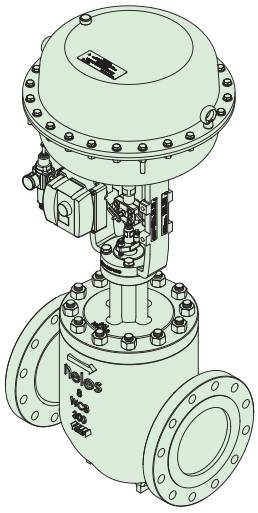
Neles™ Omega™ globe valves
Series GM

The series GM, Omega trim valves are most suitable for high pressure drop applications of both compressible and uncompressible fluids as it enables the flow velocity to be controlled through the multistage Omega trim. Also, series GM range of valves combines high integrity features, such as 2 or 3 dimensional flow path multistage trim, a high flow capacity and a wide range of 'OMEGA' trim designs. This means it is ideally suited to meet the various severe service process control requirements that are demanded from a wide range of industry related applications. The 'OMEGA' trim design is a multi-passage, multiturn disk stack trim. There are 6-30 turns designs available depending on pressure drop and potential for cavitation. The fluid passes through the flow passage generated by the Omega multistage trim. The pressure drop is staged across the stacks so that the pressure drop progressively reduces as it passes through the steps of the trim. This gives excellent resistance to cavitation on high pressure drop applications. Standard valves are equipped with VD spring diaphragm actuators, VB or VC cylinder actuators with Neles™ intelligent valve controllers for precise flow control, extended operational life and performance monitoring on-line.



Construction

- Various construction design available with a range of different end styles and connections
- The Omega standard balanced trim design is based on 2 or 3 dimensional multistage cage and balanced plug.
- The multistage trim shape defines the flow path through the valve and flow characteristics of the valve (linear, equal percentage or others), standard trim characteristic is linear.
- The balancing holes are located in the top of the plug. This trim is specially suited to high pressure drop application and is used in the majority of control applications.
- Wide variety of trims with different Cv and characteristics
- Both metal and soft seats are available depending the application
- Optional bellows seal for toxic or other applications where no stem seal leakage is allowed
- Wide material selection for different applications
- Many end connection styles available for different applications
- Extension bonnet design for wide temperature range
- Nickel films are applied as brazing foil to connect disk stacks

Wide range of applications

- Suitable for gas, liquid and steam
- Wide temperature ranges from -196 ... +593 °C (-320 ... +1099 °F) with different bonnet constructions. Temperature limits -29 ... +425 °C / (-20 ... +797 °F) with standard bonnet construction, over +425 °C (+797 °F) and under -29 °C / (-20 °F) with extended bonnets
- Large variation of trim designs for multi-turns and passages for low-noise, and anti-cavitation applications
- Wide range of applicable noise control components, silencers, attenuate plates
- Inherently characterized trim offered in linear, and optionally equal percentage.
- Large range of trims per size allowing for wide rangeability in process conditions
- Clamped cage for heavy duty guiding on severe service applications
- High integrity cage guiding system
- Double packing available

Benefits of 'OMEGA' trim applications

- Quick change trim and top entry construction for easy in-line maintenance
- Self guided components makes for easy valve assembly
- All trim components removable from the top side for easy maintenance
- Prolonged trim and valve life time
- Effective noise control
- Reduction of cavitation damage and pipe fatigue
- Stable process control
- Faster start-up, reduced system managing cost
- Neles™ digital valve controller with online diagnostics enables performance follow up and predictive maintenance
- Efficient asset management with any FDT frame application and excellent networking capabilities

Accurate control & performance

- ND9000 digital valve controller for auto-calibration and accurate control
- Accurate and sensitive diaphragm and cylinder actuators
- Stable flow control with high rangeability
- Low-noise, anti-cavitation control and erosion resistant trims
- Streamline flow passage to secure capacity

Safety and quality

- Rugged one piece body structure to minimize leakage paths and make the valve less insensitive from prone stress
- Strictly tested to ensure specified performance with quality assurance systems in according to ISO 9001
- Certified ISO 15848 fugitive emissions
- Certified CE/PED & ATEX, TSG & EAC (GOST-R)
- Certified SIL (Safety Integrity Level) in accordance to IEC61508

Applications for 'OMEGA' trim

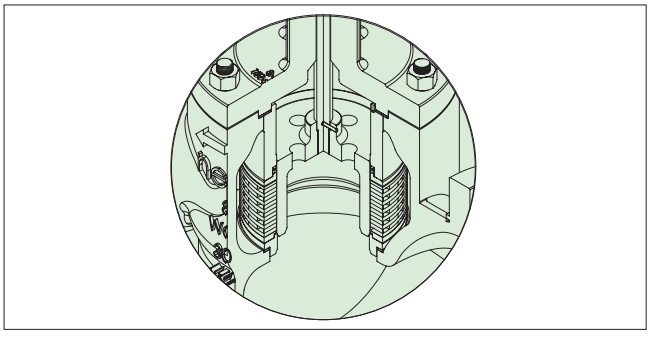
Severe services in power plant

- Flow control for main & start-up feed pump recirculation
- Main & booster feed water control
- Condensate booster pump recirculation
- Deaerator level control
- Turbine by-pass & steam generator blow down
- Auxiliary steam shoot blower control
- Boiler start-up main steam spray
- Pressurizer & POSRV
- Chemical & Volume Control System (CVCS) letdown
- HP coolant injection
- Atmospheric steam dump
- Atmospheric venting silencer

Severe services in oil & gas plant

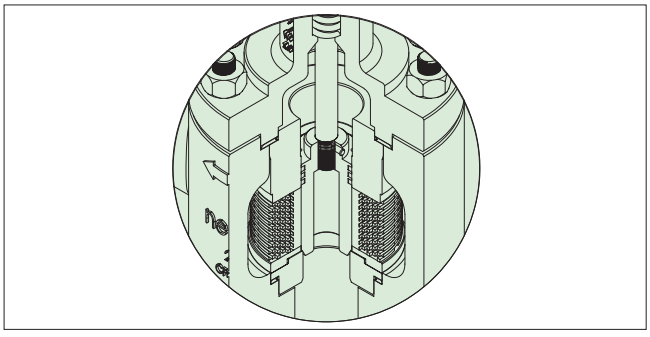
- Compressor anti-surge, kick back & recycle
- Pump minimum flow & recirculation
- Blow down discharge to vent flare
- Reactor de-pressurization
- Turbo expander by-pass
- Gas injection lift control
- Gas storage pressure letdown
- Gas flow regulation
- Pipeline anti-surge
- Heavy oil letdown
- Ethylene letdown
- Steam vent to atmosphere
- Well head choke valves

Different trim designs



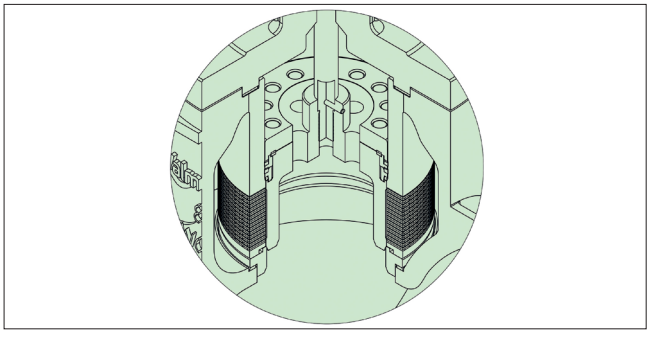
Omega quick change, Standard balanced trim

The Omega standard balanced trim design is based on 2 or 3 dimensional labyrinth disk stack cage and balanced plug.
The opened disk stack shape defines the flow path through the valve and flow characteristics of the valve (linear, equal percentage, others), standard trim characteristic is linear.
The balancing holes are located in the top of the plug. This trim is specially suited to high pressure drop application and is used in the majority of control applications.



Omega quick change, High temperature graphite seal trim

Multiple graphite seal ring construction is ideal solution for high temperature applications requiring FCI 70-2 Class III or IV tightness. It can be used in various high temperature applications, including high pressure service. The trim is compatible with both standard cage and Tendril trims.



Omega quick change, high temperature metal seal trim

High temperature metal seal trim will enable the valve to achieve tightness of FCI 70-2 Class V at high temperature up to 593'C. This seal is compatible with both standard trim and anti-cavitation trim.

GM Application guide

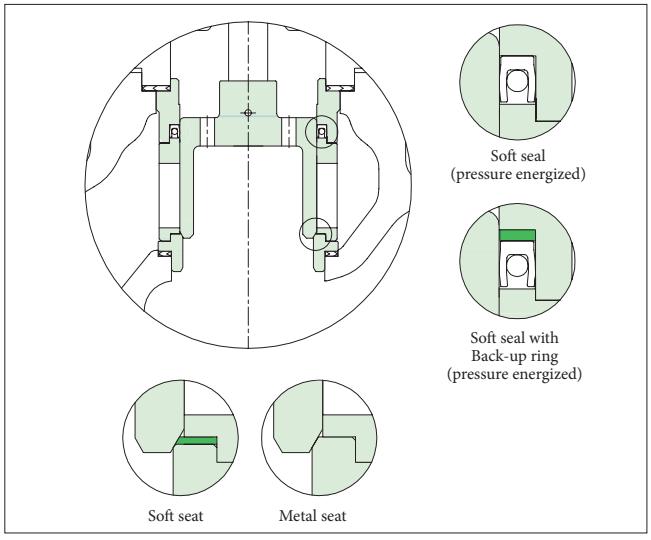
Temperature range

PTFE + Graphite pressure energized seal with metal seat:	-56...+260 °C
PTFE + Graphite + Carbon pressure energized seal with metal seat:	-56...+320 °C
PTFE pressure energized seal with metal seat:	-196...+232 °C
High temperature graphite seal with metal seat:	-56...+540 °C
High temperature metal seal with metal seat:	-56...+593 °C

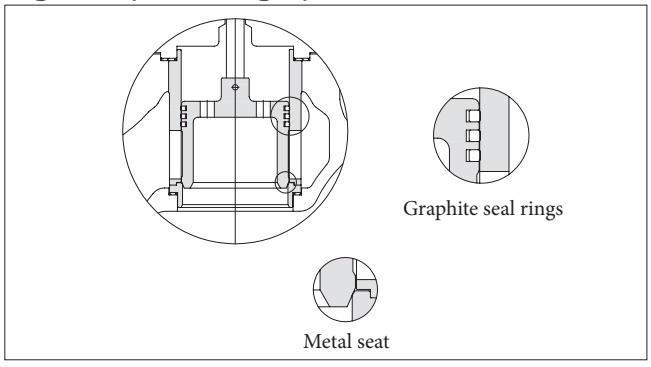
Pressure energized seal ring construction

ANSI FCI 70-2 Class IV and V available with metal and soft seat.

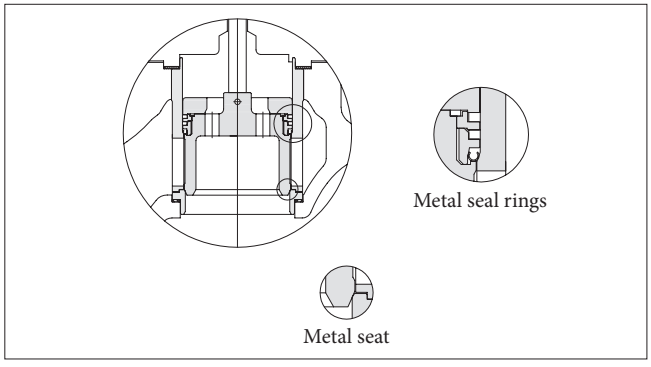
Seal-ring & seat solutions for GM valve trims



High temperature graphite seal construction



High temperature metal seal construction



Temperature range with different body and stud/nut materials

Body, bonnet material	Stud molt, nut application	Temp. range (°C)	Sign 18
Carbon steel (WCB)	ASTM A193-B7M STUD / ASTM A194-2HM NUT	-29...+425	G
Stainless steel (CF3, CF8, CF3M, CF8M)	ASTM A193-B8M / ASTM A194 -8M NUT	-196...+425	D
Stainless steel (CF3, CF8, CF3M, CF8M)	A453 gr. 660 / A453 gr. 660	-196...+593	E
Cr.Mo. Steel (WC6, WC9,C12A)	ASTM A193-B16 STUD / ASTM A194-4 NUT	-29...+593	H

Trim materials

GB,Trim				Temp.range (°C)	Sign 8, 9, 10, 11, 12, 13
Plug	Stem	Seat	Disk stack		
316 SS	316 SS	316 SS	316 L	-196...+425	T6 X TC S1 R4 X
316 SS +Cobalt based	316 SS	316 SS +Cobalt based	316 L	-196...+425	T6 A TC S1 R4 A
420 J2	630 SS	420 J2	420 J2	-10...+425	P2 X BC S1 P2 X
420 J2	XM-19	420 J2	420 J2	-10...+540	P2 X VM S1 P2 X
316 SS +Cobalt based	XM-19	316 SS +Cobalt based	316 L	-196...+593	T6 A VM S1 R4 A

Gasket applications

Body, bonnet material	Gasket material	Temp. range (°C)	Sign 17
Carbon steel (WCB)	S/W (Spiral wound) 316L SS + Graphite	-29...+425	S
Stainless steel (CF8, CF8M, CF3, CF3M)	S/W (Spiral wound) 316L SS + Graphite	-56...+425	S
	S/W (Spiral wound) 316L SS + PTFE	-196...+232	L
Stainless steel (CF8, CF8M, CF3, CF3M)	S/W (Spiral wound) 316L SS + Hi Graphite	-29...+593	H
Cr.Mo. Steel (WC6, WC9, C12A)	S/W (Spiral wound) 316L SS + Hi Graphite	-29...+593	H

Packing applications

Packing material	Temp (°C)	Pressure class	Sign 15
PTFE + Carbon Fiber (Braided TEF + Graphite)	-196...+260	Up to CL900	G
PTFE V-Ring	- 49...+232	Up to CL600	T
Graphite (with Mold + Braided), Standard packing	-196...+400	Up to CL2500	F (with sign 14 'S')
Graphite (with Mold + Braided), Live loaded emission packing	-196...+450	Up to CL2500	F (with sign 14 'E')
Hi-Graphite (with Mold + Braided)	-54...+593	Up to CL2500	H

Flow direction

	General Omega (Unbalanced plug - Bar type)	General Omega (Balanced plug)	High temperature Omega (High temp graphite seal plug)	High temperature Omega (High temp metal seal plug)
Gas	FTO	FTO	FTO	FTO
Liquid	FTC	FTC	FTC	FTC

FTO: Flow to Open
FTC: Flow to Close

Cv ratio

100: 1

Flow characteristics

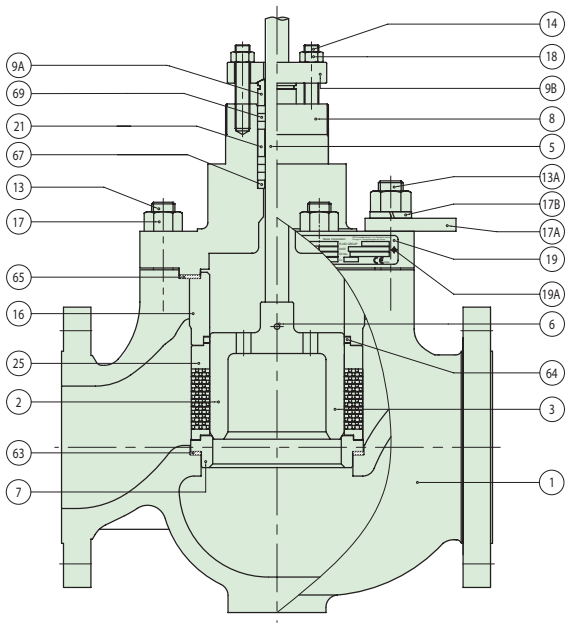
Linear, equal percentage or other customized characteristic.

GM, ratings & end connetions

DN / Inch	GM, ASME ratings										
	Class 150 ... 600				Class 900 ... 1500				Class 2500		
	RF	RTJ	SW	BW	RF	RTJ	SW	BW	RF	RTJ	BW
25 / 1	O	O	O	O	O	O	O			O	
40 / 1.5	O	O	O	O	O	O	O			O	
50 / 2	O	O	O	O	O	O	O	O		O	O
80 / 3	O	O		O	O	O		O		O	O
100 / 4	O	O		O	O	O		O		O	O
150 / 6	O	O		O	O	O		O		O	O
200 / 8	O	O		O	O	O		O		O	O
250 / 10	O	O		O	O	O		O		O	O
300 / 12	O	O		O	O	O		O		O	O
350 / 14	O	O		O	O	O		O		O	O
400 / 16	O	O		O	O	O		O		O	O
450 / 18	O	O		O	O	O		O		O	O
500 / 20	O	O		O	O	O		O		O	O
600 / 24	O	O		O	O	O		O		O	O

*Note 1. RF: Raised Face Flange, RTJ: Ring Joint, SW: Socket Weld, BW: Butt Weld.
Bigger sizes are available, please contact Valmet.

GM, Components and materials



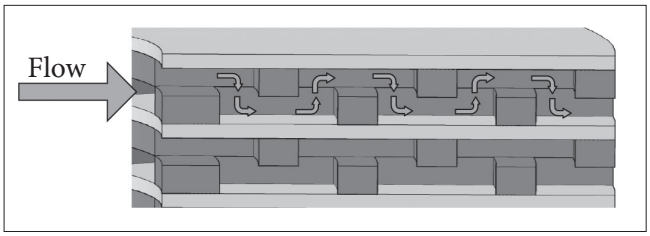
Body material: Carbon steel or alloy steel			Body material: Stainless steel	
Part no.	Description	Material	Material	Spare
1	BODY	A216 WCB / ALLOY STEEL AVAILABLE	A351 CF8M	
2	PLUG SET	420(J2) SS / 630 SS	316 SS / 316 SS	Cat 3
3*	PLUG	420(J2) STAINLESS STEEL	316 STAINLESS STEEL	
5*	STEM	630 STAINLESS STEEL + HCr	630 STAINLESS STEEL + HCr	
6*	PLUG PIN	316 STAINLESS STEEL	316 STAINLESS STEEL	
7	SEAT RING	420 STAINLESS STEEL	316 STAINLESS STEEL	Cat 3
8	BONNET	A216 WCB / ALLOY STEEL AVAILABLE	A351 CF8M	
9A	GLAND	304 STAINLESS STEEL	304 STAINLESS STEEL	
9B	GLAND FLANGE	A351 CF8	A351 CF8	
13 / 13A	STUD	A193 Gr.B7M	A193 Gr. B8M	
14	STUD	A193 Gr.B8M	A193 Gr. B8M	
16	CAGE GUIDE	420(J2) STAINLESS STEEL	420(J2) STAINLESS STEEL	Cat 3
17	HEXAGON NUT	A194 Gr.2HM	A194 Gr. 8M	
17A	LIFTING PLATE	JIS G3101-SS400	JIS G3101-SS400	
17B	SPRING WASHER	AISI 304	AISI 304	
18	HEXAGON NUT	A194 Gr.8M	A194 Gr. 8M	
19	IDENTIFICATION PLATE	304 STAINLESS STEEL	304 STAINLESS STEEL	
19A	RIVET	304 STAINLESS STEEL	304 STAINLESS STEEL	
21	LANTERN RING	304 STAINLESS STEEL	304 STAINLESS STEEL	
25	DISK STACK	420(J2) STAINLESS STEEL	316L STAINLESS STEEL	Cat 3
63	SEAT GASKET	S/W GASKET, 316L SS + GRAPHITE	S/W GASKET, 316L SS + GRAPHITE	Cat 1
64	SEAL RING	PTFE + GRAPHITE	PTFE + GRAPHITE	Cat 1
65	BODY GASKET	S/W GASKET, 316L SS + GRAPHITE	S/W GASKET, 316L SS + GRAPHITE	Cat 1
67	PACKING SPACER	304 STAINLESS STEEL	304 STAINLESS STEEL	
69	PACKING RING	PTFE + Carbon Fiber	GRAPHITE	Cat 1

Note.
1. Plug/Seat hard facing(Cobalt based alloy) & Soft seat are available
2. Materials description
   316 SS : ASTM A276 TP316 or JIS 316 St. Steel
   410 SS : ASTM A276 TP410 or JIS 410 St. Steel
   420 SS : ASTM A276 TP420 or JIS 420 St. Steel
   440C SS : ASTM A276 TP440C ot JIS 440C St. Steel
   17-4PH : ASTM A564 630 (H1100) or JIS 630 (H1100) St. Steel
3. Above standard materials to be applicable depending on specific service conditions, other optional materials to consult Valmet.
4. Optional materials to meet to requirements of NACE MR 01-75 are available
5. The materials are subject to change as equivalent depending on detail design
6. The part no. 3, 5, 6 are delivered as a set with no. 2

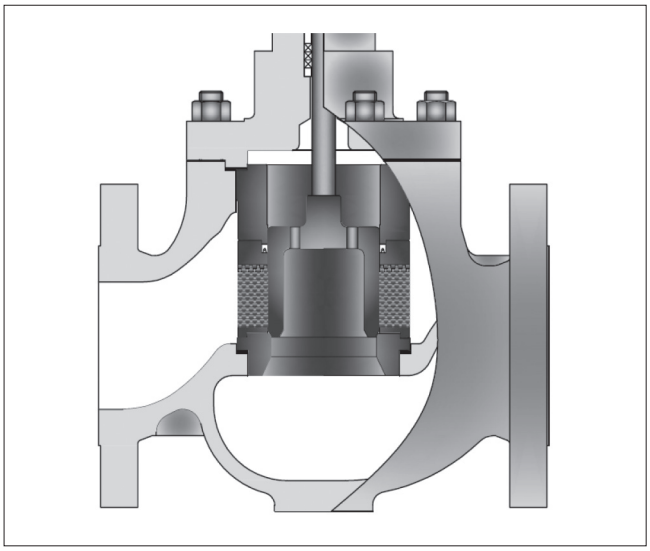
Note.
1. Plug/Seat hard facing (Cobalt based alloy) & Soft seat are available
2. Materials description
   316 SS : ASTM A276 TP316 or JIS 316 St. Steel
   420 SS : ASTM A276 TP420 or JIS 420 St. Steel
3. Above standard materials to be applicable depending on specific service conditions, other optional materials to consult Valmet.
4. Cryogenic application : ASTM A320 B8M & 8M for studs(13) and nuts(17)
5. Optional materials to meet to requirements of NACE MR 01-75 are available
6. The materials are subject to change as equivalent depending on detail design
7. The part no. 3, 5, 6 are delivered as a set with no. 2

OMEGA design principals

- Omega trim can handle a larger differential pressure than a conventional type trim through its multi-stage structure
- The value of pressure drop in the omega trim is a sum of the 'dynamic pressure in omega trim' and the 'dynamic pressure in valve design'.



Trim outlet velocity and kinetic energy limitation



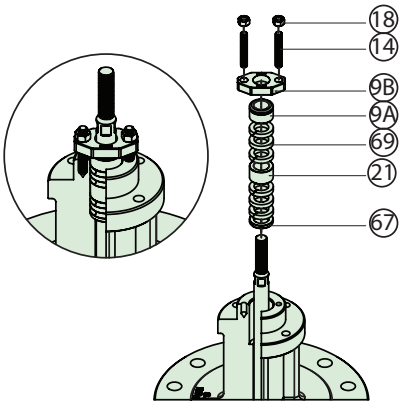
The limitation data is based on ISA04-P211.

- Excessive velocity can induce vibration and cause erosive damage to the valve body, trim, and the outlet pipe wall.
- Excessive energy levels can result in mechanical vibrations and cause erosive damage to the valve body, trim, and outlet pipe wall.

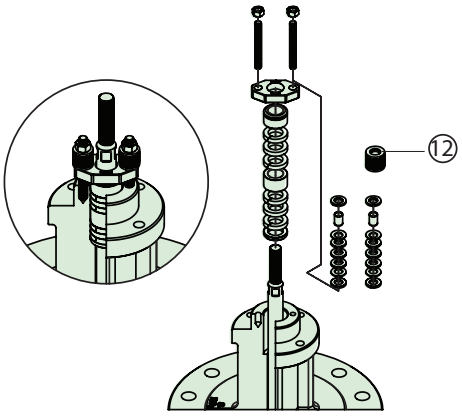
Valve trim outlet fluid kinetic energy density criteria

Service conditions	Water velocity	Oil velocity (Gf=0.8)	Air velocity (p=7 Mpa)	Kinetic energy
	m/s (ft/s)	m/s (ft/s)	m/s (ft/s)	kpa (psi)
Continuos service, single phase fluid	30 (100)	34 (112)	105 (345)	480 (70)
Cavitating and multi-phase fluids	23 (75)	26 (84)	-	275 (40)
Vibration sensitive system	12 (40)	14 (45)	42 (140)	75 (11)

Packing constructions



Standard construction



Low emission with live loaded spring

9A	Gland
9B	Gland flange
12	Disk spring assembly
14	Stud
18	Hexagon nut
21	Lantern ring
67	Packing spacer
69	Packing ring

GM Series Cv vs Travel
Standard OMEGA

ANSI Class: 150# …2500#

Size: 1" …16" Flow characteristic: LINEAR

Valve travel [%]					10	20	30	40	50	60	70	80	90	100
F_L					0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Valve size		Orifice diameter			Travel		Rated Cv							
inch	mm	sign	inch	mm	inch	mm								
1	25	C2	0.84	21	0.8	20	0.31	1.39	2.4	2.95	3.82	4.59	5.28	5.89	6.212	6.7
		O2					0.36	1.65	2.85	3.45	4.35	5.08	5.68	6.2	6.46	6.9
		CB					0.1	0.46	0.83	1.03	1.39	1.73	2.07	2.4	2.59	2.9
		OB					0.09	0.41	0.73	0.91	1.24	1.56	1.87	2.18	2.35	2.6
1.5	40	C2	1.2	30	0.8	20	0.45	2.04	3.6	4.46	5.9	7.25	8.51	9.67	10.3	11
		O2					0.4	1.8	3.22	4.02	5.37	6.62	7.77	8.82	9.37	10
		CB					0.17	0.81	1.45	1.81	2.44	3.07	3.68	4.29	4.63	5.2
		OB					0.17	0.71	1.27	1.6	2.17	2.74	3.3	3.86	4.18	4.7
2	50	C2	2.2	55	1.6	40	1.58	6.69	11.4	14.8	18.9	21.9	25.5	28.7	30.9	33
		O2					1.84	7.44	12.3	15.8	19.8	22.3	24.9	26.9	28.1	29
		CB					0.82	3.46	5.99	7.91	10.3	12	14.2	16.3	17.9	20
		OB					0.85	3.53	6.01	7.85	10.1	11.8	13.8	15.7	17.2	19
3	80	C2	3.5	80	2	50	3.84	11.2	18.5	25.4	31.9	38	43.7	48.9	53.7	60
		O2					4.46	12.6	19.9	26.8	33.2	39	44.1	48.4	51.8	55
		CB					1.98	5.7	9.4	13.1	16.7	20.2	23.7	27.1	30.3	34
		OB					2.11	6.09	9.85	13.4	16.9	20.2	23.4	26.6	29.6	33
4	100	C2	4.5	113	2	50	6.03	17.6	28.9	39.8	50.2	59.9	68.9	77	84.1	90
		O2					6.69	19.2	30.9	41.9	52.3	61.8	70.2	77.3	83.2	90
		CB					2.93	8.43	13.9	19.3	24.6	29.9	35	40.1	45.1	50
		OB					3.02	8.84	14.4	19.9	25.1	30.3	35.3	40.1	44.9	49
6	150	C2	5.3	132	2.4	60	7.66	22.7	40	54.7	69	85	98.1	113	124	130
		O2					8.26	24.9	44.5	60.9	76.6	93.8	107	122	132	140
		CB					3.9	11.4	20.2	27.7	35.1	43.7	51.1	59.5	66.6	70
		OB					3.79	11.3	20.1	27.7	35.4	44.2	51.8	60.4	67.6	70
8	200	C2	7.1	177	3.1	70	15.6	37.1	62.4	85.2	107	131	149	171	189	210
		O2					17.8	43.3	73.4	99.8	125	150	169	191	208	220
		CB					8.65	20.3	34.1	46.7	59.2	72.7	83.7	96.8	109	120
		OB					8.34	20.2	34.5	47.5	60.5	74.3	85.7	99	111	120
10	250	C2	8.7	217	3.5	80	21.8	52.8	83.1	118	147	180	207	233	262	290
		O2					23.5	57.9	92.2	131	163	198	225	251	278	300
		CB					12.6	30.2	47.6	67.7	84.7	104	121	137	156	170
		OB					12.1	29.2	46.4	66.5	83.7	103	120	136	155	170
12	300	C2	10.2	256	4.7	120	31.2	90.5	143	199	254	301	351	394	437	480
		O2					32.4	96.3	153	214	270	317	363	401	438	470
		CB					15.4	43.8	69.1	97	125	149	176	200	226	250
		OB					14.3	41.5	66.2	93.6	121	145	172	195	220	240
14	350	C2	12.4	311	5.5	140	44.4	130	215	281	360	435	491	556	616	660
		O2					48.1	144	237	308	390	464	516	573	621	650
		CB					25.2	73.2	121	159	206	252	288	332	375	410
		OB					23.1	68.7	114	151	196	240	274	315	355	390
16	400	C2	13.3	333	6.3	160	58.5	152	262	351	436	533	610	681	760	820
		O2					54.7	149	264	358	447	545	618	683	748	790
		CB					35.7	92.5	160	215	269	333	385	436	495	540
		OB					30.1	79.9	142	194	247	309	360	406	466	510

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

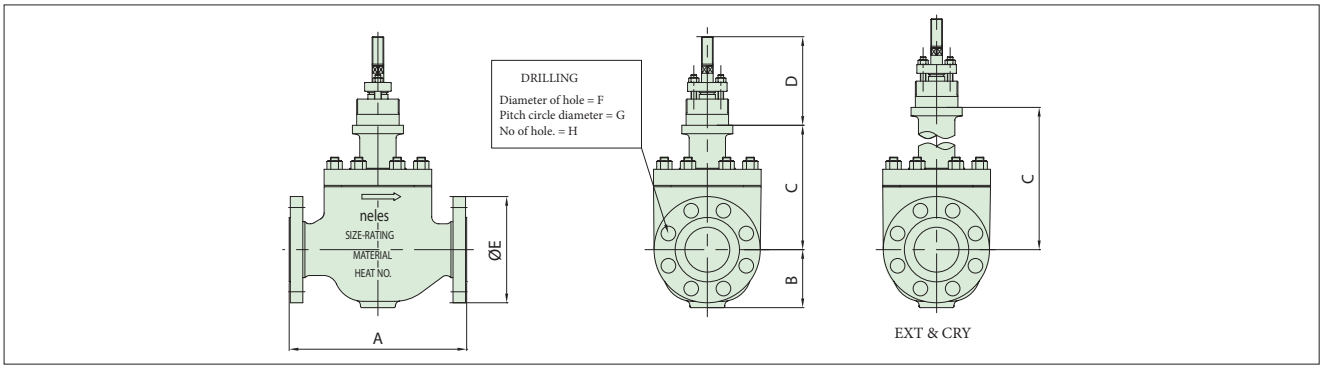
C2: Full capacity, 10 turns, Flow to Close

O2: Full capacity, 10 turns, Flow to Open

CB: 1-Step reduction, 10 turns, Flow to Close

OB: 1-Step reduction, 10 turns, Flow to Open

GM, Valve dimensions and weights



150 #/ 300 #/ 600

Dimension (mm) / Size (mm)	A			B			C			D	E			F			G			H			Weight (kg) (Approximate)		
	150#	300#	600#	150#	300#	600#	STD	EXT	CRY	COMMON	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
25	184	197	210	55	63	63	142	250	400	110	110	125	125	15.9	19.1	19.1	79.4	88.9	88.9	4	4	4	14	15	23
40	222	235	251	65	78	78	161	269	419	110	125	155	155	15.9	22.2	22.2	98.4	114.3	114.3	4	4	4	22	23	27
50	254	267	286	83	83	83	178	333	458	110	150	165	165	19.1	19.1	19.1	120.7	127	127	4	8	8	30	32	40
80	298	318	337	109	109	120	222	395	545	115	190	210	210	19.1	22.2	22.2	152.4	168.3	168.3	4	8	8	65	67	72
100	352	368	394	135	135	135	248	402	552	140	230	255	275	19.1	22.2	25.4	190.5	200	215.9	8	8	8	100	103	112
150	451	473	508	170	170	178	340	467	642	150	280	320	355	22.2	22.2	28.6	241.3	269.9	292.1	8	12	12	185	195	240
200	543	568	610	230	230	230	451	557	732	150	345	380	420	22.2	25.4	31.8	298.5	330.2	349.2	8	12	12	363	385	443
250	673	708	752	275	275	275	488	670	870	150	405	445	510	25.4	28.6	34.9	362	387.4	431.8	12	16	16	552	595	681
300	737	775	819	350	350	350	543	716	916	140	485	520	560	25.4	31.8	34.9	431.8	450.8	489	12	16	20	905	955	1020
350	889	927	972	385	385	385	616	846	1046	210	535	585	605	28.6	31.8	38.1	476.3	514.4	527	12	20	20	1170	1230	1311
400	1016	1057	1108	440	440	440	692	909	1109	220	595	650	685	28.6	34.9	41.3	539.8	571.5	603.2	16	20	20	1380	1460	1587

Dimension (inch) / Size (inch)	A			B			C			D	E			F			G			H			Weight (lbs) (Approximate)		
	150#	300#	600#	150#	300#	600#	STD	EXT	CRY	COMMON	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
1"	7.2	7.8	8.3	2.2	2.5	2.5	5.6	9.8	15.7	4.3	4.3	4.9	4.9	0.6	0.8	0.8	3.1	3.5	3.5	4	4	4	31	33	51
1-1/2"	8.7	9.3	9.9	2.6	3.1	3.1	6.3	10.6	16.5	4.3	4.9	6.1	6.1	0.6	0.9	0.9	3.9	4.5	4.5	4	4	4	49	51	60
2"	10	10.5	11.3	3.3	3.3	3.3	7	13.1	18	4.3	5.9	6.5	6.5	0.8	0.8	0.8	4.8	5	5	4	8	8	66	71	88
3"	11.7	12.5	13.3	4.3	4.3	4.7	8.7	15.6	21.5	4.5	7.5	8.3	8.3	0.8	0.9	0.9	6	6.6	6.6	4	8	8	143	148	159
4"	13.9	14.5	15.5	5.3	5.3	5.3	9.8	15.8	21.7	5.5	9.1	10	10.8	0.8	0.9	1	7.5	7.9	8.5	8	8	8	221	227	247
6"	17.8	18.6	20	6.7	6.7	7	13.4	18.4	25.7	5.9	11	12.6	14	0.9	0.9	1.1	9.5	10.6	11.5	8	12	12	408	430	529
8"	21.4	22.4	24	9.1	9.1	9.1	17.8	21.9	28.8	5.9	13.6	15	16.5	0.9	1	1.3	11.8	13	13.7	8	12	12	800	849	977
10"	26.5	27.9	29.6	10.8	10.8	10.8	19.2	26.4	34.3	5.9	15.9	17.5	20.1	1	1.1	1.4	14.3	15.3	17	12	16	16	1217	1312	1501
12"	29	30.5	32.2	13.8	13.8	13.8	21.4	28.2	36.1	5.9	19.1	20.5	22	1	1.3	1.4	17	17.7	19.3	12	16	20	1995	2105	2249
14"	35	36.5	38.3	15.2	15.2	15.2	24.3	33.3	41.2	8.3	21.1	23	23.8	1.1	1.3	1.5	18.8	20.3	20.7	12	20	20	2579	2712	2890
16"	40	41.6	43.6	17.3	17.3	17.3	27.2	35.8	43.7	8.7	23.4	25.6	27	1.1	1.4	1.6	21.3	22.5	23.7	16	20	20	3042	3219	3499

900 #/ 1500

Dimension (mm) / Size (mm)	A		B		C		D	E		F		G		H		Weight (kg)	
	900#	1500#	900#	1500#	STD	EXT	COMMON	900#	1500#	900#	1500#	900#	1500#	900#	1500#	900#	1500#
25	292	292	78	78	236	330	110	150	180	25.4	25.4	101.6	101.6	4	4	60	60
40	333	333	100	100	240	380	110	180	180	28.6	28.6	123.8	123.8	4	4	63	63
50	375	375	113	113	240	380	110	215	215	25.4	25.4	165.1	165.1	8	8	67	67
80	441	460	142	142	322	430	115	240	265	25.4	31.8	190.5	203.2	8	8	150	163
100	511	530	182	182	375	475	140	290	310	31.8	34.9	235	241.3	8	8	244	255
150	714	768	210	240	420	500	150	380	395	31.8	39	317.5	317.5	12	12	530	540
200	914	972	290	290	550	600	150	470	485	38.1	45	393.7	393.7	12	12	698	821
250	991	1067	310	350	600	700	150	545	585	38.1	51	469.9	482.6	16	12	955	1137
300	1130	1219	385	385	680	800	140	610	675	38.1	54	533.4	571.5	20	16	1180	1240
350	1257	1257	385	385	770	920	210	640	750	41.3	61	558.8	635	20	16	1387	1477
400	1422	1422	450	450	850	1050	220	705	825	44.5	67	616	704.8	20	16	1601	1721

Dimension (inch) / Size (inch)	A		B		C		D	E		F		G		H		Weight (lbs)	
	900#	1500#	900#	1500#	STD	EXT	COMMON	900#	1500#	900#	1500#	900#	1500#	900#	1500#	900#	1500#
1"	11.5	11.5	3	3	9	13	4	5.9	7.1	1	1	4	4	4	4	132	132
1-1/2"	13.1	13.1	3.9	3.9	9.5	15	4	7.1	7.1	1.1	1.1	4.9	4.9	4	4	139	139
2"	14.8	14.8	4.4	4.4	9.5	15	4	8.5	8.5	1	1	6.5	6.5	8	8	148	148
3"	17.4	18.1	5.6	5.6	12.7	17	5	9.4	10.4	1	1.3	7.5	8	8	8	331	359
4"	20.1	20.9	7.2	7.2	15	19	6	11.4	12.2	1.3	1.4	9.3	9.5	8	8	538	562
6"	28.1	30.2	8.3	9.4	17	20	6	15	15.6	1.3	1.5	12.5	12.5	12	12	1168	1191
8"	36	38.3	11.4	11.4	22	24	6	18.5	19.1	1.5	1.8	15.5	15.5	12	12	1539	1810
10"	39	42	12.2	13.8	24	28	6	21.5	23	1.5	2	18.5	19	16	12	2105	2507
12"	44.5	48	15.2	15.2	27	31	6	24	26.6	1.5	2.1	21	22.5	20	16	2602	2734
14"	49.5	49.5	15.2	15.2	30	36	8	25.2	29.5	1.6	2.4	22	25	20	16	3058	3256
16"	56	56	17.7	17.7	33	41	8	27.8	32.5	1.8	2.6	24.3	27.7	20	16	3530	3794

Bigger sizes and ASME class 2500 ratings are available, please contact Valmet.

How to order

Globe Omega trim, multi-stage type, series GM

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
GM	02	H	Z	B	J2	B	P2	X	BC	S1	P2	X	S	G	G	S	G	X	A	E	O1

Valve constructions

1.	Valve series
GM	Globe Omega trim, multi-stage type

2.	Body size		
01	1" / DN 25	1H	1.5" / DN 40
02	2" / DN 50	03	3" / DN 80
04	4" / DN 100	06	6" / DN 150
08	8" / DN 200	10	10" / DN 250
12	12" / DN 300	14	14" / DN 350
16	16" / DN 400	18	18" / DN 450
20	20" / DN 500	24	24" / DN 600
28	28" / DN 700	30	30" / DN 750
32	32" / DN 800	36	36" / DN 900
YY	Special		

3.	Pressure rating		
C	ASME class 150	D	ASME class 300
F	ASME class 600	G	ASME class 900
H	ASME class 1500	I	ASME Class 2500
J	EN PN 10	K	EN PN 16
L	EN PN 25	M	EN PN 40
N	EN PN 63	P	EN PN 100
B	EN PN 160	E	EN PN 250
Y	Special	R	JIS 10K
T	JIS 20K		

4.	End connection
W	Flanged RF, ASME B16.5
C	Flanged RF, EN 1092-1
Z	Ring joint flange, ASME B16.5
V	Socket welding, ASME B16.11
Q	Butt welding, ASME B16.25
Y	Special

5.	Bonnet construction	
	Bonnet Type	Actuator Connection
A	General	Applicable for VD_25/29/37
B	General	Applicable for VD_48/55
C	General	Applicable for VC_30, VB_32
D	General	Applicable for VC/VB_40/50
T	General	Applicable for VC/VB_60/70
E	Extension	Applicable for VD_25/29/37
F	Extension	Applicable for VD_48/55
G	Extension	Applicable for VC_30, VB_32
H	Extension	Applicable for VC/VB_40/50
U	Extension	Applicable for VC/VB_60/70
P	Cryogenic	Applicable for VD_25/29/37
Q	Cryogenic	Applicable for VD_48/55
R	Cryogenic	Applicable for VC_30, VB_32
S	Cryogenic	Applicable for VC/VB_40/50
V	Cryogenic	Applicable for VC/VB_60/70
Y	Special	Special

6.	Body material
J2	A216 gr. WCB
S6	A351 gr. CF8M
S1	A351 gr. CF3M
J4	A217 gr. WC6
CG	A217 gr. WC9
YY	Special

- Bonnet material is equivalent to body material.

7.	Model code
B	Model B

Trim constructions

8.	Plug material	
	Material	Description
P2	CA40	General for carbon steel valve
T6	CF8M + HCr	General for stainless steel valve
YY	Special	Special materials

9.	Plug application
X	Not applicable
A	Cobalt based alloy
Y	Special

10.	Stem material	
	Material	Description
BC	630 SS	General for carbon steel valve
TC	316 SS	General for stainless steel valve
FC	316L SS	
VX	XM-19	High temperature

11.	Seat type
S1	Single metal seat
YY	Special

12.	Seat / disk stack material		
	Seat	Disk Stack	Cage Guide
P2	CA40	SUS 420J2	CA40
R4	CF8M	316L SS	CF8M + HCr
YY	Special	Special	Special

13.	Seat application
X	Not applicable
A	Cobalt based alloy
Y	Special

Others

14.	Packing / bellows type
S	General packing
E	Low emission, Live loaded
C	Bellows seal (316L SS, Formed)
Y	Special

15.	Packing material
G	PTFE + Carbon fiber
F	Graphite
T	PTFE V-Ring
C	PTFE + Carbon fiber (ATEX)
H	Hi-Graphite
Y	Special

16.	Seal ring material
G	PTFE + Carbon fiber
H	PTFE + Graphite + Carbon
M	Graphite (High temp graphite seal)
N	Graphite + metal (High temp metal seal)
T	PTFE
X	Not applicable
Y	Special

17.	Gasket material
S	S/W gasket type, 316L SS + Graphite
L	S/W gasket type, 316L SS + PTFE
H	S/W gasket type, 316L SS + Hi-Graphite
Y	Special

18.	Stud / nut material
G	A193 gr. B7M / A194 gr. 2HM
D	A193 gr. B8M / A194 gr. 8M
K	A320 gr. B8M cl. 2 / A194 gr. 8M
H	A193 gr. B16 / A194 gr. 7
E	A453 gr. 660 / A453 gr. 660
Y	Special

19.	Options
X	Not applicable
E	Anti-erosion
L	Lub. & Isol. valve
W	Water seal
Y	Special

* ASME valve face to face length according to ISA 75.08. EN valve face to face length according to ISA 75.08.
* The body, bonnet, trim materials are subject to change as equivalent depending on detail design.
* See 'Neles Globe Type code Instruction' for further options and explanations.
* Round bar material such as AISI 410SS (for A743 gr. CA 15), AISI 316SS (for A351 gr. CF8M), SUS420J2 (for A743 gr. CA40) and AISI 630SS (for A747 gr. CB7Cu-1) can be used depending on manufacturing process.

Trim type & rated Cv

20. Sign	Trim type	21. Sign	Trim characteristic	22. Sign	Description	Rated Cv Body size and stroke										
						1" Str.	1.5" Str.	2" Str.	3" Str.	4" Str.	6" Str.	8" Str.	10" Str.	12" Str.	14" Str.	16" Str.
A	Balanced plug	L	Linear	C1	FC / 6 turns / FTC	8.2 (20)	13.7 (20)	41 (40)	70 (50)	110 (50)	160 (60)	270 (70)	370 (80)	580 (120)	800 (140)	1000 (160)
A	High temp. balanced plug			C2	FC / 10 turns / FTC	6.7 (20)	11 (20)	33 (40)	60 (50)	90 (50)	130 (60)	210 (70)	290 (80)	480 (120)	660 (140)	820 (160)
P	Pilot balanced plug			C3	FC / 14 turns / FTC	4.2 (20)	7.8 (20)	27 (40)	48 (50)	60 (50)	110 (60)	140 (70)	200 (80)	340 (120)	470 (140)	650 (160)
U	Unbalanaced plug			C4	FC / 18 turns / FTC			21 (40)	29 (50)	48 (50)	80 (60)	110 (70)	160 (80)	280 (120)	390 (140)	530 (160)
				C5	FC / 22 turns / FTC			15 (40)	24 (50)	39 (50)	60 (60)	90 (70)	110 (80)	200 (120)	320 (140)	370 (160)
				CA	1A / 6 turns / FTC	6.2 (20)	6.3 (20)	24 (40)	41 (50)	60 (50)	90 (60)	150 (70)	210 (80)	310 (120)	500 (140)	660 (160)
				CB	1A / 10 turns / FTC	2.9 (20)	5.2 (20)	20 (40)	34 (50)	50 (50)	70 (60)	120 (70)	170 (80)	250 (120)	410 (140)	540 (160)
				CC	1A / 14 turns / FTC	2.4 (20)	5.2 (20)	16 (40)	28 (50)	41 (50)	60 (60)	90 (70)	130 (80)	210 (120)	340 (140)	450 (160)
				CD	1A / 18 turns / FTC			13 (40)	19 (50)	30 (50)	45 (60)	70 (70)	100 (80)	170 (120)	280 (140)	310 (160)
				CE	1A / 22 turns / FTC			8.7 (40)	16 (50)	25 (50)	37 (60)	49 (70)	80 (80)	130 (120)	190 (140)	260 (160)
				O1	FC / 6 turns / FTO	7.2 (20)	12.5 (20)	36 (40)	70 (50)	100 (50)	160 (60)	270 (70)	350 (80)	540 (120)	790 (140)	960 (160)
				O2	FC / 10 turns / FTO	6.9 (20)	10 (20)	29 (40)	55 (50)	90 (50)	140 (60)	220 (70)	300 (80)	470 (120)	650 (140)	790 (160)
				O3	FC / 14 turns / FTO	4.9 (20)	7.2 (20)	24 (40)	45 (50)	60 (50)	110 (60)	150 (70)	200 (80)	350 (120)	480 (140)	620 (160)
				O4	FC / 18 turns / FTO			19 (40)	30 (50)	49 (50)	80 (60)	120 (70)	170 (80)	290 (120)	390 (140)	510 (160)
				O5	FC / 22 turns / FTO			15 (40)	25 (50)	41 (50)	70 (60)	100 (70)	110 (80)	200 (120)	320 (140)	380 (160)
				OA	1A / 6 turns / FTO	5.6 (20)	5.7 (20)	23 (40)	40 (50)	60 (50)	90 (60)	150 (70)	210 (80)	300 (120)	470 (140)	620 (160)
				OB	1A / 10 turns / FTO	2.6 (20)	4.7 (20)	19 (40)	33 (50)	49 (50)	70 (60)	120 (70)	170 (80)	240 (120)	390 (140)	510 (160)
				OC	1A / 14 turns / FTO	2.2 (20)	3.9 (20)	16 (40)	27 (50)	41 (50)	60 (60)	90 (70)	130 (80)	200 (120)	320 (140)	420 (160)
				OD	1A / 18 turns / FTO			13 (40)	19 (50)	30 (50)	46 (60)	70 (70)	100 (80)	170 (120)	260 (140)	290 (160)
				OE	1A / 22 turns / FTO			8.4 (40)	16 (50)	25 (50)	38 (60)	50 (70)	80 (80)	120 (120)	180 (140)	240 (160)
		E	Equal%	C1	FC / 6 turns / FTC	6.6 (20)	10 (20)	34 (40)	60 (50)	90 (50)	130 (60)	210 (70)	300 (80)	500 (120)	690 (140)	860 (160)
				C2	FC / 10 turns / FTC	5.5 (20)	8.3 (20)	28 (40)	46 (50)	70 (50)	110 (60)	160 (70)	230 (80)	410 (120)	570 (140)	710 (160)
				C3	FC / 14 turns / FTC	3.5 (20)	6 (20)	23 (40)	38 (50)	48 (50)	90 (60)	110 (70)	170 (80)	300 (120)	390 (140)	570 (160)
				C4	FC / 18 turns / FTC			16 (40)	22 (50)	39 (50)	60 (60)	90 (70)	140 (80)	250 (120)	320 (140)	470 (160)
				C5	FC / 22 turns / FTC			12 (40)	18 (50)	32 (50)	50 (60)	80 (70)	90 (80)	160 (120)	260 (140)	310 (160)
				CA	1A / 6 turns / FTC	4.5 (20)	6.5 (20)	22 (40)	40 (50)	70 (50)	80 (60)	120 (70)	210 (80)	320 (120)	470 (140)	540 (160)
				CB	1A / 10 turns / FTC	3.7 (20)	5.3 (20)	18 (40)	33 (50)	50 (50)	60 (60)	100 (70)	170 (80)	260 (120)	380 (140)	450 (160)
				CC	1A / 14 turns / FTC	2.6 (20)	4.4 (20)	15 (40)	27 (50)	31 (50)	50 (60)	80 (70)	140 (80)	220 (120)	310 (140)	370 (160)
				CD	1A / 18 turns / FTC			12 (40)	17 (50)	25 (50)	43 (60)	70 (70)	90 (80)	180 (120)	260 (140)	300 (160)
				CE	1A / 22 turns / FTC			7.8 (40)	14 (50)	21 (50)	36 (60)	60 (70)	70 (80)	120 (120)	170 (140)	250 (160)
				O1	FC / 6 turns / FTO	6 (20)	9.2 (20)	32 (40)	60 (50)	90 (50)	140 (60)	210 (70)	290 (80)	470 (120)	690 (140)	850 (160)
				O2	FC / 10 turns / FTO	5.5 (20)	7.6 (20)	26 (40)	46 (50)	70 (50)	110 (60)	180 (70)	250 (80)	410 (120)	570 (140)	700 (160)
				O3	FC / 14 turns / FTO	4 (20)	5.5 (20)	21 (40)	38 (50)	49 (50)	90 (60)	120 (70)	170 (80)	310 (120)	390 (140)	550 (160)
				O4	FC / 18 turns / FTO			16 (40)	23 (50)	41 (50)	70 (60)	100 (70)	140 (80)	250 (120)	320 (140)	450 (160)
				O5	FC / 22 turns / FTO			12 (40)	19 (50)	33 (50)	50 (60)	80 (70)	100 (80)	170 (120)	270 (140)	320 (160)
				OA	1A / 6 turns / FTO	4.1 (20)	5.9 (20)	21 (40)	39 (50)	70 (50)	80 (60)	120 (70)	210 (80)	310 (120)	440 (140)	510 (160)
				OB	1A / 10 turns / FTO	3.4 (20)	4.8 (20)	18 (40)	32 (50)	50 (50)	70 (60)	100 (70)	170 (80)	250 (120)	360 (140)	420 (160)
				OC	1A / 14 turns / FTO	2.8 (20)	4 (20)	14 (40)	26 (50)	31 (50)	50 (60)	80 (70)	140 (80)	210 (120)	300 (140)	340 (160)
				OD	1A / 18 turns / FTO			12 (40)	17 (50)	26 (50)	44 (60)	70 (70)	90 (80)	170 (120)	240 (140)	280 (160)
				OE	1A / 22 turns / FTO			7.6 (40)	14 (50)	21 (50)	36 (60)	60 (70)	70 (80)	110 (120)	160 (140)	230 (160)
Y	Special	Y	Special	YY	Special	Please contact Valmet for more information										

- Rated Cv is different depending on trim type and characteristic.
- Str. : valve stroke length (mm). It should be matched with actuator stroke length.
- FC / FTC / FTO= Full capacity / / Flow to close or Flow to open
- 1A /FTC or FTO = 1-Step reduction / / Flow to open or Flow to close

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