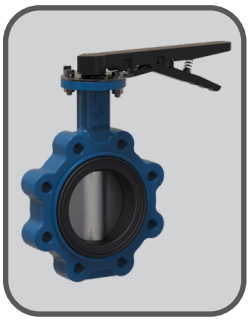
belven®
Invalved as promised

BV12S

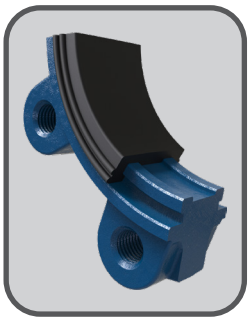
S-Line Lug type butterfly valves

BV12S

S-LINE "LUG TYPE”" - BUTTERFLY VALVES
WITH EXCHANGEABLE RUBBER SEAT







GENERAL SPECIFICATIONS

- Belven Lug type butterfly valve, with threaded holes for easy bolting between flanges.
- This valve is easy to automate by its high ISO 5211/DIN 3337 mounting platform and square stem. The platform has a recess for optimal centering of pneumatic – or electric actuators.
- Design according to EN 593 fig. 7c body type with long neck for insulation.
- The coating procedure is done according to EC.BV1012-091205. The minimum coating thickness is 150 microns. The heat number is casted into the body.
- The rubber seat is chambered in the body by tongue and groove and is positioned with a raised locating ring in the recess of the body. This construction assures that the seat remains at its correct position when used on higher working pressures. This valve can be used as end-of-line valve at maximum working pressure.
- The 2 molded O-rings and large seat facing allow the valve to be also mounted between slip-on flanges. For the adjacent flanges no additional gasket is required.
- The sealing face of the spherical disc is polished to obtain a bubble tight shut-off with minium torque.
- The octagonal connection of the disc with the stainless steel shaft provides an almost frictionless operation. Because the connection is pinless, there is no chance for leakage from the disc to the shaft.
- The excellent alignment of the shaft by multiple bushings results in less wear and low operating torques.
- A retaining ring (circlip) and the retainer plate provide the anti-blowout execution gives additional security on the bushings.

CONNECTIONS

The valves are with threaded connection holes for bolting between flanges.

- DN50 to DN150 to be mounted between flanges PN10/PN16.
- DN200 to DN300 to be mounted between flanges PN10 or PN16, to be specified.

Please check our series BV12 and BV12U for sizes up to DN1200.

TESTING

The valves are tested according to EN 12266-1 (P10-P12).

- The hydraulic test pressure of the body is 1,5x of the max. working pressure (Shell test).
- The test pressure for the seat test is 1,1x of the max. working pressure.

Seat tightness :

Bi-directional tight shut off according to below standards:
EN 12266-1 A.5 Rate A
ISO 5208 Rate A
DIN 3230, BO and BN, Rate 1
The max. working pressure with bi-directional bubble tight shut-off is 16 bar.

Ask for our high performance butterfly valves for higher pressure classes.

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WORKING PRESSURES AND TEMPERATURES

The maximum allowable working pressures depend on the temperature and the used seat material.
Unless otherwise specified, following max. working pressures are applicable at 20°C :

- DN50 to DN150 : 16 bar
- DN200 to DN300 : pressure class PN10 : 10 bar
  pressure class PN16 : 16 bar

The maximum allowable temperatures depend on the seat material, please consult the seat material chart.
The temperatures mentioned in the seat material chart are for 1 bara working pressure.
The maximum allowable temperatures depend on the working conditions of the valve.

Please take into account below mentioned minimum/maximum temperatures for the bodies:

- Ductile iron GGG40 : -10°C with peaks up to-20°C to 350°C

SEAT MATERIAL CHART

MATERIAL	SEAT CODE		DESCRIPTION	TEMP. RANGE	COLOR CODE
EPDM	E	EPDM	Weak mineral acids and basis Air, water ketones, esters	-15° to +120°	Use HE
EPDM-HT	HE		High temperature resistance	-20° to +130°	WHITE
FOOD WHITE EPDM	WE		FDA approval, Regulation (EC) 1935/2004 (white color)	-10° to +90°	-
INCREASED HT EPDM	IE		High temperature resistance up to 150°C	-10° to +150°	WHITE / ORANGE
EPDM-HT (FDA)	EF		"High temperature resistance FDA approval"	-10° to +130°	WHITE / GREEN
FOOD DRINKING WATER EPDM-HT	EW		FDA, WRAS, ACS, W270, KTW, EN-681-1, Hydrocheck (Belgaqua)	-20° to +90°	WHITE / RED
	ED		EPDM-HT- Normatives FDA, WRAS, ACS, W270, KTW, EN-681-1	-20° to +130°	WHITE / BLUE
EPDM-BLUE (FDA)	BE		FDA approval, Regulation (EC) 1935/2004 (blue color)	-10° to +90°	-
NITRILE	B	NBR	Oils, Greases, Fuel, Gas oil CO2, CO, H2	-10° to +90°	YELLOW / WHITE
FOOD WHITE NITRILE	WB		FDA approval, Regulation (EC) 1935/2004	-10° to +90°	YELLOW / BLUE
DVGW-GAS NITRILE	NG		DVGW Gas Regulation UNE EN-682	-10° to +90°	NBR003
HYDROGENATED NBR	HB	HNBR	Higher resistance SH2	-10° to +90°	YELLOW / RED
LOW TEMPER. NITRILE	LB	NBR	Low temperature resistance	-20° to +90°	YELLOW / GREY
EPICHLOROHYDRIN	ECO	ECO	"Resistance to brine, gases and moderate to oil, fuel"	-40° to +90°	VIOLET
HYPALON	HY	CSM	Moderate resistance to oils, greases and weak acids	-10° to +100°	GREEN
VITON	V	FPM	Best chemical resistance	-5° to +200°	RED
VITON BIO	VB		Acids, Steam, Biodiesel, The best chemical resistance	-5° to +200°	YELLOW
FOOD VITON	VF		FDA approval, Regulation (EC) 1935/2004	-5° to +200°	BLUE
SILICONE	SI	MVQ	Highest and lowest temperature resistance	-55° to +200°	ORANGE / WHITE
FOOD SILICONE	SF		FDA approval, Regulation (EC) 1935/2004	-55° to +200°	ORANGE / BLUE
STEAM SILICONE	S		Steam water	-55° to +160°	ORANGE
FLUOR SILICONE	SO	FMVQ	Oils resistance	-55° to+200°	ORANGE / YELLOW
AB / E	FE	-	"Wet abrasion resistance FDA approval"	-5° to +90°	GREY / WHITE
AB / P	FC	-	Dry abrasion resistance	-10° to +70°	GREY
AB / N	FN	-	Oily abrasion resistance	0° to +90°	GREY / YELLOW
AB / T	FT	-	High Temperature abrasion resistance	-5° to +130°	GREY / ORANGE
AB / W	FW	-	Dry abrasion resistance, FDA approv., Regul. (EC) 1935/2004 (white color)	-5° to +130°	GREY / BLUE

REMARKS:
Temperatures and fluid resistance have been supplied from raw rubber suppliers.
Work temperatures and pressures are calculated in static laboratory conditions and don't involve the correct service of the butterfly valve.

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OPTIONAL EXECUTIONS

BV12SA : Butterfly valve with ATEX declaration

The butterfly valve is suited to shut-off or control the flow of liquid, gaseous or bulk materials, within the approved pressure and temperature limits, in a potentially explosive atmosphere of gases, vapours or dusts.

The BV12SA fulfills the 2014/34/EU directive relating to equipment and protective systems intended for use in potentially explosive atmospheres.
A potentially explosive atmosphere exists when a mixture of air gases, vapours, mists, or dusts combine in a way that can ignite under certain operating conditions.

The BV12SA with our Belven lever is suitable to be used in Zone 1 and 2 for explosive gases and vapors, and in Zone 21 and 22 for flammable dust.
If the the valve is assembled with another operator the ATEX classification will be equal to the lowest category of the different parts of the assembly.
If one element does not meet with ATEX, the complete assembly will not comply with ATEX.

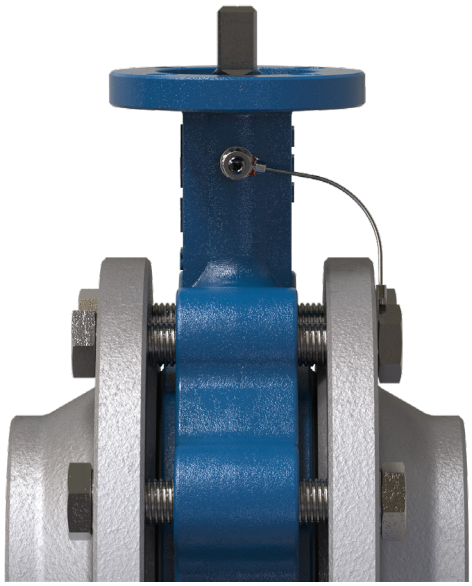
This butterfly is designed to be installed in the usual ambient conditions :

- Temperature range-20°C to 60°C
- Pressure 80kPa (0.8 bar) to 110 kPa (1.1 bar)
- Air with the usual oxygen content

Materials of construction:

Body:	EN-GJS400 The shell wall thickness is designed for a maximum allowable working pressure of 16 bar
Disc:	Ductile iron GGG40 with nickel plating or stainless steel ASTM A351 CF8M
Stem:	Stainless steel AISI 416 or AISI 316
Bushings:	Nylon/PTFE
Seat :	The soft seat is made of a conductive elastomer and allows minimum/maximum working temperatures depending of the material, pressure and medium. Please consult the temperature range of seat on page 2.

The BV12SA valve body is provided with a terminal for the connection to the equipotential bonding system.
This body must be permanently earthed with the equipotential bonding system, please note the connection between the body and the mating flange must have a discharge resistance < $10^9\Omega$.



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BV12S–GAS and BV12SA-GAS : Butterfly valve with DVGW Gas approval:

Type tested butterfly valves according to EN 13774:2013 “Valves for gas distribution systems with maximum operating pressure less than or equal to 16 bar”.
The valves are tested for an ambient temperature of -20 °C to 60 °C.
The rubber parts comply to EN 682. Because this standard has a limited temperature range, this range of-5°C to 50°C is stated on the label.

Both the standard BV12S- as well as the BV12SA execution were tested.
The BV12SA valve body is provided with a terminal for the connection to the equipotential bonding system, please consult page 3.

Description of the valves

Types :	BV12S-2425NG-GAS, BV12S-2466NG-GAS, BV12SA-2425NG-GAS, BV12SA-2466NG-GAS
Body:	EN-GJS400
Disc:	Ductile iron GGG40 with nickel plating or stainless steel ASTM A351 CF8M
Stem:	Stainless steel AISI 416
Bushings:	Nylon/PTFE
Seat :	“NG” DVGW-Gas Nitrile

Max. working pressure : 16 bar

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PRODUCT CODIFICATION

BV12S	-	24	66	E

TYPE	
BV12S	Lug type butterfly valve with threaded holes
BV12SA	Lug type butterfly valve with threaded holes - ATEX

BODY	
24	Ductile iron GGG40 - GJS400-15

DISC	
25	Ductile iron GGG40, nickel-plated
3C	Ductile iron GGG40 + PTFE black coating (FDA)
66	Stainless steel A351 CF8M
6B	Stainless steel A351 CF8M + PTFE black coating (FDA)
69	Stainless steel A351 CF8M, mirror polished

SEAT	
EPDM	E / HE / WE / IE / EF / EW/ED / BE
NBR	B / WB / NG / LB / HB
ECO	ECO
CSM	HY
FPM	V / VB / VF
MVQ	SI / SF / S
FMVQ	SO
AB	FE / FC / FN / FT/FW (abrasion resistant)

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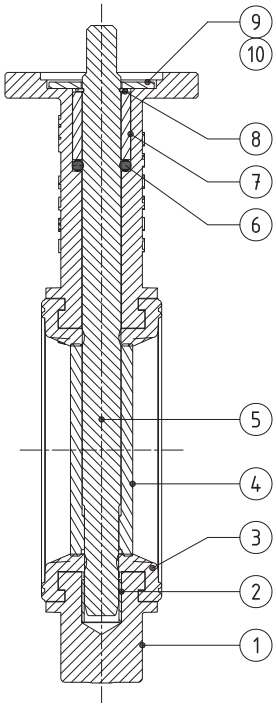
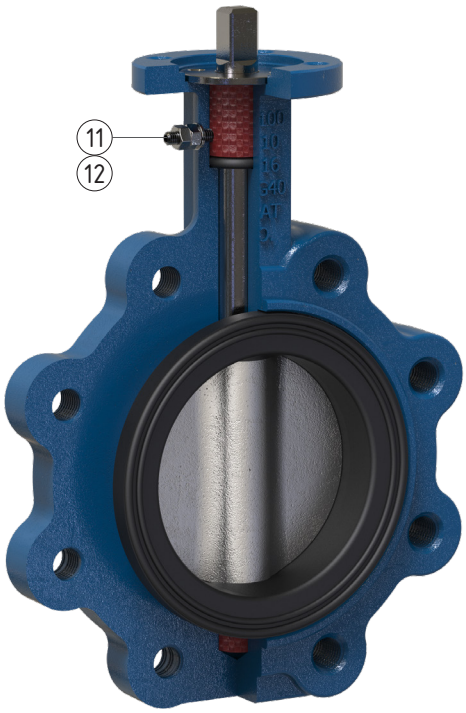
MATERIALS



DN050 - DN300



ITEM	QTY	DESCRIPTION	STANDARD MATERIAL	ON REQUEST
1	1	BODY	24xxx: ductile iron GGG40 (GJS-400)	
2	1	LOWER BUSHING	Self-lubricating PTFE/Nylon	
3	1	SEAT	See product codification "Seat Material Chart"	
4	1	DISC	xx25x: nickel plated ductile iron GGG40(GJS-400) xx66x: stainless steel ASTM A351 CF8M	xx3Cx : Black PTFE coated GGG40 xx6Bx : Black PTFE coated CF8M xx69x : Mirror polished CF8M
5	1	STEM	Stainless steel AISI 416	
6	1	O-RING	EPDM, Exception : all NBR seats have NBR O-ring	
7	1	UPPER BUSHING	Self-lubricating PTFE/Nylon	
8	1	CIRCLIP	Spring steel 65Mn	
9	1	RETAINER PLATE	Zinc coated steel	
10	2	PHILIP SCREW	Zinc coated steel	
11	1	SPRING LOADED SCREW	Stainless Steel 1.4305	
12	2	WASHER-NUT	Stainless Steel AISI 316	

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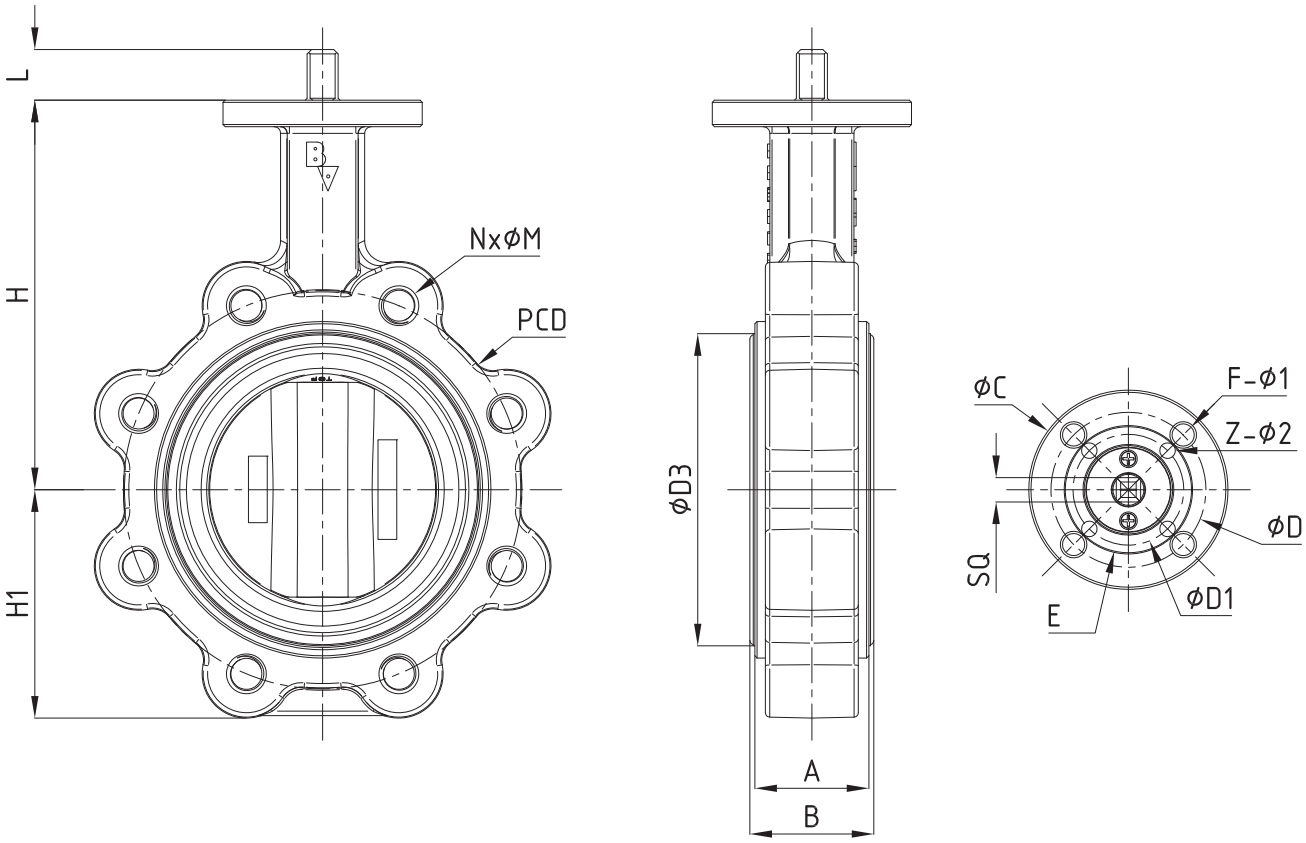
DIMENSIONS - DN050/DN300



DN	INCH	L	H	H1	A	B	ØD3	PCD	N-ØM
50	2"	22,0	141,0	64,0	43,0	47,0	84,6	Depending on the connection flanges, see page 9.	
65	2" 1/2	22,0	153,0	71,4	46,0	50,0	100,4		
80	3"	22,0	157,0	87,7	46,0	50,0	115,0		
100	4"	22,0	176,0	102,0	52,0	56,0	141,0		
125	5"	22,0	191,0	118,5	56,0	60,0	165,7		
150	6"	22,0	202,0	133,0	56,0	60,0	191,4		
200	8"	34,5	243,3	165,0	60,0	66,0	247,0		
250	10"	34,5	273,0	196,4	68,0	74,0	302,0		
300	12"	34,5	311,0	207,7	78,0	84,0	356,4		

DN	INCH	ØC	ØD	ØD1	ISO	E	Z-Ø2	F-Ø1	SQ	Weight (Kg)*
50	2"	90	70	50	F07/F05	55	4-Ø7	4-Ø10	11	3,8
65	2" 1/2	90	70	50	F07/F05	55	4-Ø7	4-Ø10	11	4,5
80	3"	90	70	50	F07/F05	55	4-Ø7	4-Ø10	11	5,9
100	4"	90	70	-	F07	55	-	4-Ø10	14	8,6
125	5"	90	70	-	F07	55	-	4-Ø10	14	10,7
150	6"	90	70	-	F07	55	-	4-Ø10	14	12,7
200	8"	150	102	-	F10	70	-	4-Ø12	17	21,4
250	10"	150	102	-	F10	70	-	4-Ø12	22	30,9
300	12"	150	125	-	F12	85	-	4-Ø14	27	47,7

* Mentioned weights are for indication only. The weight depends of the used materials and the pressure classes. Please consult the Technical Product Sheet for the valve according your required materials and operator.

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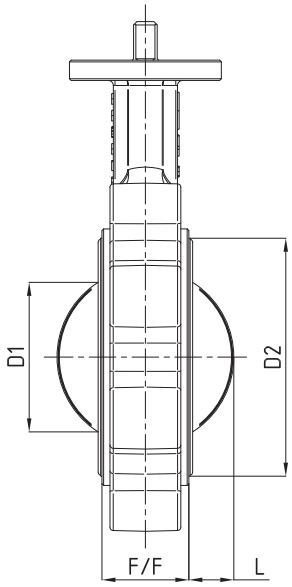
FACE-TO-FACE AND DISC DIMENSIONS

The face-to face dimensions correspond with below standards:

EN 558-1 Table 1 series 20
API 609 category A
ISO 5752 series 20
DIN 3202-3 K1
BS 5155 Wafer short



DN	NPS	L	D1	D2	F/F
50	2"	5,16	30	84,6	43
65	2 1/2"	11,46	45	100,4	46
80	3"	16,81	64	115,0	46
100	4"	26,45	90	141,0	52
125	5"	35,65	110	165,7	56
150	6"	50,53	146	191,4	56
200	8"	71,91	194	247,0	60
250	10"	91,65	242	302,4	68
300	12"	111.93	292	356,4	78

KV-VALUES

FLOW m^3/h @ Δp 1 bar										
SIZE		CLOSED ----------> OPEN								
DN	NPS	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	2"	0,1	3	6	13	23	37	59	88	96
65	2 ½"	0,1	5	10	22	39	65	101	152	167
80	3"	0,2	8	15	34	60	99	156	235	257
100	4"	0,3	15	31	67	119	196	310	465	510
125	5"	0,4	25	51	111	198	326	516	774	850
150	6"	0,7	39	82	175	313	517	819	1228	1349
200	8"	2	77	161	349	620	1026	1624	2434	2675
250	10"	3	130	274	593	1057	1748	2766	4149	4559
300	12"	3	197	416	900	1604	2654	4201	6302	6925

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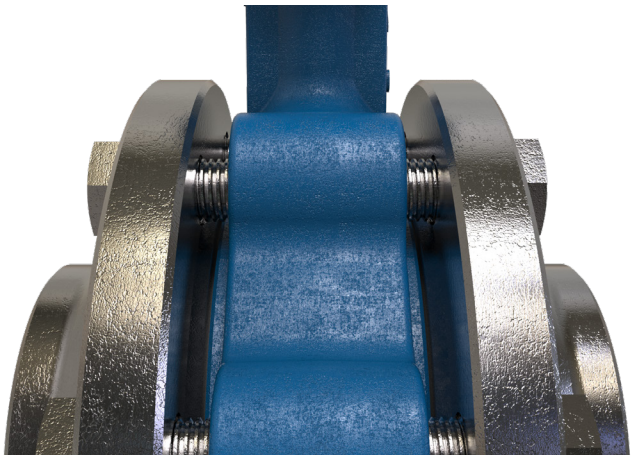
FLANGE BOLTING DIMENSIONS



	Flange EN 1092-1 PN10			Bolts DIN931 or DIN934	
DN	Pitch circle (PCD)	Number of holes (N)	Hole diameter (M)	Number	Nominal size x length
40	110	4	18	8	M16 x 30
50	125	4	18	8	M16 x 35
65	145	4	18	8	M16 x 35
80	160	8	18	16	M16 x 40
100	180	8	18	16	M16 x 40
125	210	8	18	16	M16 x 45
150	240	8	22	16	M20 x 45
200	295	8	22	16	M20 x 50
250	350	12	22	24	M20 x 50
300	400	12	22	24	M20 x 60

	Flange EN 1092-1 PN16			Bolts DIN931 or DIN934	
DN	Pitch circle (PCD)	Number of holes (N)	Hole diameter (M)	Number	Nominal size x length
40	110	4	18	8	M16 x 30
50	125	4	18	8	M16 x 35
65	145	4	18	8	M16 x 35
80	160	8	18	16	M16 x 40
100	180	8	18	16	M16 x 40
125	210	8	18	16	M16 x 45
150	240	8	22	16	M20 x 45
200	295	12	22	24	M20 x 50
250	355	12	26	24	M24 x 50
300	410	12	26	24	M24 x 60

	Flange ASME 150lbs B16.5			ASME B18.2	
DN	Pitch circle (PCD)	Number of holes (N)	Hole diameter (M)	Number	Nominal size x length
1 1/2"	98.4	4	15.9	8	1/2" 13UNC x 30
2"	120,6	4	19	8	5/8" 11UNC x 35
2-1/2"	139,7	4	19	8	5/8" 11UNC x 35
3"	152,4	4	19	8	5/8" 11UNC x 40
4"	190,5	8	19	16	5/8" 11UNC x 40
5"	215,9	8	22,2	16	3/4" 10UNC x 45
6"	241,3	8	22,2	16	3/4" 10UNC x 45
8"	298,4	8	22,2	16	3/4" 10UNC x 50
10"	361,9	12	25,4	24	7/8" 9UNC x 55
12"	431,8	12	25,4	24	7/8" 9UNC x 60

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VALVE OPERATING TORQUES

Below mentioned torques are net values, without any safety factor, measured with clean water at 15°C, assuming velocities lower than 3 m/s and at least 1 operating cycle per week. Valid for EPDM or NBR seat

DN	NPS	Δp = 6bar	Δp = 10bar	Δp = 16bar	Max. Allowable Stem Torque
50	2"	13	13,9	15,1	94
65	2 /2"	13,8	15,4	17,2	94
80	3"	21	21,7	23,1	94
100	4"	34,9	37,1	39,8	193
125	5"	53,8	57,9	61,9	193
150	6"	84,5	93,9	102	193
200	8"	154	173	192	346
250	10"	249	286	323	578
300	12"	371	429	490	1388

Above values are in Nm

To select a pneumatic actuator, we advise to calculate with a safety factor of 1,3, for the selection of electric actuators we advise a factor of 1,35.
For heavy applications, like contaminated fluids, dry gas or air, low operating frequencies or other seat materials, please contact our Belven people.

OPERATORS

- Lever: the butterfly valve has standard a cast iron lever with stainless steel notch plate with possibility to fix the lever in 10 positions.
- Short lever: short lever (for small spaces) with notch plate
- Aluminum lever: aluminum lever with notch plate
- Gearboxes: cast iron or aluminum gearboxes
- Stem extensions: Stainless steel stem extensions with protective tube, height 100 mm standard available from stock, other heights upon request.
- Pneumatic: double acting or single acting pneumatic actuators.
  Our basic selection is published in our catalogue. We can also select an actuator for a specific application when the necessary criteria and the available air pressure are stated.
- Accessories like open/close feedback, solenoid valves and positioners. Our standard accessories are published in our catalogue, other requirements and brands are available upon request.
- Electric: our basic selection is published in our catalogue. Other applications or brands are available upon request.
- Other operators like spring return levers, lockable gearboxes, chainwheels, etc. are available on request.

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Solenoid valves




Limit switch boxes



Limit switches




Positioners



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Some accessory details

Limit switch boxes
for remote signal and local visual indication

BAP-300M2

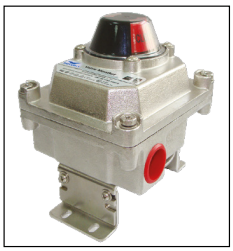
- Aluminium die casting enclosure
- 2x Crouzet SPDT mechanical switches
- Rectangular design, IP67
- 2 conduit entries opposite side
- Conical yellow/red visual indicator
- Terminal strip with 8 contacts, suitable to loop a solenoid valve

BAP-400M4 - Ex d IIC T6

- Aluminium die casting enclosure
- 4x Crouzet SPDT mechanical switches
- Cylindrical design, IP66
- 2 conduit entries same side
- Conical yellow/red visual indicator
- Terminal strip with 14 contacts, suitable to loop a solenoid valve

BAP-500M4 - Ex d IIB T6

- Aluminium die casting enclosure
- 4x Crouzet SPDT mechanical switches
- Rectangular compact design, IP66
- 2 conduit entries opposite side
- Conical yellow/red visual indicator
- Terminal strip with 14 contacts, suitable to loop a solenoid valve



BAP-600M4 - Ex d IIB T6

- Stainless steel enclosure
- 4x Crouzet SPDT mechanical switches
- Rectangular compact design, IP66
- 2 conduit entries opposite side
- Conical yellow/red visual indicator
- Terminal strip with 14 contacts, suitable to loop a solenoid valve

Double Stem Extensions

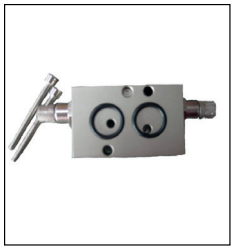
Intended for isolated pipelines

Options for Solenoid valves BAP-520

Solenoid valves BAP-520

- monostable non-zone solenoid valves with NAMUR connection.
- standard supplied with adaptor for 3/2 or 5/2 function

Speed control plate



to control speed of valve opening and closing

Silencer

to be fitted on exhaust air ports

Coupling

to avoid water ingress through solenoid ports

BV12S_EN 210302

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