



*Let's move the medium!*

**butterfly valves**

# introducing belven



Geert Van Mechelen - Managing Director Belven

As a Belgian producer of butterfly valves, Belven has a reputation to keep up with. This is a challenge the company takes with full confidence, having a remarkable reputation of nearly 3 decades in valve production. The company started from the local heating and ventilation market with low pressure valves in small diameters and grew gradually into water treatment plants and district cooling plants which demanded more complicated electrical operated large diameter double flanged valves, high pressure valves etc.

Recently, the continuous striving for product innovation and quality upgrades resulted in the production of the new NP Butterfly valves. Belven commissioned the DVGW to test this butterfly valve for gas applications (NBR rubber seat) and drinking water applications (EPDM rubber seat).

Improvements you'll not only find on the productside but also on companies managements' side: with the last generation change of directive – and general management a base was set wherein experience, refreshing motivation and eagerness set out a perfect combination to serve all markets. After being 28 years active in the market, Belgium Ventiel, changed its name into Belven. A little shorter and much more dynamic: a new exciting era has started.

**Belven : your partner for Butterfly valves**

## Mission

Belven is a family company, specialised in the production and sales of quarterturn valves. Belven wants to put its brand name on the globe by means of geographical expansion.

Belven focuses on active partnership with customers and suppliers and wants to help realise the success of its partners by continuous dialogue and technological innovation.

Belven wants to develop a climate of active partnership with its employees, in which everyone can develop and support in an enthusiastic way to realise its mission.

## Strategy

Belven has an offensive eye on innovation, quality of production and sales. Focused markets are being approached via two sales channels: International Distribution Department (Distribution) and Business Development Department (Project).

As a growing marketing-focused company, Belven aims for maintenance and expansion of the existing sales web. Combined with geographical growth through the above mentioned departments, Belven strengthens its basis and builds up on a durable way and with respect for its environment towards a strong future.

Belven is a privately owned family company which is financially fully self supporting. Partnerships with cooperators, customers and suppliers are part of the long term vision and result in a win/win situation for all parties.

***Being a family company, Belven represents a number of important family values which are being carried out both internally to and by the employees and externally towards customers and agents. Stability, flexibility, trust, loyalty, respect, positivism, keeping an eye on the future. These values are guidelines for the complete conduct and organisation of Belven and are handled with care as in each family.***



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## APPLICABLE STANDARDS (NON LIMITATIVE)

ANSI - American National Standards Institute		
ANSI	B16.5	Pipe flanges & flange fittings
ANSI	B16.10	Face-to-face and end-to-end dimensions of valves
ANSI	B16.47	Large diameter flanges, NPS 26 through NPS 60
API - American Petroleum Institute		
API	598	Valve Inspection and Test
API	609	Butterfly Valves : Double Flanged, Lug- and Wafer-type
API	6D	Specification for pipeline valves
BS - British Standard		
BS	5146	Part 2 : Specification for pressure testing requirements for general purpose valves
BS	5155	Specification for Butterfly Valves
BS	6755	Part 1 : Specification for production pressure testing requirements
DIN - Deutsches Institut für Normung		
DIN	1690	Technical delivery conditions for castings made from metallic materials
DIN	1691	Cast iron
DIN	1693	Nodular iron
DIN	2501	Flanges - connecting dimensions
DIN	3202	Part 1 : Face-to-face and centre-to-face dimensions - Flanged valves
DIN	3337	Part-turn valve actuator attachment - flange dimensions
DIN	3840	Valve bodies, strength calculation in respect of internal pressure
ISO - International Organisation for Standardisation		
ISO	2081	Metallic coatings, electroplated coatings of zinc on iron or steel
ISO	5208	Industrial valves - pressure testing for valves
ISO	5211	Part-turn valve actuator attachment - flange dimensions
ISO	5752	Metal valves for use in flanged pipe systems. Face-to face and centre-to-face dimensions
ISO	7005	Metallic flanges
ISO	7268	Pipe components, definition of nominal pressure
EN - European Norm		
EN	19	Industrial valves - Marking of metallic valves
EN	558	Industrial valves - Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems
EN	593	Industrial valves - Metallic butterfly valves
EN	736	Part 1 : Definition of types of valves Part 2 : Definition of components of valves Part 3 : Definition of terms
EN	1092	Flanges and their joint. Circular flanges for pipes, valves, fittings and accessories
EN	1503	Materials for bodies, bonnets and covers
EN	1561	Founding. Grey cast irons
EN	1775	Gas supply - Gas pipework for buildings
EN	1759	Flanges and their joint. Circular flanges for pipes, valves, fittings and accessories
EN	6708	Pipework components - definition and selection of DN (nominal size)
EN	10204	Metallic products - Types of inspection documents
EN	12516	Part 2 : Valves, shell design strength. Calculation method for steel valve shells Part 3 : Shell design strength. Experimental method
EN	12570	Industrial valves - Method for sizing the operating element
MSS - Manufacturers Standard Society		
MSS	SP-67	Butterfly Valves
MSS	SP-68	High Pressure Butterfly Valves with Offset Design

## BUTTERFLY VALVES CERTIFIED



PED 97/23/EC (TÜV Süddeutschland - CE0036)  
Pressure Equipment Directive  
According to Module H (full quality assurance)



TA LUFT (TÜV Süddeutschland)  
Technische Anleitung zur Reinhaltung der Luft  
According TA luft (27.02.86) punkt 3.1.8.4



ADR approved (Apragaz)  
International Carriage of Dangerous Goods by Road  
According to KB 09.03.2003 - Class 3, 4, 5, 6, 8, 9



WRAS approved (Water Regulations Advisory Scheme)  
Black coloured EPDM rubber valve liner  
For cold and hot water use up to 85°C



ISO 9001:2000 certified (SGS)  
Quality Management System  
Certified since 1996



ATEX certified  
Atex compliant version for explosive surroundings  
Group II, Zones 0, 1, 2 and (20, 21, 22 respectively)



DVGW approval  
(Deutsche Vereinigung des Gas- und Wasserfaches)  
under evaluation  
DVGW file reference 06-0360-G

# overview products

## WAFER – LUG RUBBERLINED

BV10



BV10-U  
BV11  
BV12-U



BV12



## DOUBLE FLANGED

BV13



BV14



## WAFER – LUG TFM LINED

BV10-TFM



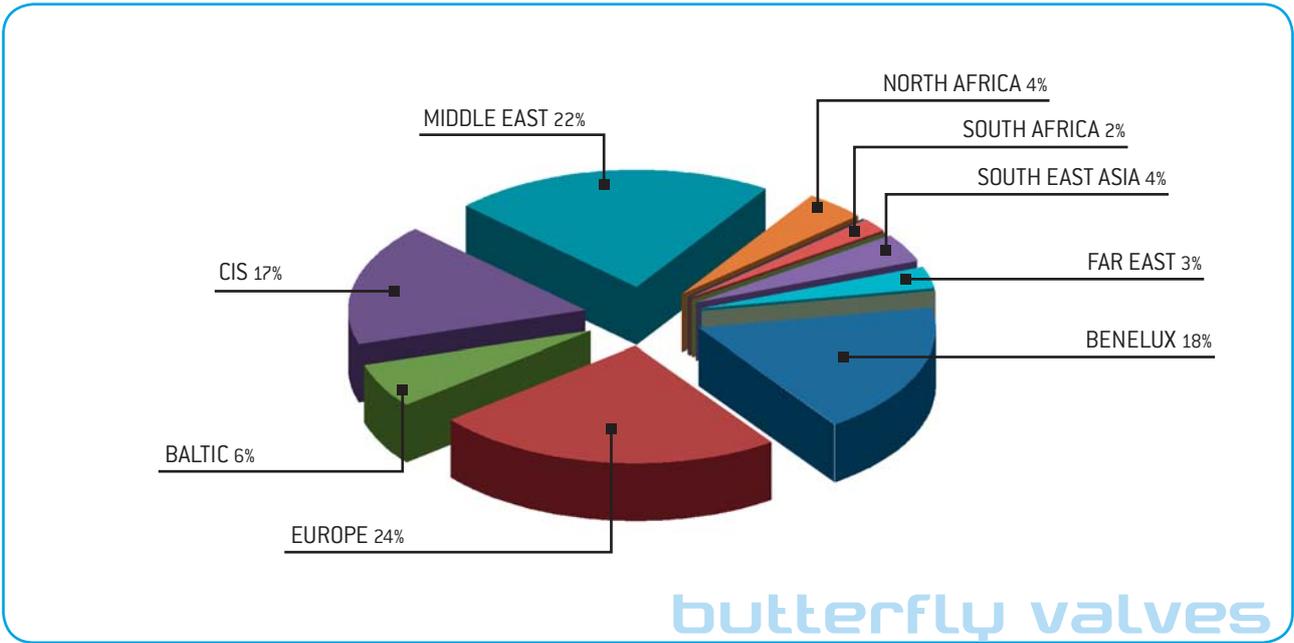
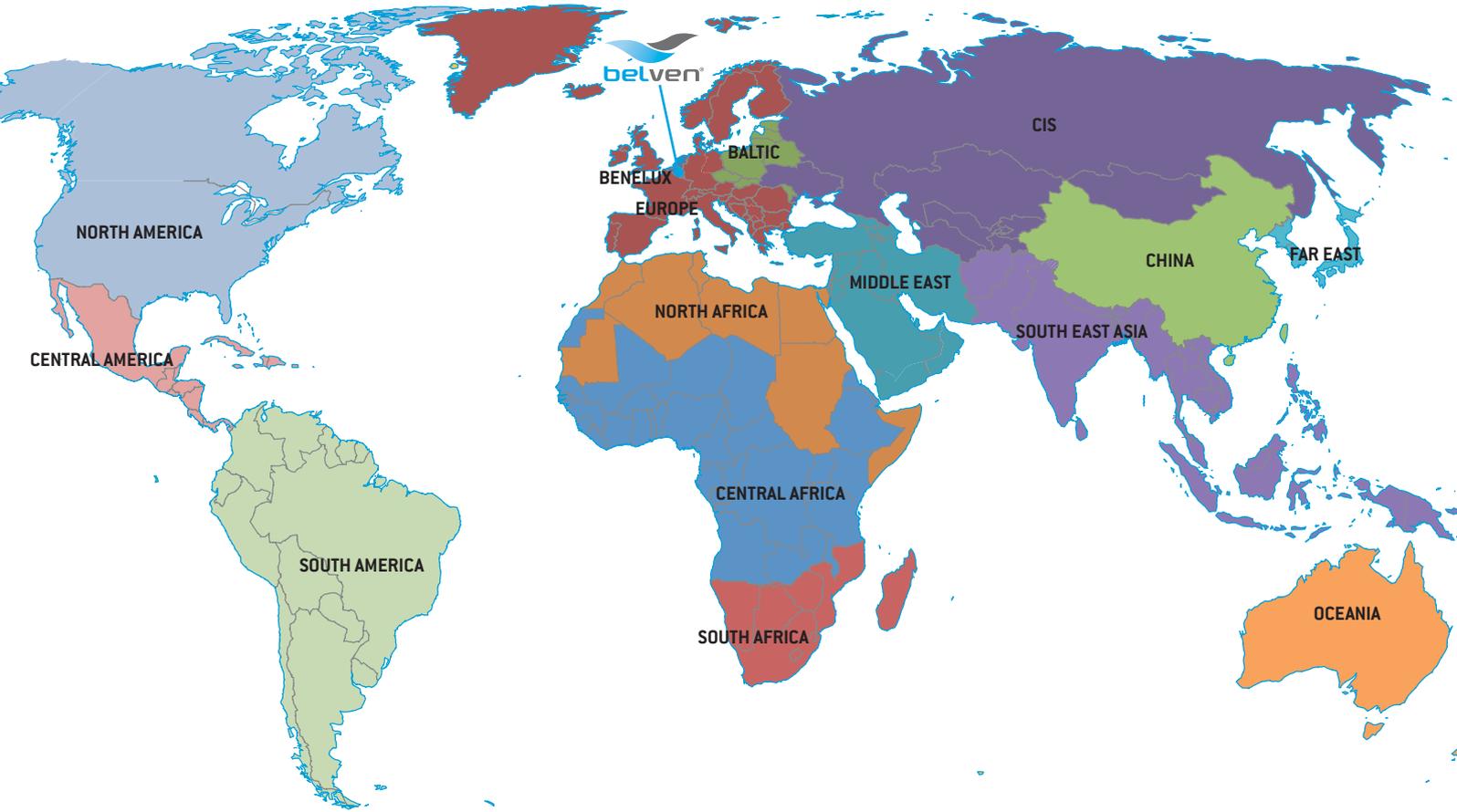
BV12-TFM



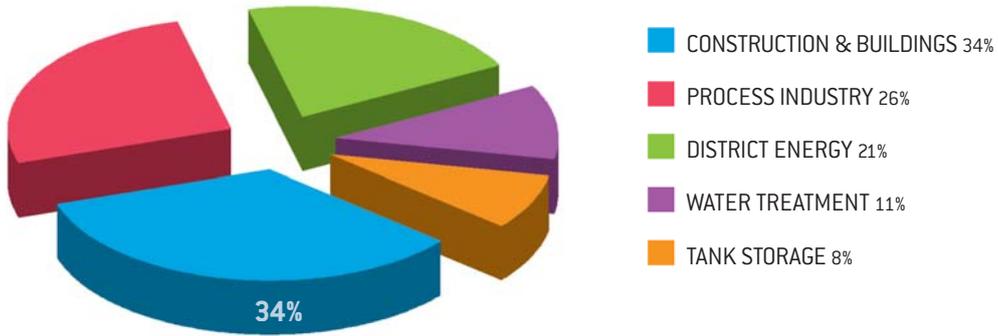
## HIGH PERFORMANCE

BV10-HP  
BV12-HP  
BV13-HP



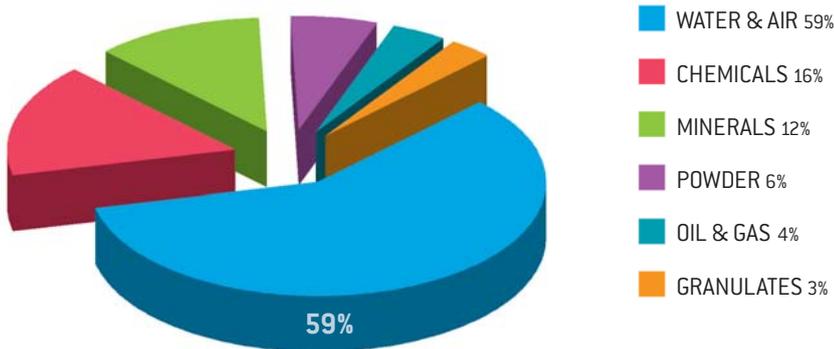


MARKETS



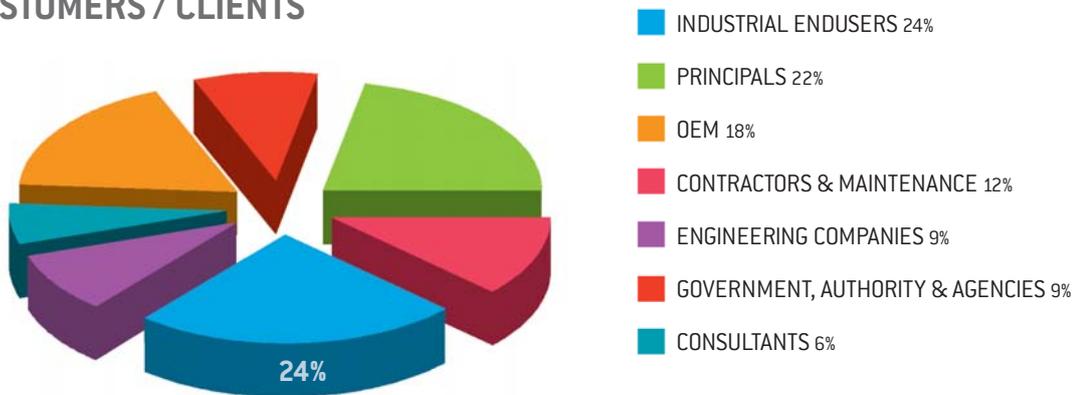
butterfly valves

PRODUCTS / MEDIUM



butterfly valves

OUR CUSTOMERS / CLIENTS



butterfly valves

# wafer-lug rubberlined

## WAFER

			DIN	ANSI	DIN	ANSI	DIN	ANSI
FLANGE according to	EN 1092-2	PN 6						
		PN 10						
		PN 16						
	ASME/ANSI B16.5	class 150						
		class 150 series A						
ASME/ANSI B16.47	class 150 series B							

FACE-to-FACE according to (*)	EN 558-1	series 13						
	EN 558-1	series 14						
	EN 558-1	series 20						

DESIGN according to	EN 593							
	MSS SP67							
(*) For more corresponding F/F standards, kindly check the file on page 27	DN 25 - 1200 / NPS 1 - 48 DESIGNED ACCORDING TO		DN 200 - 1600 / NPS 8 - 64 DESIGNED ACCORDING TO		DN 350 - 1200 / NPS 14 - 48 DESIGNED ACCORDING TO			
	with central lugs		central single flange		U-section wafer body without counter nut		U-section wafer body with counter nut	
	DN 25 - 500 NPS 1 - 20		DN 600 - 1200 NPS 24 - 48		DN / NPS all sizes		DN / NPS all sizes	

FEATURES	DISC construction	concentric						
		eccentric						
	SEAT execution	back-up						
		soft						
		resilient disc seal						
vulcanised on body								

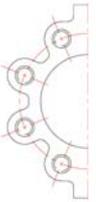
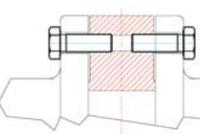
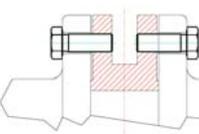
BV TYPE	BV10	BV10-U	BV11
BV description	WAFER	U-TYPE WAFER	U-TYPE WITH COUNTERNUT



# LUG

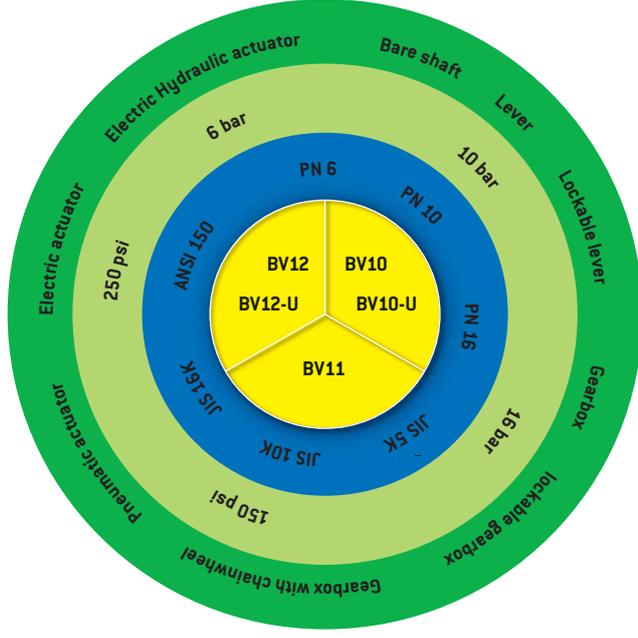
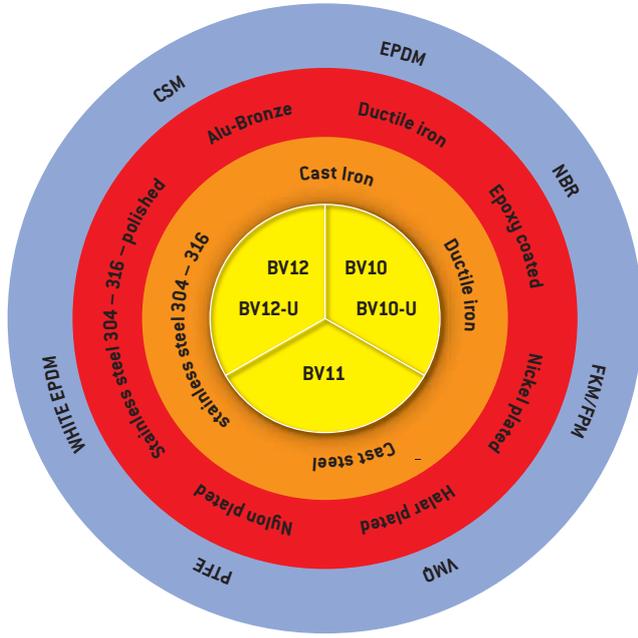
DIN	ANSI	DIN	ANSI
belven		belven	
belven		belven	
belven		belven	
	belven		belven
			belven
			belven

belven	belven	belven	belven

belven	belven	belven	belven
DN 40 - 600 / NPS 1 1/2 - 24	DESIGNED ACCORDING TO	DN 700 - 1200 / NPS 28 - 48	DESIGNED ACCORDING TO
Valve with lugs with internally threaded holes		U-section Lug body with internally threaded holes	
			
DN / NPS all sizes		DN / NPS all sizes	
			

belven	belven	belven	belven
belven	belven	belven	belven
belven	belven	belven	belven
belven	belven	belven	belven

<b>BV12</b>	<b>BV12-U</b>
LUG	U- LUG



- TYPE
- BODY
- DISC
- SEAT
- FLANGE CONNECTIONS
- PRESSURE RATING
- OPERATION

BV10

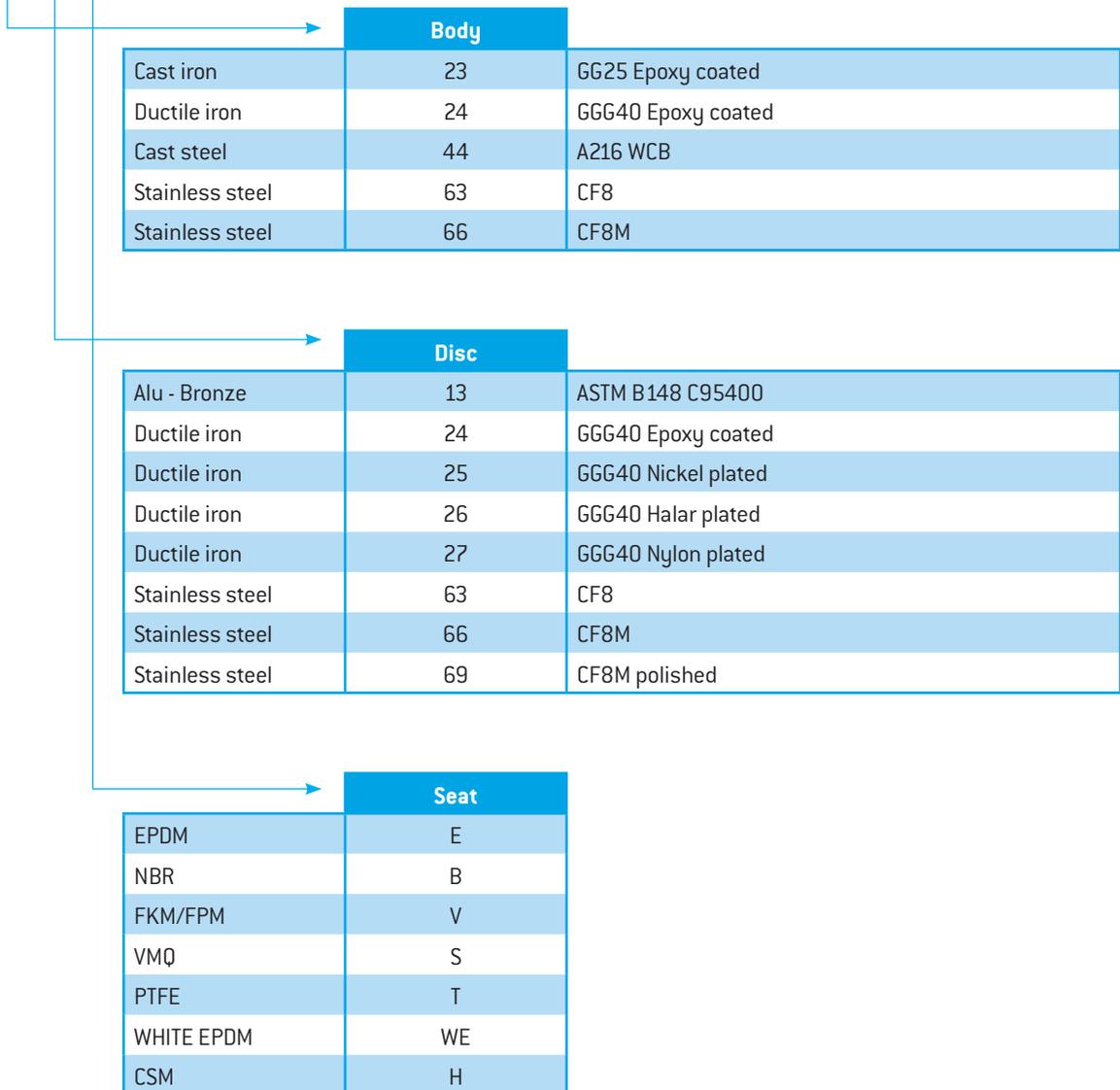
BV10-U

BV11 - XX XX X

BV12

BV12-U

- XX XX X



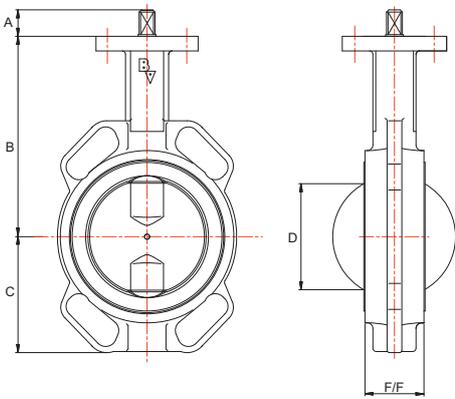
For soft seat valves, NP, code is composed as follows BV10-NP-XXXXX or BV12-NP-XXXXX



# BV 10

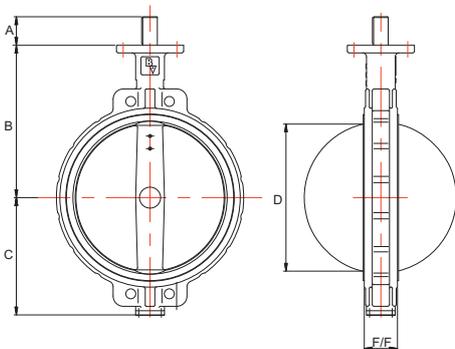


## DIMENSIONS



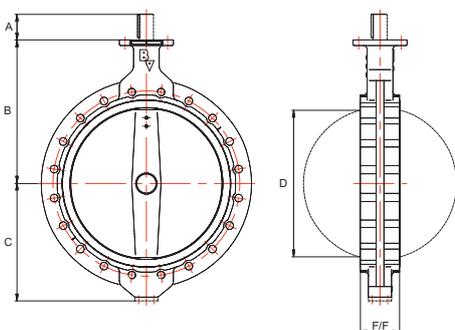
DN	NPS	BV10					BV10-NP				
		A	B	C	D	F/F	A	B	C	D	F/F
32	1 1/4	22,0	110,0	57,0	[*]	33,0	U/R	U/R	U/R	U/R	U/R
40	1 1/2	22,0	110,0	89,0	29,0	33,0	U/R	U/R	U/R	U/R	U/R
50	2	22,0	142,7	71,4	30,0	43,0	22,0	141,0	64,0	30,0	43,0
65	2 1/2	22,0	155,4	77,8	45,0	46,0	22,0	153,0	71,0	45,0	46,0
80	3	22,0	161,8	89,0	64,0	46,0	22,0	157,0	94,0	64,0	46,0
100	4	22,0	178,0	102,0	90,0	52,0	22,0	176,0	108,5	90,0	52,0
125	5	22,0	190,5	123,0	110,0	56,0	22,0	191,0	120,0	110,0	56,0
150	6	22,0	205,2	138,0	146,0	56,0	22,0	202,0	135,0	146,0	56,0
200	8	34,5	237,0	168,0	194,0	60,0	34,5	243,5	165,2	194,0	60,0
250	10	34,5	268,3	207,0	242,0	68,0	34,5	273,0	202,0	242,0	68,0
300	12	34,5	308,5	243,5	292,0	78,0	34,5	311,0	235,0	292,0	78,0
		mm	inches		Dimensions in mm ; U/R = Upon Request						

[\*] For this size, the open disc dimension is covered by F/F



DN	NPS	BV10				
		A	B	C	D	F/F
350	14	65,0	368,0	259,0	325,0	78,0
400	16	75,0	400,0	309,0	377,0	102,0
450	18	75,0	422,0	327,0	426,0	114,0
500	20	90,0	480,0	363,0	475,0	127,0
		mm	inches		Dimensions in mm	

Dimensions in mm



DN	NPS	BV10				
		A	B	C	D	F/F
600	24	100,0	562,0	459,0	572,0	154,0
700	28	85,0	626,0	518,0	674,0	165,0
800	32	100,0	666,0	605,0	772,0	190,0
900	36	118,0	722,0	655,0	840,0	203,0
1000	40	140,0	806,0	713,0	940,0	216,0
1200	48	150,0	938,0	855,0	1132,0	254,0
		mm	inches		Dimensions in mm	

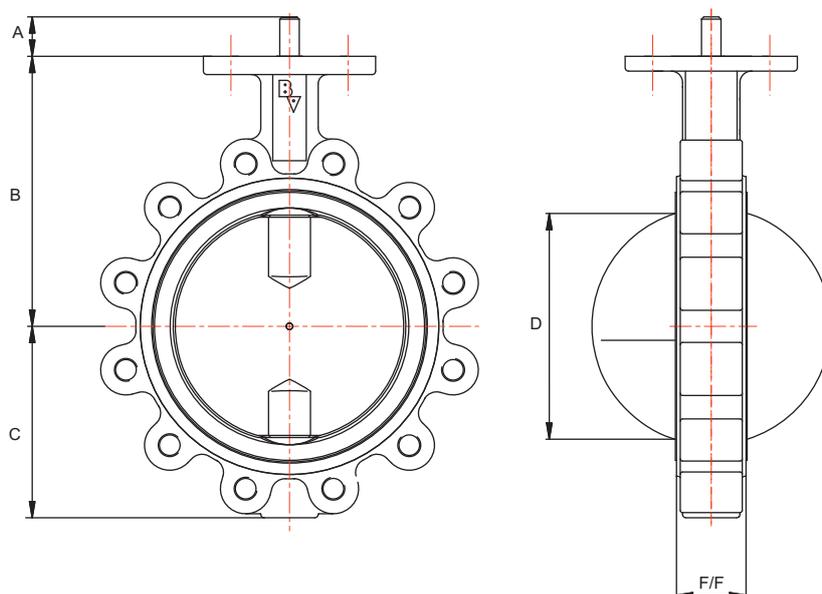
Dimensions in mm

all dimensions are subject to revision without prior notice

# BV 12



## DIMENSIONS



DN	NPS	BV12					BV12-NP				
		A	B	C	D	F/F	A	B	C	D	F/F
40	1 1/2	22,0	110,0	89,0	29,0	33,0	U/R	U/R	U/R	U/R	U/R
50	2	22,0	142,7	71,4	30,0	43,0	22,0	141,0	64,0	30,0	43,0
65	2 1/2	22,0	155,4	77,8	45,0	46,0	22,0	153,0	71,0	45,0	46,0
80	3	22,0	161,8	89,0	64,0	46,0	22,0	157,0	71,0	64,0	46,0
100	4	22,0	178,0	102,0	90,0	52,0	22,0	176,0	103,2	90,0	52,0
125	5	22,0	190,5	123,0	110,0	56,0	22,0	191,0	119,0	110,0	56,0
150	6	22,0	205,2	138,0	146,0	56,0	22,0	203,0	132,0	146,0	56,0
200	8	34,5	237,0	168,0	194,0	60,0	34,5	244,0	165,0	194,0	60,0
250	10	34,5	268,3	207,0	242,0	68,0	34,5	273,0	197,0	242,0	68,0
300	12	34,5	308,5	243,5	292,0	78,0	34,5	311,0	231,0	292,0	78,0
350	14	65,0	368,0	259,0	325,0	78,0	U/R	U/R	U/R	U/R	U/R
400	16	75,0	400,0	309,0	377,0	102,0	U/R	U/R	U/R	U/R	U/R
450	18	75,0	422,0	327,0	426,0	114,0	U/R	U/R	U/R	U/R	U/R
500	20	90,0	480,0	361,0	475,0	127,0	U/R	U/R	U/R	U/R	U/R
600	24	100,0	562,0	459,0	572,0	154,0	U/R	U/R	U/R	U/R	U/R
mm		inches									

Dimensions in mm ; U/R = Upon Request

all dimensions are subject to revision without prior notice

# BV 10-U

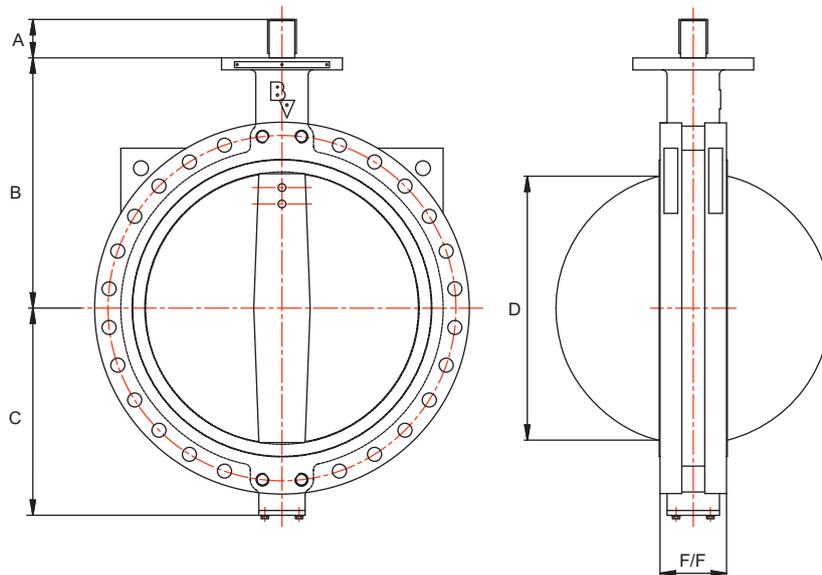
# BV 11

# BV 12-U

## U-section design



## DIMENSIONS



DN	NPS	BV10-U / BV11 / BV12-U					F/F	BV10-U	BV11	BV12-U
		A	B	C	D					
200	8	34,5	260,0	175,0	194,0	60,0	belven	U/R	U/R	
250	10	34,5	292,0	202,5	242,0	68,0	belven	U/R	U/R	
300	12	34,5	337,0	242,0	292,0	78,0	belven	U/R	U/R	
350	14	65,0	364,0	267,0	325,0	78,0	belven	belven	U/R	
400	16	75,0	400,0	309,0	377,0	102,0	belven	belven	U/R	
450	18	75,0	422,0	337,0	426,0	114,0	belven	belven	U/R	
500	20	90,0	480,0	371,0	475,0	127,0	belven	belven	U/R	
600	24	100,0	562,0	459,0	572,0	154,0	belven	belven	U/R	
700	28	85,0	626,0	527,0	674,0	165,0	belven	belven	belven	
750	30	85,0	660,0	566,4	726,0	167,0	belven	belven	belven	
800	32	100,0	666,0	605,0	772,0	190,0	belven	belven	belven	
900	36	118,0	720,0	668,0	840,0	203,0	belven	belven	belven	
1000	40	140,0	806,0	728,0	940,0	216,0	belven	belven	belven	
1050	42	150,0	858,0	790,5	992,0	251,0	belven	belven	belven	
1100	44	150,0	850,0	760,0	1115,0	251,0	belven	belven	belven	
1200	48	150,0	938,0	868,0	1132,0	254,0	belven	belven	belven	
mm	inches									

Dimensions in mm ; U/R = Upon Request

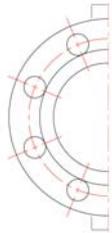
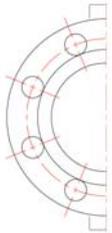
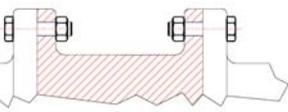
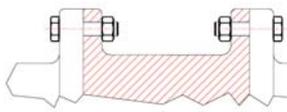
all dimensions are subject to revision without prior notice

# double flanged

## DOUBLE FLANGED

			DIN	ANSI	DIN	ANSI
<b>FLANGE according to</b>	EN 1092-2	PN 6				
		PN 10				
		PN 16				
	ASME/ANSI B16.5	class 150				
		class 150 series A				
ASME/ANSI B16.47	class 150 series B					

<b>FACE-to-FACE according to (*)</b>	EN 558-1	series 13				
	EN 558-1	series 14				
	EN 558-1	series 20				

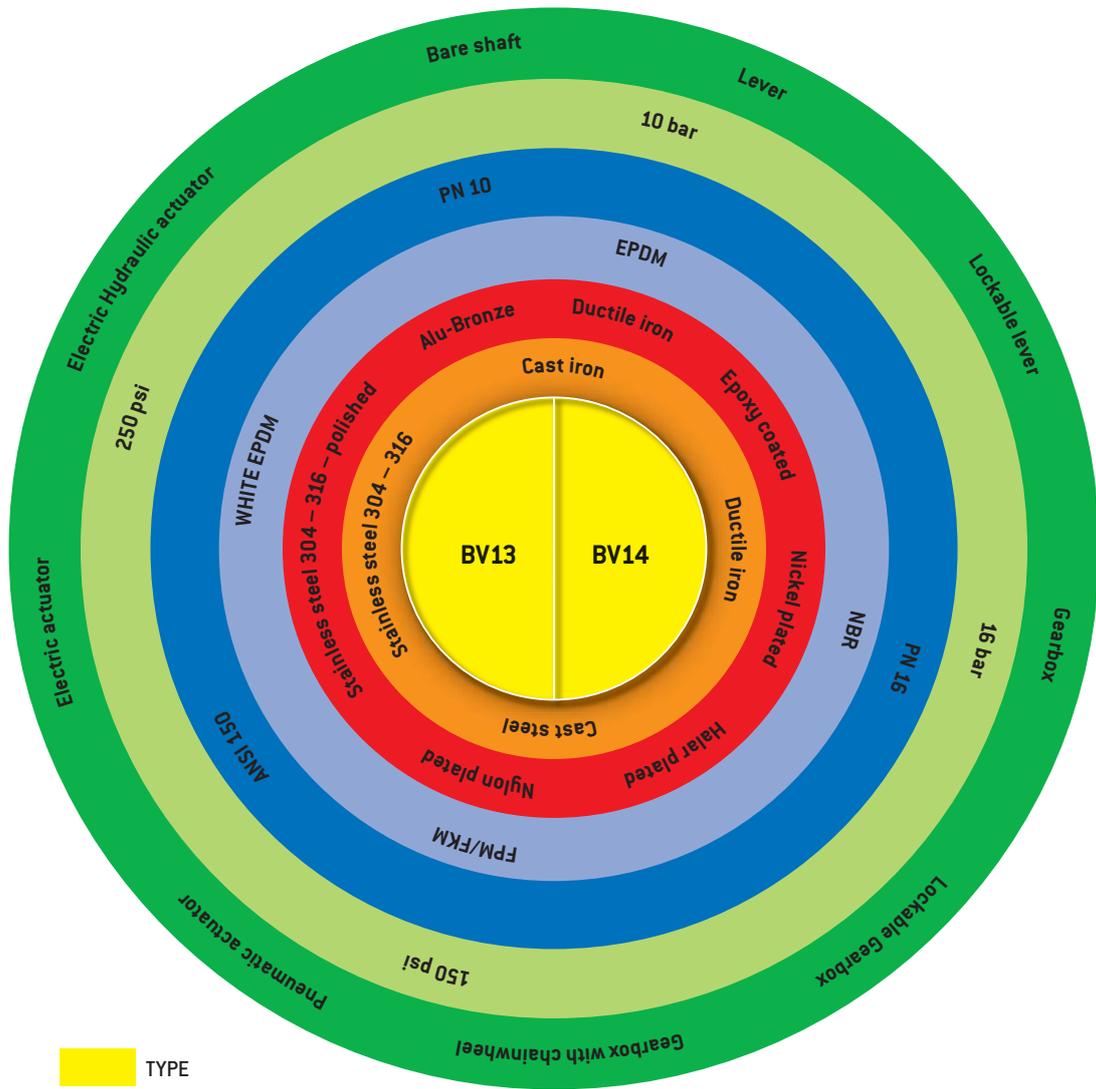
<b>DESIGN according to</b>	EN 593						
	MSS SP67						
			DN 200 - 2000 / NPS 8 - 80 DESIGNED ACCORDING TO			DN 150 - 1600 / NPS 6 - 64 DESIGNED ACCORDING TO	
			Double flanged body			Double flanged body	
							
		DN / NPS all sizes			DN / NPS all sizes		
							

(\*) For more corresponding F/F standards, kindly check the file on page 27

<b>FEATURES</b>	DISC construction	concentric					
		eccentric					
		back-up					
	SEAT execution	soft					
		resilient disc seal					
		vulcanised on body					

BV TYPE	BV13	BV14
BV description	DOUBLE FLANGED ECCENTRIC	DOUBLE FLANGED CONCENTRIC





- TYPE
- BODY
- DISC
- SEAT
- FLANGE CONNECTIONS
- PRESSURE RATING
- OPERATION

# BV 13



## MATERIAL

BV13

-XX XX X

Body		
Cast iron	23	GG25 Epoxy coated
Ductile iron	24	GGG40 Epoxy coated

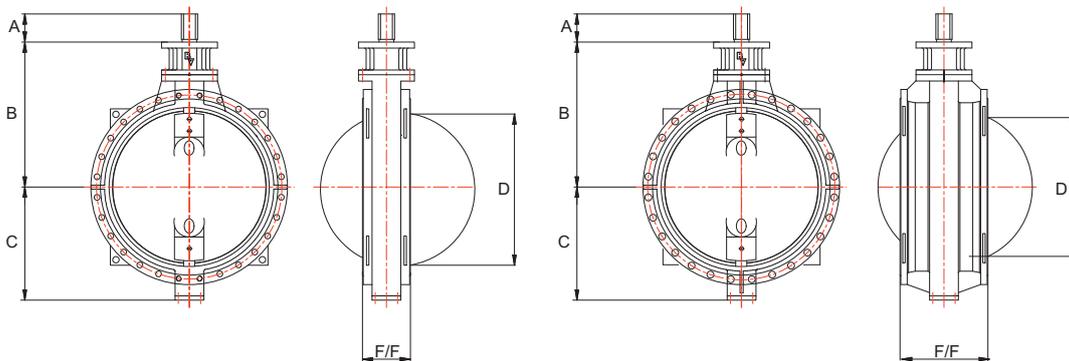
  

Disc		
Ductile iron	24	GGG40 Epoxy coated
Stainless steel	63	CF8
Stainless steel	66	CF8M

Seat	
EPDM	E
NBR	B

## DIMENSIONS



DN	NPS	BV13-SERIE 13					BV13-SERIE 14				
		A	B	C	D	F/F	A	B	C	D	F/F
200	8	50,0	308,0	210,0	183,0	152,0	50,0	308,0	210,0	35,0	230,0
250	10	54,5	360,0	214,0	228,0	165,0	54,5	360,0	214,0	135,0	250,0
300	12	63,5	423,0	262,0	283,0	178,0	63,5	423,0	262,0	200,0	270,0
350	14	54,0	452,0	307,0	333,0	190,0	54,0	452,0	307,0	260,0	290,0
400	16	66,5	488,0	343,0	381,0	216,0	66,5	488,0	343,0	312,0	310,0
450	18	59,5	516,0	371,0	437,0	222,0	59,5	516,0	371,0	370,0	330,0
500	20	81,0	560,0	420,0	479,0	229,0	81,0	560,0	420,0	412,0	350,0
600	24	90,0	631,0	440,0	578,0	267,0	90,0	631,0	440,0	510,0	390,0
700	28	103,0	671,0	518,0	672,0	292,0	103,0	671,0	518,0	607,0	430,0
800	32	126,0	731,0	573,0	773,0	318,0	126,0	731,0	573,0	709,0	470,0
900	36	157,0	789,0	629,0	875,0	330,0	157,0	789,0	629,0	805,0	510,0
1000	40	177,0	914,0	713,0	962,0	410,0	177,0	914,0	713,0	898,0	550,0
1200	48	171,0	1023,0	820,0	1139,0	470,0	171,0	1023,0	820,0	1083,0	630,0
1400	56	242,0	1255,0	1091,0	1353,0	530,0	242,0	1255,0	1091,0	1283,0	710,0
1600	64	234,0	1365,0	1236,0	1546,0	600,0	234,0	1365,0	1236,0	1471,0	790,0
1800	72	309,0	1603,0	1446,0	1748,0	670,0	309,0	1603,0	1446,0	1670,0	870,0
2000	80	303,0	1630,0	1486,0	1864,0	760,0	303,0	1630,0	1486,0	1863,0	950,0

mm inches

Dimensions in mm

all dimensions are subject to revision without prior notice

# BV 14



## MATERIAL

BV14

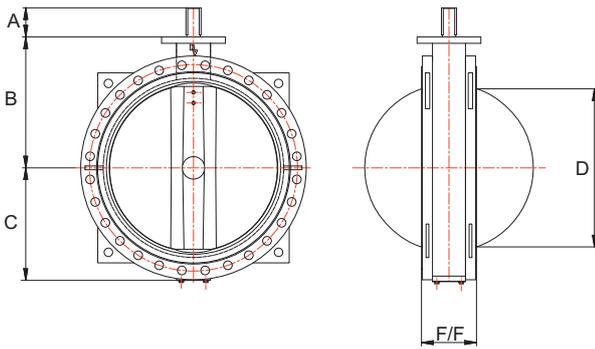
- XX XX X

Body		
Ductile iron	24	GGG40 Epoxy coated
Cast steel	44	A216 WCB
Stainless steel	63	CF8
Stainless steel	66	CF8M

Disc		
Alu - bronze	13	ASTM B148 C95400
Ductile iron	24	GGG40 Epoxy coated
Ductile iron	25	GGG40 Nickel plated
Ductile iron	26	GGG40 Halar plated
Ductile iron	27	GGG40 Nylon plated
Stainless steel	63	CF8
Stainless steel	66	CF8M
Stainless steel	69	CF8M polished

Seat	
EPDM	E
NBR	B
FKM/FPM	V
WHITE EPDM	WE

## DIMENSIONS



DN	NPS	BV14				
		A	B	C	D	F/F
50	2	22,0	110,0	80,0	(*)	108,0
65	2 1/2	22,0	134,0	80,0	(*)	112,0
80	3	22,0	131,0	95,0	(*)	114,0
100	4	22,0	150,0	114,0	(*)	127,0
125	5	22,0	170,0	127,0	(*)	140,0
150	6	22,0	180,0	139,0	70,0	140,0
200	8	34,5	210,0	175,0	134,0	152,0
250	10	34,5	245,5	203,0	189,0	165,0
300	12	34,5	276,0	242,0	244,0	178,0
350	14	65,0	328,0	250,0	274,0	190,0
400	16	75,0	376,0	310,5	324,0	216,0
450	18	75,0	406,0	332,0	381,0	222,0
500	20	90,0	433,0	358,0	435,0	229,0
600	24	100,0	507,5	423,0	529,0	267,0
700	28	75,0	560,0	487,5	630,0	292,0
750	30	75,0	610,0	508,0	680,0	305,0
800	32	100,0	620,0	533,0	729,0	318,0
900	36	118,0	692,0	602,0	799,0	330,0
1000	40	140,0	735,0	656,0	873,0	410,0
1200	48	150,0	917,0	781,0	1057,0	470,0
<b>mm</b>	<b>inches</b>	Dimensions in mm				

(\*) For this size, the open disc dimension is covered by F/F

all dimensions are subject to revision without prior notice

# wafer-lug TFM Lined

			WAFER		LUG	
			DIN	ANSI	DIN	ANSI
FLANGE according to	EN 1092-2	PN 6				
		PN 10				
		PN 16				
	ASME/ANSI B16.5	class 150				
ASME/ANSI B16.47	class 150 series A					
		class 150 series B				

FACE-to-FACE according to (*)	EN 558-1	series 13				
	EN 558-1	series 14				
	EN 558-1	series 20				

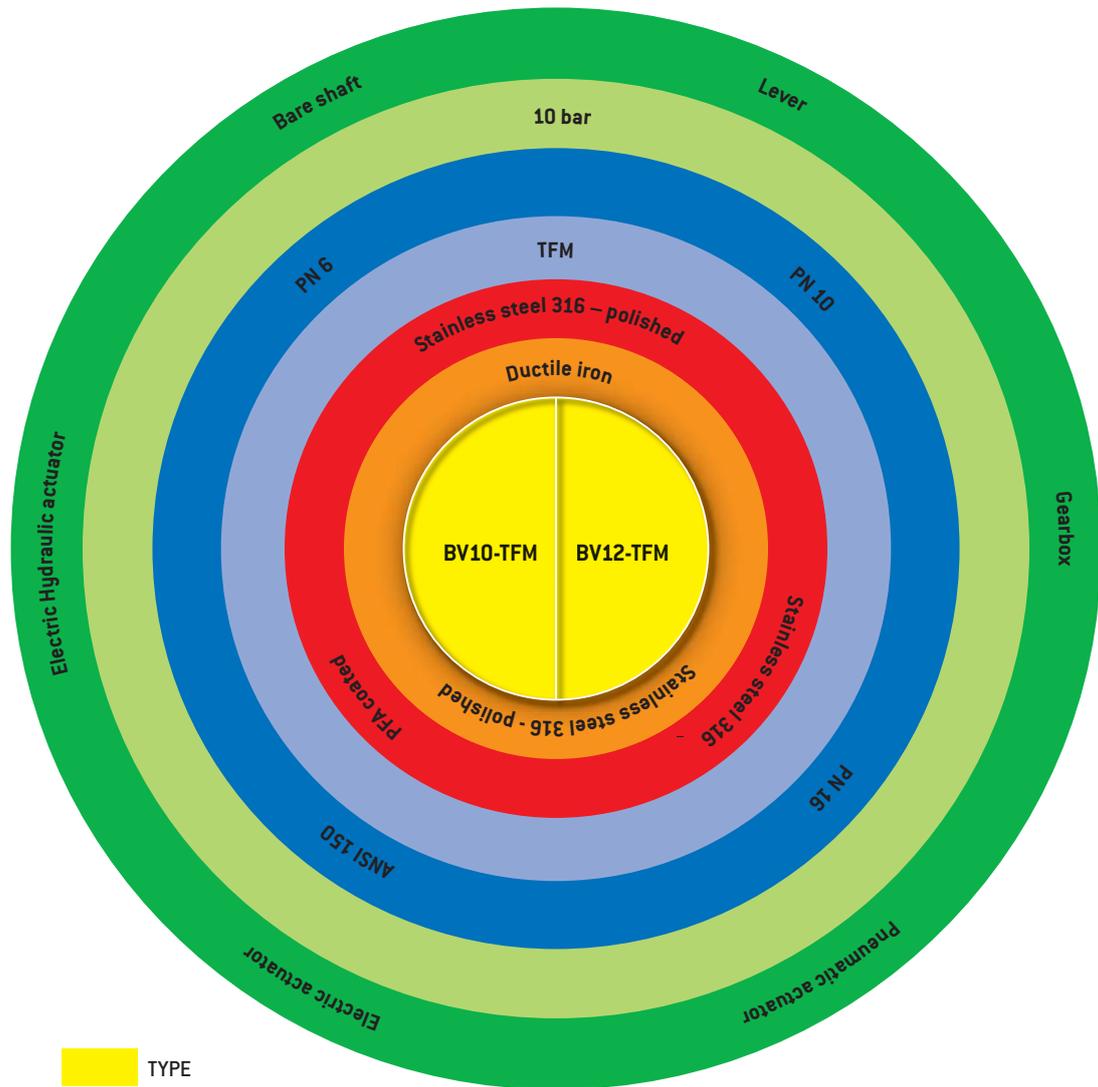
DESIGN according to	EN 593						
	MSS SP67						
			DN 50 - 1050 / NPS 2 - 42 DESIGNED ACCORDING TO <small>(from size DN 350 / NPS 14 lug type with holes drilled through)</small>	DN 40 - 1050 / NPS 1 1/2 - 42 DESIGNED ACCORDING TO			
			2-piece valve with central lugs	2-piece valve with lugs with internally threaded holes			
			DN / NPS all sizes	DN / NPS all sizes			

(\*) For more corresponding F/F standards, kindly check the file on page 27

FEATURES	DISC construction	concentric				
		eccentric				
		back-up				
	SEAT execution	soft				
		resilient disc seal				
		vulcanised on body				

BV TYPE	BV10-TFM	BV12-TFM
BV description	WAFER TFM LINED	LUG TFM LINED





- TYPE
- BODY
- DISC
- SEAT
- FLANGE CONNECTIONS
- PRESSURE RATING
- OPERATION

# BV 10-TFM

# BV 12-TFM

## EXECUTION

### TECHNICAL SPECIFICATIONS

- Face to face according to DIN 3202/K1 - BS5155 - ISO 5752 - API 609
- Long neck execution
- Wafer type with 2 centre holes : Type BV10
- Lug type with threaded holes : Type BV12
- Actuator mounting flange according to ISO 5211
- Mounting between flanges DIN PN6/10/16, ANSI 150
- Two piece body in GGG40.3
- Disc and stem in one piece design
- Min. 3 mm PFA covering to obtain good corrosion and diffusion resistance
- Min. 3 mm TFM liner, vacuumtight
- Elastic elastomers obtain gastightness
- Wide TFM flangesealing area
- Leakagefree sealing by constant pressure of belleville rings
- Maintenance free stem bearing



## MATERIAL

BV10  
BV12

- XX XX X

Body		
Ductile iron	29	GGG40.3
Stainless steel	66	CF8M
Stainless steel	69	CF8M polished

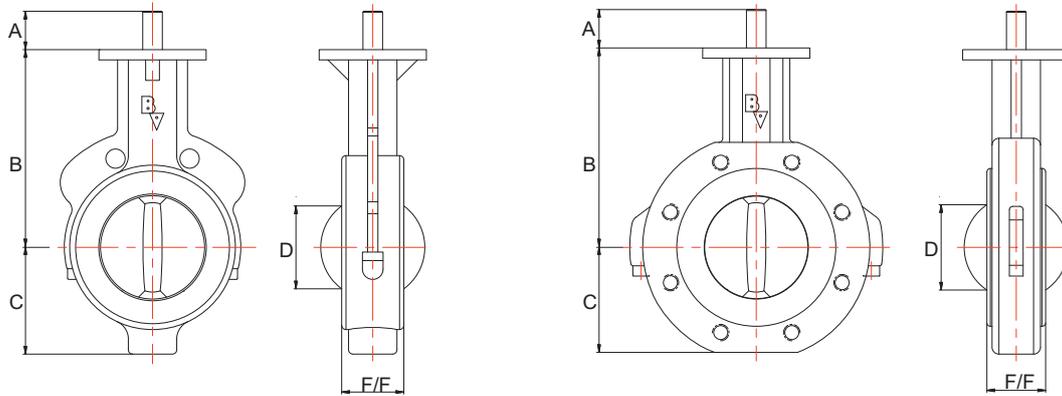
  

Disc		
Stainless steel	66	CF8M
Stainless steel	69	CF8M polished
PFA	77	PFA coated

Seat	
TFM	T

## DIMENSIONS



DN	NPS	BV10 - TFM					BV12 - TFM				
		A	B	C	D	F/F	A	B	C	D	F/F
40	1 1/2	19,0	95,0	70,0	34,0	33,0	19,0	95,0	70,0	34,0	33,0
50	2	19,0	130,0	56,0	31,0	43,0	19,0	130,0	58,0	31,0	43,0
65	2 1/2	19,0	146,0	67,0	48,0	46,0	19,0	146,0	65,0	48,0	46,0
80	3	19,0	165,0	84,0	63,0	46,0	19,0	165,0	88,0	63,0	46,0
100	4	25,0	185,0	100,0	90,0	52,0	25,0	185,0	102,0	90,0	52,0
125	5	25,0	202,0	110,0	118,0	56,0	25,0	202,0	116,0	118,0	56,0
150	6	30,0	217,0	125,0	137,0	56,0	30,0	217,0	127,0	137,0	56,0
200	8	26,0	245,0	158,0	189,0	60,0	26,0	245,0	160,0	189,0	60,0
250	10	30,0	270,0	190,0	239,0	68,0	30,0	270,0	193,0	239,0	68,0
300	12	30,0	308,0	225,0	290,0	78,0	30,0	308,0	227,0	290,0	78,0
350	14	37,0	330,0	256,0	328,0	92,0	37,0	330,0	256,0	328,0	92,0
400	16	37,0	365,0	292,0	377,0	102,0	37,0	365,0	292,0	377,0	102,0
450	18	50,0	400,0	311,0	417,0	114,0	50,0	400,0	311,0	417,0	114,0
500	20	50,0	435,0	340,0	477,0	127,0	50,0	435,0	340,0	477,0	127,0
600	24	64,0	510,0	398,0	560,0	154,0	64,0	510,0	398,0	560,0	154,0
750	30	90,0	608,0	482,0	716,0	154,0	90,0	608,0	482,0	716,0	154,0
900	36	90,0	684,0	573,0	860,0	154,0	90,0	684,0	573,0	860,0	154,0
1050	42	90,0	768,0	660,0	1009,0	154,0	90,0	768,0	660,0	1009,0	154,0
mm											
inches											

Dimensions in mm

all dimensions are subject to revision without prior notice

# high performance

			WAFER		LUG	
			DIN	ANSI	DIN	ANSI
FLANGE according to	EN 1092-1	PN 10 - PN 16 - PN 25 - PN 40				
	ASME/ANSI B16.5	class 150 - class 300 - class 600				
	ASME/ANSI B16.47	series A/B for class 150 - class 300 - class 600				
	API 605 / MSS-SP-44	class 150 - class 300 - class 600				
	BS 3293	class 150 - class 300 - class 600				
	JIS B2210	10 k - 16 k - 20 k				
	ASME B16.25	Buttwelding Ends				

FACE-to-FACE according to (*)	ISO 5752	Serie 13				
	ISO 5752	Serie 14				
	ISO 5752	Serie 20				
	API 609	Category A, B, Double flanged short				
	MSS-SP-68	Table 1, 2				

DESIGN according to	EN 593					
	ASME B16.34					
	MSS SP67					
(*) For more corresponding F/F standards, kindly check the file on page 27			DN 50 – 1800 / NPS 2 – 72 DESIGNED ACCORDING TO		DN 50 – 1800 / NPS 2 – 72 DESIGNED ACCORDING TO	
			with central lugs		Valve with lugs with internally threaded holes	
			DN / NPS all sizes		DN / NPS all sizes	

FEATURES	DISC construction	concentric				
		eccentric				
	SEAT execution	soft (PTFE / RTFE)				
		metal				
		fire-safe				

BV TYPE	BV10-HP	BV12-HP
BV description	WAFER HIGH PERFORMANCE	LUG HIGH PERFORMANCE



# high performance

**Besides the resilient seated butterfly valves, some industrial processes require other types of butterfly valves which offer them the perfect solution in form of high performance valves.**

Belven's high performance butterfly range adds an extra asset towards the complete butterfly range as they cover different temperature and pressure ratings and different flange connections as in its standard range.

Field applications for this valve differs from power generation, hydrocarbon processing, water and waste water treatment, marine and commercial shipbuilding, food and beverage processing towards pulp and paper and sugar productions.

Different configurations are possible, all is depending on your request and necessities.



## EXECUTION

### HP range

- suited for high pressure and temperature applications: water, oil, steam, gas and slurry
- engineered for heavy duty, maintenance-free performance
- combines the high performance advantages with the benefits of a butterfly valve design translated into low-cost, light-weight, compact size and easy installation
- offers anti blow-out device as a special safety feature
- ensures minimum torque and longer seat life and high sealing integrity by the advanced double or tripple offset design
- guarantees a complete flow control with pneumatic/electric actuators and accessories
- works uni-directionally
- covers a complete temperature range from -80° C till 450° C
- provides a fire safe design



## MATERIAL

BV10-HP

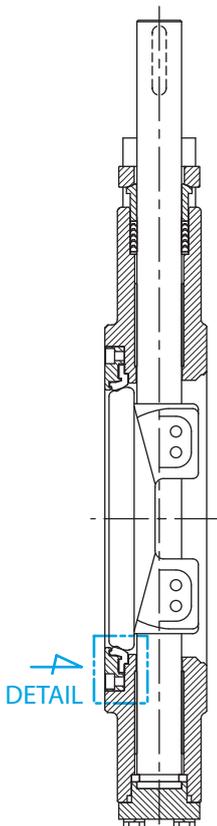
BV12-HP - XX XX X

BV13-HP

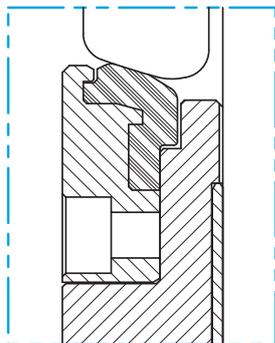
Body		
Cast steel	44	A216 WCB
Stainless steel	63	CF8
Stainless steel	64	CF3
Stainless steel	66	CF8M
Stainless steel	67	CF3M

Disc		
Alu -Bronze	13	ASTM B148
Stainless steel	63	CF8
Stainless steel	64	CF3
Stainless steel	66	CF8M
Stainless steel	67	CF3M

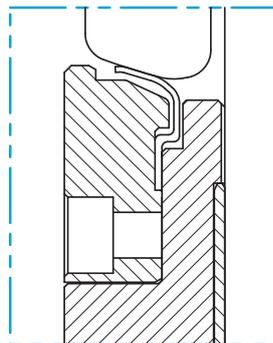
Seat	
PTFE	T
RTFE	R
METAL	M
FIRE-SAFE	F



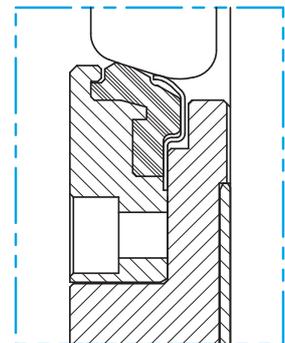
soft seat



metal seat

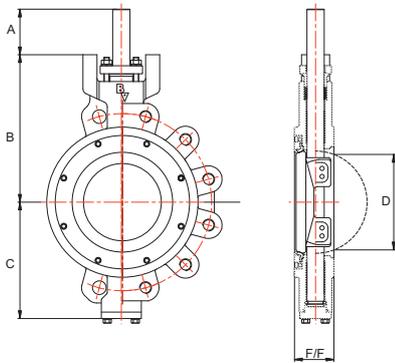


fire-safe seat

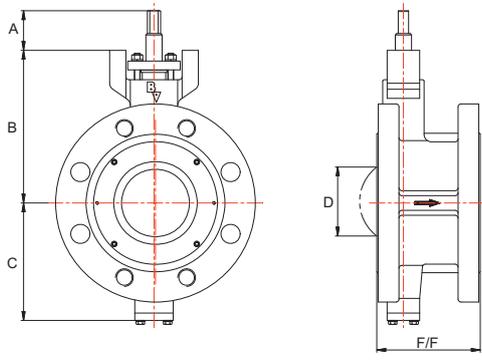


## DIMENSIONS

### BV10-12-HP



### BV13-HP



DN	NPS	BV10-HP / BV12-HP CLASS 150					BV10-HP / BV12-HP CLASS 300				
		A	B	C	D	F/F	A	B	C	D	F/F
50	2	37,0	150,0	95,0	46,0	44,0	37,0	150,0	95,0	46,0	44,0
65	2 1/2	38,0	170,0	115,0	61,0	46,0	38,0	170,0	115,0	61,0	46,0
80	3	38,0	170,0	115,0	76,0	48,0	38,0	170,0	116,0	76,0	48,0
100	4	41,0	185,0	130,0	96,0	54,0	41,0	185,0	130,0	96,0	54,0
125	5	45,0	208,0	160,0	119,0	57,0	45,0	210,0	160,0	118,0	59,0
150	6	45,0	222,0	162,0	144,0	57,0	45,0	245,0	185,0	143,0	59,0
200	8	85,0	265,0	202,0	192,0	64,0	85,0	275,0	217,0	190,0	73,0
250	10	85,0	300,0	232,0	242,0	71,0	85,0	320,0	250,0	232,0	83,0
300	12	95,0	330,0	262,0	285,0	81,0	100,0	355,0	292,0	280,0	92,0
350	14	95,0	365,0	294,0	326,0	92,0	100,0	405,0	323,0	316,0	117,0
400	16	121,0	424,0	346,0	370,0	102,0	141,0	450,0	386,0	359,0	133,0
450	18	121,0	454,0	376,0	425,0	114,0	155,0	488,0	425,0	406,0	149,0
500	20	121,0	479,0	406,0	475,0	127,0	155,0	525,0	455,0	448,0	159,0
550	22	155,0	520,0	465,0	514,0	154,0	165,0	560,0	520,0	494,0	181,0
600	24	155,0	555,0	490,0	558,0	154,0	165,0	600,0	545,0	540,0	181,0
650	26	155,0	585,0	520,0	608,0	165,0	165,0	650,0	562,0	590,0	230,0
700	28	155,0	615,0	549,0	664,0	165,0	165,0	645,0	590,0	648,0	230,0
750	30	155,0	650,0	585,0	714,0	190,0	185,0	710,0	645,0	698,0	240,0
800	32	155,0	675,0	625,0	764,0	190,0	185,0	732,0	685,0	746,0	240,0
850	34	155,0	700,0	640,0	825,0	203,0	185,0	815,0	737,0	798,0	273,0
900	36	155,0	740,0	675,0	878,0	203,0	185,0	815,0	772,0	851,0	273,0
950	38	155,0	780,0	715,0	925,0	203,0	185,0	840,0	755,0	898,0	300,0
1000	40	155,0	810,0	745,0	975,0	216,0	245,0	850,0	785,0	948,0	300,0
<b>mm</b>	<b>inches</b>	All dimensions in mm unless otherwise specified									

DN	NPS	BV13-HP CLASS 150					BV13-HP CLASS 300				
		A	B	C	D	F/F	A	B	C	D	F/F
50	2	37,0	150,0	95,0	31,0	108,0	37,0	150,0	95,0	31,0	150,0
65	2 1/2	38,0	170,0	115,0	45,0	112,0	38,0	170,0	115,0	45,0	170,0
80	3	38,0	170,0	115,0	58,0	114,0	38,0	170,0	116,0	58,0	180,0
100	4	41,0	185,0	130,0	75,0	127,0	41,0	185,0	130,0	75,0	190,0
125	5	45,0	208,0	160,0	96,0	140,0	45,0	210,0	160,0	94,0	200,0
150	6	45,0	222,0	162,0	117,0	140,0	45,0	245,0	185,0	116,0	210,0
200	8	85,0	265,0	202,0	159,0	152,0	85,0	275,0	217,0	157,0	230,0
250	10	85,0	300,0	232,0	198,0	165,0	85,0	320,0	250,0	189,0	250,0
300	12	95,0	330,0	262,0	236,0	178,0	100,0	355,0	292,0	231,0	270,0
350	14	95,0	365,0	294,0	272,0	190,0	100,0	405,0	323,0	263,0	290,0
400	16	121,0	424,0	346,0	310,0	216,0	141,0	450,0	386,0	300,0	310,0
450	18	121,0	454,0	376,0	354,0	222,0	155,0	488,0	425,0	337,0	330,0
500	20	121,0	479,0	406,0	397,0	229,0	155,0	525,0	455,0	374,0	350,0
550	22	155,0	520,0	465,0	431,0	267,0	165,0	560,0	520,0	414,0	390,0
600	24	155,0	555,0	490,0	470,0	267,0	165,0	600,0	545,0	454,0	390,0
650	26	155,0	585,0	520,0	509,0	292,0	165,0	650,0	562,0	493,0	430,0
700	28	155,0	615,0	549,0	558,0	292,0	165,0	645,0	590,0	544,0	430,0
750	30	155,0	650,0	585,0	601,0	318,0	185,0	710,0	645,0	588,0	470,0
800	32	155,0	675,0	625,0	645,0	318,0	185,0	732,0	685,0	629,0	470,0
850	34	155,0	700,0	640,0	698,0	330,0	185,0	815,0	737,0	675,0	510,0
900	36	155,0	740,0	675,0	745,0	330,0	185,0	815,0	772,0	721,0	510,0
950	38	155,0	780,0	715,0	786,0	410,0	185,0	840,0	755,0	762,0	550,0
1000	40	155,0	810,0	745,0	829,0	410,0	245,0	850,0	785,0	806,0	550,0
<b>mm</b>	<b>inches</b>	All dimensions in mm unless otherwise specified									

all dimensions are subject to revision without prior notice

# face-to-face standards

	WAFER					
	BV10	BV10-NP	BV10-U	BV11	BV10-TFM	BV10-HP
EN 558-1 BASIC SERIE 20						
ISO 5752 BASIC SERIE 20						
DIN 3202 Part 3 K1						
API 609 Category A valves (lug & wafer type)						
API 609 Category B valves						
BS 5155 (4) Double flanged short DN 40-300						
BS 5155 (5) Double flanged medium DN 350-600						
MSS SP-67 W-1 narrow body DN 40-350						
MSS SP-67 W-2 wide body DN 400-1050						
MSS SP-68 Table 1,2						

	LUG				
	BV12	BV12-NP	BV12-U	BV12-TFM	BV12-HP
EN 558-1 BASIC SERIE 20					
ISO 5752 BASIC SERIE 20					
DIN 3202 Part 3 K1					
API 609 Category A valves (lug & wafer type)					
API 609 Category B valves					
BS 5155 (4) Double flanged short DN 40-300					
BS 5155 (5) Double flanged medium DN 350-600					
MSS SP-67 W-1 narrow body DN 40-350					
MSS SP-67 W-2 wide body DN 400-1050					
MSS SP-68 Table 1,2					

	DOUBLE FLANGED		
	BV13	BV14	BV13-HP
EN 558-1 series 13			
ISO 5752 BASIC SERIE 13			
DIN 3202 Part 1 SERIE F16			
API 609 Double flanged @ Short pattern class 150 or 300			
BS 5155 (2) Double flanged short			

EN 558-1 series 14			
ISO 5752 BASIC SERIE 14			
DIN 3202 Part 1 SERIE F4			
API 609 Double flanged @ Short pattern class 300			
BS 5155 (2) Double flanged long			

# chemical resistance list

	Seat materials					Metals					
	PTFE /TFM	EPDM	NBR (Buna N)	CSM (hypalon)	FKM (viton)	VMQ (silicon)	Cast iron	Ductile iron	Carbon steel	Alu bronze	SS 316
Acetaldehyde	A	A	C	C	C	A	B	B	A	C	A
Acetic Acid	A	B	C	C	C	C	C	C	C	C	A
Acetone	A	A	C	C	C	C	A	A	A	A	A
Acetylene (gas 100%)	A	A	A	B	A	B	A	A	A	C	A
Acrylonitrile	A	C	C	B	C	C	A	A	A	A	A
Adipic Acid	A	A	A	B	A	na	C	C	B	na	B
Aluminum Chloride (Sat'd)	A	A	B	B	A	B	C	C	C	C	A
Aluminum Sulfate	A	A	A	A	A	A	C	C	C	C	B
Ammonia, liquid	A	A	B	C	C	na	A	A	A	C	A
Amyl Acetate	A	B	C	C	C	C	C	B	B	B	A
Amyl Alcohol	A	A	B	A	A	C	B	B	B	A	A
Amyl Chloride	A	C	C	C	B	C	A	A	A	A	A
Aniline	A	B	C	C	A	B	C	B	C	C	B
Antimony Trichloride	A	B	B	na	A	na	na	C	C	C	C
Aqua Regia (80% HCl, 20% HNO3)	A	C	C	C	B	C	C	C	C	C	B
Arsenic Acid	A	A	A	A	A	A	C	C	C	C	A
Asphalt	A	C	B	C	A	C	A	A	A	A	A
Barium Hydroxide	A	A	A	A	A	A	B	B	C	C	A
Barium Nitrate	A	A	A	A	A	B	A	A	A	C	A
Barium Sulfate	A	A	A	A	A	A	B	B	A	B	A
Beer	A	A	B	A	A	A	C	C	C	A	A
Benzaldehyde	A	A	C	C	C	C	A	C	C	A	A
Benzene	A	C	C	C	A	C	A	A	A	A	A
Benzoic Acid	A	C	A	B	A	B	C	C	C	C	A
Benzol / Benzene	A	C	na	C	A	C	A	na	na	na	A
Borax (Sodium Borate)	A	A	A	A	A	B	A	B	A	B	A
Boric Acid	A	A	A	A	A	A	C	C	B	B	A
Brine	A	A	A	A	A	B	C	C	C	A	A
Bromine	A	C	C	C	B	C	C	C	C	C	C
Butadiene	A	C	C	B	B	C	A	A	A	A	A
Butane	A	C	B	B	A	C	A	A	A	A	A
Butanol (Butyl Alcohol)	A	A	B	A	B	B	na	A	B	A	A
Butyric Acid	A	B	na	C	B	C	C	C	C	A	A
Calcium Bisulfate	A	na	B	C	A	C	C	C	C	na	A
Calcium Carbonate	A	A	B	B	A	A	B	B	B	C	A
Calcium Chlorate	A	A	B	B	A	na	B	B	B	B	A
Calcium Chloride	A	A	A	A	A	A	C	A	C	B	A
Calcium Hydroxide	A	A	A	A	A	A	C	C	C	C	A
Calcium Hypochlorite	A	B	C	A	A	B	C	C	C	C	B
Calcium Nitrate	A	A	A	A	A	B	B	na	B	B	A
Calcium Sulfate	A	A	A	A	A	na	A	A	B	B	A
Carbon Dioxide (dry)	A	B	A	A	A	B	A	A	A	A	A
Carbon Dioxide (wet)	A	B	A	B	B	B	B	B	A	A	A
Carbon Tetrachloride	A	C	C	C	A	C	A	A	A	B	A
Carbonic Acid	A	B	A	C	A	A	C	B	B	C	A
Chloric Acid	A	na	na	na	na	na	C	C	C	C	C
Chlorinated Water (<3500ppm)	A	B	C	B	A	na	C	C	C	C	A
Chlorinated Water (>3500ppm)	A	C	C	B	A	C	C	C	C	C	A
Chlorosulfonic Acid	A	C	C	C	C	C	B	C	C	B	B
Chromic Acid 10%	A	C	C	C	B	C	C	C	C	C	B
Chromic Acid 30%	A	C	C	B	B	C	C	C	C	C	B
Chromic Acid 50%	A	B	C	C	B	C	C	C	C	C	B
Citric Acid	A	A	B	C	A	A	C	C	C	C	A
Copper Chloride	A	A	A	B	A	A	C	C	C	C	A
Copper Nitrate	A	A	B	A	A	na	C	C	C	C	A
Copper Sulfate (sat'd)	A	A	A	C	A	A	C	C	C	C	A
Cresylic Acid	A	C	C	C	A	C	A	A	B	A	A
Cyclohexane	A	C	C	C	A	C	B	B	A	A	A
Cyclohexanol	A	C	C	C	C	C	A	A	na	na	A
Detergents	A	A	A	A	A	B	A	A	A	A	A
Diacetone Alcohol	A	B	C	C	C	C	A	A	A	A	A
Dichlorobenzene	A	C	C	C	C	C	na	A	A	na	A
Dichloroethane	A	C	C	C	C	A	A	na	B	A	A
Diesel Fuel	A	C	A	C	A	C	A	A	A	A	A
Diethylamine	A	B	B	C	C	B	A	A	C	C	A
Ethanol	A	A	A	A	A	B	A	A	A	A	A
Ether	A	C	C	C	C	C	B	B	na	A	A
Ethyl Acetate	A	B	C	C	C	B	A	A	A	na	A
Ethyl Chloride	A	B	C	C	A	C	A	A	B	A	A
Ethylene Bromide	A	C	C	C	B	C	na	A	A	na	A
Ethylene Chloride (dry)	A	C	C	C	B	C	na	na	na	B	A
Ethylene Glycol	A	A	A	A	A	A	A	A	A	A	A
Ethylene Oxide	A	C	C	C	C	C	B	A	A	na	A
Ferric Sulfate	A	A	A	A	A	B	C	C	C	na	A

	Seat materials					Metals					
	PTFE /TFM	EPDM	NBR (Buna N)	CSM (hypalon)	FKM (viton)	VMQ (silicon)	Cast iron	Ductile iron	Carbon steel	Alu bronze	SS 316
Ferrous Chloride	A	A	A	na	A	na	C	C	C	C	C
Ferrous Sulfate	A	A	A	B	A	na	C	C	C	B	A
Fluorine Gas (dry)	B	C	C	B	C	C	C	C	A	na	A
Formaldehyde (50%)	A	A	C	C	C	B	C	na	B	B	A
Formic Acid	A	A	C	B	C	B	C	C	C	C	B
Freon 11	A	C	B	B	B	C	B	B	B	A	A
Freon 12	A	C	na	B	C	C	B	B	B	A	A
Freon 22	C	C	C	B	C	C	B	B	B	A	A
Furfural	A	B	C	B	C	C	A	A	A	A	A
Gallic Acid	A	B	C	B	A	C	C	C	C	C	A
Gasoline, leaded	A	C	B	B	B	C	A	A	A	A	A
Gasoline, unleaded	A	C	B	B	B	C	A	A	A	A	A
Glucose	A	A	A	B	A	A	A	A	A	A	A
Glue	A	B	A	A	B	A	A	A	A	A	A
Glycerin	A	A	B	A	A	C	A	A	A	A	A
Glycolic Acid	A	A	C	C	C	B	C	C	C	na	A
Grease	A	C	A	C	A	C	A	A	A	C	A
Heptane	A	C	B	B	B	C	A	A	A	A	A
Hexane	A	C	B	B	B	C	A	A	A	A	A
Hydraulic Oil (Petro)	A	C	A	B	A	B	A	A	A	B	A
Hydrobromic Acid 50%	A	A	C	B	A	C	C	C	C	C	C
Hydrochloric Acid 37%	A	B	C	C	C	C	C	C	C	C	B
Hydrocyanic Acid 10%	A	A	B	A	A	C	C	C	C	C	A
Hydrofluoric Acid 50%	A	C	C	B	B	C	C	C	C	C	B
Hydrogen Gas	A	A	A	A	A	C	A	A	A	A	A
Hydrogen Peroxide 50%	A	A	C	A	A	A	C	A	C	B	C
Hydrogen Sulfide (aqua)	A	B	C	B	B	C	C	C	C	C	A
Hydrogen Sulfide (dry)	A	B	C	B	B	C	C	B	B	na	A
Ink	A	na	B	na	A	na	C	C	C	A	A
Iodine 10%	A	B	B	B	C	na	C	C	C	C	C
Isooctane	A	C	B	A	A	C	A	A	A	A	A
Isopropyl Acetate	A	B	C	C	C	C	A	A	A	na	A
Isopropyl Ether	A	C	B	C	C	C	A	A	A	na	A
Jet Fuel (JP3, JP4, JP5)	A	C	B	C	A	C	A	A	A	A	A
Kerosene	A	C	A	C	A	C	A	A	A	A	A
Ketones	A	C	C	C	C	na	A	A	A	A	A
Lactic Acid	A	B	C	A	B	A	C	B	C	C	A
Lard Oil	A	C	A	C	A	B	B	B	B	C	A
Latex	A	B	B	na	B	A	na	A	na	na	A
Lead Acetate	A	A	B	B	B	C	A	C	C	na	A
Lead Nitrate	A	A	A	na	A	B	na	na	A	na	A
Lead Sulfate	A	A	na	A	A	B	C	C	C	na	B
Lime	A	B	B	B	A	na	A	A	A	na	A
Linoleic Acid	A	C	B	C	B	B	C	C	C	C	B
Lithium Chloride	A	A	B	na	A	A	A	A	B	B	A
Lithium Hydroxide	A	B	B	na	na	na	A	A	na	C	A
Lubricating oil (ASTM #1/2/3)	A	C	A	C	A	C	A	A	A	A	A
Magnesium Carbonate	A	A	A	A	A	na	B	B	B	na	A
Magnesium Chloride	A	A	A	A	A	A	C	C	C	B	C
Magnesium Oxide	A	A	A	na	na	A	A	A	na	na	A
Magnesium Sulfate (Epsom Salts)	A	A	A	A	A	A	A	A	A	A	A
Maleic Acid	A	B	C	na	A	na	C	C	C	B	A
Manganese Sulfate	A	A	A	A	A	A	C	C	B	A	A
Mercuric Chloride (dilute)	A	A	A	A	A	na	C	C	C	C	C
Mercuric Cyanide	A	B	B	na	B	A	C	C	C	C	A
Mercurous Nitrate	A	B	C	na	A	na	na	C	C	C	A
Mercury	A	A	A	A	A	na	A	A	na	C	A
Methane	A	C	C	B	A	C	A	A	A	A	A
Methanol (Methyl Alcohol)	A	A	A	A	C	A	A	A	A	A	A
Methyl Acetate	A	B	C	C	C	C	A	A	B	na	B
Methyl Acetone	A	B	na	na	C	na	A	A	A	A	A
Methyl Acrylate	A	B	C	C	C	C	na	na	na	na	A
Methyl Bromide	A	C	B	C	A	na	C	B	B	B	A
Methyl Cellosolve	A	B	C	C	C	C	C	B	B	B	B
Methyl Chloride	A	C	C	C	B	C	A	A	C	A	A
Methyl Ethyl Ketone	A	B	C	C	C	C	A	A	A	A	A
Methyl Isobutyl Ketone	A	B	C	C	C	C	A	na	na	na	B
Methyl Isopropyl Ketone	A	C	C	C	C	C	C	na	na	na	na
Methyl Methacrylate	A	C	C	B	C	C	C	na	na	na	B
Methylene Chloride	A	C	C	C	B	na	B	C	B	B	A
Milk	A	A	A	A	A	A	A	C	B	C	A
Molasses	A	A	A	A	A	na	A	A	A	A	A
Monochloroacetic acid	A	C	B	C	C	na	C	C	C	C	C
Monoethanolamine	A	B	B	C	C	A	B	B	B	C	A

# chemical resistance list

	Seat materials						Metals					
	PTFE /TFM	EPDM	NBR (Buna N)	CSM (hypalon)	FKM (viton)	VMQ (silicon)	Cast iron	Ductile iron	Carbon steel	Alu bronze	SS 316	
Motor oil	A	C	A	na	A	na	A	A	A	A	A	
Naphtha	A	C	A	C	A	C	A	A	A	B	A	
Naphthalene	A	C	C	C	A	C	A	A	A	B	A	
Natural Gas	A	C	A	A	A	A	A	A	A	A	A	
Nickel Chloride	A	A	A	A	A	A	C	C	C	B	A	
Nickel Nitrate	A	A	A	C	A	na	C	C	C	na	A	
Nickel Sulfate	A	A	na	A	A	A	C	C	C	B	B	
Nitric Acid <10%	A	B	C	B	A	na	C	C	C	na	A	
Nitric Acid 70%	A	C	C	C	B	C	C	C	C	C	A	
Nitrobenzene	A	C	na	C	B	C	A	A	A	na	A	
Nitromethane	A	B	C	na	na	ba	na	na	na	na	A	
Nitrous Acid 10%	A	na	C	na	B	na	C	C	C	C	B	
Nitrous Oxide	A	na	B	C	B	na	C	B	B	na	A	
Oleic Acid	A	B	B	B	A	C	B	B	C	A	A	
Oxalic Acid (cold)	A	A	C	na	B	B	C	A	C	C	A	
Ozone	A	A	C	A	A	A	A	C	A	A	A	
Palmitic Acid	A	B	B	C	A	C	B	B	B	B	A	
Paraffin	A	C	B	na	A	na	B	A	A	A	A	
Pentane	A	C	B	na	B	C	A	A	A	A	A	
Perchloric Acid	A	B	C	C	A	C	C	na	na	na	B	
Perchloroethylene	A	C	C	C	A	C	B	B	B	na	A	
Phenol	A	B	C	C	A	C	C	C	C	C	A	
Phosphoric Acid (>40%)	A	B	C	B	A	C	C	C	C	C	A	
Phosphorus	A	na	na	na	na	na	na	na	na	na	A	
Phosphorus Trichloride	A	na	C	C	na	na	na	na	na	na	A	
Photographic Solutions	A	A	na	B	A	A	na	C	na	na	A	
Phthalic Acid	A	A	C	B	B	B	B	B	C	na	A	
Picric Acid	A	B	C	B	B	C	C	C	C	C	A	
Potassium Bicarbonate (Sat'd)	A	A	B	na	A	A	A	A	A	na	A	
Potassium Bromide	A	A	A	na	A	A	C	C	C	B	A	
Potassium Carbonate	A	A	A	na	A	na	A	A	A	B	A	
Potassium Chlorate (aqueous)	A	A	B	na	A	B	A	A	A	na	A	
Potassium Chloride	A	A	A	A	A	A	B	B	B	A	A	
Potassium Chromate	A	A	A	na	A	na	A	A	A	B	A	
Potassium Cyanide	A	A	A	A	A	A	B	B	B	C	A	
Potassium Dichromate	A	A	A	A	A	A	B	B	C	C	A	
Potassium Ferricyanide	A	A	B	A	A	na	B	B	C	na	A	
Potassium Ferrocyanide	A	A	B	A	A	na	C	C	C	C	A	
Potassium Hydroxide	A	A	A	A	C	C	B	B	B	C	A	
Potassium Hypochlorite	A	C	C	B	na	B	na	C	na	na	A	
Potassium Iodide	A	A	A	A	A	na	na	na	B	na	A	
Potassium Nitrate	A	A	A	A	A	A	B	B	B	B	A	
Potassium Permanganate 10%	A	A	C	B	A	na	A	A	A	na	A	
Potassium Sulfate	A	A	A	A	A	A	A	A	A	B	A	
Potassium Sulfide	A	A	A	B	A	A	C	C	C	C	B	
Propane	A	C	B	B	C	A	A	A	A	A	A	
Propylene Glycol	A	B	A	A	A	A	na	na	B	na	A	
Pyridine	A	B	C	C	C	C	B	B	B	na	A	
Pyrogalllic Acid	A	na	B	na	A	na	A	A	A	na	A	
Rosins	A	na	B	B	A	A	C	C	C	na	A	
Salicylic Acid	A	A	C	A	A	A	C	C	C	na	A	
Silver Nitrate	A	A	A	A	A	A	C	C	C	C	A	
Soap Solutions	A	A	A	A	A	A	A	A	A	A	A	
Sodium Acetate	A	A	C	B	C	A	B	B	C	B	A	
Sodium Aluminate (Sat'd)	A	A	A	A	A	na	B	B	A	na	A	
Sodium Bicarbonate	A	A	A	A	A	A	A	A	C	B	A	
Sodium Bisulfate	A	A	A	A	A	A	A	C	C	C	A	
Sodium Bisulfite	A	A	A	A	A	A	C	C	C	na	A	
Sodium Bromide	A	A	B	B	A	na	C	C	C	na	A	
Sodium Carbonate	A	A	A	A	A	A	A	A	A	B	A	
Sodium Chlorate	A	B	B	na	A	C	B	B	B	C	A	
Sodium Chloride	A	A	A	A	A	A	B	B	B	A	B	
Sodium Chromate	A	B	B	C	A	na	B	B	B	na	A	
Sodium Cyanide	A	A	A	A	A	A	C	A	A	C	A	
Sodium Ferrocyanide	A	A	A	B	A	na	na	na	na	na	A	
Sodium Fluoride	A	A	B	B	A	na	C	C	C	B	A	
Sodium Hydroxide (<10%)	A	A	A	A	C	A	A	A	A	A	A	
Sodium Hydroxide (30%)	A	A	A	A	C	A	B	B	B	B	A	
Sodium Hydroxide (50%)	A	A	C	A	C	A	B	B	B	C	A	
Sodium Hydroxide (70%)	A	B	C	B	C	B	B	B	C	A		
Sodium Hypochlorite (5%)	A	B	C	A	A	B	C	C	C	C	A	
Sodium Hypochlorite (sat'd)	A	C	C	A	A	B	C	C	C	C	A	
Sodium Metaphosphate	A	B	B	B	A	A	C	C	C	C	A	
Sodium Nitrate	A	A	A	A	A	C	A	A	A	B	A	

	Seat materials						Metals					
	PTFE /TFM	EPDM	NBR (Buna N)	CSM (hypalon)	FKM (viton)	VMQ (silicon)	Cast iron	Ductile iron	Carbon steel	Alu bronze	SS 316	
Sodium Perborate	A	B	B	B	B	B	B	B	B	na	A	
Sodium Peroxide	A	A	B	A	A	C	C	C	C	C	A	
Sodium Polyphosphate	A	A	A	A	A	C	B	B	B	B	A	
Sodium Silicate	A	A	A	A	A	A	A	A	A	B	A	
Sodium Sulfate	A	A	A	A	A	A	A	A	A	B	A	
Sodium Sulfide	A	A	A	A	A	A	B	B	C	C	A	
Sodium Sulfite	A	A	A	A	A	A	B	B	B	C	A	
Soybean Oil	A	C	A	A	A	na	A	A	B	B	A	
Stannic Chloride	A	A	A	C	A	B	C	C	C	C	C	
Stannous Chloride	A	C	A	A	A	B	C	C	C	C	A	
Starch	A	A	A	A	A	na	B	B	B	B	A	
Stearic Acid	A	C	A	C	A	B	C	C	C	C	A	
Stoddard Solvent	A	C	A	C	A	C	A	A	A	na	A	
Styrene	A	C	C	C	B	C	B	B	B	B	A	
Sugar (Liquids)	A	A	A	A	A	A	na	B	C	na	A	
Sulfate (Liquors)	A	B	B	B	B	A	B	C	A	na	C	
Sulfur Chloride	A	C	C	na	A	C	C	C	C	C	C	
Sulfur Dioxide (wet)	A	A	C	A	A	B	A	A	A	A	A	
Sulfur Dioxide (dry)	A	B	C	A	B	B	na	na	na	na	B	
Sulfur Trioxide	A	B	C	C	A	B	B	na	na	na	B	
Sulfuric Acid (<30%)	A	A	C	A	A	C	C	C	C	C	A	
Sulfuric Acid (30-75%)	A	C	C	B	A	C	C	C	C	C	B	
Sulfuric Acid (75-100%)	A	C	C	C	B	C	C	C	C	C	C	
Sulfuric Acid (fuming)	A	C	C	C	C	C	C	C	C	C	C	
Sulfurous Acid	A	B	n	A	A	C	C	C	C	C	A	
Tannic Acid	A	B	A	A	A	B	B	B	C	na	A	
Tanning Liquors	A	na	B	B	A	B	B	na	na	na	A	
Tartaric Acid	A	C	B	A	A	B	C	C	C	C	A	
Tetrachloroethane	A	C	C	C	B	C	na	na	na	na	A	
Tetrachloroethylene	A	C	C	C	B	C	na	na	na	na	na	
Tetrahydrofuran	A	C	C	C	C	C	na	na	na	na	na	
Toluene (Toluol)	A	C	na	C	C	C	A	A	A	A	A	
Tomato Juice	A	A	C	C	A	na	C	C	B	na	A	
Trichloroacetic Acid	A	B	B	na	C	C	C	C	C	na	C	
Trichloroethylene	A	C	C	C	A	C	B	B	B	A	A	
Triethylamine	A	na	B	na	B	na	na	na	na	na	A	
Trisodium Phosphate	A	B	B	A	A	B	B	na	na	na	A	
Turpentine	A	C	B	C	A	C	A	A	A	A	A	
Urea	A	A	A	A	A	B	na	C	C	B	na	
Urine	A	A	A	na	A	na	C	C	C	na	A	
Varnish	A	C	B	C	B	C	C	C	C	B	A	
Vegetable Oil	A	C	B	B	B	B	na	A	A	na	A	
Vinegar	A	A	C	A	C	A	C	C	C	C	A	
Vinyl Acetate	A	B	B	C	C	B	B	na	B	na	na	
Water, Acid Mine	A	A	A	A	A	B	C	C	C	C	A	
Water, Deionized	A	A	B	na	A	na	C	C	C	C	A	
Water, Distilled	A	A	A	A	A	C	C	C	C	B	A	
Water, Hot	A	A	A	A	C	na	B	B	B	A	A	
Water, Potable	A	A	A	A	A	B	B	B	B	A	A	
Water, Salt	A	A	A	A	A	B	C	C	C	B	A	
Water, Sea	A	A	A	A	A	C	C	C	C	A	B	
Whiskey & Wines	A	A	A	A	A	C	C	C	C	C	A	
White Liquor (Pulp Mill)	A	na	A	B	A	A	C	C	C	C	A	
Xylene	A	C	C	C	B	C	A	A	A	A	A	
Zinc Chloride	A	A	B	A	A	B	C	C	C	C	B	
Zinc Hydrosulfite	A	A	na	na	na	na	C	na	na	na	A	
Zinc Sulfate	A	A	A	A	A	A	C	C	C	B	A	

### ATTENTION

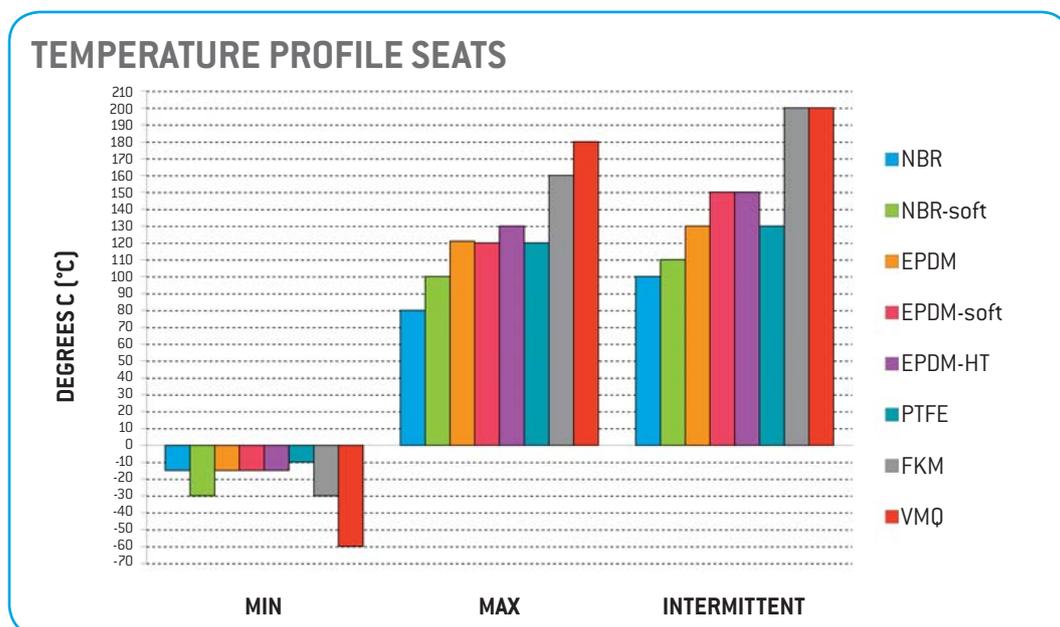
This chemical resistance guide has been compiled to assist the piping system designer in selecting chemical resistant materials. The information given is intended as a guide only, consequently it can not be used as guarantee as many conditions can affect the material choice. Careful consideration must be given to temperature, pressure and chemical concentrations before a final material can be selected. It is the responsibility of the user to check the compatibility of our products within the specific process parameters.

# rubber - seat material

The field of application and/or chemical resistance suggested by us derives from our long experience in valve manufacturing but are purely indicative. Since many factors influence the liner - type of fluid, concentration, temperature, pressure, type of flow (turbulent, laminar), impurities, etc - the final choice of liner is up to our customers based on their specific process characteristics and applications.



- EPDM** EPDM is a terpolymer elastomer made from ethylene-propylene diene monomer. EPDM has good abrasion and tear resistance and offers excellent chemical resistance to a variety of acids and alkalines. It is susceptible to attack by oils and is not recommended for applications involving petroleum oils, strong acids or strong alkalines. It has exceptionally good weather aging and ozone resistance. It is fairly good with ketones and alcohols and has excellent temperature range from -15°C until +120°C.
- NBR** is a general purpose oil-resistant polymer known as nitrile rubber. Nitrile rubber (BUNA) is a copolymer of butadiene and acrylonitrile and has a moderate temperature range from -15°C until 80°C. Nitrile has good solvent, oil, water and hydraulic fluid resistance. It displays good abrasion resistance and tensile strength. Nitrile should not be used in highly polar solvents such as acetone and methyl ethyl ketone, nor should it be used in chlorinated hydrocarbons, ozone or nitro hydrocarbons.
- PTFE** Polytetrafluoroethylene has outstanding resistance to chemical attack by most chemicals and solvents. It is especially used in applications where high mechanical strength is required. Because of its purity, inertness and electrical isolating properties, PTFE finds most of its applications in chemical-, food-, pharmaceutical- and electro-industry. Temperature ranging from -10°C to +120°C.
- FKM** Fluorocarbon elastomers are compatible with a broad spectrum of chemicals. Because of this extensive chemical compatibility, which spans considerable concentration and temperature ranges from -30°C to +160°C, fluorocarbon elastomers have gained wide acceptance as material of construction for butterfly valves. FKM can be used in most applications involving mineral acids, salt solutions, chlorinated hydrocarbons and petroleum oils. They are particularly good in hydrocarbon service however they are not suitable for hot water and steam service.
- VMQ** Silicons are primarily based on a sequence of silicon and oxygen atoms rather than a long chain of carbon atoms. This silicon-oxygen backbone is much stronger than a carbon-based backbone, making silicons much more resistant to extreme temperature, range -60°C to 180°C. In addition to being generally inert silicons are odourless, tasteless, non-toxic and fungus resistance making them suitable for food & beverage applications. Silicons are not well suited for dynamic use due to their poor tear and tensile strength. Silicons are also gas permeable.
- TFM** TFM is manufactured with PTFE and a 1% fraction of perfluoropropyl vinyl ether (PPVE). While the properties of conventional PTFE will be conserved, the additive PPVE leads to a better allocation of the PTFE particles and thus to a higher density of the molecular structure. This leads - in comparison with conventional PTFE - to a cold flow which is considerably lower for TFM, a reduced permeation that leads to better barrier properties and a smooth surface that provokes only a slight abrasion of the liner and less particles in the medium. Temperature ranging from -20°C to +200°C



EPDM – Soft is soft seat / EPDM – HT : EPDM that is manufactured through other production process which broadens temperature range

# rubber - seat material

Name	Composition	General applications	Limitations
EPDM	Ethylene-propylene Terpolymer	Water-Steam Sea Water Brine Esters Ketone Alkalis Caustic soda	Not recommended for Hydrocarbons Oils Fats
NBR	Copolymer of butadiene and acrylonitrile	Hydrocarbons Natural Gas Oils and fat Air Gasoline	Not recommended for Solvents Benzene Xylol
PTFE	PolyTetraFluoroEthylene	Solvents Corrosive products	Not recommended for fluid containing powders Alkaline metals Gaseous Fluorine
FKM	Fluorocarbon polymer	Acids Oils Hydrocarbons	Not recommended for Steam Freon Ketones Alkalis
VMQ	Organic Silicone polymer	Food & Beverage	Not recommended for Steam Oils Hydrocarbons
TFM	Tetra Fluoro Modified (modified PTFE)	High chemical demands High purity environments Corrosive liquids & gases Abrasive liquids & gases	



## DISC COATINGS

**PFA** Perfluoroalkoxy-Copolymer is a thermoplastic fluorine polymer. It is used in combination with TFM lined butterfly valves for many different and high demanding applications. PFA is very similar in composition to the fluoropolymers (PTFE) and shows the same useful properties as outstanding resistance to chemical attack, high chemical strength, low coefficient of friction, inertness and electrical isolating properties.

**HALAR** Halar fluoropolymer exhibits outstanding chemical resistance and excellent barrier properties. It is unaffected by all corrosive chemicals commonly encountered in industry. Amongst those substances that HALAR fluoropolymer is resistant to are strong mineral and oxidizing acids, alkalis, metal etching agents, liquid oxygen and essentially all organic solvents except hot amines. Typical of the fluoropolymers, HALAR is attacked by metallic sodium and potassium. Rate of attack is a function of exposure time and temperature.

**NYLON** Nylon, a synthetic thermoplastic polyamide (PA11), has many applications in a wide variety of fields where following characteristics are required: excellent resistance to corrosion, improved resistance to wear and abrasion, good impact resistance, electrical insulation, low surface friction, compatibility with food products, good hygienic properties, long service life. There are no volatile substances, toxicity, or odours released on the finished coatings, thus contributing to a healthy environment.

# operating options

Belven can supply butterfly valves for a wide range of materials and applications from cast iron material for usage with water to stainless steel for usage with corrosive media. Due to the quarter-turn control, butterfly valves are easy to operate and suited for automated processes.

Upon customer's request the butterfly valves can be supplied beside manual steering with actuated OPEN/CLOSE or full position control, both supplied with the necessary accessories. Herewith we give you a brief overview of the possibilities

## MANUAL



- LEVER in different materials, long or short model, adjustable, fail safe lever, ...
- GEARBOX in different materials such as cast iron or aluminium, standard/lockable/with chainwheel, with visual open/close indication

## PNEUMATIC

Double acting pneumatic actuator - DA

Single acting pneumatic actuator - SA

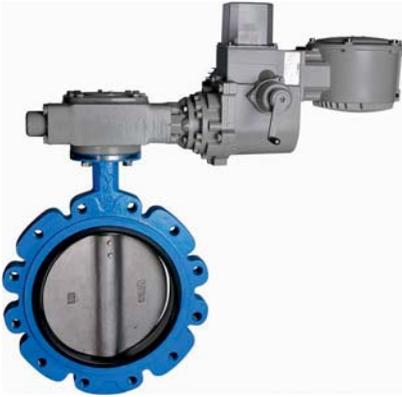
- Suitable for high duty cycles
- Fast opening and closing times
- Few moving parts: increases operational safety
- Namur design for easy mounting of accessories, as limit switches, (NAMUR) solenoid valves and bus communication systems
- Can be combined with emergency operation (manual override - MOD)

SA : Fail-safe function can easily be realized in spring closing or spring opening configuration, standard Belven chooses for operational safety – fail close position



# operating options

## ELECTRIC



Belven aims to find solutions suitable for the automation of butterfly valves for different water applications and other processes in the industrial and construction sector. The usage of electronic components of last generation, together with precise mechanic, fruit of careful research and development, enables high performance and long-term reliability of the product.

- Wide range of voltage options
- Self-locking reduction gear
- The electronic circuit adjusts automatically the motor speed depending on the mechanical charge variations in order to drive the cycle always in the same time.
- All actuators are provided with torque limiter.
- Thermal protection
- Usual required options, like extra limit switches, visual open/close indication, heater and even an emergency handwheel operator are (often) standard integrated in the actuator
- open / close and modulating duty
- Different protection classes

For more information related to our standardisation on electric actuators and brands, kindly contact our sales department.

## ELECTRIC HYDRAULIC

- High operational safety
- Modular design for easy mounting of accessories, like limit switches or visual open/close indication
- Suitable for submerged purposes (IP68) as option
- Different oil pressures possible



## ACCESSORIES

- Stem extension in steel or stainless steel
- Visual indicators
- Solenoid valves, available in different voltages /currents and available in different ATEX protection classes
- Limit switches (mechanical, inductive, capacitive, ...)



# belven. your partner for butterfly valves

## DESIGN

The Belven butterfly valve is available in many different designs to serve a wide range of applications. You'll find butterfly valves with one piece stem and two piece stem, as well as butterfly valves with one piece body as two piece body. The medium, pressure and temperature used in the pipeline will most often define the choice of the valve. Corrosive media will mostly demand stainless steel and highly resistant seats whereas watertreatment plants are served with cast iron butterfly valves with a standard rubber liner.



## RESEARCH & DEVELOPMENT

Each butterfly valve has been produced with preliminary thorough testing and research. Traceability of the product is a key factor for Belven, it can furnish you with the necessary certificates on pressure and materials. Belven continuously strives for innovation through product development and expanding its experience by daily testing its own quality system. Belven is ISO 9001 certified and has all relevant product certificates.

## SALES SUPPORT

Belven's partners are located worldwide and they can offer you the necessary support in your local market. Besides these local service points, the head offices has plenty of experienced people on each market to support you in finding the correct butterfly valve you require for.



## FOLLOW UP

At order placement, the Belven sales and logistic team follow your order carefully to ensure your goods are handled as quickly as possible. This way, you will be notified in due course when your goods can be expected your way.

# belven. your partner for butterfly valves

## DELIVERY

The central warehouse in Belgium carries a large stock of standard product types. Deliveries ex works, transport by road, cargo or air, express deliveries; all is possible through Belven's well organised logistic department. Belven supervises the transport through its contacts and will gladly organise all relevant export documentation you might require.



## REFERENCES

Belven is well organised in daily sales but has even more experience in handling large projects. If you have any questions related towards its experience in this field you are kindly requested to contact the sales departments.

**COLD WATER IN THE MIDDLE EAST  
GROWTH MARKET IN ARABIAN PENINSULA  
OFFERS MAJOR OPPORTUNITIES**

For the last few years, an increasing number of industrial and commercial sectors in an increasingly high-performance region such as Belgium, Saudi Arabia and the United Arab Emirates are offering an extraordinary number of opportunities. With a steadily increasing amount of savings, more and more industrial and commercial sectors are looking for a solution to the water supply in the region. In the case of Belven, this is the opportunity to supply water supply systems in a region where the water supply is a major challenge. This is the opportunity to supply water supply systems in a region where the water supply is a major challenge. This is the opportunity to supply water supply systems in a region where the water supply is a major challenge.

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**Reference List**

**BUTTERFLY VALVES**

- Industrial projects
- HVAC projects
- Export Projects

For updated references in interviews and publications, check the Belven website : [www.belven.com](http://www.belven.com)

For updated information related towards butterfly valve projects, contact our sales departments for our reference list.

Belven recommendations for service and after-service

**Belven Spray MG-66**

Revision date: 30-07-2008

**Description**

Belven Spray MG-66 is a special lubricant based on perfluoropolyether oils, special PTFE fillers and selected self-lubricating additives. Belven Spray MG-66 has the following characteristics:

- Excellent temperature stability
- Good resistance against wash-out by solvents like peroxide/hydroxide, nitroethane, gasoline, acetone, etc.
- Low evaporation and bleed
- Good compatibility with sensitive materials like easy welding or emitting plastics.

**Typical properties**

Viscosity	cSt	1.0 - 100
Density at 20°C	g/cm <sup>3</sup>	1.00

**Properties after evaporation of the solvent**

Color	white
Service temperature range	-40 to 200
Density at 20°C	1.00
Base oil viscosity at 40°C	100
Compressive strength	100

**belven CHECKLIST AND RECOMMENDATIONS FOR BUTTERFLY VALVES**

1093/01/008 Page 1 of 2

**MOV Hand Operated Valves**  
**MOV Motorized Operated Valves**

All points must be checked. All pages must be dated, signed for, and returned to [service@belven.com](mailto:service@belven.com)

**Storage requirements for all in- and outside installed units**

- All units must be stored inside in a clean dry place.
- Do not remove the original packing.
- All units must be protected against UV light.
- All units must be protected against water.
- All units must be protected against sand.

**Pre-installation Procedure**

Before installation make sure the valves are cleaned properly. Do NOT use any chemicals, detergents or other cleaning products.

**Cleaning procedure for MOV units**

Inspect the valve to be certain the wetness is free from dirt or any other foreign material.

- Clean the valve with a dry cloth.
- Clean the valve with compressed air.
- Clean the valve with water.

**Cleaning procedure for MVU units**

Inspect the valve to be certain the wetness is free from dirt or any other foreign material.

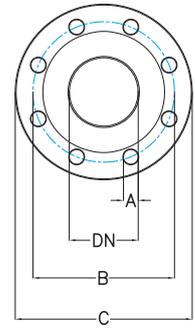
- Clean the valve with a dry cloth.
- Clean the valve with compressed air.

**For both MOV and MVU units**

- Make sure to apply Belven Spray MG-66 to the seal of the valve prior to installation. **Do not use any other lubricant to prevent malfunctioning.**

Programme: \_\_\_\_\_ Date: \_\_\_\_\_  
Contractor: \_\_\_\_\_  
Customer: \_\_\_\_\_  
Stamp and signature

# flange connections

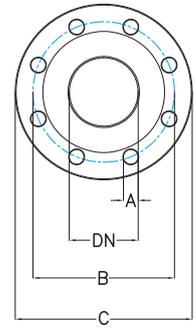


- A Diameter of holes                      # bolts    Number of bolts
- B Bolt circle diameter                    ⌀ bolts    Diameter of bolts
- C Diameter of flange

	PN 6					PN 10					PN 16				
	BS EN 1092 PN 6 (mm)					BS EN 1092 PN10 (mm)					BS EN 1092 PN16 (mm)				
DN	A	B	C	# bolts	⌀ bolts	A	B	C	# bolts	⌀ bolts	A	B	C	# bolts	⌀ bolts
32	14	90	120	4	M12	18	100	140	4	M16	18	100	140	4	M16
40	14	100	130	4	M12	18	110	150	4	M16	18	110	150	4	M16
50	14	110	140	4	M12	18	125	165	4	M16	18	125	165	4	M16
65	14	130	160	4	M12	18	145	185	4	M16	18	145	185	4	M16
80	18	150	190	4	M16	18	160	200	8	M16	18	160	200	8	M16
100	18	170	210	4	M16	18	180	220	8	M16	18	180	220	8	M16
125	18	200	240	8	M16	18	210	250	8	M16	18	210	250	8	M16
150	18	225	265	8	M16	22	240	285	8	M20	22	240	285	8	M20
200	18	280	320	8	M16	22	295	340	8	M20	22	295	340	12	M20
250	18	335	375	12	M16	22	350	395	12	M20	26	355	405	12	M24
300	22	395	440	12	M20	22	400	445	12	M20	26	410	460	12	M24
350	22	445	490	12	M20	22	460	404	16	M20	26	470	520	16	M24
400	22	495	540	16	M20	23	515	565	16	M24	30	525	580	16	M27
450	22	550	595	16	M20	26	565	615	20	M24	30	585	640	20	M27
500	22	600	645	20	M20	26	620	670	20	M24	33	650	715	20	M30
600	26	705	755	20	M24	30	725	780	20	M27	36	770	840	20	M33
700	26	810	860	24	M24	30	840	895	24	M27	36	840	910	24	M33
800	30	920	975	24	M27	33	950	1015	24	M30	39	950	1025	24	M36
900	30	1020	1075	24	M27	33	1050	1115	28	M30	39	1050	1125	28	M36
1000	30	1120	1175	28	M27	36	1160	1230	28	M33	42	1170	1255	28	M39
1200	33	1340	1405	32	M30	39	1380	1455	32	M36	48	1390	1485	32	M45
1400	36	1560	1630	36	M33	42	1590	1675	36	M39	48	1590	1685	36	M45
1600	36	1760	1830	40	M33	48	1820	1915	40	M45	56	1820	1930	40	M52
1800	39	1970	2045	44	M36	48	2020	2115	44	M45	56	2020	2130	44	M52
2000	42	2180	2265	48	M39	48	2230	2230	48	M45	62	2230	2230	48	M56

# flange connections

- A Diameter of holes                      # bolts    Number of bolts
- B Bolt circle diameter                    Ⓞ bolts    Diameter of bolts
- C Diameter of flange



## ANSI 150

NPS	ANSI B16.5 CLASS 150 (inches) ANSI B16.47 serie A (inches)					ANSI B16.5 CLASS 150 (mm) ANSI B16.47 serie A (mm)				
	A	B	C	# bolts	Ⓞ bolts	A	B	C	# bolts	Ⓞ bolts
1 1/4	5/8	3 1/2	4 5/8	4	1/2	16	89	117	4	13
1 1/2	5/8	3 7/8	5	4	1/2	16	98	127	4	13
2	3/4	4 3/4	6	4	5/8	19	121	152	4	16
2 1/2	3/4	5 1/2	7	4	5/8	19	140	178	4	16
3	3/4	6	7 1/2	4	5/8	19	152	191	4	16
4	3/4	7 1/2	9	8	5/8	19	191	229	8	16
5	7/8	8 1/2	10	8	3/4	22	216	254	8	19
6	7/8	9 1/2	11	8	3/4	22	241	279	8	19
8	7/8	11 3/4	13 1/2	8	3/4	22	298	343	8	19
10	1	14 1/4	16	12	7/8	25	362	406	12	22
12	1	17	19	12	7/8	25	432	483	12	22
14	1 1/8	18 3/4	21	12	1	29	476	533	12	25
16	1 1/8	21 1/4	23 1/2	16	1	29	540	597	16	1
18	1 1/4	22 3/4	25	16	1 1/8	32	578	635	16	29
20	1 1/4	25	27 1/2	20	1 1/8	32	635	699	20	29
24	1 3/8	29 1/2	32	20	1 1/4	35	749	813	20	32
28	1 3/8	34	36 1/2	28	1 1/4	35	863	927	28	35
32	1 5/8	38 1/2	41 3/4	28	1 1/2	41	978	1060	28	41
36	1 5/8	42 3/4	46	32	1 1/2	41	1086	1168	32	41
40	1 5/8	47 1/4	50 3/4	36	1 1/2	41	1200	1289	36	41
48	1 5/8	51 3/4	55 1/4	40	1 1/2	41	1314	1403	40	41
56	1 5/8	60 1/2	64	44	1 1/2	41	1537	1626	44	48
64	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
72	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
80	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a. = not applicable

# CV - Kv values for concentric butterfly valve

The flow coefficient is the valve sizing factor that permits the selection of the appropriate valve to meet the flow requirements in the development of a given fluid system.

## KV VALUE (m<sup>3</sup>/h)

The Kv for a valve defines the flow of water in m<sup>3</sup>/h at room temperature which flows through a fully open valve with a pressure of 1 bar.

Flow in m<sup>3</sup>/h @ Δp 1 bar

Size DN		CLOSE .....> OPEN									
INCH	MM	10°	20°	30°	40°	50°	60°	70°	80°	90°	
2"	50	0,1	3	6	13	23	38	60	90	99	
2-1/2"	65	0,1	5	10	22	39	65	102	153	169	
3"	80	0,2	8	15	34	60	100	157	237	260	
4"	100	0,3	15	31	67	120	198	313	470	516	
5"	125	0,4	25	52	114	204	337	533	800	879	
6"	150	0,7	39	82	176	315	520	824	1236	1358	
8"	200	2	77	162	351	625	1034	1637	2454	2697	
10"	250	3	130	275	597	1064	1760	2786	4179	4592	
12"	300	3	201	426	922	1643	2719	4304	6456	7095	
14"	350	5	291	615	1332	2374	3928	6218	9326	10249	
16"	400	7	399	845	1832	3265	5403	8550	12825	14094	
18"	450	9	529	1120	2427	4324	7155	11324	16987	18666	
20"	500	12	680	1416	3120	5560	9200	14561	21841	24001	
24"	600	19	1051	2225	4820	7288	12856	19581	30012	37080	
28"	700	31	1559	3130	5707	8591	14214	22495	33743	42570	
30"	750	32	1789	3789	6610	10224	15970	24747	37561	50633	
32"	800	39	1193	4120	7513	11858	17727	27000	41381	58695	
36"	900	52	2623	5788	10956	17389	27950	45150	68456	75250	
40"	1000	72	3597	7220	13164	20777	31103	47372	72606	102985	
42"	1050	301	4106	7774	14713	23349	37530	60630	91925	117713	
48"	1200	391	4614	10182	19264	26316	44032	79378	120400	132440	

Flow m<sup>3</sup>/h  
Pressure drop Δp = 1 bar

$$Kv = Cv \times 0,86$$

## CV VALUE (gpm)

The Cv values, which are still used in the USA, define the flow of water in US gallons /minute flowing through an open valve with a pressure drop on 1 psi across the valve.

Flow in gpm @ Δp 1 psi

Size DN		CLOSE .....> OPEN									
INCH	MM	10°	20°	30°	40°	50°	60°	70°	80°	90°	
2"	50	0,1	3	7	15	27	44	70	105	115	
2-1/2"	65	0,1	6	12	25	45	75	119	178	196	
3"	80	0,2	9	18	39	70	116	183	275	302	
4"	100	0,3	17	36	78	139	230	364	546	600	
5"	125	0,5	29	61	133	237	392	620	930	1022	
6"	150	0,8	45	95	205	366	605	958	1437	1579	
8"	200	2	89	188	408	727	1202	1903	2854	3136	
10"	250	3	151	320	694	1237	2047	3240	4859	5340	
12"	300	4	234	495	1072	1911	3162	5005	7507	8250	
14"	350	6	338	715	1549	2761	4568	7230	10844	11917	
16"	400	8	464	983	2130	3797	6282	9942	14913	16388	
18"	450	11	615	1302	2822	5028	8320	13168	19752	21705	
20"	500	14	791	1647	3628	6465	10698	16931	25396	27908	
24"	600	22	1222	2587	5605	8474	14949	22769	34898	43116	
28"	700	36	1813	3639	6636	9989	16528	26157	39236	49500	
30"	750	37	2080	4406	7686	11888	18570	28776	43676	58875	
32"	800	45	1387	4791	8736	13788	20613	31395	48117	68250	
36"	900	60	3050	6730	12740	20220	32500	52500	79600	87500	
40"	1000	84	4183	8395	15307	24159	36166	55084	84425	119750	
42"	1050	350	4774	9040	17108	27150	43640	70500	106890	136875	
48"	1200	455	5365	11840	22400	30600	51200	92300	140000	154000	

Flow gpm (gallons per minute)  
Pressure drop Δp = 1 psi

$$Cv = Kv \times 1,16$$

## FORMULAS

Liquid flow	$Q = Kv \times \sqrt{\Delta p / \delta}$	Q	flow (m <sup>3</sup> /h)
Pressure drop	$\Delta p = \delta \times (Q^2 / Kv^2)$	Δp	pressure drop (1 bar)
Minimum coefficient of flow	$Kv = Q \times \sqrt{\delta / \Delta p}$	δ	density (kg/dm <sup>3</sup> ), water = 1

We keep the right to change the mentioned values and text in this leaflet at any time without prior notice.

## OUR FIELD APPLICATIONS



**WATER  
TREATMENT**



**DISTRICT  
ENERGY**



**TANK  
STORAGE**



**CONSTRUCTION  
& BUILDINGS**



**PROCESS  
INDUSTRY**

## WE APPROACH YOU THROUGH

**DISTRIBUTION**

**CONTRACTING & MAINTENANCE**

**ENGINEERING**

**PROJECT DEVELOPMENT**



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