

# Datasheet

# Si-208 EN

## Butterfly valve for oil and gas applications MTV, MTVG, MTVL

Edition: 2024-05

- Advanced triple eccentric design
- Designed for manual and remote operated applications
- Tightness class in accordance with EN 60534-4 Class V as standard
- Solid seat made of stainless steel or a soft seat in PTFE with a backup seat in nickel alloy



<b>Type MTV</b>	<b>Wafer design</b>	<b>Material</b>	<b>CF8M (316)</b>
<b>Type MTVG</b>	<b>Wafer design with guiding lugs</b>		<b>6Mo</b>
<b>Type MTVL</b>	<b>Lugged design</b>		<b>22 Cr Duplex</b>
<b>Nominal pressure</b>	<b>PN 10 - 25 Class 150</b>		<b>25 Cr Duplex</b>
<b>Nominal size</b>	<b>DN 80 - 500 NPS 3 - 20 MTV / MTVG</b>		<b>Titanium</b>
	<b>DN 80 - 350 NPS 3 - 14 MTVL</b>		



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## Sales and distribution

Somas Instrument AB  
P.O. Box 107  
SE-661 23 SÄFFLE, Sweden  
Visiting address: Norrlandsv. 26-28

Phone: +46 533 69 17 00  
Mail to: [sales@somas.se](mailto:sales@somas.se)  
Internet: [www.somas.se](http://www.somas.se)



## Product Information

Somas butterfly valve, type MTV is 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 design, in lugged design (MTVL), and in wafer design with 4 guiding lugs (MTVG).

The valve has an advanced triple eccentric design including a unique shape of the disc which enables the use of a solid stainless steel seat as well as a soft seat. The solid seat remains unaffected 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 levers or gear units and the remote operated valves can be delivered with hydraulic or pneumatic actuators on request.



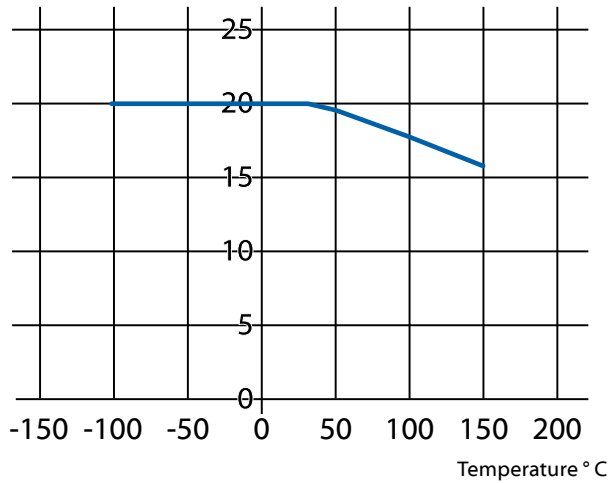
## Tightness class

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

Standard leakage class	Optional leakage class
<b>EN 60534-4</b>	<b>EN 60534-4</b>
PTFE - Class V	PTFE - Class VI ( $\leq$ DN400)
Metal - Class V	
	<b>EN 12266-1</b>
	PTFE - Rate C
	PTFE - Rate B
	Metal - Rate D

## Pressure and temperature rating

Pressure  
Bar, gauge



Minimum working temperature -60°. If lower temperatures are needed contact Somas.

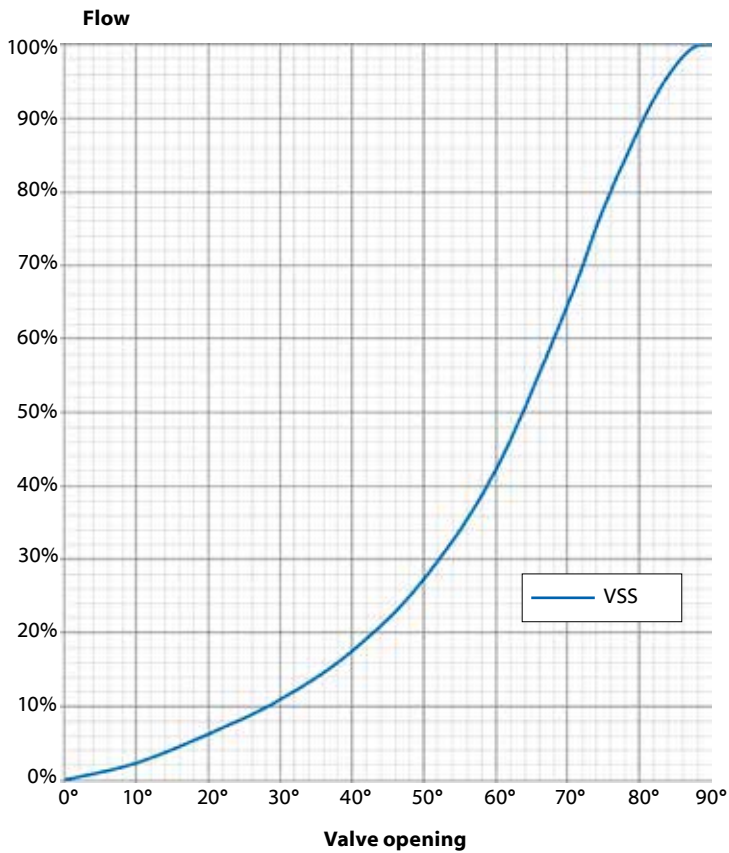
## Max. allowable pressure drops/torque figures

Maximum allowable pressure drops are valid at 20° C (see below).

Valve			Max. pressure drop in Bar		Torque (shaft)	
DN	NPS	Class	Opening angle 0°	Opening angle 80°	Min. Nm	Max. Nm
80	3	150	20	4.4	120	150
100	4	150	20	4.4	165	220
125	5	150	20	5.8	220	220
150	6	150	20	2.7	250	300
200	8	150	20	1.1	290	350
250	10	150	20	1.05	500	600
300	12	150	20	1.05	620	750
350	14	150	20	1.09	1000	1200
400	16	150	20	1.43	1350	1600
500	20	150	15	1.19	2700	3250



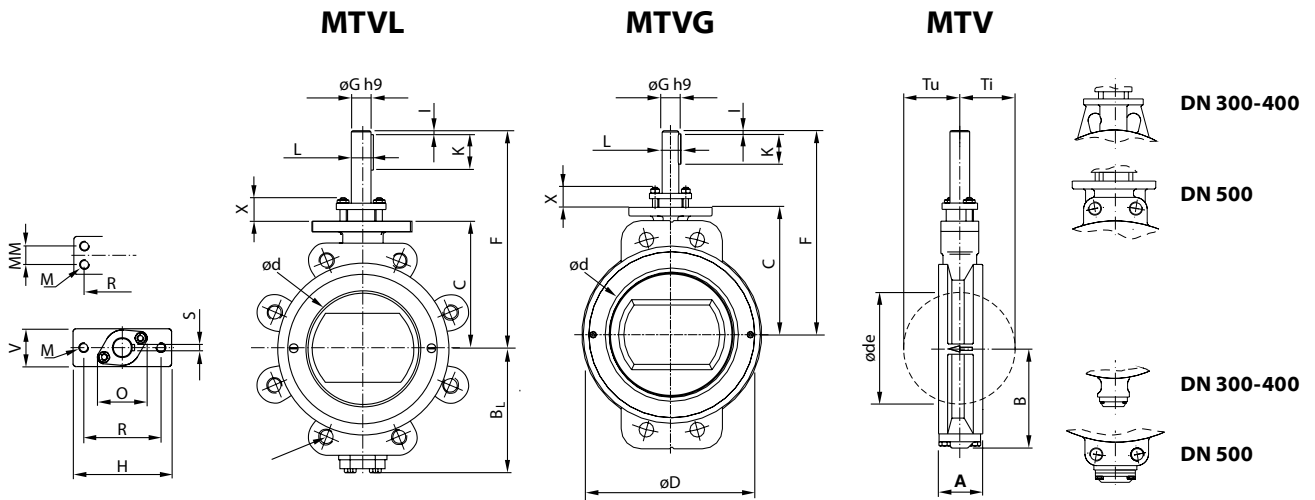
## Flow characteristics



## Capacity factor Kv and Resistance factor $\zeta$ for butterfly valve type MTV/MTVF

DN	Opening angle									$\zeta$ 90°
	10°	20°	30°	40°	50°	60°	70°	80°	90°	
80	4	11	19	31	48	75	114	157	177	3,423
100	6	17	29	47	73	113	173	237	267	2,231
125	10	27	47	76	118	182	280	384	433	1,627
150	15	41	73	116	181	280	429	589	664	1,317
200	31	84	147	236	368	568	870	1195	1347	0,996
250	55	147	258	413	644	994	1524	2092	2358	0,830
300	87	233	408	653	1019	1574	2412	3311	3732	0,727
350	128	343	601	962	1501	2317	3551	4875	5495	0,656
400	178	478	839	1342	2094	3233	4954	6802	7666	0,605
450	238	640	1122	1796	2802	4326	6630	9103	10260	0,565
500	309	828	1453	2325	3628	5600	8582	11783	13281	0,534

Relation between Kv and Cv:  $Cv = 1,156 \times Kv$



Butterfly valve type MTV

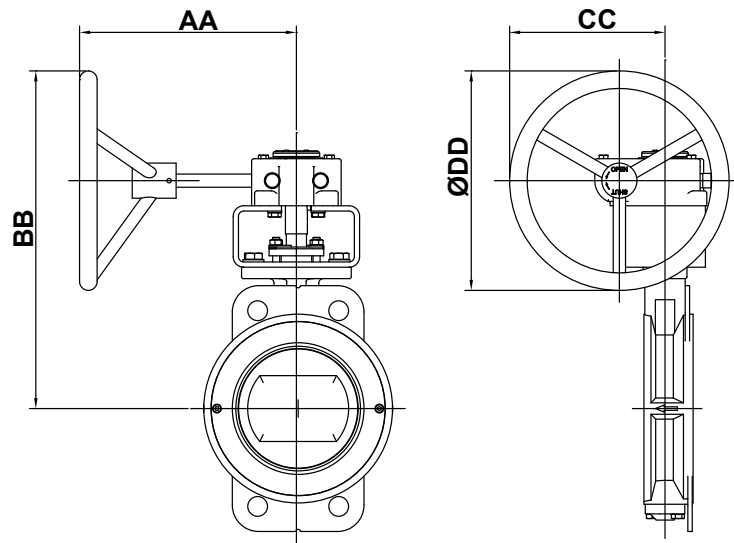
DN	NPS	A	B	BL	C	ød	øde	øD	F	øG	H	I	K	L	M	MM	O	R	S	V	X	Tu	Ti	Weight	
																								MTV	MTVL
80	3	46	86	86	111	70	60	133	226	20	125	5	45	22.5	M12	-	61	98	6	40	30	41	38	5	10
100	4	52	99	129	128	90	86	160	243	20	125	5	45	22.5	M12	-	61	98	6	44	30	52	48	6	11.5
125	5	56	113	137	146	116	110	188	261	20	125	5	45	22.5	M12	-	61	98	6	48	30	64	60	9	15.5
150	6	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	8	60	153	191 <sup>1</sup>	191	187	186	270	306	25	125	5	45	28	M12	-	66	98	8	48	30	100	96	17	31
250	10	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	12	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	14	78	287	287	294	331	330	432	449	40	150	3	70	43	M12	40	95	123	12	70	50	172	167	53	100
400	16	102	339	-	330	382	380	485	530	50	170	3	80	53.5	M16	55	105	136	14	87	50	199	194	82	-
500	20	127	396	-	395	479	475	590	605	60	210	3	90	64	M20	70	116	150	18	120	60	249	242	143	-

A = Face to Face dimension according to EN 558 series 20.

BL = The B measure for butterfly valves, lugged type.

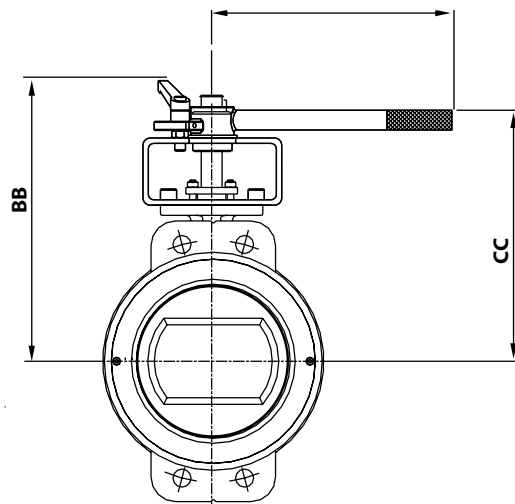
øde = Necessary free diameter for the disc under movement.

<sup>1</sup> BL for DN 200 PN 10 and PN 20 is 154.



Butterfly valve with gear unit for on-deck application

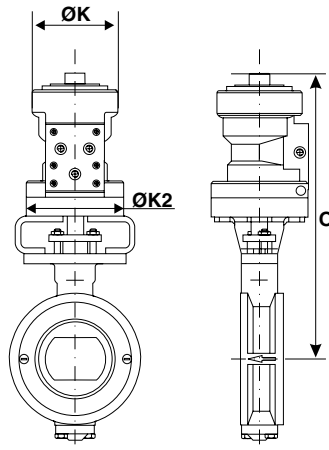
DN	NPS	Type	AA	BB	CC	øDD	Weight	
							MTV	MTVL
80	3	AB 215 W	250	342	177	200	13	18
100	4	AB 215 W	250	357	177	200	14	20
125	5	AB 215 W	250	372	177	200	17	24
150	6	AB 215 W	250	386	177	200	19	26
200	8	AB 215 W	250	414	177	200	25	39
250	10	AB 550 W	285	487	221	300	39	58
300	12	AB 550 W	285	526	221	300	52	83
350	14	AB 550 W	285	589	221	300	65	110
400	16	AB 880 W	280	667	261	350	103	-
500	20	AB 2000 W	320	866	320	500	184	-



Butterfly valve type MTV with hand lever\*

DN	NPS	Type	AA	BB	CC	Weight	
						MTV	MTVL
80	3	HSR20	300	265	220	8	13
100	4	HSR20	300	285	240	9	14,5
125	5	HSR20	300	300	255	12	18,5

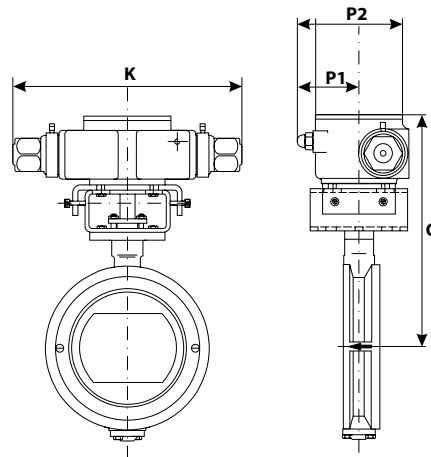
\* Hand lever type HSR is only sold together with Somas butterfly valves with soft seats and for the valve size of DN 80 - 125.



Butterfly valve type MTV/MTVL with actuator type DAMCOS

DN	NPS	Actuator	ØK	O	ØK2	Weight	
						MTV	MTVL
80	3	BRC250	104	351	118	15	20
100	4	BRC250	104	368	118	16	21.5
125	5	BRC250	104	386	118	19	25.5
150	6	BRC250	104	401	118	21	28.5
200	8	BRC500	126	450	132	32	46
250	10	BRC500	126	504	132	41	60
300	12	BRC1000	145	566	160	61	92
350	14	BRC1000	145	615	160	81	122
400	16	BRC2000	165	726	192	118	-
500	20	BRC4000	215	854	258	216	-

NOTE! Required oil supply pressure 130 bar.



Butterfly valve type MTV/MTVL with actuator type Skarpenord

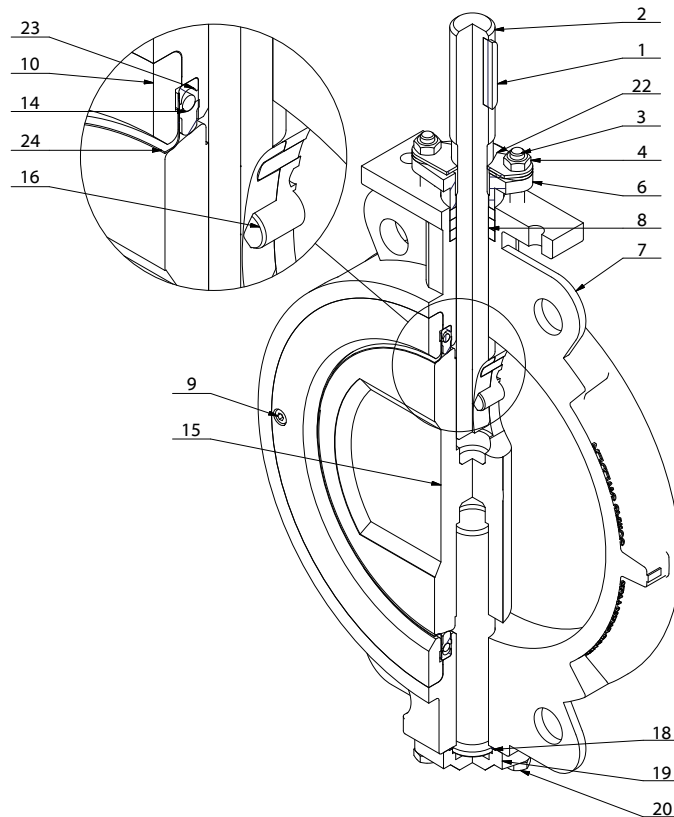
DN	NPS	Actuator	K	O	P1	P2	Weight	
							MTV	MTVL
80	3	RA2-07	326	291	82	150	15	20
100	4	RA2-10	378	320	102	184	21	26.5
125	5	RA2-10	378	338	102	184	24	30.5
150	6	RA2-10	378	353	102	184	26	33.5
200	8	RA2-10	378	383	102	184	32	46
250	10	RA2-12	435	437	105	202	50	69
300	12	RA2-12	435	467	105	202	63	94
350	14	RA2-14	542	536	121	240	94	135
400	16	RA2-14	542	592	121	240	117	-
500	20	RA2-16	744	739	148	306	227	-

NOTE! Required oil supply pressure 130 bar





Wafer design with 4 unthreaded guiding lugs - also available in wafer design and lugged design.



## Stainless steel type CF8M (316)

Valve datasheet VDS BUAS20R

No.	Qty.	Component	Datasheet	Material	Note
1	1	Key			
2	1	Shaft		EN 10088-3 - 1.4435	
3	2	Stud screw		SS 316L (Bumax 88)	PED-approved equivalent to ASTM A320 B8M Cl.2
4	4	Nut		SS 316L (Bumax 88)	PED-approved equivalent to ASTM A320 B8M Cl.2
6	1	Stuffing box gland		ASTM A351 CF8M	
7	1	Valve body wafer, 4 guiding lugs, unthreaded	MDS SO2	ASTM A351 CF8M	
8	1	Stuffing box kit		Expanded Graphite	Purity >98%
9	2	Screw		SS 316L (Bumax 88)	PED-approved equivalent to ASTM A320 B8M Cl.2
10	1	Cover plate		EN 10088-2-1.4404	
14	1	Seat		PTFE (10% Carbon)	
15	1	Disc		ASTM A351 CF8M	
18	1	Gasket		Expanded Graphite	Purity >98%
19	1	Plug		ASTM A351 CF8M	
20	2	Screw		SS 316L (Bumax 88)	PED-approved equivalent to ASTM A320 B8M Cl.2
22	2	Securing plate		EN 10088-2 - 1.4404	
23	1	Guide ring		ASTM A743 - CK-3MCuN	
24	1	Fire-safe seat	EDS N01	ASTM B443 UNS N06625 gr.1	

Design according to EN 593, API 609, ASME B16.34.

Pressure test according to EN 60534-4/API 598 including a High Pressure Closure Test.

Overall dimensions and weights according to separate drawings.

Fire safe certified according to EN ISO 10497 and API 607.

If not specified above, wetted parts suitable for sour service according to NACE MR0175.

Plant specific valve datasheets may include deviations to above general specification.



## Stainless steel type 6Mo

### Valve datasheet VDS BUAR20R, BUAR27R, BUAR30R

No.	Qty.	Component	Datasheet	Material	Note
1	1	Key			
2	1	Shaft	MDS R14 EDS NIP1 MDS R17 rev.3	ASTM A276 UNS S31254	
3	2	Stud	MDS NB02 / S66	ASTM A453Gr 660 A	
4	4	Nut	MDS NB02 / S66	ASTM A453Gr 660 A	
6	1	Stuffing box gland		ASTM A351 CK-3MCuN EN 10272-1.4547	
7	1	Valve body wafer, 4 guiding lugs, unthreaded	MDS R16 rev.2	ASTM A351 CK-3MCuN	VDS BUAR20R BUAR27R
7	1	Valve body lugged	MDS R16 rev.2	ASTM A351 CK-3MCuN	VDS BUAR30R
8	1	Stuffing box kit		PTFE	VDS BUAR27R
8	1	Stuffing box kit		Exp. Graphite, purity >98%	VDS BUAR20R, BUAR30R,
9	2	Screw	MDS NB02 / S66	ASTM A453 Gr.660 A	
10	1	Cover plate		EN 10088-2-1.4547	
14	1	Seat		ASTM A351 CK-3MCuN EN 10028-7-1.4547	
15	1	Disc		ASTM A351 CK-3MCuN	
18	1	Gasket		Expanded Graphite	
19	1	Plug		ASTM A351 CK-3MCuN EN 10272-1.4547	
20	2	Screw	MDS NB02 / S66	ASTM A453 Gr.660A	
31	2	Gasket		PTFE	
40	1	Antistatic plate		EN 10088-2-1.4539	

Design according to EN 593, API 609, ASME B16.34.

Pressure test according to EN 60534-4/API 598 including a High Pressure Closure Test.

Overall dimensions and weights according to separate drawings.

Fire safe certified according to EN ISO 10497 and API 607.

If not specified above, wetted parts suitable for service according to NACE MR0175.

Plant specific valve datasheets may include deviations to above general specification.

## Stainless steel type 22 Cr Duplex

### Valve datasheet VDS BUAD20R

No.	Qty.	Component	Datasheet	Material	Note
1	1	Key		EN 10088-3 - 1.4462	
2	1	Shaft	MDS D47	ASTM A479 UNS S31803/32205	
3	2	Stud screw	EDS NB02	ASTM A193 gr. B7	ASTM A153 hot dip galvanized
4	2	Nut	EDS NB02	ASTM A194 gr. 2H	ASTM A153 hot dip galvanized
6	1	Gland		EN 10213 - 1.4470/EN 10272 - 1.4462	
7	1	Valve body wafer, 4 guiding lugs, unthreaded	MDS D46	ASTM A995 4A	
8	1	Gland packing		Expanded Graphite	Purity >98%
9	2	Screw	EDS NB02	ASTM A193 gr. B7	ASTM A153 hot dip galvanized
10	1	Cover plate		EN 10088-2/3 - 1.4462/EN 10283 - 1.4470	
14	1	Seat		PTFE (10% Carbon)	
15	1	Disc	MDS D46	ASTM A995 4A	
16	2	Cylindrical pin		EN 10088-3 - 1.4462	
18	1	Gasket		Expanded Graphite	Purity >98%
19	1	Plug		EN 10213 - 1.4470/EN 10272 - 1.4462	
20	2	Screw	EDS NB02	ASTM A193 gr. B7	ASTM A153 hot dip galvanized
22	2	Securing plate		EN 10088-2 - 1.4462	
23	1	Guide ring		ASTM A743 - CK3MCuN	
24	1	Fire-safe seat	EDS N01	ASTM B443 UNS N06625 gr. 1	

Design according to EN 593, API 609, ASME B16.34.

Pressure test according to EN 60534-4/API 598 including a High Pressure Closure Test.

Overall dimensions and weights according to separate drawings.

Fire safe design.

If not specified above, wetted parts suitable for sour service according to NACE MR0175.

Plant specific valve datasheets may include deviations to above general specification.



## Stainless steel type 25 Cr Duplex

Valve datasheet VDS BUAD21R, BUAD27R

No.	Qty.	Component	Datasheet	Material	Note
1	1	Key		1.4571	
2	1	Shaft	EDS NIPI/MDS D57 rev.3	ASTM A276 UNS S32750	<61 mm shaft dia.
3	2	Stud		BUMAX 88	
4	4	Nut		BUMAX 88	
6	1	Stuffing box gland		ASTM A351 CF8M	
7	1	Valve body wafer, 4 guiding lugs unthreaded	MDS D56 rev.3	ASTM A995 5A	VDS BUAD21R, BUAD27R
8	1	Stuffing box kit		Exp. Graphite, purity >98%	VDS BUAD21R
8	1	Stuffing box kit		PTFE	VDS BUAD27R
9	2	Screw		BUMAX 88	
10	1	Cover plate		EN 10088-7-1.4410	
14	1	Seat		ASTM A351 CK-3MCuN/ EN 10028-7-1.4547	
15	1	Disc	MDS D54/NIPI/ D56 rev.3	ASTM A995 5A	
18	1	Gasket		Expanded Graphite	
19	1	Plug		ASTM A276 UNS S32750	
20	2	Screw		BUMAX 88	
31	2	Gasket		PTFE	
40	1	Antistatic plate		EN 10088-2-1.4539	

Design according to EN 593, API 609, ASME B16.34.

Pressure test according to EN 60534-4/API 598 including a High Pressure Closure Test.

Overall dimensions and weights according to separate drawings.

Fire safe design.

If not specified above, wetted parts suitable for sour service according to NACE MR0175.

Plant specific valve datasheets may include deviations to above general specification.

## Titanium

Valve datasheet VDS BUAT20R

No.	Qty.	Component	Datasheet	Material	Note
1	1	Key			
2	1	Shaft		ASTM B348 Gr.5	
3	2	Stud screw	EDS NB02/MDS D57	ASTM A479 UNS S32750	
4	2	Nut	EDS NB02/MDS D57	ASTM A479 UNS S32750	
6	1	Stuffing box gland		ASTM B348 Gr.2	
7	1	Valve body wafer, 4 guiding lugs, unthreaded	MDS T02	ASTM B 367 gr. C-2	
8	1	Stuffing box kit		Expanded Graphite	Purity >98%
9	2	Screw	EDS NB02/MDS D57	ASTM A479 UNS S32750	
10	1	Cover plate		ASTM B265/B348/B367 gr.2	
14	1	Seat		PTFE (10% Carbon)	
15	1	Disc	MDS T02	ASTM B367 gr.2	
16	2	Cylindrical pin		ASTM B348 gr.2	
18	1	Gasket		Expanded Graphite	Purity >98%
19	1	Plug		ASTM B265 Gr.2	
20	2	Screw	EDS NB02/MDS D57	ASTM A479 UNS S32750	
22	2	Securing plate		ASTM B265 gr.2	
23	1	Guide ring		ASTM B348/B265 gr.2	
24		Fire-safe seat	EDS N01	ASTM B443 UNS N06625 gr.1	

Design according to EN 593, API 609, ASME B16.34.

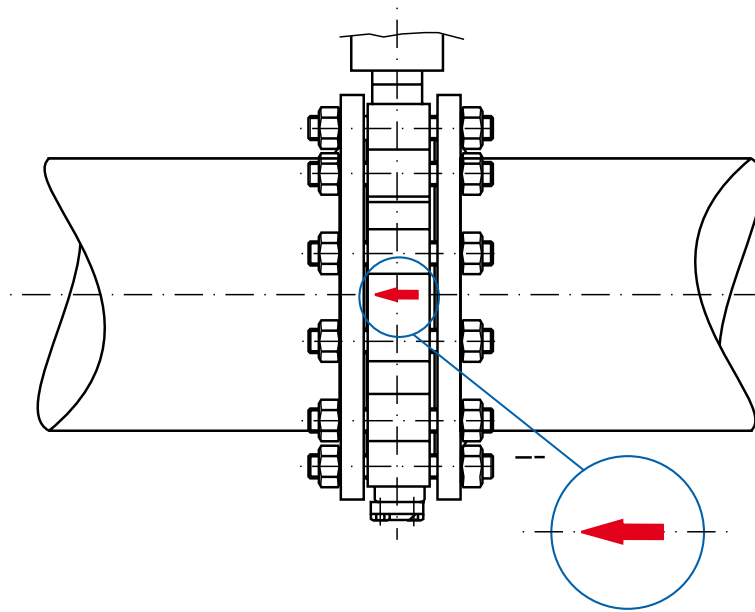
Pressure test according to EN 60534-4/API 598 including a High Pressure Closure Test.

Overall dimensions and weights according to separate drawings.

Fire safe design.

If not specified above, wetted parts suitable for service according to NACE MR0175.

Plant specific valve datasheets may include deviations to above general specification.



## Mounting

### Note!

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 ASME standard.
- Gaskets should be flat type (not spiral wounded) in a correct quality. For dimensions see page 11 or our service and operating instruction Mi-205EN.
- The bolts in the flange connection should be tightened according to figures given in our service and operating instruction Mi-205EN.
- 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-205EN.



## Flange standard

Somas butterfly valve type MTV in this data sheet is of wafer design, lugged design or wafer design with 4 guiding lugs, for mounting between flanges PN10 - 25/ and Class 150 according to ASME B16.5:2003.

Other flange standards can be used as well.

When ordering, please state the pressure rating of the counter flanges. See valve specification system, page 12, code 13.

## Actuators, gears and accessories

The valves can be fitted with Somas manual, on/off or control actuators in accordance with the selection tables in this data sheet. The valves will then be delivered as tested units ready for installation.

In the documents library on [www.somas.se](http://www.somas.se) there is also information about positioners, limit switches and solenoid valves.

We can also fit other types of actuators and accessories in accordance with your specification.

## Supplemental 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 PN10 - 25, the inside gasket diameter should not exceed the dimensions specified in the standard EN 1514-1.

**Gaskets according to EN 1514-1**

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
500	508	594	617	624

For mounting between flanges according to Class 150 dimensions according to the standard ASME B 16.21 RF, where the following dimensions refer to the gasket.

**Gaskets according to ASME B 16.21 RF**

Valve DN	Max. Inside dia. di (mm)	Outside dia. (dy) (mm)
		Class 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
500	508	606



## **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 4 - E S D - F 1 1 - DN... - D... - B... - PN...**

1            2    3            4    5    6            7    8    9            10            11            12            13

### 1 Type of valve

*Wafer design*

MTV

*Wafer design with guiding lugs*

MTVG

*Lugged design*

MTVL

### 2 Valve body design

A = Wafer design

F = Lugged design

G = Wafer design with 4 guiding lugs, unthreaded

### 3 Nominal pressure

4 = Class 150

### 4 Material – valve body

X = ASTM A351 CF8M

E = ASTM A351 CK-3MCuN

X = ASTM A995 4A

X = ASTM A995 5A

X = ASTM B367 gr. C-2

### 5 Material – disc

X = ASTM A351 CF8M

S = ASTM A351 CK-3MCuN

X = ASTM A995 4A

X = ASTM A995 5A

X = ASTM B367 gr. C-2

### 6 Material – seat

A = PTFE (10% Carbon)

D = EN 10213-1.4470 (type Y seat)

X = ASTM A351 CK-3MCuN/EN 10028-7-1.4547

### 7 Material – shaft

F = EN 10088-3-1.4435

X = ASTM A276 S31803

X = ASTM A276 S32750

X = ASTM A276 S31254

X = ASTM B348 Gr.5

### 8 Bearings – valve body/shaft

1 = Without bearing

4 = Rulon LR

### 9 Stuffing box

1 = Graphite

2 = PTFE

### 10 Valve size, DN/NPS

### 11 Shaft diameter

### 12 Actuator mounting flange drilling

### 13 Drilling, counter flanges PN/Class

*Somas reserves the right to make improvements without prior notice.*



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LinkedIn

*Head office:*

**Somas Instrument AB**

Norrlandsvägen 26

SE-661 40 SÄFFLE

Sweden

Phone: +46 (0)533 69 17 00

E-mail: [sales@somas.se](mailto:sales@somas.se)

[www.somas.se](http://www.somas.se)

