



Butterfly valves for marine cargo systems

Si-206 EN

Edition: 2007-05

Type MTV Type MTVL	Wafer design Lugged design
Nominal pressure	- PN 10 - 25 - ANSI 150
Nominal size	- DN 80 - 400
Material	- Stainless steel

The SOMAS butterfly valve types MTV and MTVL

- **Advanced triple eccentric design**
- **are designed for manual and remote operated applications.**
- **are designed for applications up to 350°C (662°F).**
- **have a tightness class in accordance with IEC 534-4 Class V as standard.**
- **have a solid seat made of stainless steel.**

Option:

- **PTFE-seat**

SOMAS butterfly valves, type MTV and MTVL are designed for manual and remote operations. This valve is designed to handle a wide range of liquids and gases within a broad temperature range.

The MTV valve can be supplied in wafer as well in lugged design (MTVL).

The valves have an advanced triple eccentric design including a unique shape of the disc allows the use of a solid stainless steel seat. The solid seat remains un-affected by high flow velocities and temperatures. A good valve function is achieved even on difficult applications.

The SOMAS valves are delivered ready for installation and operation. The manual valves are delivered with lever or gear unit and the remote operated valves can be delivered with hydraulic or pneumatic actuator on request.



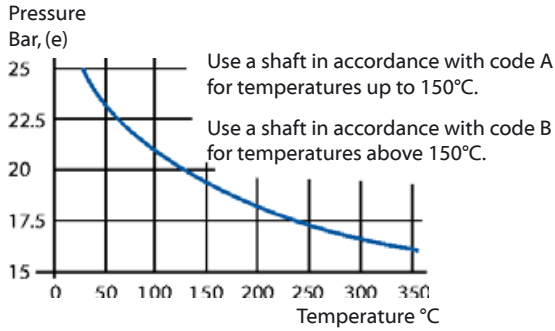


Tightness class

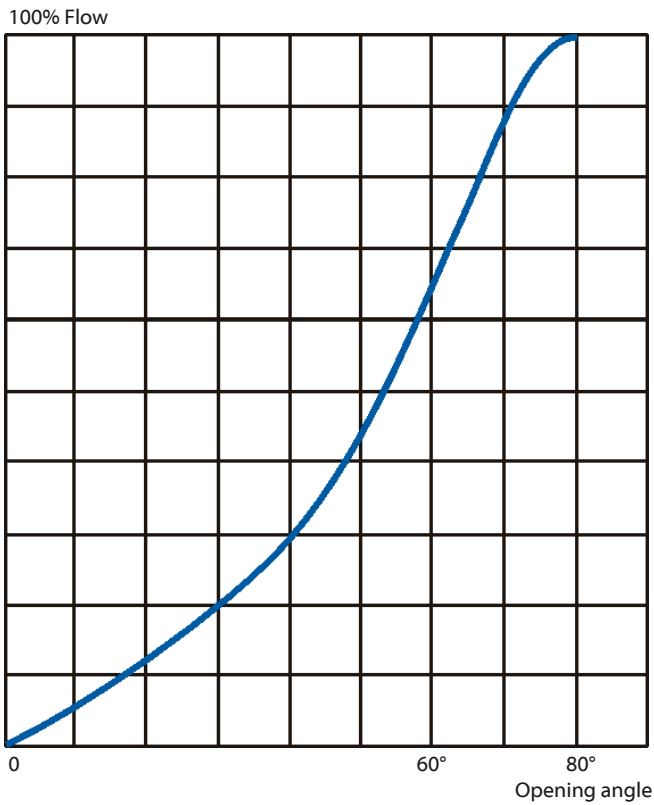
The tightness class is related to the chosen material in the seat ring.

Metal seat (Code C alt. D) IEC 534-4 Class V
 PTFE-seat (Code A) IEC 534-4 Class VI (Option)

Pressure and temperature rating



Flow characteristics



Capacity factor Kv and Resistance factor ζ for butterfly valve type MTV/MTVL

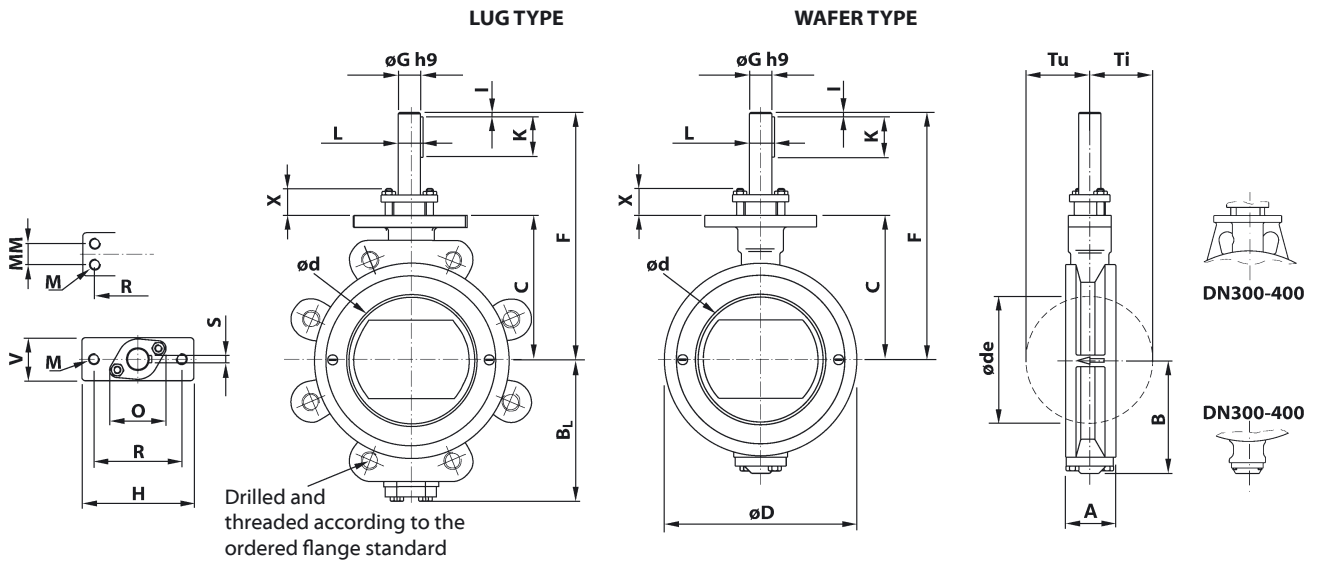
DN	Opening angle								
	10°	20°	30°	40°	50°	60°	70°	80°	ζ 80°
80	14	31	48	73	108	165	203	235	1.18
100	21	45	70	107	158	240	324	375	1.13
125	35	75	116	177	262	400	520	605	1.06
150	50	108	168	256	379	580	780	905	0.98
200	89	193	299	457	675	1030	1390	1610	0.99
250	142	307	476	727	1076	1650	2211	2555	0.95
300	207	446	692	1058	1566	2400	3219	3720	0.93
350	279	602	934	1427	2111	3230	4341	5020	0.95
400	371	800	1242	1898	2809	4300	5775	6675	0.91

Relation between Kv and Cv: $K_v = 0.86 C_v$

Max. allowable pressure drops/torque figures

Maximum allowable pressure drops are valid at 20°C.

Valve DN	PN	Max. pressure drop bar at opening angle		Torque (shaft)	
		0°	80°	Min. Nm	Max. Nm
80	25	25	4.4	120	150
100	25	25	4.4	165	220
125	25	25	5.8	220	220
150	25	25	2.7	250	300
200	25	25	1.1	290	350
250	25	25	1.05	500	600
300	25	20	1.05	620	750
350	25	20	1.09	1000	1200
400	25	20	1.43	1350	1600



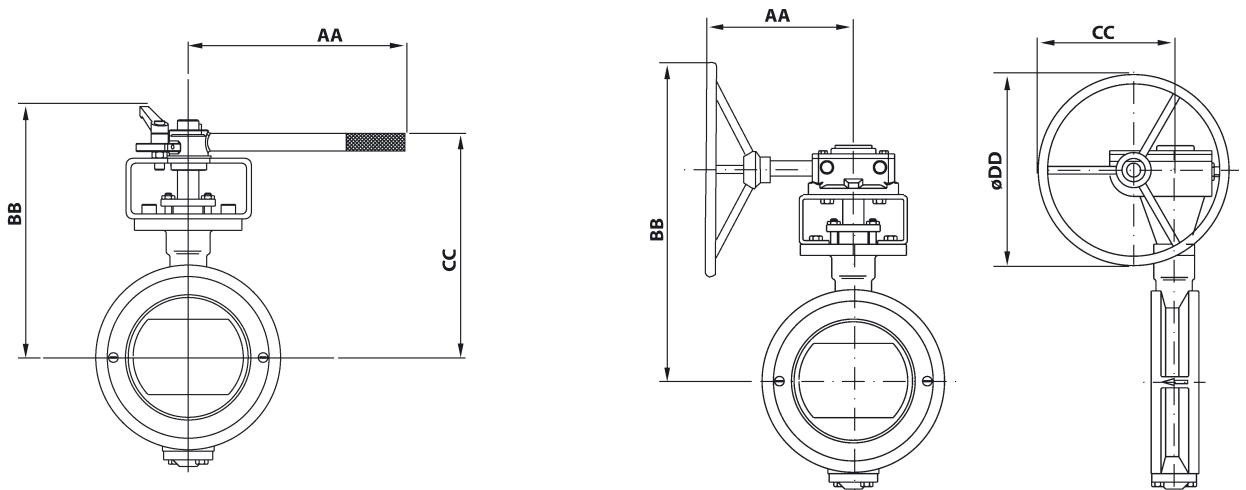
A = Face to Face dimension according to EN 558-1 series 20 and EN 558-2 series 20

Butterfly valve type MTV																					Weight			
DN	A	B	B _L	C	ϕd	ϕde	ϕD	F	ϕG	H	I	K	L	M	MM	O	R	S	V	X	Tu	Ti	MTV	MTVL
80	46	86	86	111	70	60	133	226	20	125	5	45	22.5	M12	—	61	98	6	40	30	41	38	5	10
100	52	99	129	128	90	86	160	243	20	125	5	45	22.5	M12	—	61	98	6	44	30	52	48	6	11.5
125	56	113	137	146	116	110	188	261	20	125	5	45	22.5	M12	—	61	98	6	48	30	64	60	9	15.5
150	56	127	158	161	140	138	215	276	25	125	5	45	28	M12	—	66	98	8	48	30	77	73	11	18.5
200	60	153	191*	191	187	186	270	306	25	125	5	45	28	M12	—	66	98	8	48	30	100	96	17	31
250	68	188	226	225	236	235	324	360	30	150	5	60	33	M12	24	72	123	8	50	40	124	120	26	45
300	78	261	261	265	285	285	374	400	35	150	3	50	38	M12	24	75	123	10	60	40	149	145	39	70
350	78	287	287	294	331	330	432	449	40	150	3	50	43	M12	40	95	123	12	70	50	172	167	59	100
400	102	339	339	330	382	380	485	530	50	170	3	80	53.5	M16	55	105	136	14	87	50	199	194	82	129

B_L = The B measure for butterfly valves, lugged type

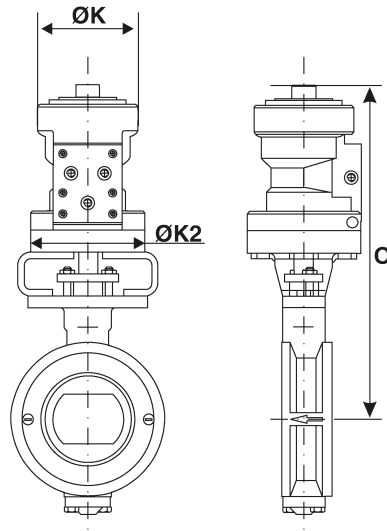
ϕde = Necessary free diameter for the disc during movement

*B_L for DN200 PN 10 and PN 20 is 154.



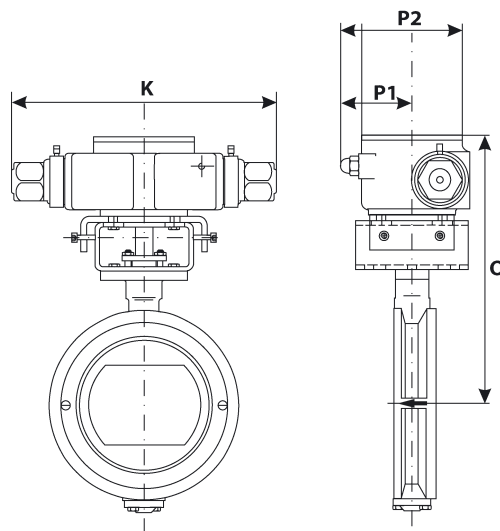
Butterfly valve type MTV with hand lever						Weight	
DN	Type	AA	BB	CC	MTV	MTVL	
80	HSR20	300	265	220	8	13	
100	HSR20	300	285	240	9	14.5	
125	HSR20	300	300	255	12	18.5	

Butterfly valve with gear unit for on-deck application							Weight	
DN	Type	AA	BB	CC	ϕDD	MTV	MTVL	
80	M10/R10/F07 SL040	190	360	190	255	13	18	
100	M10/R10/F07 SL040	190	375	190	255	14	19.5	
125	M10/R10/F07 SL040	190	395	190	255	17	23.5	
150	M10/R10/F07 SL040	190	410	190	255	19	25.5	
200	M10/R10/F07 SL040	190	440	190	255	25	39	
250	M12/R12/F12 SL040	228	545	230	305	38	57	
300	M12/R12/F12 SL040	228	585	230	305	51	82	
350	M12/R12/F12 SL040	228	615	270	305	71	112	
400	M14/R14/F14 SL040	250	680	270	355	103	150	



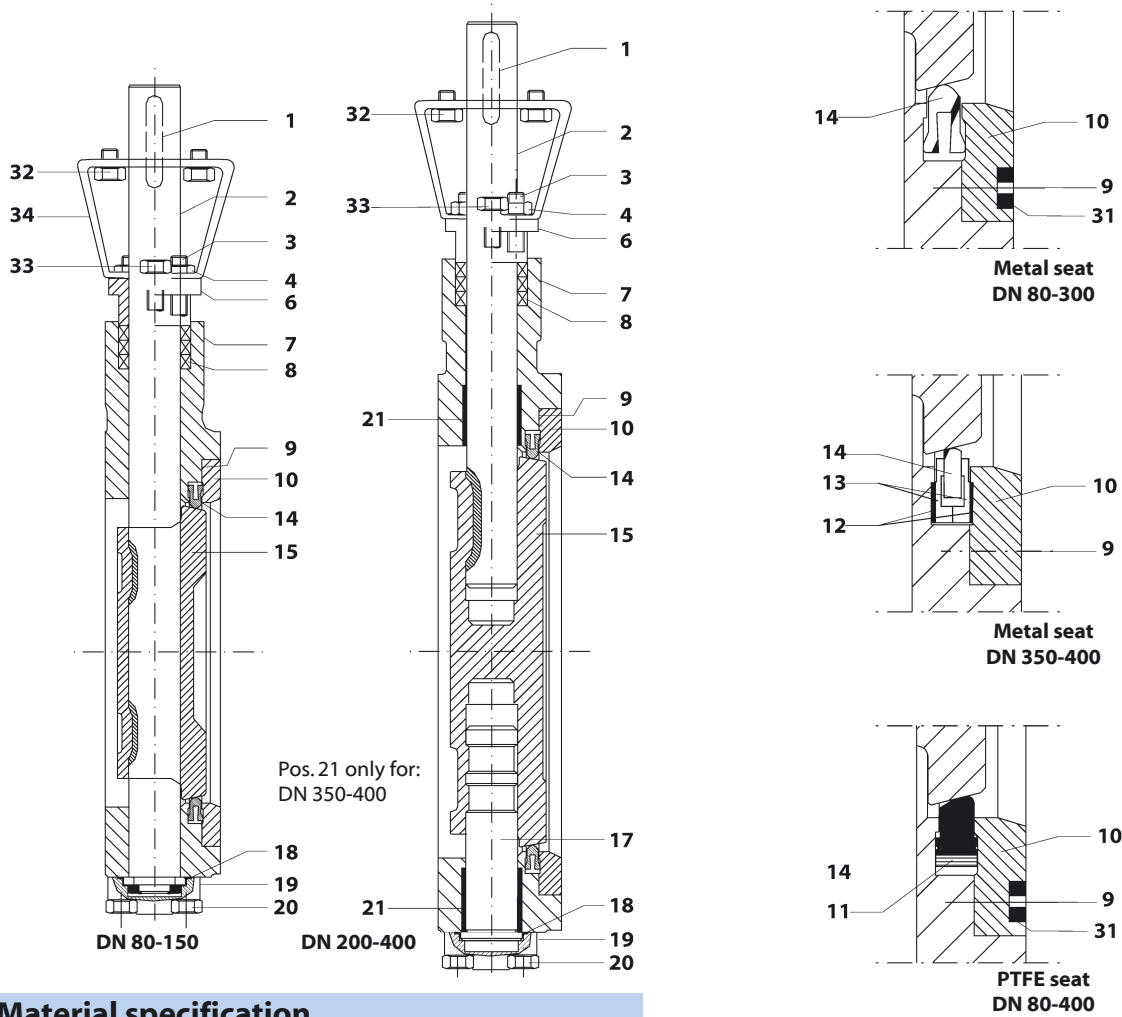
NOTE! Required supply pressure 130 bar

Butterfly valve, type MTV/MTVL with actuator type DAMCOS					
DN	Actuator type	ØK	O	ØK2	Weight
80	BRC250	104	351	118	15
100	BRC250	104	368	118	16
125	BRC250	104	386	118	19
150	BRC250	104	401	118	21
200	BRC500	126	450	132	32
250	BRC500	126	504	132	41
300	BRC1000	145	566	160	61
350	BRC1000	145	615	160	81
400	BRC2000	172	726	192	118



NOTE! Required supply pressure 130 bar

Butterfly valve, type MTV/MTVL with actuator type Skarpenord						
DN	Type	K	O	P1	P2	Weight
80	RA2-07	326	291	82	150	15
100	RA2-10	378	320	102	184	21
125	RA2-10	378	338	102	184	24
150	RA2-10	378	353	102	184	26
200	RA2-10	378	383	102	184	32
250	RA2-12	435	437	105	202	50
300	RA2-12	435	467	105	202	63
350	RA2-14	542	536	121	240	94
400	RA2-14	542	592	121	240	117

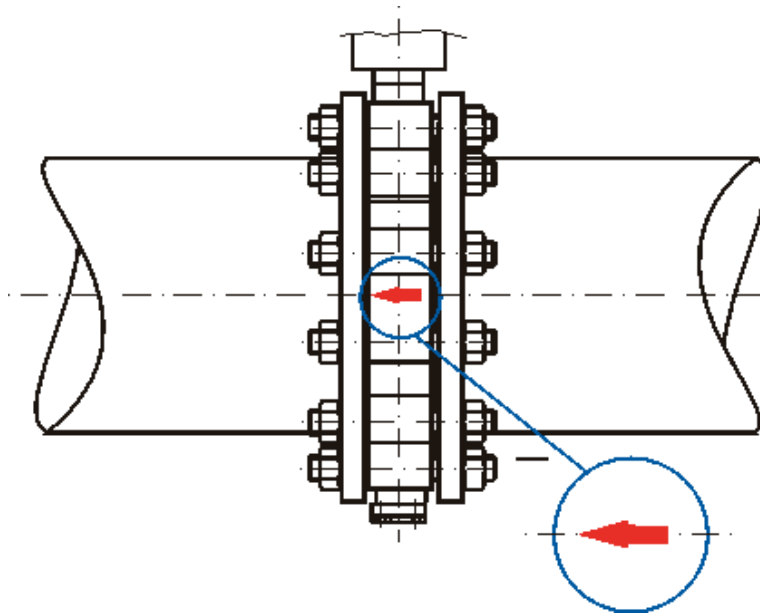


Material specification

Item No.	Description	Swedish standard	EN standard	Comparable material USA standard	Included in the spare part kit
1	Key	Steel (SS 1650-06)	Steel (C45K)	Steel (ASTM 1045)	X
2	Shaft		1.4460	AISI 329	
	Shaft ¹		1.4460 Hard chromed	AISI 329 Hard chromed	
4	Stud	A4	A4	AISI 316	
5	Nut	A4	A4	AISI 316	
6	Gland	SS 2343-12 (CF8M)	1.4408	A351 (CF8M)	
7	Valve body	SS 2343-12 (CF8M)	1.4408	A351 (CF8M)	
8	Stuffing box kit	Graphite alternative PTFE	Graphite alternative PTFE	Graphite alternative PTFE	X
9	Screw	A4	A4	AISI 316	
10	Cover plate	SS 2343-12 (CF8M)	1.4436	AISI 316	
11	Backing ring	SS 2353	1.4435	AISI 316L	X
12	Gaskets, kit ²	Graphite	Graphite	Graphite	X
13	Spring washers, kit ²	1.4462	1.4462	UNS S31803	X
14	Seat	1.4462, 1.4470 and PTFE	1.4462, 1.4470 and PTFE	UNS S31803 alternative PTFE	X
15	Disc	1.4436/SS2343-12	1.4408	A351 (CF8M)	
17	Shaft	1.4460	1.4460	AISI 329	
	Shaft ¹	1.4460 Hard chromed	1.4460 Hard chromed	AISI 329 Hard chromed	
18	Gasket	Graphite	Graphite	Graphite	X
19	Cover	SS 2343-12 (CF8M)	1.4408	A351 (CF8M)	
20	Screw	A4	A4	AISI 316	
21	Bearings sleeve ²	1.4539	1.4539	AISI 904L	
31	Gasket (DN80-300)	PTFE	PTFE	PTFE	X
32	Screw	A4	A4	AISI 316	
33	Screw	A4	A4	AISI 316	
34	Bracket		1.4436	AISI 316	

Note ¹ Temp >150 °C

Note ² DN 350-400



Mounting

Note!

The preferred flow direction is towards the flat side of the disc. When lugged valves are installed, downstream piping can be removed when the valves are in the closed position. The lugged valve can also be used for end-of-line service, in which case the fluid pressure must flow towards the flat side of the disc.

The preferred flow direction is marked with arrows on both sides of the valve.

IMPORTANT INSTALLATION INFORMATION

- Protection plates should not be removed until the valve is subject to installation.
- Counter flanges should be standard according to European or ANSI standard.
- Gaskets should be flat type (not spiral wound) in a correct quality. For dimensions see page 7 or our Operating and service instruction Mi-205 EN.
- The bolts in the flange connection should be tightened according to figures given in our Operating and service instruction Mi-205 EN.
- Before start up make sure that the pipe system is well cleaned. Remaining impurities can quickly damage seat and disc edge and make the valve untight.
- The valve should be left fully open during pipe cleaning procedure.
- For more details about maintenance see the manual Mi-205 EN.



Flange standard

SOMAS butterfly valve type MTV in this data sheet is of wafer type for mounting between flanges PN 10-25/ANSI 150.

The valve can also be delivered with "lugs"

The valve can be drilled for mounting between flanges according to ANSI, BS, e.tc.

When ordering, please state the pressure rating of the counter flanges. See valve specification system, code 11.

Seat design

The valves with a nominal size between DN 80-DN 300 have a metal seat (type Y) according to code D, while larger valves have a metal seat (3 pcs.) acc. to code C.

PTFE seat is available as an option. See the valve specification system, code 6.

Temperature ranges for seat and shaft

Seat	Max. temp.
A = PTFE (10% carbon)	170 °C
C = 1.4462 (metal seat, 3 pcs.)	350 °C
D = 1.4470 (metal seat type Y)	350 °C

Shaft	Max. temp.
A = 1.4460	150 °C
B = 1.4460 (hard chromed)	350 °C

Actuators, gears and accessories

The valves can be fitted with SOMAS gears, levers or hydraulic actuators in accordance with the selection table.

The gear material and painting is customized for on-deck applications. The painting procedure is based upon a proposal from the Jotun Company and it is named BSK-99 Corrosion Class C5 M. The type code is S7.09.

See also data sheet Ti-918 for painting procedure for on-deck applications

The valves will be delivered as tested units ready for installation.

Gasket information

Note: Use gaskets with the correct inside diameter to ensure that pressure is applied on the cover plate.

For mounting between flanges according to PN 10-25, the inside gasket diameter **should not exceed** the dimensions specified in the standard DIN-EN 1514-1.

See the table below.

Valve DN	Max. inside dia. di (mm)	Outside dia. (dy) (mm)		
		PN 10	PN 16	PN 25
80	89	142	142	142
100	115	162	162	168
125	141	192	192	194
150	169	218	218	224
200	220	273	273	284
250	273	328	329	340
300	324	378	384	400
350	356	438	444	457
400	407	489	495	514

Recommendation: Use nominal diameter as inside diameter

For mounting between flanges according to ANSI 150 dimensions according to the standard ANSI B 16.21 RF are valid where the following dimensions refer to the gasket:

Valve DN	Max inside dia. di (mm)	Outside dia. (dy) (mm) ANSI 150
80	89	136
100	114	174
125	141	196
150	168	222
200	219	279
250	273	340
300	324	410
350	356	451
400	406	515



For ordering

State desired valve according to the valve specification system below as well as type of actuator, positioner and accessories.

Valve specification system

MTV - A 5 - A A D - A 1 1 - DN... - PN...

- | | | |
|---|--|---|
| <p>1 Valve type
 MTV = Standard
 MTVL = Lugged design</p> <p>2 Valve body design
 A = Wafer design
 F = Lugged type</p> <p>3 Nominal pressure
 5 = PN 25
 4 = PN 20 / ANSI 150</p> <p>4 Material – valve body
 A = 2343-12 (CF8M)</p> <p>5 Material – disc
 A = 2343-12
 (DN80-200=1.4436)</p> | <p>6 Material – seat
 A = PTFE (10% carbon ¹)
 C = 1.4462 (metal seat, 3 pcs., DN 350–400)
 D = 1.4470 (metal seat, type Y, DN 80–300)</p> <p>7 Material – shaft
 A = 1.4460
 B = 1.4460, hard chromed</p> <p>8 Bearing – valve body/shaft
 1 = Without bearing
 7 = 1.4539</p> <p>9 Stuffing box
 1 = Graphite
 2 = PTFE</p> | <p>10 Valve size, DN</p> <p>11 Drilling, counter flanges</p> <p>¹ percentage by weight</p> <p><i>Check with SOMAS for other materials.</i></p> |
|---|--|---|

For material equivalent, see table at page 5

SOMAS reserves the right to make improvements without prior notice.



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