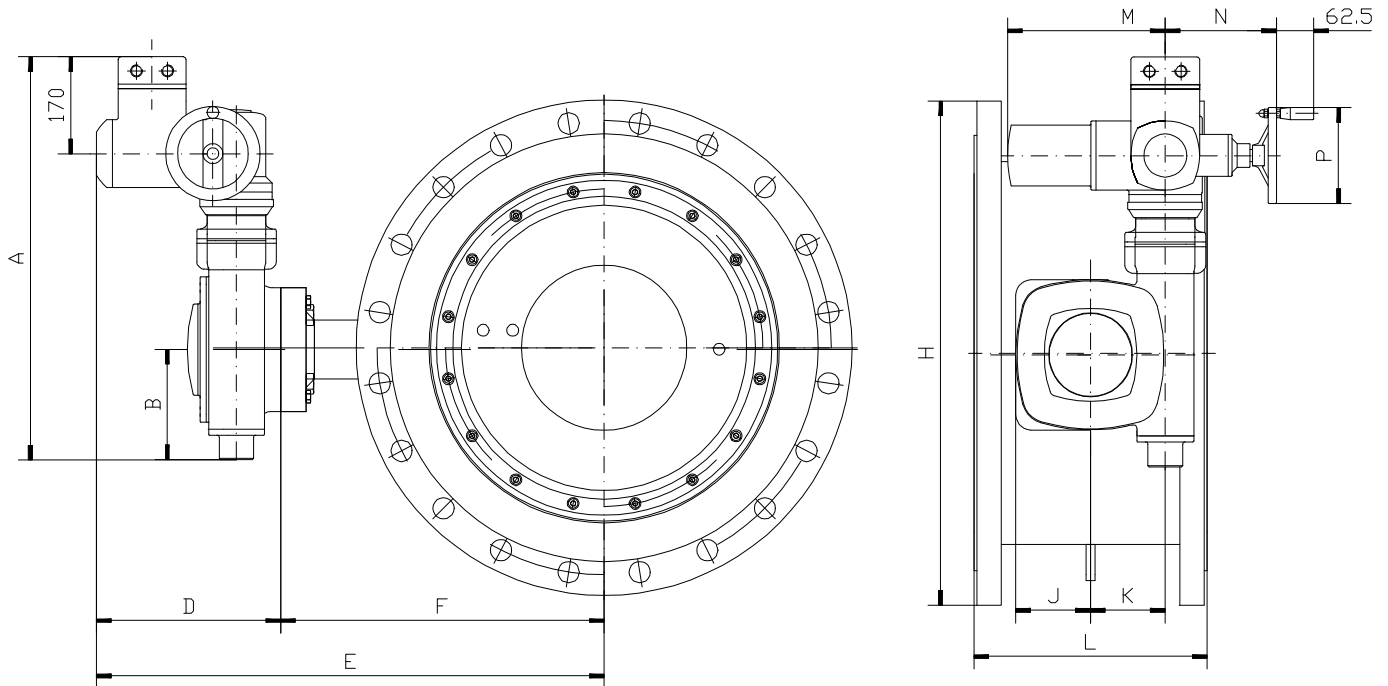
* weight of hand wheel is not included



Electrical actuator.

Högfors valve can be equipped with the electrical actuator of any known brand.

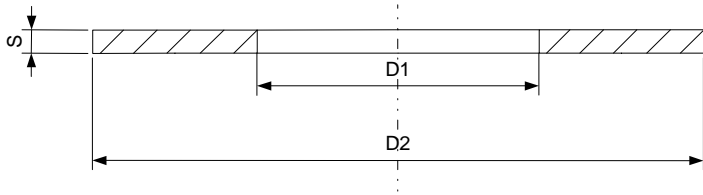
The typical solution is with AUMA Norm actuator.



DN	AUMA type	A	B	D	E	F	G	H	J	K	L	M	N	P
200	SA07.1-GS50.3 – F10	444	96	277	536	259	154	233	63	50	233	265	186	140
250	SA07.5-GS63.3 – F12	500	127	282	580	298	193	284	75	63	385	265	186	160
300	SA07.5-GS80.3 – F12	510	132	284	607	323	229	334	88	80	435	265	186	160
350	SA07.5-GS100.3/VZ4.3 – F14	689	182	312	665	353	255	389	105	100	465	265	186	160
400	SA07.5-GS100.3/VZ4.3 – F14	689	182	312	721	409	299	440	105	100	540	265	186	160
450	SA07.5-GS100.3/VZ4.3 – F16	689	182	312	757	445	326	490	105	100	590	265	186	160
500	SA07.5-GS125.3/VZ4.3 – F16	689	187	312	782	470	351	540	125	125	660	265	186	160
600	SA07.5-GS125.3/VZ4.3 – F16	689	187	312	860	548	376	638	125	125	760	265	186	160
700	SA07.5-GS160.3/GZ160.3 – F25	990	337	313	914	601	440	738	173	160	860	265	186	160
800	SA07.5-GS200.3/GZ200.3 – F30	1131	398	338	989	651	490	835	215	200	955	265	186	160
900	SA07.5-GS200.3/GZ200.3 – F30	1131	398	338	1056	718	575	946	215	200	1070	265	186	160
1000	SA07.5-GS200.3/GZ200.3 – F30	1131	398	338	1145	764	636	1060	268	250	1200	265	186	160
1200	SA10.1-GS250.3/GZ250.3 - F35	1303	486	381	1254	873	755	1279	268	250	1440	282	193	200



Mounting gasket.

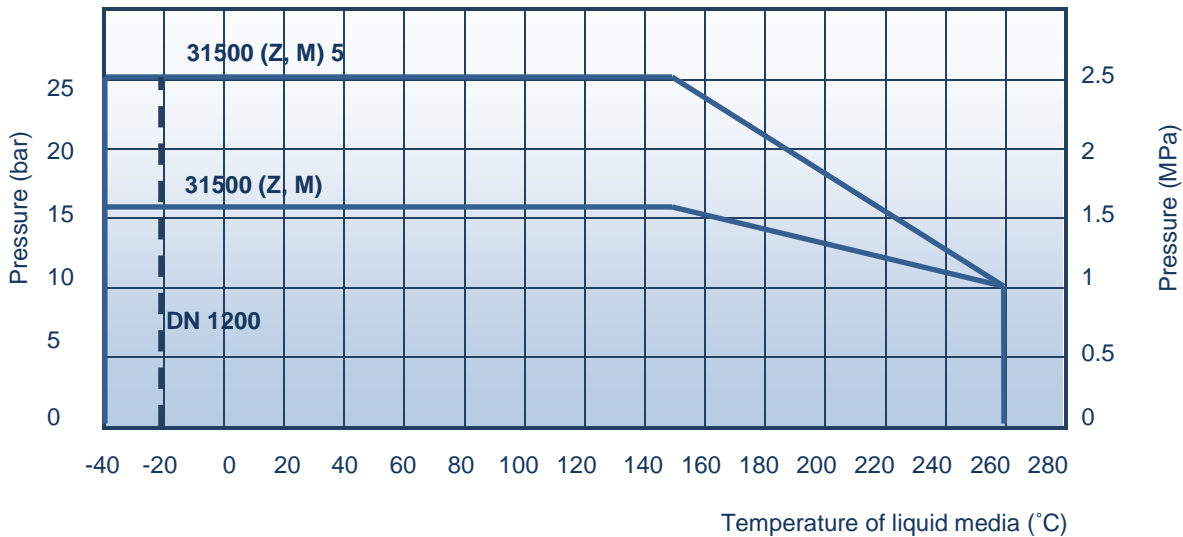


Gasket thickness "S" can be 0.5 – 3.0mm, 2.0mm is recommended.

DN	200	250	300	350	400	450	500	600	700	800	900	1000	1200
D1*(MM)	220	274	325	368	420	470	520	620	720	820	920	1020	1220
D2(MM)	PN10	273	328	378	438	490	540	595	695	810	915	1015	1340
	PN16	273	330	385	445	497	557	618	735	805	910	1010	1340
	PN25	285	342	402	458	515	565	625	730	830	940	1040	1360

Pressure / Temperature Rating.

The max pressure difference depends on the working temperature



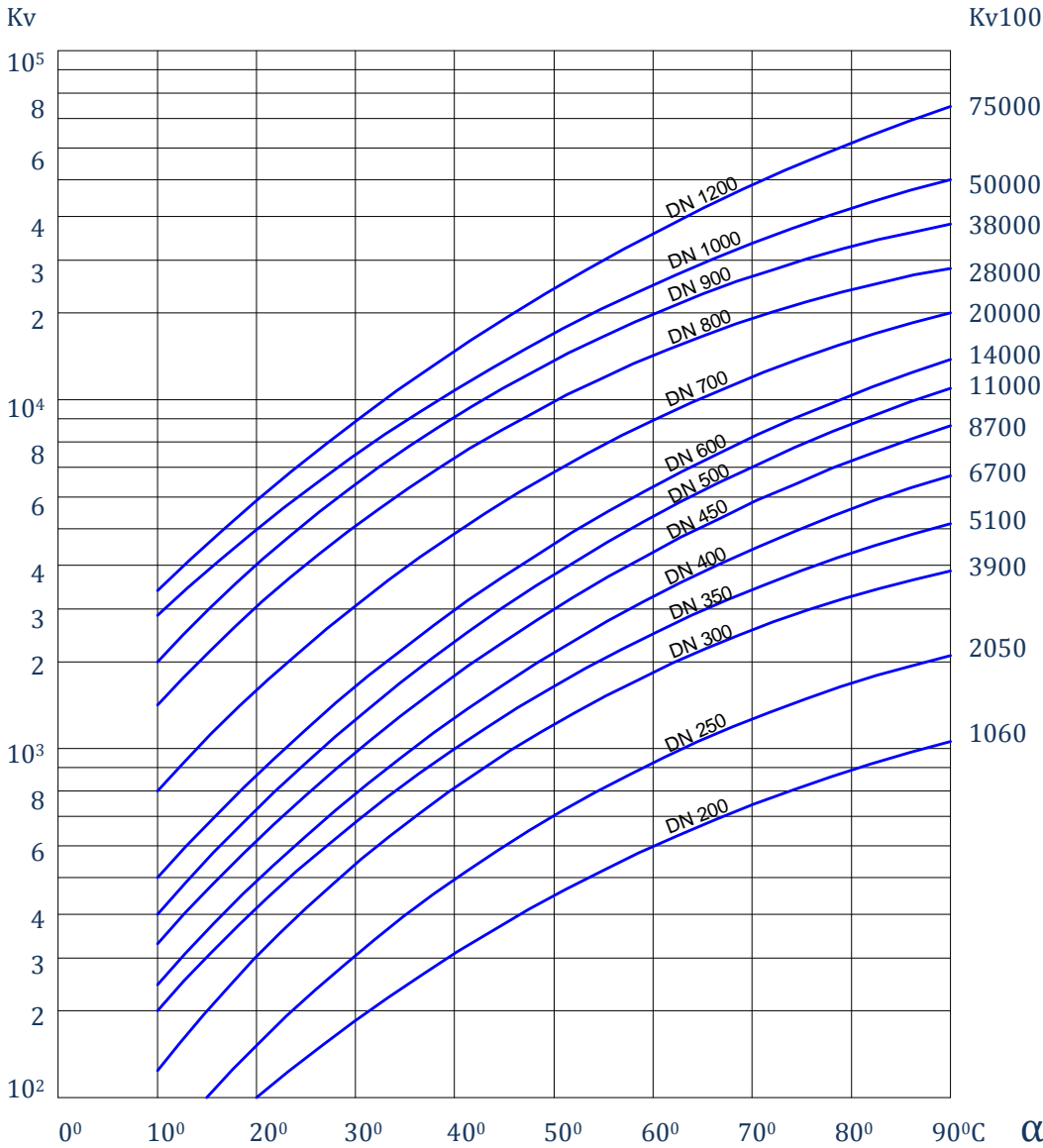
How to order

		3	1	5	00	CS	800	M	5
Body material:	3 – Carbon steel								
Valve type:	1 - butterfly valve,								
Connection:	0, 1, 2 – wafer type, 3 - welded end, 5 – flanged,								
Design options:	00 – Standard, 01 - For steam								
Main seal	(CS) - Stainless steel								
Size DN									
Actuation:	(Z) - bare shaft, (M) - manual gear								
Customization	(5) – ΔP = 25 bar								



The control curves

The curves indicate the regulating values of the valve at different opening angles.



WATER:

Volume flow: $Q = K_v \sqrt{\frac{\Delta p}{\rho}}$

Flow velocity: $V = 354 \frac{Q}{DN^2}$

K_v = KV value – Capacity factor

DN = nominal valve size (mm)

α – disc opening angle

Δp = pressure difference, bar

ρ – density of liquid kg/m^3

V – flow velocity m/s

Q – volume flow m^3/h

Product codes

	Maximum Closing pressure (ΔP)			
	16 bar		25 bar	
bare shaft	31500CS__Z	31300CS__Z	31300CS__Z5	31300CS__Z5
manual gear	31500CS__M	31300CS__M	31300CS__M5	31300CS__M5
For steam on special order. Code number: 31501CS__				