

Series GU control valves globe-single seated, top guided

Metso's Neles series GU single seated, top guided globe valves are economical high-performance control valves designed to provide the best possible control accuracy and wide rangeability with the all inherent benefits of linear control valves. Standard units are equipped with spring diaphragm actuators and ND9000[®] intelligent valve controllers for precise flow control, extended operational life and performance monitoring on-line.

Construction

- Compact and lightweight construction
- Wide variety of trims with different Cv and characteristics
- Both metal and soft seat available depending from the application
- Option for bellows seal for toxic or other application where no leak is allowed
- Wide material selection for different applications
- Many end connection styles available for different applications
- Extension bonnet design for wide temperature range

Accurate control

- ND9000 digital valve controller for auto-calibration and accurate control
- Accurate and sensitive diaphragm and piston actuators

Wide range of applications

- Suitable for gas, liquid and steam
- Temperature limits -29 ... +260 °C with standard bonnet construction. Over +260 °C and under -29 °C with extension bonnet.
- Tendril multi-hole and multi-stage trim for high pressure drop and cavitation applications
- Multi groove trim for low Cv, non-compressible fluids to prevent cavitation and erosion
- Micro trim for small flow and/or to get rid of the stability problems in high pressure drop application

Safety and quality

- Rugged one piece body structure to minimize the leak paths and makes the valve insensitive to pipe 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)

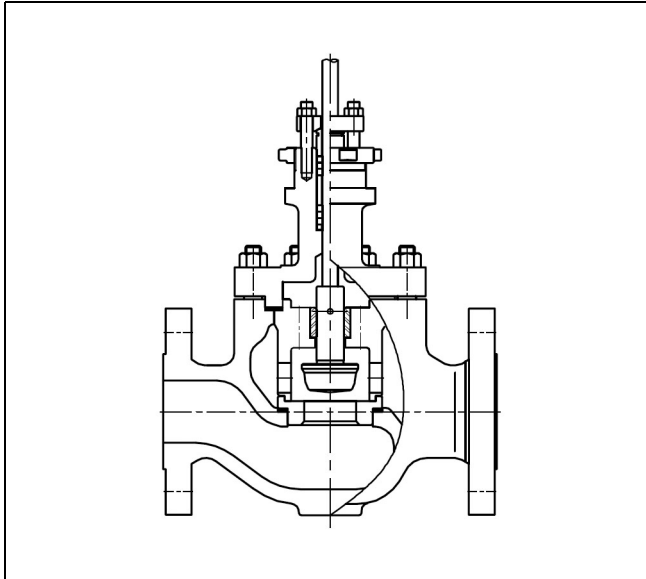
Easy maintenance

- Quick change trim and top entry construction for easy in-line maintenance
- Valve assembly is easy and self guiding
- Flow characteristics can be easily changed with interchangeable trim parts
- ND9000 digital valve controller with online diagnostics enables performance follow up and predictive maintenance
- Efficient asset management with Metso FieldCare open architecture software and excellent networking capabilities



Different trim designs

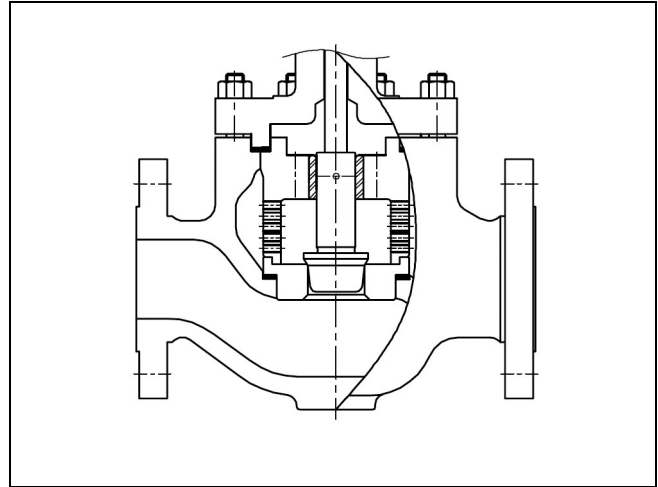
Contoured trim



Quick change, standard contoured trim

Quick change standard contoured plug offers a smooth flow profile. The trim is most suited to low pressure drop application and is used in the majority of control applications.

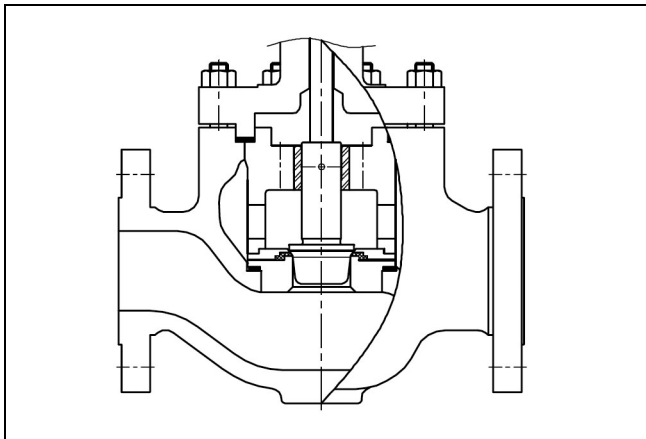
Tendril (multi-hole, multi-stage) trim



Tendril trim

The trim design is a multi-stage, multi-hole trim. There are 1 and 2 stage designs available depending on pressure drop and potential for cavitation. The pressure drop is divided between the stages so that the pressure progressively reduces as it passes through the stages of the trim. This gives excellent resistance to cavitation on high pressure drop applications.

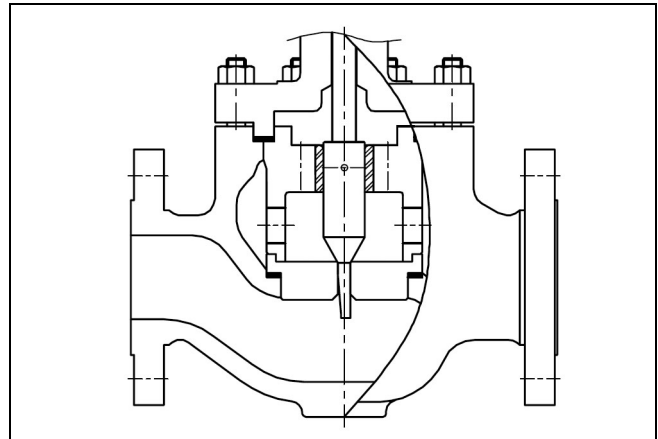
Contoured soft seat trim



Soft seat trim

An alteration of the standard contoured trim is the soft seated option. The seat ring is manufactured with a clamped on shroud which locks the soft seated ring in position. When the soft face contacts the seating point it deforms the softer ring ensuring a high degree of closure. The soft seated trim is used on applications where bubble tight shut off is required.

Micro trim



Micro trim

The micro trim design is seat guided construction, capable of handling high pressure drops, without instability problems. This trim design has an inherent characteristic of linear, and has excellent rangeability. It is an ideal selection for the control of very low flow rates. Please contact Metso for micro trim applications.

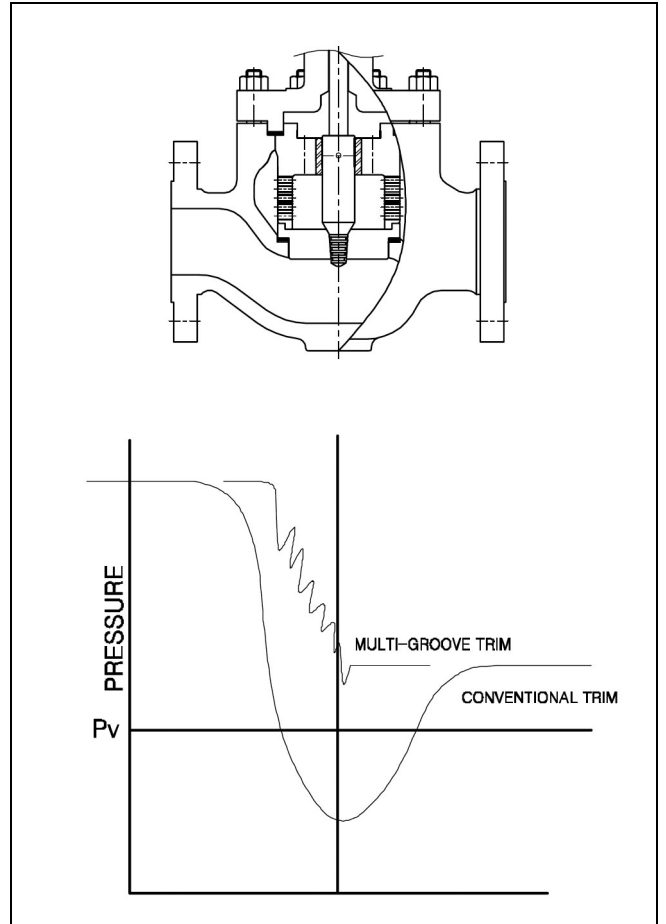
Different trim designs

Multi-groove trim



Multi-groove trim for non-compressible fluid applications is designed for any number of grooves required for preventing cavitation and eventual erosion from occurring. There are 7... 9 grooves designs available depending on pressure drop and potential for cavitation. The fluid passes through the flow path generated by incorporating angled flats onto the surface of the plug together with a cut out on the internal surface of the seat.

The pressure drop is divided across the stages of the trim so that the pressure drop progressively reduces as it passes through the grooves of the trim. This gives excellent resistance to cavitation on high pressure drop applications. For very high pressure drop applications the plug and seat insert would be manufactured from solid stellite and tungsten carbide or advanced glass metallic optionally. Please contact Metso for multi groove trim applications.



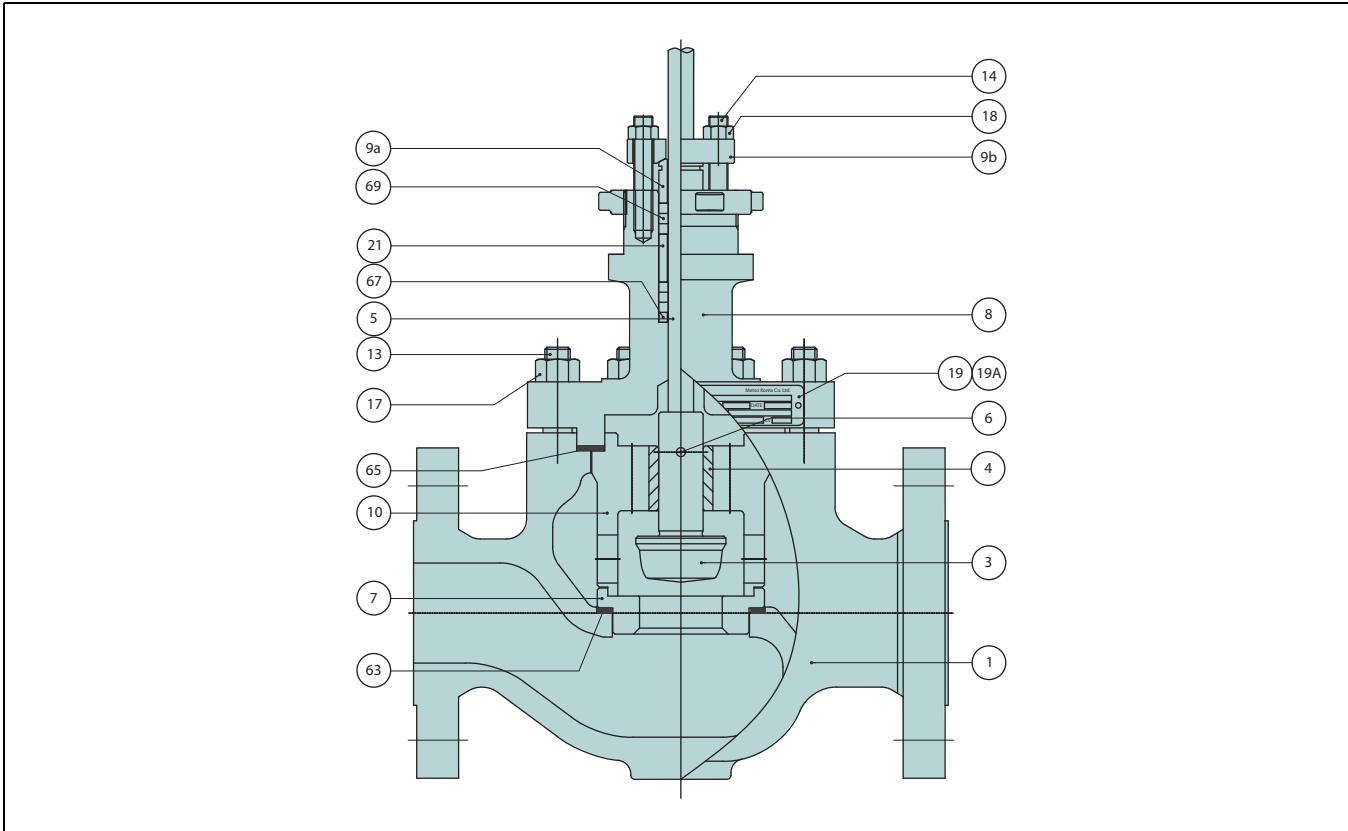
Multi-groove

GU, Ratings & end connetions

Valve size DN / Inch"	GU, ASME Ratings							
	Class 150 - 600				Class 900 - 2500			
	RF	RTJ	SW	BW	RF	RTJ	SW	BW
25 / 1	O	O	O		O	O	O	
40 / 1-1/2	O	O	O		O	O	O	
50 / 2	O	O	O		O	O	O	O
80 / 3	O	O		O				
100 / 4	O	O		O				

*Note 1. RF: Raised Face Flange, RTJ: Ring Joint, SW: Socket Weld, BW: Butt Weld
 2. ASME class 4500 is available on sizes 3/4" - 2" with weld end connection.

Components & materials



Body material: Carbon steel or alloy steel

Part no.	Description	Material
1	BODY	A216 WCB / ALLOY STEEL AVAILABLE
2	PLUG SET	410 SS / 630 SS
3*	PLUG	410 STAINLESS STEEL
5*	STEM	630 STAINLESS STEEL + HCr
6*	PLUG PIN	316 STAINLESS STEEL
4	GUIDE BUSHING	440C STAINLESS STEEL
7	SEAT RING	410 STAINLESS STEEL
8	BONNET	A216 WCB / ALLOY STAINLESS STEEL
9a	GLAND	304 STAINLESS STEEL
9b	GLAND FLANGE	A351 CF8
10	RETAINER	630 STAINLESS STEEL
13	STUD	A193 Gr.B7
14	STUD	A193 Gr.B8
17	HEXAGON NUT	A194 Gr.2H
18	HEXAGON NUT	A194 Gr.8
19	IDENTIFICATION PLATE	304 STAINLESS STEEL
19A	RIVET	304 STAINLESS STEEL
21	LANTERN RING(SPACE)	304 STAINLESS STEEL
63	SEAT GASKET	S/W GASKET, 316 SS + GRAPHITE
65	BODY GASKET	S/W GASKET, 316 SS + GRAPHITE
67	PACKING SPACER	304 STAINLESS STEEL
69	PACKING RING	PTFE + CARBON FIBER

- 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
 440C SS : ASTM A276 TP440C or 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 Metso
 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

Body material: Stainless steel

Part no.	Description	Material
1	BODY	A351 CF8M
2	PLUG SET	316 SS / 316 SS
3*	PLUG	316 STAINLESS STEEL
5*	STEM	316 STAINLESS STEEL + HCr
6*	PLUG PIN	316 STAINLESS STEEL
4	GUIDE BUSHING	316 + COBALT BASED ALLOY
7	SEAT RING	316 STAINLESS STEEL
8	BONNET	A351 CF8M
9a	GLAND	304 STAINLESS STEEL
9b	GLAND FLANGE	A351 CF8
10	RETAINER	A351 CF8M
13	STUD	A193 Gr.B8(M)
14	STUD	A193 Gr.B8
17	HEXAGON NUT	A194 Gr.8(M)
18	HEXAGON NUT	A194 Gr.8
19	IDENTIFICATION PLATE	304 STAINLESS STEEL
19A	RIVET	304 STAINLESS STEEL
21	LANTERN RING	304 STAINLESS STEEL
63	SEAT GASKET	S/W GASKET, 316 SS + GRAPHITE
65	BODY GASKET	S/W GASKET, 316 SS + GRAPHITE
67	PACKING SPACER	304 STAINLESS STEEL
69	PACKING RING	PTFE + CARBON FIBER

- 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
 3. Above standard materials to be applicable depending on specific service conditions, other optional materials to consult Metso
 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

GU, Application guide

GU, Temperature range and seat leakage class with different bonnet and seat application

Valve Size DN / Inch	ASME rating	Seat type	Temperature range (°C)		Seat leakage class (ANSI B 16.104)	
			Standard bonnet	Extension bonnet	Standard	Optional
25 / 1 ~ 100 / 4	150 ~ 600	Metal Seat	-29 ~ +260	196 ~ +425	IV	V
		Soft Seat	-29 ~ +232	-196 ~ +232	VI	
25 / 1 ~ 50 / 2	900 ~ 2500	Metal Seat	-29 ~ +260	-196 ~ +593	IV	V

Temperature range with different body and stud/nut materials

Body, Bonnet Material	Stud Bolt , Nut material	Temp. range, (°C)	Sign
Carbon steel (WCB, A105)	ASTM A193-B7 STUD ASTM A194-2H NUT	-29 ~ +425	A
Stainless steel (CF3, CF8,CF3M, CF8M)	ASTM A193-B7 STUD ASTM A194-2H NUT	-46 ~ +538	A
	ASTM A193(320)-B8(M) STUD ASTM A194(320)-8(M) NUT	-196 ~ +538	B
Cr.Mo. Steel (WC6, F11, WC9, F22,C12A, F91)	ASTM A193-B16 STUD ASTM A194-4 NUT	-29 ~ +593	*

*Please contact Metso

Trim materials

GU, Trim				Temperature range (°C)	Sign
Plug	Stem	Seat	Retainer		
410 SS	17-4PH + HCr	410 SS	17-4PH	-29 ~ +425	P1XBCS1R1X
316 SS	316 SS + HCr	316 SS	316 SS	-196 ~ +425	T6XTCS1T6X
316 SS + Cobalt based	316 SS + HCr	316 SS + Cobalt based	316 SS	-196 ~ +425	T6ATCS1T6A
420 J2	17-4PH + HCr	420 J2	420 J2	-29 ~ +425	*
316 SS	316 SS + HCr	316 SS + PTFE	316 SS	-196 ~ +232	*
17-4PH	17-4PH + HCr	410 SS	410 SS	-29 ~ +425	*
Inconel 718	Inconel 718	F91	F91	-29 ~ +593	*
Inconel 625, 718, 750				-196 ~ +645	*

*Please contact Metso

Gasket applications

Body, Bonnet material	Gasket material	Temp. range (°C)	Sign
Carbon steel WCB, A105	S/W (Spiral Wound) 316SS + Graphite	-29 ~ +425	S
Stainless steel CF8, CF8M, CF3, CF3M	S/W (Spiral Wound) 316SS + Graphite	-196 ~ +425	S
	S/W (Spiral Wound) 316SS + PTFE	-196 ~ +232	L
Cr.Mo. Steel WC6, WC9, F22, C12A, F91	S/W (Spiral Wound) 316SS + Graphite + Non Asbestos	-29 ~ +593	H
	S/W (Spiral Wound) 316SS+ Graphite + Mica (special Hi-Temp. max 950)		*

*Please contact Metso

Packing applications

Packing material	Temp (°C)	Sign
PTFE + Carbon Fiber (Braided TEF + Graphite), standard	-196 ~ +260	G
PTFE V-Ring	-196 ~ +232	T
Graphite (with Mold + Braided)	-196 ~ +400	F
Hi-Graphite (with Mold + Braided)	-196 ~ +593	Y
RTFE V-Ring + Metal	-40 ~ +350	Y

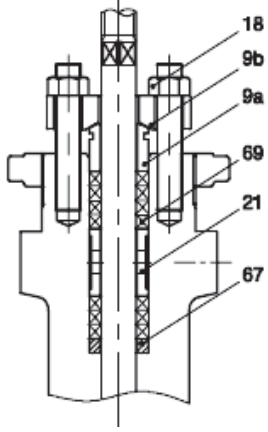
Flow direction

GU, Contoured Plug Un-Balanced	Fluid Media	Flow to Open	Flow to Close
	Liquid	o	
Steam Gas	o		

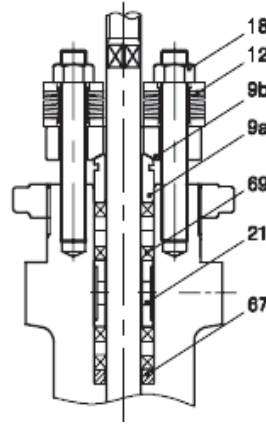
Cv Ratio 50 : 1

Flow Characteristics Equal percentage and Linear

Packing constructions



Standard construction



Low emission with
Live load spring

- 9a Gland
- 9b Gland flange
- 12 Disk spring ass'y
- 18 Hexagon nut
- 21 Lantern ring
- 67 Packing spacer
- 69 Packing ring

Rated Cv and trim table(Globe single seat, unbalanced type, series GU)

Sign	TRIM TYPE	Sign	TRIM CHARACTERISTIC	Sign	RATED Cv								
					Description	Body Size							
						1" Srk.	1-1/2" Srk.	2" Srk.	3" Srk.	4" Srk.			
A	Standard plug type	L	Linear	FC	Full capacity	13 (20)	26 (20)	48 (20)	112 (40)	198 (40)			
				E	Equal %	1A	1-Step reduction	8 (20)	16 (20)	28 (20)	68 (40)	118 (40)	
				Q	Quick opening	2A	2-Step reduction	5 (20)	10 (20)	16 (20)	40 (40)	70 (40)	
						3A	3-Step reduction	3 (20)	6 (20)	10 (20)	24 (40)	42 (40)	
		L	Linear	FT	Tendril 1 stage / Full capacity	11 (20)	22 (20)	44 (20)	100 (40)	174 (40)			
				1T	Tendril 1 stage / 1-Step reduction	8 (20)	14 (20)	28 (20)	62 (40)	110 (40)			
				2T	Tendril 1 stage / 2-Step reduction	5 (20)	8 (20)	16 (20)	38 (40)	68 (40)			
				3T	Tendril 1 stage / 3-Step reduction	3 (20)	5 (20)	10 (20)	24 (40)	40 (40)			
				FM	Tendril 2 stage / Full capacity	8 (20)	16 (20)	30 (20)	70 (40)	126 (40)			
				1M	Tendril 2 stage / 1-Step reduction	5 (20)	10 (20)	20 (20)	46 (40)	80 (40)			
				2M	Tendril 2 stage / 2-Step reduction	3 (20)	6 (20)	14 (20)	28 (40)	48 (40)			
				3M	Tendril 2 stage / 3-Step reduction	2 (20)	4 (20)	8 (20)	16 (40)	30 (40)			
		Q	Quick opening	FT	Tendril 1 stage / Full capacity	11 (20)	22 (20)	44 (20)	100 (40)	174 (40)			
				1T	Tendril 1 stage / 1-Step reduction	8 (20)	14 (20)	28 (20)	62 (40)	110 (40)			
				2T	Tendril 1 stage / 2-Step reduction	5 (20)	8 (20)	16 (20)	38 (40)	68 (40)			
				3T	Tendril 1 stage / 3-Step reduction	3 (20)	5 (20)	10 (20)	24 (40)	40 (40)			
				FM	Tendril 2 stage / Full capacity	8 (20)	16 (20)	30 (20)	70 (40)	126 (40)			
				1M	Tendril 2 stage / 1-Step reduction	5 (20)	10 (20)	20 (20)	46 (40)	80 (40)			
				2M	Tendril 2 stage / 2-Step reduction	3 (20)	6 (20)	14 (20)	28 (40)	48 (40)			
				3M	Tendril 2 stage / 3-Step reduction	2 (20)	4 (20)	8 (20)	16 (40)	30 (40)			
E	Equal %	FT	Tendril 1 stage / Full capacity	11 (20)	22 (20)	44 (20)	100 (40)	174 (40)					
		1T	Tendril 1 stage / 1-Step reduction	8 (20)	14 (20)	28 (20)	62 (40)	110 (40)					
		2T	Tendril 1 stage / 2-Step reduction	5 (20)	8 (20)	16 (20)	38 (40)	68 (40)					
		3T	Tendril 1 stage / 3-Step reduction	3 (20)	5 (20)	10 (20)	24 (40)	40 (40)					
		FM	Tendril 2 stage / Full capacity	8 (20)	16 (20)	30 (20)	70 (40)	126 (40)					
		1M	Tendril 2 stage / 1-Step reduction	5 (20)	10 (20)	20 (20)	46 (40)	80 (40)					
		2M	Tendril 2 stage / 2-Step reduction	3 (20)	6 (20)	14 (20)	28 (40)	48 (40)					
		3M	Tendril 2 stage / 3-Step reduction	2 (20)	4 (20)	8 (20)	16 (40)	30 (40)					
G	Multi groove plug type	L	Linear	FC	Full capacity	4 (20)	8 (20)	16 (20)	- (40)	- (40)			
				1A	1-Step reduction	3 (20)	6 (20)	10 (20)	- (40)	- (40)			
				2A	2-Step reduction	2 (20)	4 (20)	6 (20)	- (40)	- (40)			
				3A	3-Step reduction	1 (20)	2 (20)	4 (20)	(40)	(40)			
C	Micro plug type	L	Linear	-	-	Contact Metso for Cv details							
Y	Special	Y	Special	YY	Special	Contact Metso for Cv details							

* Rated Cv is separated depending on the trim type & trim characteristic.

* Optional rated Cv to meet to specific Cv are available.

* Micro(Mini flow) trim is available.

* (Srk) is the valve stroke in 'mm'.

* For trims without the specified Cv values, please contact Metso.

GU Series Cv vs Travel (Standard Contoured)

ANSI Class: 150# ~ 600#

Size: 1" ~ 4"

Flow Characteristic: LINEAR

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							0.93	0.93	0.92	0.92	0.91	0.91	0.91	0.90	0.90	0.90	0.90
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sign	Inch	mm	Inch	mm											
1"	25	FC	0.9	22.3	0.8	20	1.28	2.55	3.82	5.10	6.37	7.65	8.92	10.19	11.47	13.0	
		1A	0.6	16.0			0.79	1.57	2.35	3.14	3.92	4.71	5.49	6.27	7.06	8.0	
		2A	0.5	13.0			0.49	0.98	1.47	1.96	2.45	2.94	3.43	3.92	4.41	5.0	
		3A	0.3	8.0			0.29	0.59	0.88	1.18	1.47	1.76	2.06	2.35	2.65	3.0	
1- 1/2"	40	FC	1.3	33.7	0.8	20	2.55	5.10	7.65	10.20	12.75	15.29	17.84	20.39	22.94	26.0	
		1A	1.0	24.6			1.57	3.14	4.71	6.28	7.84	9.41	10.98	12.55	14.12	16.0	
		2A	0.7	18.0			0.98	1.96	2.94	3.92	4.90	5.88	6.86	7.84	8.82	10.0	
		3A	0.6	14.2			0.59	1.18	1.77	2.35	2.94	3.53	4.12	4.71	5.29	6.0	
2"	50	FC	1.7	43.9	0.8	20	4.71	9.42	14.12	18.83	23.53	28.23	32.94	37.64	42.35	48.0	
		1A	1.3	33.4			2.75	5.49	8.24	10.98	13.73	16.47	19.21	21.96	24.70	28.0	
		2A	1.0	24.4			1.57	3.14	4.71	6.28	7.84	9.41	10.98	12.55	14.12	16.0	
		3A	0.7	17.6			0.98	1.96	2.94	3.92	4.90	5.88	6.86	7.84	8.82	10.0	
3"	80	FC	2.7	69.1	1.5	40	11.00	21.97	32.95	43.93	54.90	65.88	76.85	87.83	98.81	112.0	
		1A	1.9	49.3			6.68	13.34	20.01	26.67	33.33	40.00	46.66	53.33	59.99	68.0	
		2A	1.5	37.1			3.93	7.85	11.77	15.69	19.61	23.53	27.45	31.37	35.29	40.0	
		3A	1.1	27.0			2.36	4.71	7.06	9.41	11.76	14.12	16.47	18.82	21.17	24.0	
4"	100	FC	3.6	91.5	1.5	40	19.44	38.85	58.25	77.66	97.06	116.46	135.87	155.27	174.68	198.0	
		1A	2.8	70.3			11.59	23.15	34.72	46.28	57.84	69.41	80.97	92.54	104.10	118.0	
		2A	1.9	49.3			6.87	13.73	20.59	27.45	34.31	41.17	48.03	54.89	61.75	70.0	
		3A	1.5	37.0			4.12	8.24	12.36	16.47	20.59	24.70	28.82	32.94	37.05	42.0	

NOTE
 Cv: Valve flow coefficient
 FL: Liquid pressure recovery factor
 FC: Full Capacity 1A: 1-Step reduction
 2A: 2-Step reduction 3A: 3-Step reduction

ANSI Class: 150# ~ 600#

Size: 1" ~ 4"

Flow Characteristic: EQ-%

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							0.93	0.93	0.92	0.92	0.91	0.91	0.91	0.90	0.90	0.90	0.90
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sign	Inch	mm	Inch	mm											
1"	25	FC	0.9	22.3	0.8	20	0.39	0.57	0.85	1.43	2.60	4.29	7.02	9.88	11.70	13.0	
		1A	0.6	16.0			0.24	0.35	0.52	0.88	1.60	2.64	4.32	6.08	7.20	8.0	
		2A	0.5	13.0			0.15	0.22	0.33	0.55	1.00	1.65	2.70	3.80	4.50	5.0	
		3A	0.3	8.0			0.09	0.13	0.20	0.33	0.60	0.99	1.62	2.28	2.70	3.0	
1-1/2"	40	FC	1.3	33.7	0.8	20	0.78	1.14	1.69	2.86	5.20	8.58	14.04	19.76	23.40	26.0	
		1A	1.0	24.6			0.48	0.70	1.04	1.76	3.20	5.28	8.64	12.16	14.40	16.0	
		2A	0.7	18.0			0.30	0.44	0.65	1.10	2.00	3.30	5.40	7.60	9.00	10.0	
		3A	0.6	14.2			0.18	0.26	0.39	0.66	1.20	1.98	3.24	4.56	5.40	6.0	
2"	50	FC	1.7	43.9	0.8	20	1.44	2.11	3.12	5.28	9.60	15.84	25.92	36.48	43.20	48.0	
		1A	1.3	33.4			0.84	1.23	1.82	3.08	5.60	9.24	15.12	21.28	25.20	28.0	
		2A	1.0	24.4			0.48	0.70	1.04	1.76	3.20	5.28	8.64	12.16	14.40	16.0	
		3A	0.7	17.6			0.30	0.44	0.65	1.10	2.00	3.30	5.40	7.60	9.00	10.0	
3"	80	FC	2.7	69.1	1.5	40	3.36	4.93	7.28	12.32	22.40	36.96	60.48	85.12	100.80	112.0	
		1A	1.9	49.3			2.04	2.99	4.42	7.48	13.60	22.44	36.72	51.68	61.20	68.0	
		2A	1.5	37.1			1.20	1.76	2.60	4.40	8.00	13.20	21.60	30.40	36.00	40.0	
		3A	1.1	27.0			0.72	1.06	1.56	2.64	4.80	7.92	12.96	18.24	21.60	24.0	
4"	100	FC	3.6	91.5	1.5	40	5.94	8.71	12.87	21.78	39.60	65.34	106.92	150.48	178.20	198.0	
		1A	2.8	70.3			3.54	5.19	7.67	12.98	23.60	38.94	63.72	89.68	106.20	118.0	
		2A	1.9	49.3			2.10	3.08	4.55	7.70	14.00	23.10	37.80	53.20	63.00	70.0	
		3A	1.5	37.0			1.26	1.85	2.73	4.62	8.40	13.86	22.68	31.92	37.80	42.0	

NOTE
 Cv: Valve flow coefficient
 FL: Liquid pressure recovery factor
 FC: Full Capacity 1A: 1-Step reduction
 2A: 2-Step reduction 3A: 3-Step reduction

Contoured Trim (with Tendril 1-Stage)

ANSI Class: 150# ~ 600#

Size: 1" ~ 4"

Flow Characteristic: LINEAR

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sign	Inch	mm	Inch	mm											
1"	25	FT	0.9	22.3	0.8	20	1.08	2.16	3.24	4.31	5.39	6.47	7.55	8.63	9.70	11.0	
		1T	0.6	15.7			0.79	1.57	2.35	3.14	3.92	4.71	5.49	6.27	7.06	8.0	
		2T	0.4	9.5			0.49	0.98	1.47	1.96	2.45	2.94	3.43	3.92	4.41	5.0	
		3T	0.3	6.4			0.29	0.59	0.88	1.18	1.47	1.76	2.06	2.35	2.65	3.0	
1- 1/2"	40	FT	1.3	33.7	0.8	20	2.16	4.32	6.47	8.63	10.78	12.94	15.10	17.25	19.41	22.0	
		1T	1.0	24.6			1.37	2.75	4.12	5.49	6.86	8.23	9.61	10.98	12.35	14.0	
		2T	0.7	18.0			0.79	1.57	2.35	3.14	3.92	4.71	5.49	6.27	7.06	8.0	
		3T	0.6	14.2			0.49	0.98	1.47	1.96	2.45	2.94	3.43	3.92	4.41	5.0	
2"	50	FT	1.7	43.9	0.8	20	4.32	8.63	12.94	17.26	21.57	25.88	30.19	34.50	38.82	44.0	
		1T	1.3	33.4			2.75	5.49	8.24	10.98	13.73	16.47	19.21	21.96	24.70	28.0	
		2T	1.0	24.4			1.57	3.14	4.71	6.28	7.84	9.41	10.98	12.55	14.12	16.0	
		3T	0.8	19.3			0.98	1.96	2.94	3.92	4.90	5.88	6.86	7.84	8.82	10.0	
3"	80	FT	2.7	69.1	1.5	40	9.82	19.62	29.42	39.22	49.02	58.82	68.62	78.42	88.22	100.0	
		1T	1.9	49.3			6.09	12.16	18.24	24.32	30.39	36.47	42.54	48.62	54.70	62.0	
		2T	1.5	37.1			3.73	7.46	11.18	14.90	18.63	22.35	26.08	29.80	33.52	38.0	
		3T	1.1	27.0			2.36	4.71	7.06	9.41	11.76	14.12	16.47	18.82	21.17	24.0	
4"	100	FT	3.6	91.5	1.5	40	16.89	33.75	50.60	67.46	84.31	101.17	118.03	134.88	151.74	172.0	
		1T	2.8	70.3			10.80	21.58	32.36	43.14	53.92	64.70	75.48	86.26	97.04	110.0	
		2T	1.9	49.3			6.68	13.34	20.01	26.67	33.33	40.00	46.66	53.33	59.99	68.0	
		3T	1.5	37.0			3.93	7.85	11.77	15.69	19.61	23.53	27.45	31.37	35.29	40.0	

NOTE

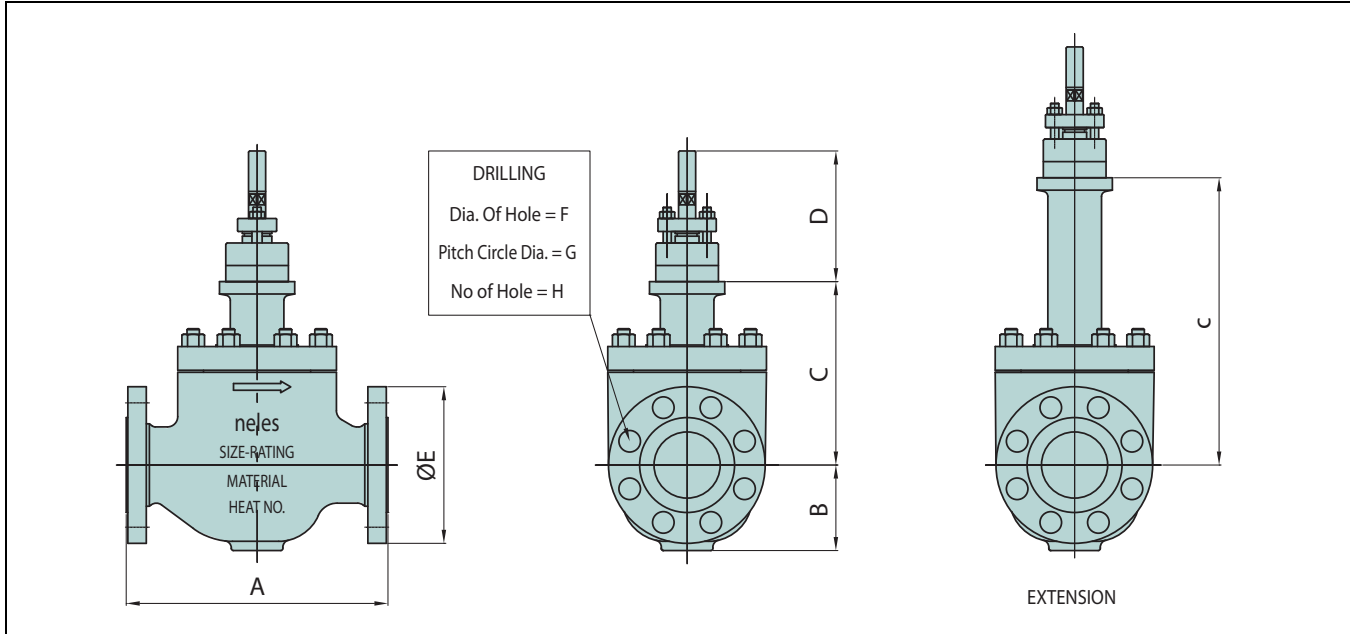
Cv: Valve flow coefficient

FL: Liquid pressure recovery factor

FT: Full Capacity 1T: 1-Step reduction

2T: 2-Step reduction 3T: 3-Step reduction

Valve dimensions and weights



150 # / 300 # / 600

(UNIT: mm)

Dimension Size	A			B			C		D	E			F			G			H			Weight (kg)		
	150#	300#	600#	150#	300#	600#	STD	EXT	COMMON	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
1/2"	184	190	203	44.5	47.5	47.5	142	250	110	90	95	95	15.9	15.9	15.9	60.3	66.7	66.7	4	4	4	14	15	23
3/4"	184	194	206	49	57.5	57.5	142	250	110	100	115	115	15.9	19.1	19.1	69.9	82.6	82.6	4	4	4	14	15	23
1"	184	197	210	55	63	63	142	250	110	110	125	125	15.9	19.1	19.1	79.4	88.9	88.9	4	4	4	14	15	23
1-1/2"	222	235	251	65	78	78	161	270	110	125	155	155	15.9	22.2	22.2	98.4	114.3	114.3	4	4	4	22	23	27
2"	254	267	286	83	83	83	178	295	110	150	165	165	19.1	19.1	19.1	120.7	127	127	4	8	8	25	27	32
3"	298	318	337	109	109	120	222	330	115	190	210	210	19.1	22.2	22.2	152.4	168.3	168.3	4	8	8	55	57	62
4"	352	368	394	135	135	135	248	380	140	230	255	275	19.1	22.2	25.4	190.5	200	215.9	8	8	8	100	103	112

NOTE
P.C.D = Pitch Circle Diameter

900 # / 1500

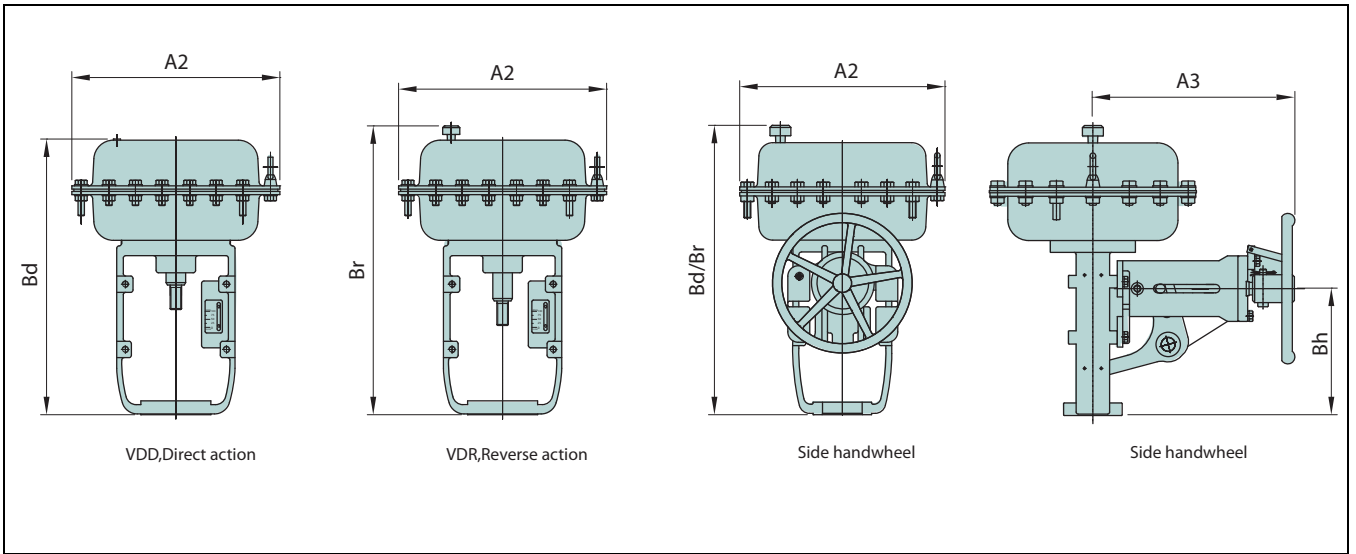
(UNIT: mm)

Dimension Size	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#
1/2"	292	292	82	82	236	330	110	120	120	22.2	22.2	82.6	82.6	4	4	44	46
3/4"	292	292	82	82	236	330	110	130	130	22.2	22.2	88.9	88.9	4	4	69	58
1"	292	292	82	82	236	330	110	150	150	25.4	25.4	101.6	101.6	4	4	70	76
1-1/2"	333	333	90	90	248	380	110	180	180	28.6	28.6	123.8	123.8	4	4	105	115
2"	375	375	113	113	240	380	110	215	215	25.4	25.4	165.1	165.1	8	8	130	140
3"	441	460	135	135	260	430	115	240	265	25.4	31.8	190.5	203.2	8	8	207	220
4"	511	530	182	182	376	475	140	290	310	31.8	34.9	235	241.3	8	8	397	475

NOTE
P.C.D = Pitch Circle Diameter

Actuator dimensions

VD Diaphragm actuators



(UNIT : mm)

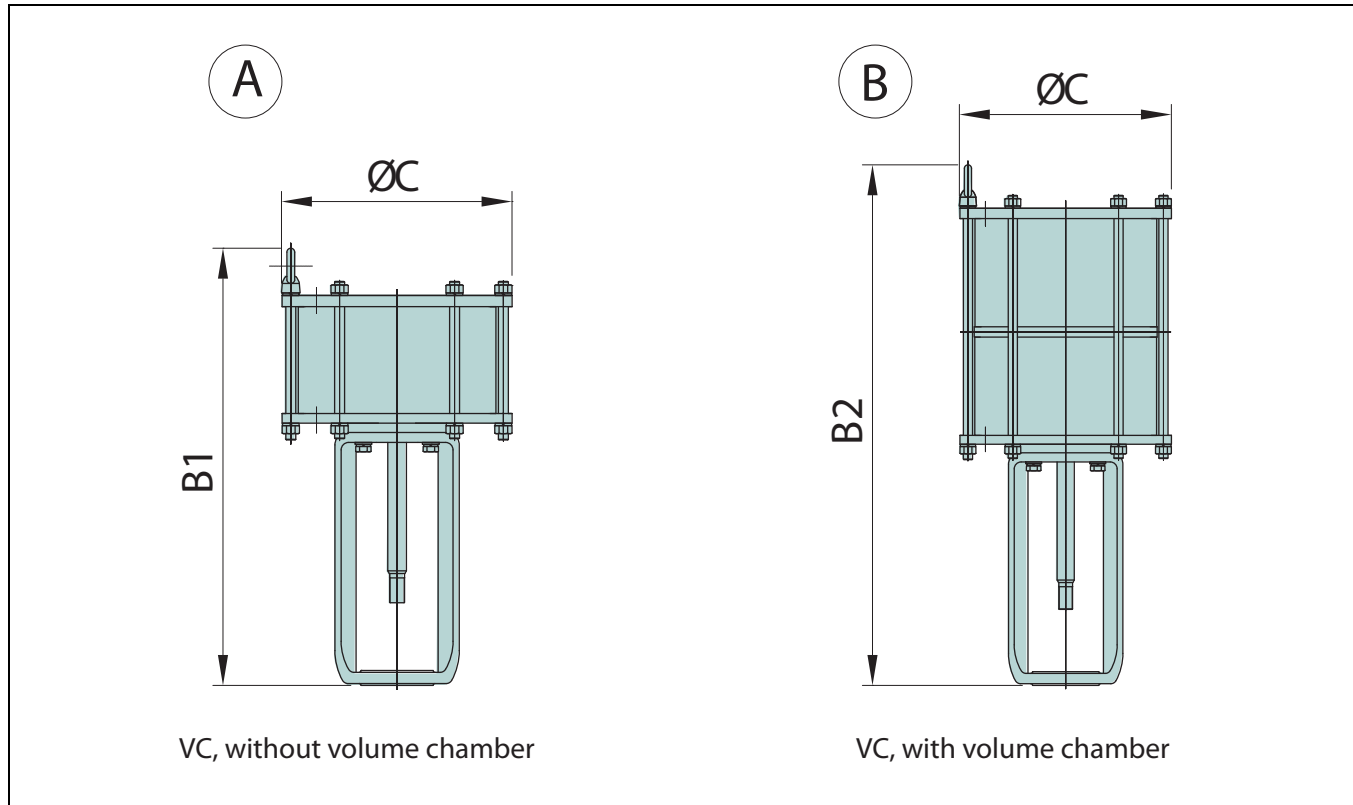
Size	Without handwheel				With handwheel					
	A2	Bd	Br	Weight (kg)	A2	Bd	Br	A3	Bh	Weight (kg)
#25	255	348	373	12	255	348	373	312	170	22
#29	295	391	416	18	295	391	416	312	182	28
#37	375	464	489	28	464	464	489	342	201	43
#48	486	652	677	86	486	652	677	464	244	119
#55	566	695	720	112	566	695	720	464	244	145

NOTE

1. 'Br' refers to reverse acting actuator, VDR
2. 'Bd' refers to direct acting actuator, VDD

Actuator dimensions

VC cylinder actuators without handwheel



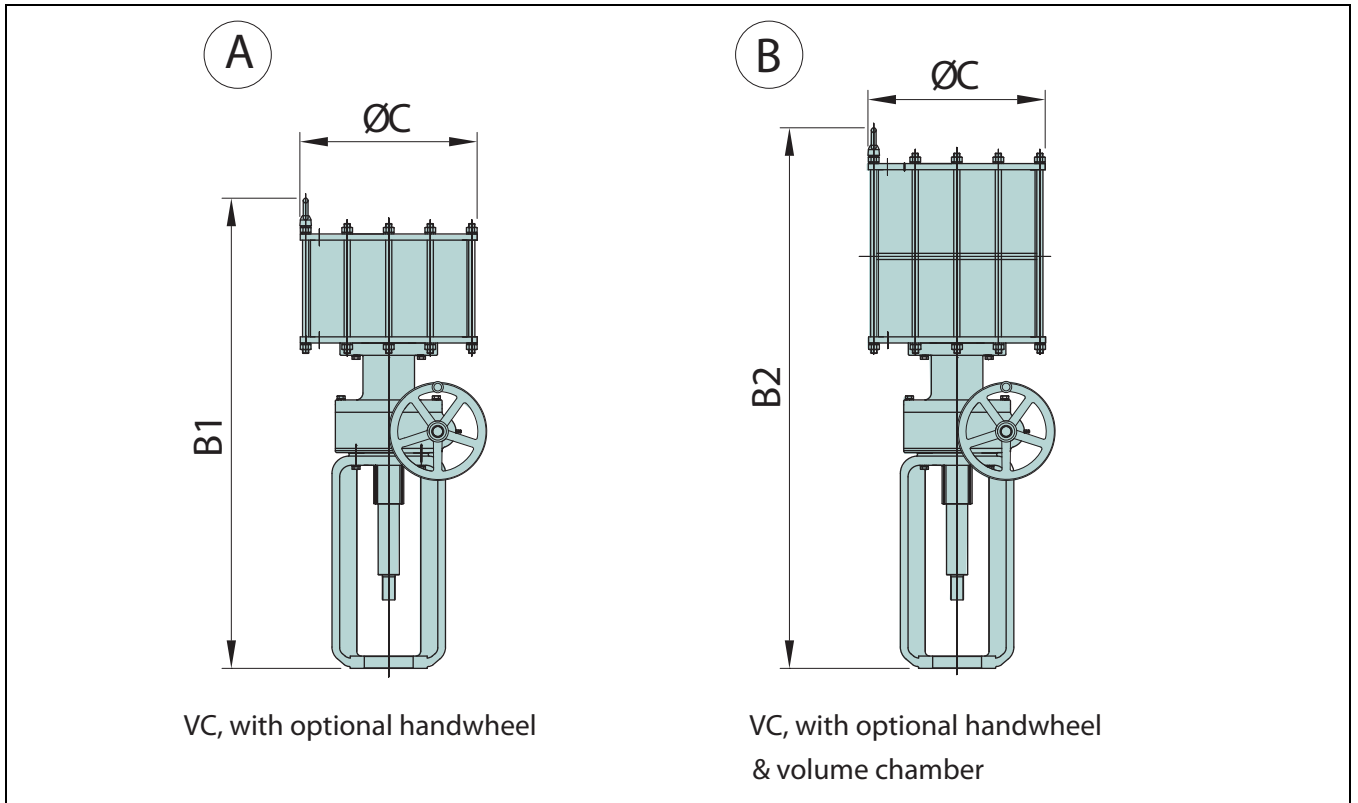
VC actuators without handwheel

(UNIT: mm)

Stroke (mm)	#30			Stroke (mm)	#40			Stroke (mm)	#50		
	Ø C	370			Ø C	460			Ø C	560	
	B1	Weight(kg)			B1	Weight(kg)			B1	Weight(kg)	
	B2	A	B		B2	A	B		B2	A	B
40	640	92	115	40	810	120	148	40	810	186	234
	760				935				935		
50	650	94	118	50	820	123	152	50	820	189	237
	790				965				965		
60	660	97	121	60	830	126	155	60	830	192	242
	820				995				995		
70	670	100	124	70	840	128	159	70	840	195	246
	850				1025				1025		
80	680	103	127	80	850	131	162	80	850	198	251
	880				1055				1055		
90	690	106	130	90	860	134	166	90	860	201	256
	910				1085				1085		
100	700	108	133	100	870	137	173	100	870	203	261
	940				1115				1115		
120	720	114	139	120	890	142	177	120	890	209	270
	1000				1175				1175		
				140	910	148	184	140	910	215	279
					1235				1235		
				180	950	159	198	180	950	227	298
					1355				1355		

Actuator dimensions

VC cylinder actuators with handwheel



VC actuators with handwheel

(UNIT: mm)

Stroke (mm)	#30			Stroke (mm)	#40			Stroke (mm)	#50		
	Ø C	370			Ø C	460			Ø C	560	
	B1	Weight(kg)			B1	Weight(kg)			B1	Weight(kg)	
	B2	A	B		B2	A	B		B2	A	B
40	930	134	157	40	1095	180	208	40	1095	246	294
	1055				1220				1220		
50	940	137	160	50	1105	183	212	50	1105	249	299
	1085				1250				1250		
60	950	139	163	60	1115	186	215	60	1115	252	303
	1115				1280				1280		
70	960	142	167	70	1125	188	219	70	1125	255	308
	1145				1310				1310		
80	970	144	170	80	1135	191	222	80	1135	258	313
	1175				1340				1340		
90	980	147	173	90	1145	194	226	90	1145	261	318
	1205				1370				1370		
100	990	150	176	100	1155	197	230	100	1155	263	322
	1235				1400				1400		
120	1010	155	183	120	1175	202	237	120	1175	269	332
	1295				1460				1460		
				140	1195	208	244	140	1195	275	341
					1520				1520		
				180	1235	219	258	180	1235	287	360
					1640				1640		

HOW TO ORDER

Globe single seat, unbalanced type, series GU

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
GU	01	C	W	A	J2	X	P1	X	BC	S1	R1	X	S	G	X	S	A	X	A	L	FC

VALVE CONSTRUCTIONS

1.	VALVE SERIES		
GU	Globe unbalanced, Top guided type		

2.	BODY SIZE		
01	1" / DN 25	1H	1-1/2" / DN 40
02	2" / DN 50	03	3" / DN 80
Optional body size			
04	4" / DN 100	YY	Special

3.	PRESSURE RATING		
C	ASME Class 150	D	ASME Class 300
Optional pressure rating			
F	ASME Class 600	Y	Special

4.	END CONNECTION		
W	Flanged RF, ASME B16.5		
Optional end connection			
V	Socket welding, ASME B16.11		
Q	Butt welding, ASME B16.25		
Z	Ring joint flange, ASME B16.5		
Y	Special		

5.	BONNET CONSTRUCTION	
Bonnet type	Actuator connection	
A	Standard	Standard actuator size
B	Standard	Applicable for VD_48/55 (3",4" only)
Optional bonnet construction		
E	Extension	Standard actuator size
F	Extension	Applicable for VD_48/55 (3",4" only)
L	Bellows seals	Standard actuator size
M	Bellows seals	Applicable for VD_48/55 (3",4" only)
Y	Special	Special

6.	BODY & BONNET MATERIAL		
J2	A216 gr. WCB	S6	A351 gr. CF8M
Optional Body & Bonnet Material			
S4	A351 gr. CF8	S9	A351 gr. CF3
S1	A351 gr. CF3M	YY	Special

7.	BEARINGS (TRUNNION / THRUST BEARING)		
X	Not applicable	Y	Special

TRIM CONSTRUCTIONS

8.	PLUG MATERIAL	
Material	Description	
P1	410 SS	Standard for carbon steel body
T6	316 SS	Standard for stainless steel body
Optional plug material		
VM	Alloy 6	Stellite 6 Alloy steel
YY	Special	Special materials

9.	PLUG APPLICATION	
X	Not applicable	
A	Cobalt based alloy	
Optional plug application		
Y	Special	

10.	STEM MATERIAL	
Material	Description	
BC	630 SS + HCr	Standard for carbon steel body
TC	316 SS + HCr	Standard for stainless steel body
YY	Special	Special materials

11.	SEAT TYPE	
S1	Single metal seat	
Optional seat type		
T1	Single soft seat	
YY	Special	

12.	SEAT / RETAINER MATERIAL		
Seat	Retainer	Guide bushing	
R1	CA15 / 410 SS	CB7Cu-1 / 630 SS	AISI 440C
T6	CF8M / 316 SS	CF8M / 316 SS	AISI 316 + Alloy 6
YY	Special	Special	Special

* CA15 / 410 SS is the standard material for carbon steel body.

** CF8M / 316 SS is the standard material for stainless steel body..

13.	SEAT APPLICATION	
X	Not applicable	
A	Cobalt based alloy	
Optional seat application		
p	Insert PTFE	
R	Insert RTFE	
Y	Special	

OTHERS

14. PACKING TYPE	
S	Standard
Optional packing type	
L	Live loaded packing
B	Bellows Seal (316L SS, Welded)
C	Bellows Seal (304 SS, Formed)
Y	Special

15. PACKING MATERIAL	
G	PTFE Carbon fiber
Optional packing material	
F	Graphite (with mold and braided)
Y	Special

16. SEALS MATERIAL	
X	Not applicable
Y	Special

17. GASKET MATERIAL	
S	S/W gasket type, 316 SS + Graphite for standard
Optional gasket material	
H	S/W gasket type, 316 SS + Graphite for high temp.
L	S/W gasket type, 316 SS + PTFE
Y	Special

18. STUD / NUT MATERIAL	
A	A193 gr. B7 / A194 gr. 2H
B	A193 gr. B8 / A194 gr. 8
Optional bolting material	
H	A193 gr. B16 / A194 gr. 4
Y	Special

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

* The body, bonnet, trim materials are subject to change as equivalent depending on detail design.

TRIM TYPE & RATED Cv

20. Sign	TRIM TYPE	21. Sign	TRIM CHARACTERISTIC	22. Sign	Description	RATED Cv													
						Body size													
						1"	Srk.	1-1/2"	Srk.	2"	Srk.	3"	Srk.	4"	Srk.				
A	Standard plug type	L	Linear	FC	Full capacity	13	(20)	26	(20)	48	(20)	112	(40)	198	(40)				
				1A	1-Step reduction	8	(20)	16	(20)	28	(20)	68	(40)	118	(40)				
				2A	2-Step reduction	5	(20)	10	(20)	16	(20)	40	(40)	70	(40)				
		Q	Quick opening	3A	3-Step reduction	3A	3-Step reduction	3	(20)	6	(20)	10	(20)	24	(40)	42	(40)		
						FT	Tendril 1 stage / Full capacity	11	(20)	22	(20)	44	(20)	100	(40)	174	(40)		
						1T	Tendril 1 stage / 1-Step reduction	8	(20)	14	(20)	28	(20)	62	(40)	110	(40)		
				L	Linear	Q	Quick opening	2T	Tendril 1 stage / 2-Step reduction	5	(20)	8	(20)	16	(20)	38	(40)	68	(40)
								3T	Tendril 1 stage / 3-Step reduction	3	(20)	5	(20)	10	(20)	24	(40)	40	(40)
								FM	Tendril 2 stage / Full capacity	8	(20)	16	(20)	30	(20)	70	(40)	126	(40)
								1M	Tendril 2 stage / 1-Step reduction	5	(20)	10	(20)	20	(20)	46	(40)	80	(40)
								2M	Tendril 2 stage / 2-Step reduction	3	(20)	6	(20)	14	(20)	28	(40)	48	(40)
								3M	Tendril 2 stage / 3-Step reduction	2	(20)	4	(20)	8	(20)	16	(40)	30	(40)
		E	Equal %	Q	Quick opening	FT	Tendril 1 stage / Full capacity	11	(20)	22	(20)	44	(20)	100	(40)	174	(40)		
						1T	Tendril 1 stage / 1-Step reduction	8	(20)	14	(20)	28	(20)	62	(40)	110	(40)		
						2T	Tendril 1 stage / 2-Step reduction	5	(20)	8	(20)	16	(20)	38	(40)	68	(40)		
						3T	Tendril 1 stage / 3-Step reduction	3	(20)	5	(20)	10	(20)	24	(40)	40	(40)		
						FM	Tendril 2 stage / Full capacity	8	(20)	16	(20)	30	(20)	70	(40)	126	(40)		
						1M	Tendril 2 stage / 1-Step reduction	5	(20)	10	(20)	20	(20)	46	(40)	80	(40)		
2M	Tendril 2 stage / 2-Step reduction					3	(20)	6	(20)	14	(20)	28	(40)	48	(40)				
3M	Tendril 2 stage / 3-Step reduction					2	(20)	4	(20)	8	(20)	16	(40)	30	(40)				
G	Multi groove plug type					L	Linear	FC	Full capacity	4	(20)	8	(20)	16	(20)	-	(40)	-	(40)
		1A	1-Step reduction	3	(20)			6	(20)	10	(20)	-	(40)	-	(40)				
		2A	2-Step reduction	2	(20)			4	(20)	6	(20)	-	(40)	-	(40)				
		3A	3-Step reduction	1	(20)			2	(20)	4	(20)	-	(40)	-	(40)				
C	Micro plug type	L	Linear	-	-	Contact Metso for Cv details													
Y	Special	Y	Special	YY	Special	Contact Metso for Cv details													

* Rated Cv is separated depending on the trim type & trim characteristic.

* Srk. & number in the bracket means the valve stroke in 'mm'.

Subject to change without prior notice.

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