

Series A angle pattern control valves

AU: Angle pattern-Unbalanced top guided

AB: Angle pattern-Balanced cage guided

AM: Angle pattern-Omega multi-path & multi-stage

Metso's Neles A series angle pattern 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. The A series valves are designed for use in both modulating control and on-off service and available with Unbalanced trim, Balanced cage trim and Omega multistage trim. They provide reliable operation and are well suited for many different kind of applications.

The angle pattern valves are especially suitable for severe applications where high pressure drop and erosive fluid exist. The flow in an angle valve does not impact directly into the body as it exits the trim, instead, it passes straight down into the downstream piping, which is an advantage if the fluid is erosive and moving at high velocity. Standard valves 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

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
- Omega multistage trim for severe service applications

Accurate control

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

Safety and quality

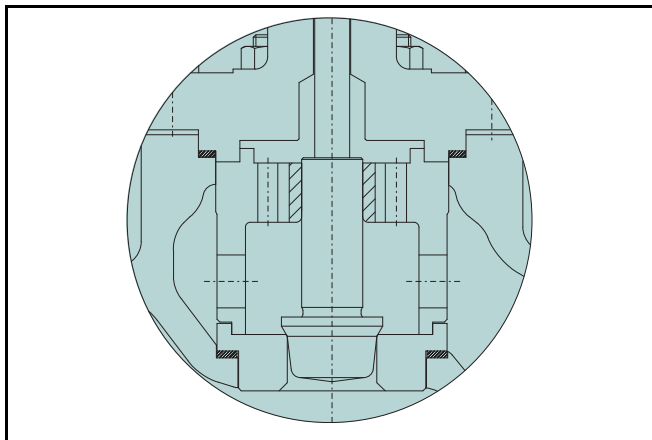
- Rugged one piece body structure to minimize the leak paths and makes the valve insensitive to pipe stress
- Strictly tested to ensure specified performance with quality assurance systems in according to ISO 9001
- Certified ISO 15848 fugitive emissions
- Certified CE/PED & ATEX, TSG & EAC (GOST-R)

Easy maintenance

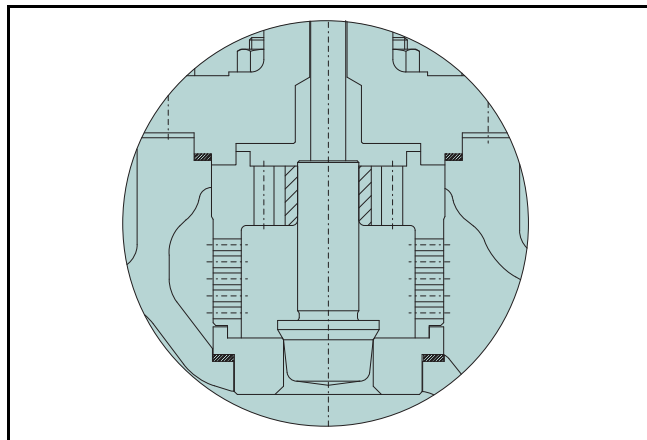
- Quick change trim and top entry construction for easy in-line maintenance
- Valve assembly is easy and self guiding
- Flow characteristics can be easily changed with interchangeable trim parts
- ND9000 digital valve controller with online diagnostics enables performance follow up and predictive maintenance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



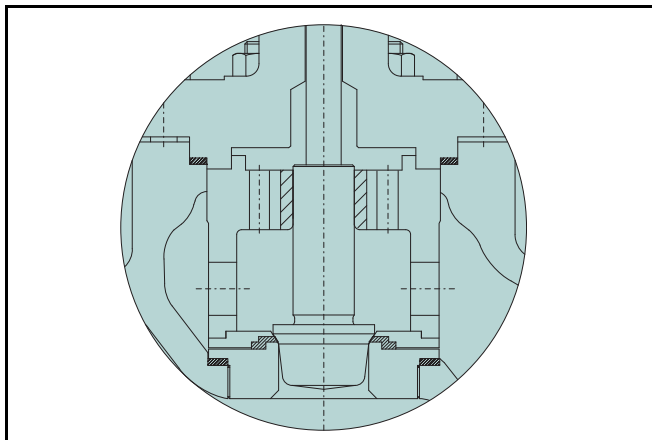
AU, Different trim designs



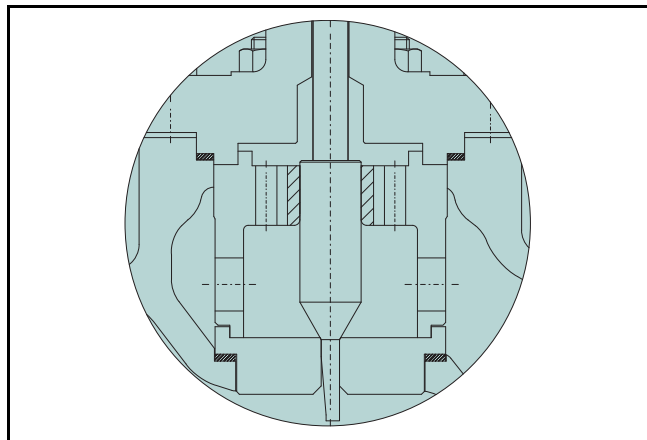
AU, standard contoured trim
 AU, Quick change standard contoured plug offers a smooth flow profile. The trim is most suited to low pressure drop application and is used in the majority of control applications.



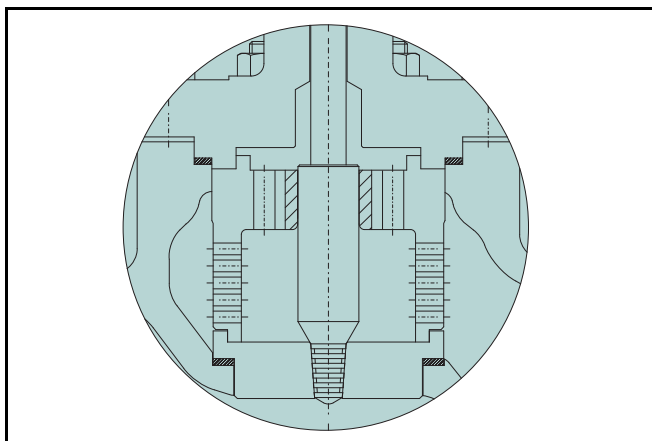
AU, Tendril trim
 AU, Tendril trim is multi drilled hole trim. This gives excellent resistance to noise on high pressure drop applications.



AU, Soft seat trim
 AU, Soft seat option is used on applications where bubble tight shut off, seat leakage class VI is required.



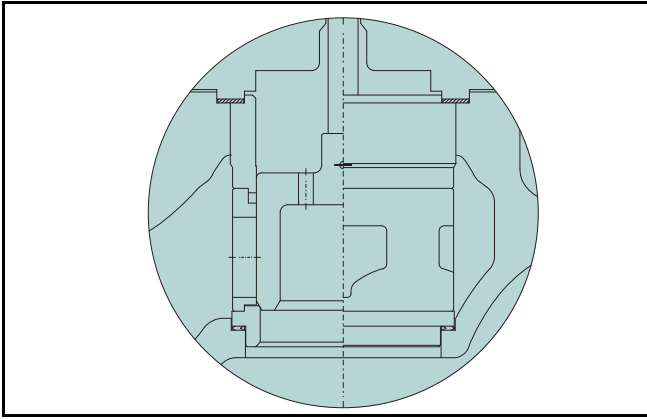
AU, Micro trim
 AU, Micro trim design is an ideal selection for the very low flow rates which is from rated Cv 0.003 to 0.1.



AU, Multi-groove

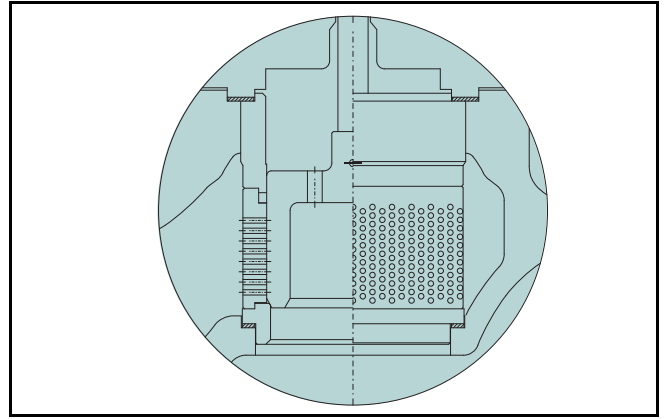
AU, Multi-groove trim for incompressible fluid applications is designed for any number of grooves required for preventing cavitation and eventual erosion from occurring. There are 7...11 grooves designs available depending on pressure drop and potential for cavitation. This trim gives excellent resistance to cavitation on high pressure drop applications with reasonable price.

AB, Different trim designs



Quick change, standard cage trim

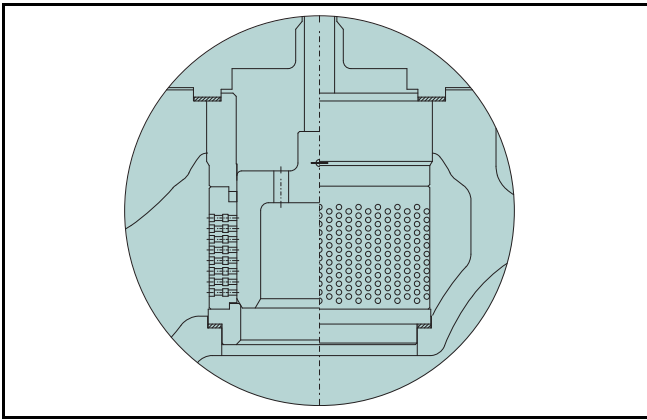
The standard cage trim is designed with a specially represented window shape cage and balanced plug. The window shape defines the flow path through the valve and the flow characteristic of the valve (linear, equal percentage, modified equal percentage or others). The balancing holes are located in the top of the plug. This trim is suited for both high and low pressure drop application and is used in the majority of control applications.



Tendril 1-stage

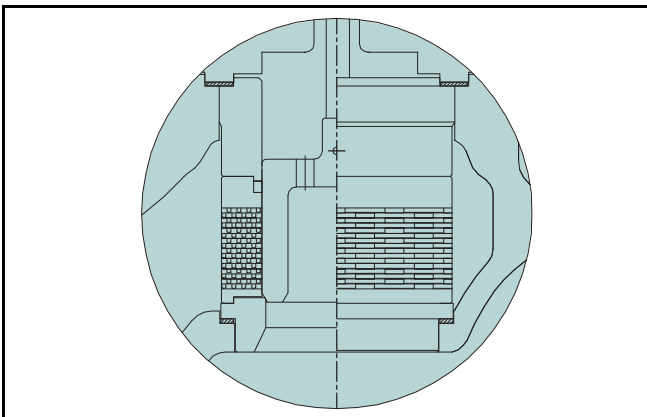
The trim design presented a multi-stage, multi-hole trim. There are 1 or 2 stages designs in standard depending on pressure drop and potential for cavitation.

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.



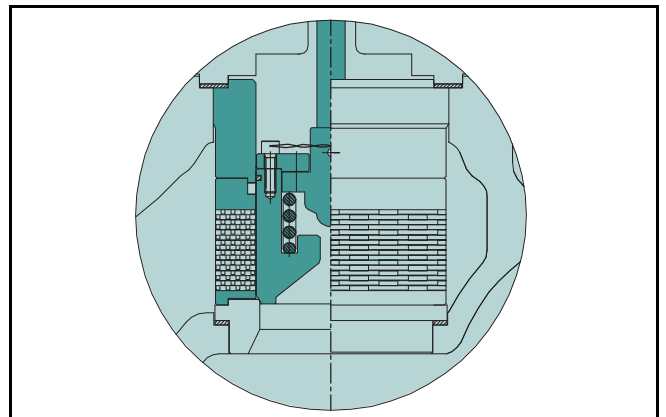
Tendril multi-stage trim

AM, Different trim designs



AM, 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.



AM, Omega quick change, Pilot balanced trim

Pilot balanced trim construction is designed with a special pilot plug & seat built-in the main plug. The design gives excellent seat tightness to leakage on high pressure drop and high temperature applications. The design applicable TSO (Tight Shut Off, seat leakage class V) requirement in high temperature services.

APPLICATION GUIDE

AU/AB/AM, Temperature range & seat leakage class with different bonnet & seat applications

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 ~ 400 / 16	150 ~ 600	Metal Seat	-29 ~ +260	-196 ~ +425	IV*	V
		Soft Seat	-29 ~ +232	-196 ~ +232	IV**	
25 / 1 ~ 400 / 16	900 ~ 1500	Metal Seat	-29 ~ +260	-196 ~ +593	IV*	V
25 / 1 ~ 400 / 16	2500	Metal Seat	-29 ~ +260	-196 ~ +593	IV*	V

*Leakage class will be IV for metal seat with soft seal, but class III for metal seat with metal or graphite seals

** Leakage class will be V for soft seat with soft seal.

Optional Class V is available by using pilot trim option or as a special option for metal seat with soft seal up to 4" size

AB/AM, Seal-ring applications

Seal Ring Application	Temp. Range (°C)	Sign
Spring Energized (PTFE + Graphite)	-40 ~ +260	G
Spring Energized (PTFE + Graphite) with back-up ring (ASME 1500 and higher)	-40 ~ +260	G
Spring Energized (PTFE)	-40 ~ +232	T
Spring Energized (Poly PTFE) with back-up ring	-196 ~ +232	L
Metal ring	-29 ~ +593	M
Metal C-seal ring	-29 ~ +593	C

*Please contact Metso.

AU/AB/AM, Temperature range with different body and stud/nut materials

Body, Bonnet Material	Stud , 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-B8 STUD ASTM A194-8 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.

AU/AB/AM, Trim materials

AU/AB/AM, Trim				Temperature Range (°C)	Sign
Plug	Stem	Seat	Retainer/ Cage/Disk		
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.

*Disk (AM) : Standard materials are 420J2 & Inconel 718, please contact Metso for other applications.

AU/AB/AM, 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.

AU/AB/AM, 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	H
RTFE V-Ring + Metal	- 40 ~ +350	M

*Please contact Metso.

Flow direction

AU Flow to open

AB

Standard cage	Tendril 1-stage	Tendril 2-stage	Pilot balance (all)
FTO / FTC	FTO / FTC	FTO / FTC	FTC

- * FTO: Flow to open, applicable for compressible fluids (air, gas, steam, etc.) except Pilot trim
- FTC: Flow to close, applicable for incompressible fluids (water and other liquids)
- * When selected Tendril 2-stage in Pilot design, the trim is applied 'Tendril 1-stage + diffuser' with FTC automatically.

AM

Standard Omega	Pilot Omega
FTO / FTC	FTC

- * FTO: Flow to open, applicable for compressible fluids (air, gas, steam, etc.) except Pilot trim
- FTC: Flow to close, applicable for incompressible fluids (water and other liquids)

Cv ratio

AU & AB 50: 1

AM 100: 1

Flow characteristics

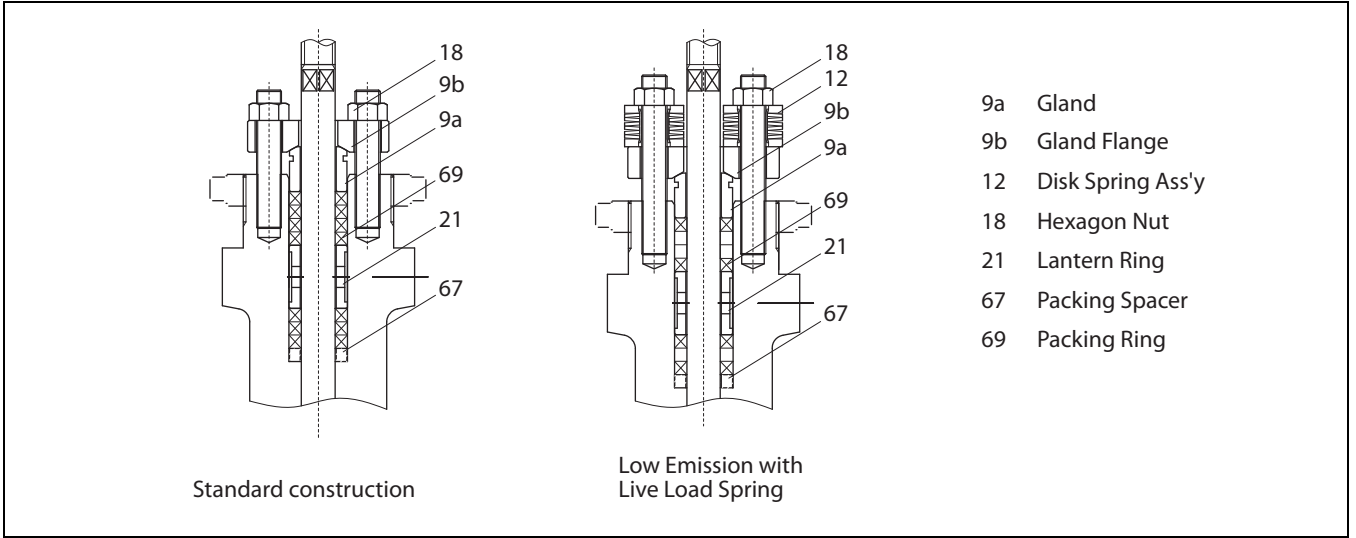
AU Equal percentage and Linear

AB Equal percentage and Linear

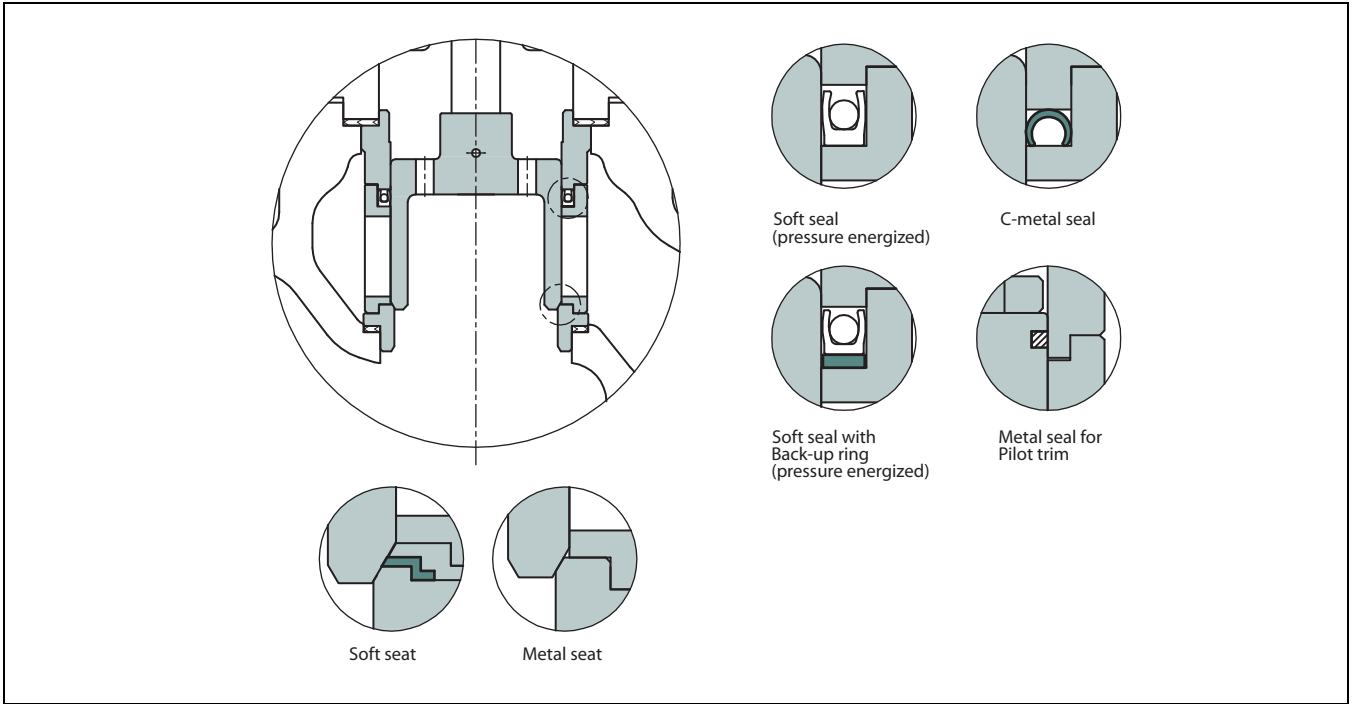
AM Linear

Customized %

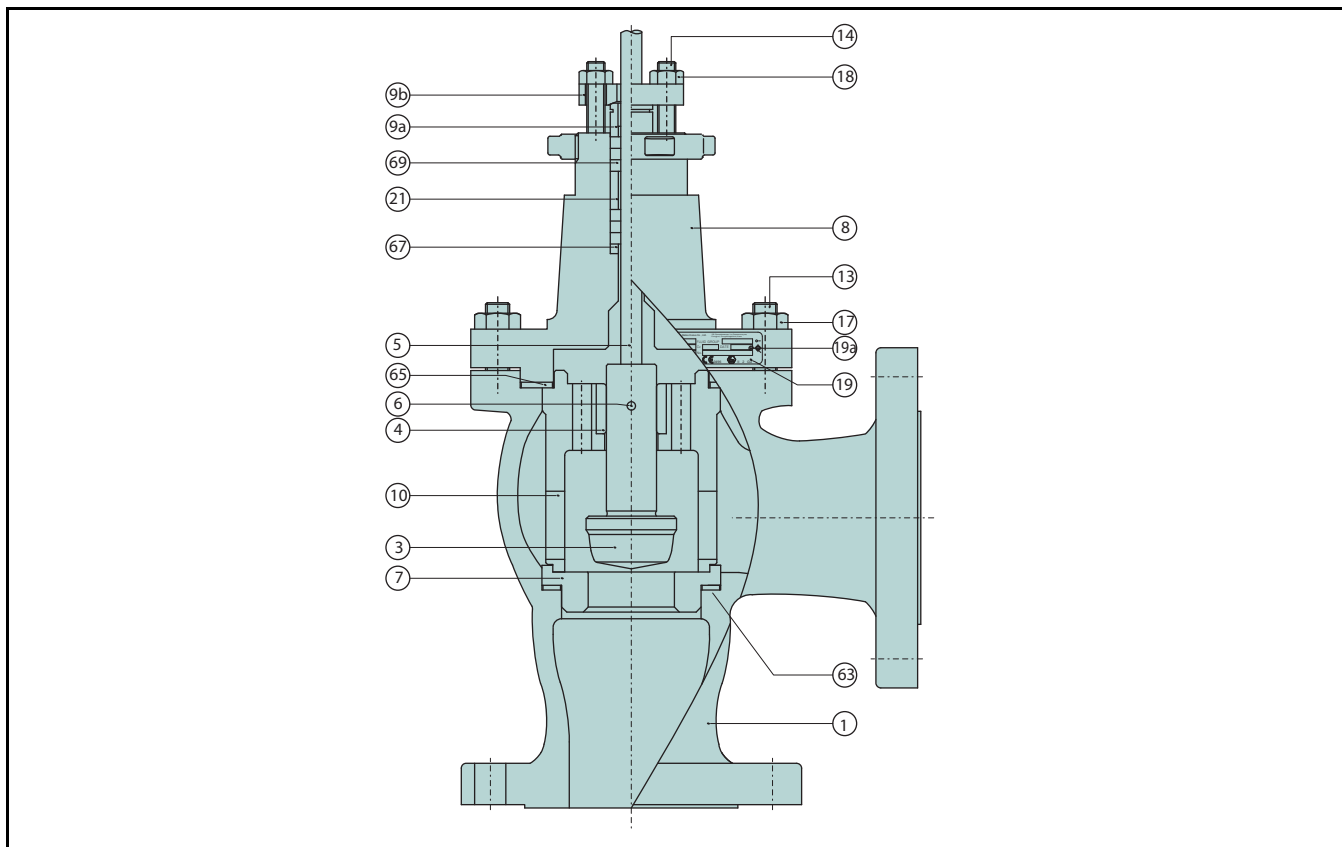
Packing constructions



Seal-ring & seat solutions for AB & AM valve trims



AU-Components & materials



Body materials: 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 + HCr
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	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, GRAPHITE

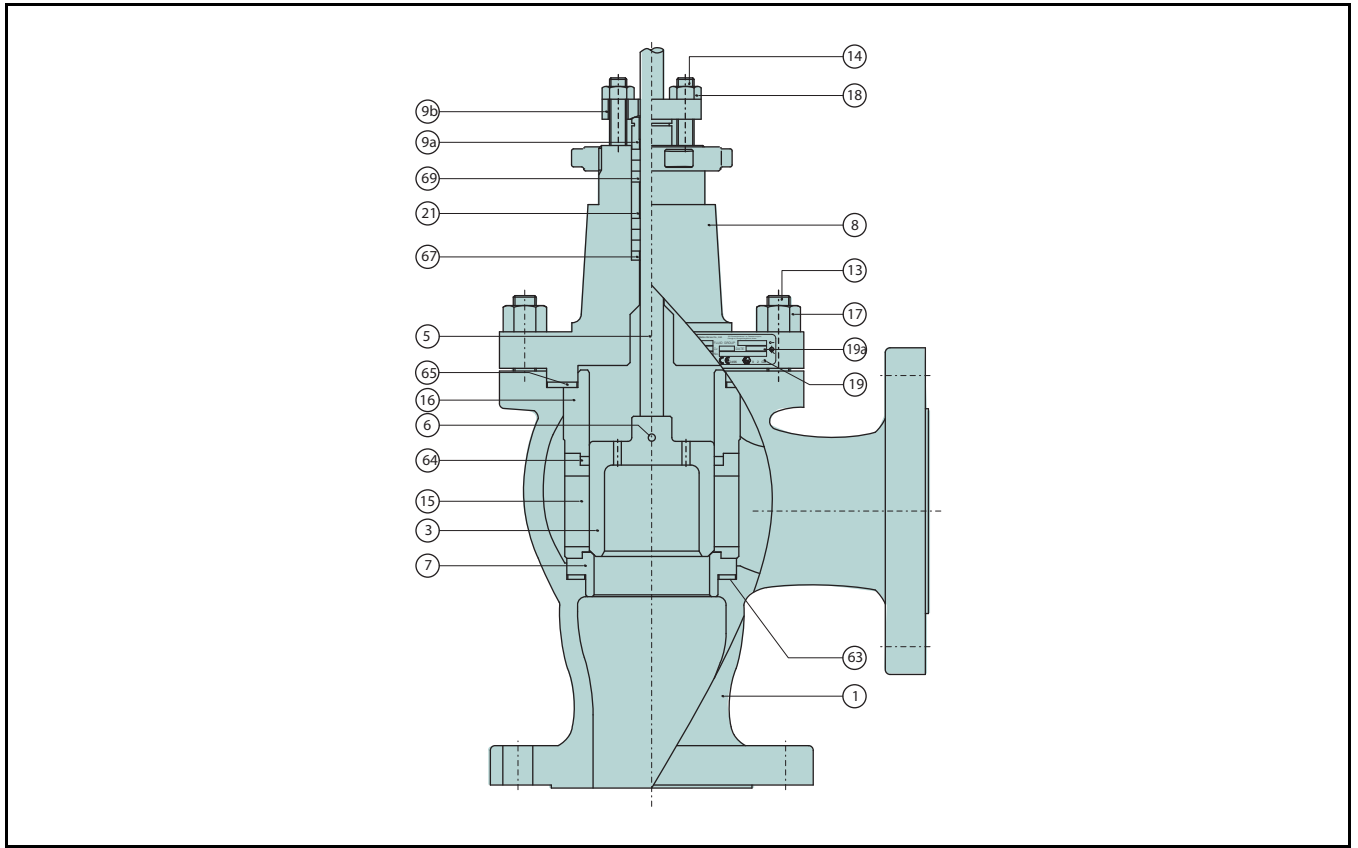
- Note.
1. Plug/Seat Hard Facing(Cobalt based alloy) & Soft Seat are available.
 2. Materials description
316 SS: ASTM A276 TP316 or JIS 316 St. Steel
410 SS: ASTM A276 TP410 or JIS 410 St. Steel
440C SS: ASTM A276 TP440C or JIS 440C St. Steel
17-4PH: ASTM A564 630(H1100) or JIS 630(H1100) St. Steel
 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 materials: 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, GRAPHITE

- 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.
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AB-Components & materials



Body materials: 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
7	SEAT RING	410 STAINLESS STEEL
8	BONNET	A216 WCB / ALLOY STAINLESS STEEL
9a	GLAND	304 STAINLESS STEEL
9b	GLAND FLANGE	A351 CF8
13	STUD	A193 Gr.B7
14	STUD	A193 Gr.B8
15	CAGE	630 STAINLESS STEEL + HCr
16	CAGE GUIDE	630 STAINLESS STEEL + HCr
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	304 STAINLESS STEEL
63	SEAT GASKET	S/W GASKET, 316 SS + GRAPHITE
64	SEAL RING	PTFE + GRAPHITE
65	BODY GASKET	S/W GASKET, 316 SS + GRAPHITE
67	PACKING SPACER	304 STAINLESS STEEL
69	PACKING RING	PTFE + CARBON FIBER, GRAPHITE

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.
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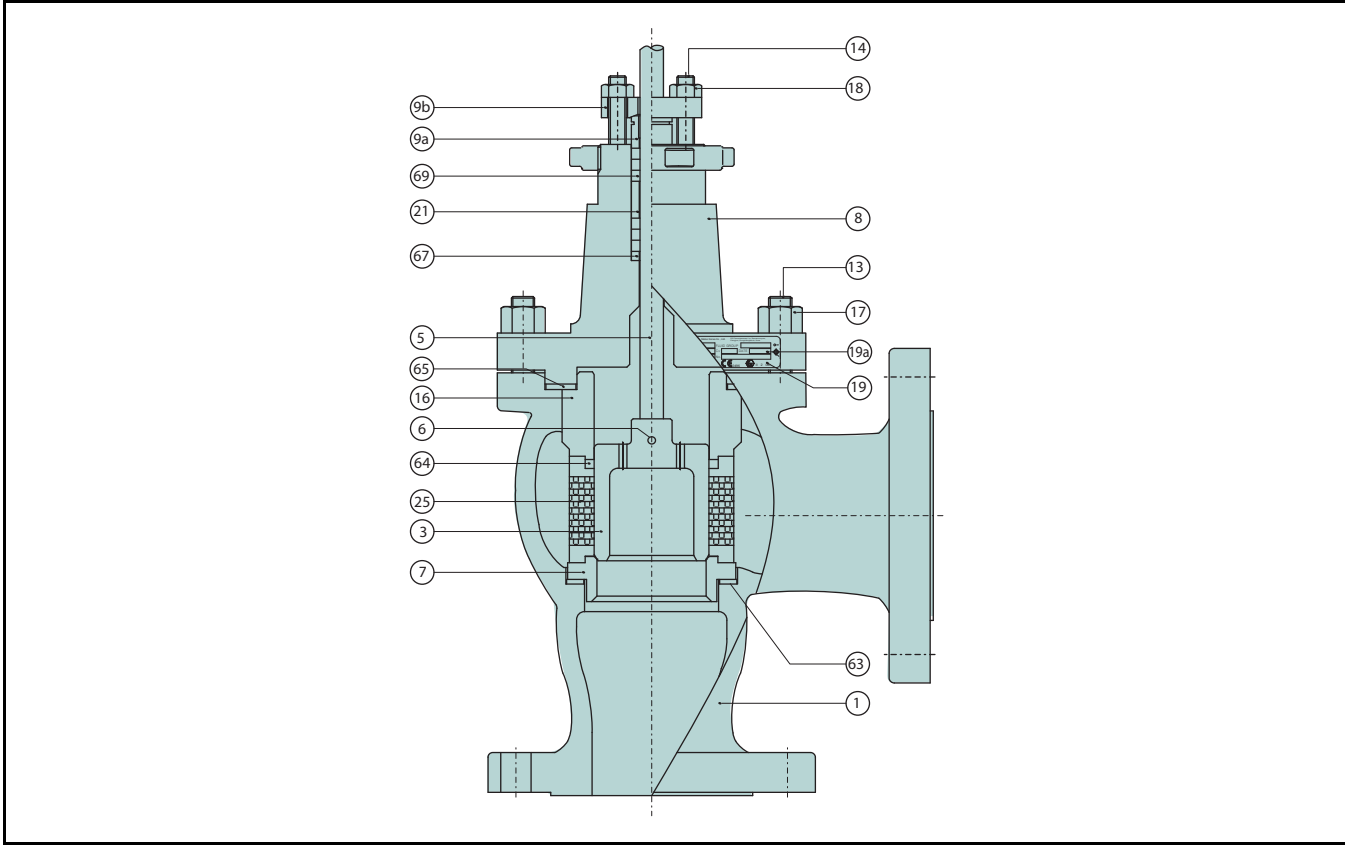
Body materials: Stainless steel

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
7	SEAT RING	316 STAINLESS STEEL
8	BONNET	A351 CF8M
9a	GLAND	304 STAINLESS STEEL
9b	GLAND FLANGE	A351 CF8
13	STUD	A193 Gr.B8(M)
14	STUD	A193 Gr.B8
15	CAGE	316 SS + HCr / CF8M + HCr
16	CAGE GUIDE	316 SS + HCr / CF8M + HCr
17	HEXAGON NUT	A194 Gr.8(M)
18	HEXAGON NUT	A194 Gr.8
19	IDENTIFICATION PLATE	304 STAINLESS STEEL
19a	RIVET	304 STAINLESS STEEL
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Note.

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2. Materials description
316 SS: ASTM A276 TP316 or JIS 316 St. Steel.
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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

AM-Components & materials



Body materials: Carbon steel or alloy steel

Part no.	Description	Material
1	Body	A216 WCB / ALLOY STEEL AVAILABLE
2	PLUG SET	420(J2) SS / 630 SS
3*	Plug	420(J2) STAINLESS STEEL
5*	Stem	630 STAINLESS STEEL + HCr
6*	Plug Pin	316 STAINLESS STEEL
7	Seat Ring	410 STAINLESS STEEL
8	Bonnet	A216 WCB / ALLOY STEEL AVAILABLE
9a	Gland	304 STAINLESS STEEL
9b	Gland Flange	A351 CF8
13	Stud	A193 Gr.B7
14	Stud	A193 Gr.B8
16	Cage Guide	420(J2) STAINLESS STEEL
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	304 STAINLESS STEEL
25	Disk Stack	420(J2) STAINLESS STEEL
63	Seat Gasket	S/W GASKET, 316 SS + GRAPHITE
64	Seal Ring	PTFE + GRAPHITE
65	Body Gasket	S/W GASKET, 316 SS + GRAPHITE
67	Packing Spacer	304 STAINLESS STEEL
69	Packing Ring	PTFE + CARBON FIBER, GRAPHITE

- 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 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 materials: Stainless steel

Part no.	Description	Material
1	Body	A351 CF8M
2	PLUG SET	420(J2) SS / 316 SS
3*	Plug	420(J2) STAINLESS STEEL
5*	Stem	316 STAINLESS STEEL + HCr
6*	Plug Pin	316 STAINLESS STEEL
7	Seat Ring	316 STAINLESS STEEL
8	Bonnet	A351 CF8M
9a	Gland	304 STAINLESS STEEL
9b	Gland Flange	A351 CF8
13	Stud	A193 Gr.B8(M)
14	Stud	A193 Gr.B8
16	Cage Guide	420(J2) STAINLESS STEEL
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
25	Disk Stack	420(J2) STAINLESS STEEL
63	Seat Gasket	S/W GASKET, 316 SS + GRAPHITE
64	Seal Ring	PTFE + GRAPHITE
65	Body Gasket	S/W GASKET, 316 SS + GRAPHITE
67	Packing Spacer	304 STAINLESS STEEL
69	Packing Ring	PTFE + CARBON FIBER, GRAPHITE

- 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 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.

Cv and Trim Table (Angle Single Seat, Unbalanced, AU)

Sign	TRIM TYPE	Sign	TRIM CHARACTERISTIC	Sign	RATED Cv							
					Description	1" Srk.	1-1/2" Srk.	2" Srk.	3" Srk.	4" Srk.		
A	Standard plug type	L	Linear	FC	Full capacity	14 (20)	28 (20)	52 (20)	124 (40)	220 (40)		
				1A	1-Step reduction	8 (20)	16 (20)	30 (20)	74 (40)	128 (40)		
				2A	2-Step reduction	5 (20)	10 (20)	18 (20)	46 (40)	78 (40)		
				3A	3-Step reduction	3 (20)	6 (20)	12 (20)	28 (40)	46 (40)		
		L	Quick opening	FT	Tendril 1 stage / Full capacity	12 (20)	24 (20)	44 (20)	100 (40)	196 (40)		
				1T	Tendril 1 stage / 1-Step reduction	8 (20)	14 (20)	28 (20)	62 (40)	114 (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)	32 (20)	74 (40)	130 (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	12 (20)	24 (20)	44 (20)	100 (40)	196 (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)	32 (20)	74 (40)	130 (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)	9 (20)	18 (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						

Cv and Trim Table (Angle, Balanced Trim, AB)

Sign	TRIM TYPE	Sign	TRIM CHARACTERISTIC	Sign	RATED Cv												
					Description	2" Srk	3" Srk	4" Srk	6" Srk	8" Srk	10" Srk	12" Srk	14" Srk	16" Srk			
A P	Standard plug type Pilot Balanced Type	L Q	Linear Quick-Opening	FC	Full capacity	82 (40)	174 (50)	280 (50)	470 (60)	810 (70)	1250 (80)	1810 (100)	2530 (120)	2960 (140)			
				1A	1-Step reduction	74 (40)	104 (50)	170 (50)	284 (60)	500 (70)	760 (80)	1100 (100)	1540 (120)	1780 (140)			
				2A	2-Step reduction	44 (40)	62 (50)	100 (50)	170 (60)	320 (70)	460 (80)	680 (100)	940 (120)	1080 (140)			
				3A	3-Step reduction	26 (40)	40 (50)	64 (50)	100 (60)	200 (70)	280 (80)	420 (100)	580 (120)	660 (140)			
				FT	Tendril 1 stage / Full capacity	72 (40)	156 (50)	250 (50)	420 (60)	720 (70)	1120 (80)	1620 (100)	2270 (120)	2660 (140)			
				1T	Tendril 1 stage / 1-Step reduction	44 (40)	94 (50)	156 (50)	256 (60)	430 (70)	680 (80)	980 (100)	1380 (120)	1600 (140)			
				2T	Tendril 1 stage / 2-Step reduction	26 (40)	56 (50)	94 (50)	156 (60)	260 (70)	420 (80)	590 (100)	830 (120)	980 (140)			
				3T	Tendril 1 stage / 3-Step reduction	18 (40)	34 (50)	60 (50)	94 (60)	156 (70)	252 (80)	360 (100)	500 (120)	600 (140)			
				FM	Tendril 2 stage / Full capacity	52 (40)	110 (50)	174 (50)	300 (60)	510 (70)	800 (80)	1150 (100)	1610 (120)	1890 (140)			
				1M	Tendril 2 stage / 1-Step reduction	30 (40)	68 (50)	110 (50)	180 (60)	310 (70)	500 (80)	700 (100)	980 (120)	1140 (140)			
	2M	Tendril 2 stage / 2-Step reduction	18 (40)	40 (50)	70 (50)	110 (60)	186 (70)	310 (80)	420 (100)	600 (120)	680 (140)						
	3M	Tendril 2 stage / 3-Step reduction	12 (40)	26 (50)	48 (50)	72 (60)	114 (70)	120 (80)	252 (100)	360 (120)	420 (140)						
					E	Equal %	FC	Full capacity	76 (40)	160 (50)	256 (50)	430 (60)	740 (70)	1140 (80)	1650 (100)	2300 (120)	2700 (140)
							1A	1-Step reduction	46 (40)	98 (50)	156 (50)	260 (60)	450 (70)	680 (80)	1000 (100)	1400 (120)	1640 (140)
							2A	2-Step reduction	28 (40)	60 (50)	94 (50)	156 (60)	270 (70)	410 (80)	640 (100)	840 (120)	980 (140)
							3A	3-Step reduction	18 (40)	36 (50)	60 (50)	96 (60)	164 (70)	250 (80)	384 (100)	520 (120)	600 (140)
							FT	Tendril 1 stage / Full capacity	68 (40)	140 (50)	230 (50)	384 (60)	660 (70)	1020 (80)	1480 (100)	2050 (120)	2420 (140)
							1T	Tendril 1 stage / 1-Step reduction	42 (40)	84 (50)	140 (50)	230 (60)	400 (70)	620 (80)	890 (100)	1240 (120)	1460 (140)
							2T	Tendril 1 stage / 2-Step reduction	24 (40)	50 (50)	86 (50)	142 (60)	250 (70)	380 (80)	540 (100)	760 (120)	880 (140)
							3T	Tendril 1 stage / 3-Step reduction	16 (40)	30 (50)	54 (50)	88 (60)	160 (70)	240 (80)	340 (100)	460 (120)	540 (140)
						FM	Tendril 2 stage / Full capacity	48 (40)	100 (50)	160 (50)	274 (60)	470 (70)	726 (80)	1050 (100)	1470 (120)	1720 (140)	
						1M	Tendril 2 stage / 1-Step reduction	28 (40)	60 (50)	94 (50)	164 (60)	284 (70)	440 (80)	640 (100)	890 (120)	1040 (140)	
						2M	Tendril 2 stage / 2-Step reduction	16 (40)	36 (50)	54 (50)	100 (60)	170 (70)	264 (80)	384 (100)	540 (120)	640 (140)	
						3M	Tendril 2 stage / 3-Step reduction	10 (40)	24 (50)	32 (50)	64 (60)	100 (70)	160 (80)	240 (100)	340 (120)	384 (140)	
Y	Special	Y	Special	YY	Special	Contact Metso for Cv details											

Cv and Trim Table (Angle, Balanced Omega Trim, AM)

Sign	TRIM TYPE	Sign	TRIM CHARACTERISTIC	Sign	RATED Cv														
					Description	Body size and stroke													
						1" Srk	1-1/2" Srk	2" Srk	3" Srk	4" Srk	6" Srk	8" Srk	10" Srk	12" Srk	14" Srk	16" Srk			
A P U	Balanced plug type Pilot balanced plug type Unbalanced plug type	L Q	Linear Quick opening	FG	Full capa. / Gas	7 (30)	16 (30)	26 (40)	54 (50)	84 (50)	146 (60)	252 (70)	384 (80)	560 (100)	770 (120)	1020 (140)			
				FL	Full capa. / Liquid														
				1G	1-Step red. / Gas														
				1L	1-Step red. / Liquid														
				2G	2-Step red. / Gas														
				2L	2-Step red. / Liquid														
				3G	3-Step red. / Gas														
	3L	3-Step red. / Liquid																	
					E	Equal %	FG	Full capa. / Gas	5 (30)	10 (30)	18 (40)	38 (50)	60 (50)	104 (60)	176 (70)	268 (80)	390 (100)	540 (120)	710 (140)
							FL	Full capa. / Liquid											
							1G	1-Step red. / Gas											
							1L	1-Step red. / Liquid											
							2G	2-Step red. / Gas											
							2L	2-Step red. / Liquid											
						3G	3-Step red. / Gas												
						3L	3-Step red. / Liquid												
Y	Special	Y	Special	YY	Special	Contact Metso for Cv details													

NOTE
 1. Rated Cvs are applied differently depending on the trim type & trim characteristics.
 2. The larger Cvs and sizes are available, please contact Metso.
 3. (Srk) means the valve stroke in mm.
 4. The other Cvs and trim types, please contact Metso.

A Series Cv vs Travel

AU - Contoured trim

ASME 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	Sing	Inch	mm	Inch	mm											
1"	25	FC	0.9	22.3	0.8	20	1.37	2.75	4.12	5.49	6.86	8.23	9.61	10.98	12.35	14.0	
		1A	0.6	15.7			0.79	1.57	2.35	3.14	3.92	4.71	5.49	6.27	7.06	8.0	
		2A	0.4	9.5			0.49	0.98	1.47	1.96	2.45	2.94	3.43	3.92	4.41	5.0	
		3A	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	FC	1.3	33.7	0.8	20	2.75	5.49	8.24	10.98	13.73	16.47	19.21	21.96	24.70	28.0	
		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	5.11	10.20	15.30	20.39	25.49	30.59	35.68	40.78	45.87	52.0	
		1A	1.3	33.4			2.95	5.89	8.83	11.77	14.71	17.65	20.59	23.53	26.47	30.0	
		2A	1.0	24.4			1.77	3.53	5.30	7.06	8.82	10.59	12.35	14.12	15.88	18.0	
		3A	0.8	19.3			1.18	2.35	3.53	4.71	5.88	7.06	8.23	9.41	10.59	12.0	
3"	80	FC	2.7	69.1	1.5	40	12.18	24.33	36.48	48.63	60.78	72.94	85.09	97.24	109.39	124.0	
		1A	1.9	49.3			7.27	14.52	21.77	29.02	36.27	43.53	50.78	58.03	65.28	74.0	
		2A	1.5	37.1			4.52	9.03	13.53	18.04	22.55	27.06	31.57	36.07	40.58	46.0	
		3A	1.1	27.0			2.75	5.49	8.24	10.98	13.73	16.47	19.21	21.96	24.70	28.0	
4"	100	FC	3.6	91.5	1.5	40	21.60	43.16	64.72	86.28	107.84	129.40	150.96	172.52	194.08	220.0	
		1A	2.8	70.3			12.57	25.11	37.66	50.20	62.75	75.29	87.83	100.38	112.92	128.0	
		2A	1.9	49.3			7.66	15.30	22.95	30.59	38.24	45.88	53.52	61.17	68.81	78.0	
		3A	1.5	37.0			4.52	9.03	13.53	18.04	22.55	27.06	31.57	36.07	40.58	46.0	

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

FC: Full Capacity

1A: 1-Step reduction

2A: 2-Step reduction

3A: 3-Step reduction

ASME 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	0.92	0.92	0.91	0.91	0.91	0.90
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sing	Inch	mm	Inch	mm											
1"	25	FC	0.9	22.3	0.8	20	0.42	0.62	0.91	1.54	2.80	4.62	7.56	10.64	12.60	14.0	
		1A	0.6	15.7			0.24	0.35	0.52	0.88	1.60	2.64	4.32	6.08	7.20	8.0	
		2A	0.4	9.5			0.15	0.22	0.33	0.55	1.00	1.65	2.70	3.80	4.50	5.0	
		3A	0.3	6.4			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	0.84	1.23	1.82	3.08	5.60	9.24	15.12	21.28	25.20	28.0	
		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	1.56	2.29	3.38	5.72	10.40	17.16	28.08	39.52	46.80	52.0	
		1A	1.3	33.4			0.90	1.32	1.95	3.30	6.00	9.90	16.20	22.80	27.00	30.0	
		2A	1.0	24.4			0.54	0.79	1.17	1.98	3.60	5.94	9.72	13.68	16.20	18.0	
		3A	0.8	19.3			0.36	0.53	0.78	1.32	2.40	3.96	6.48	9.12	10.80	12.0	
3"	80	FC	2.7	69.1	1.5	40	3.72	5.46	8.06	13.64	24.80	40.92	66.96	94.24	111.60	124.0	
		1A	1.9	49.3			2.22	3.26	4.81	8.14	14.80	24.42	39.96	56.24	66.60	74.0	
		2A	1.5	37.1			1.38	2.02	2.99	5.06	9.20	15.18	24.84	34.96	41.40	46.0	
		3A	1.1	27.0			0.84	1.23	1.82	3.08	5.60	9.24	15.12	21.28	25.20	28.0	
4"	100	FC	3.6	91.5	1.5	40	6.60	9.68	14.30	24.20	44.00	72.60	118.80	167.20	198.00	220.0	
		1A	2.8	70.3			3.84	5.63	8.32	14.08	25.60	42.24	69.12	97.28	115.20	128.0	
		2A	1.9	49.3			2.34	3.43	5.07	8.58	15.60	25.74	42.12	59.28	70.20	78.0	
		3A	1.5	37.0			1.38	2.02	2.99	5.06	9.20	15.18	24.84	34.96	41.40	46.0	

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

FC: Full Capacity

1A: 1-Step reduction

2A: 2-Step reduction

3A: 3-Step reduction

AU - Contoured trim (Tendril, 1-stage)

ASME 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	Sing	Inch	mm	Inch	mm											
1"	25	FT	0.9	22.3	0.8	20	1.18	2.35	3.53	4.71	5.88	7.06	8.23	9.41	10.59	12.0	
		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	2.36	4.71	7.06	9.41	11.76	14.12	16.47	18.82	21.17	24.0	
		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	19.25	38.46	57.66	76.87	96.08	115.29	134.50	153.70	172.91	196.0	
		1T	2.8	70.3			11.19	22.37	33.54	44.71	55.88	67.05	78.23	89.40	100.57	114.0	
		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
 C_v: Valve flow coefficient
 F_L : Liquid pressure recovery factor
 FC: Full Capacity 1A: 1-Step reduction 2A: 2-Step reduction 3A: 3-Step reduction

AB - Standard trim (Standard cage)

ASME Class: 150# ~ 600#

Size: 2" ~ 16"

Flow Characteristic : LINEAR

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							0.945	0.945	0.945	0.935	0.935	0.925	0.925	0.915	0.905	0.905	0.905
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sing	Inch	mm	Inch	mm											
2	50	FC	2.5	64.0	1.6	40	8.1	16.1	24.1	32.2	40.2	48.2	56.3	64.3	72.3	82	
		1A					7.3	14.5	21.8	29.0	36.3	43.5	50.8	58.0	65.3	74	
		2A					4.3	8.6	12.9	17.3	21.6	25.9	30.2	34.5	38.8	44	
		3A					2.6	5.1	7.6	10.2	12.7	15.3	17.8	20.4	22.9	26	
3	80	FC	3.5	89.0	2.0	50	17.1	34.1	51.2	68.2	85.3	102.3	119.4	136.5	153.5	174	
		1A					10.2	20.4	30.6	40.8	51.0	61.2	71.4	81.6	91.7	104	
		2A					6.1	12.2	18.2	24.3	30.4	36.5	42.5	48.6	54.7	62	
		3A					3.9	7.8	11.8	15.7	19.6	23.5	27.4	31.4	35.3	40	
4	100	FC	4.4	113.0	2.0	50	27.5	54.9	82.4	109.8	137.3	164.7	192.1	219.6	247.0	280	
		1A					16.7	33.4	50.0	66.7	83.3	100.0	116.7	133.3	150.0	170	
		2A					9.8	19.6	29.4	39.2	49.0	58.8	68.6	78.4	88.2	100	
		3A					6.3	12.6	18.8	25.1	31.4	37.6	43.9	50.2	56.5	64	
6	150	FC	5.2	132.0	2.4	60	46.2	92.2	138.3	184.3	230.4	276.5	322.5	368.6	414.6	470	
		1A					27.9	55.7	83.6	111.4	139.2	167.0	194.9	222.7	250.5	284	
		2A					16.7	33.4	50.0	66.7	83.3	100.0	116.7	133.3	150.0	170	
		3A					9.8	19.6	29.4	39.2	49.0	58.8	68.6	78.4	88.2	100	
8	200	FC	7.0	177.0	2.8	70	79.5	158.9	238.3	317.7	397.1	476.4	555.8	635.2	714.6	810	
		1A					49.1	98.1	147.1	196.1	245.1	294.1	343.1	392.1	441.1	500	
		2A					31.4	62.8	94.1	125.5	156.9	188.2	219.6	250.9	282.3	320	
		3A					19.6	39.2	58.8	78.4	98.0	117.6	137.2	156.8	176.4	200	
10	250	FC	8.5	217.0	3.1	80	122.8	245.3	367.8	490.3	612.8	735.3	857.8	980.3	1102.8	1250	
		1A					74.6	149.1	223.6	298.1	372.6	447.0	521.5	596.0	670.5	760	
		2A					45.2	90.3	135.3	180.4	225.5	270.6	315.7	360.7	405.8	460	
		3A					27.5	54.9	82.4	109.8	137.3	164.7	192.1	219.6	247.0	280	
12	300	FC	10.1	256.0	3.9	100	177.7	355.1	532.5	709.9	887.3	1064.6	1242.0	1419.4	1596.8	1810	
		1A					108.0	215.8	323.6	431.4	539.2	647.0	754.8	862.6	970.4	1100	
		2A					66.8	133.4	200.1	266.7	333.3	400.0	466.6	533.3	599.9	680	
		3A					41.2	82.4	123.6	164.7	205.9	247.0	288.2	329.4	370.5	420	
14	350	FC	12.2	311.0	4.7	120	248.4	496.4	744.3	992.3	1240.2	1488.1	1736.1	1984.0	2232.0	2530	
		1A					150.9	302.1	453.1	604.0	754.9	905.8	1056.7	1207.7	1358.6	1540	
		2A					92.1	184.4	276.5	368.7	460.8	552.9	645.0	737.1	829.3	940	
		3A					56.9	113.8	170.6	227.5	284.3	341.2	398.0	454.8	511.7	580	
16	400	FC	13.1	333.0	5.5	140	290.1	580.8	870.8	1160.9	1451.0	1741.1	2031.2	2321.2	2611.3	2960	
		1A					174.5	349.2	523.7	698.1	872.6	1047.0	1221.4	1395.9	1570.3	1780	
		2A					105.9	211.9	317.7	423.6	529.4	635.3	741.1	846.9	952.8	1080	
		3A					64.7	129.5	194.2	258.9	323.5	388.2	452.9	517.6	582.3	660	

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

FC: Full Capacity

1A: 1-Step reduction

2A: 2-Step reduction

3A: 3-Step reduction

AB - Standard trim (Standard cage)

ASME Class: 150# ~ 600#

Size: 2" ~ 16"

Flow Characteristic: EQ-%

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							0.945	0.945	0.945	0.945	0.945	0.945	0.935	0.925	0.925	0.925	0.905
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sing	Inch	mm	Inch	mm											
2	50	FC	2.5	64.0	1.6	40	2.28	3.34	4.94	8.36	15.20	25.08	41.04	57.76	68.40	76	
		1A					1.38	2.02	2.99	5.06	9.20	15.18	24.84	34.96	41.40	46	
		2A					0.84	1.23	1.82	3.08	5.60	9.24	15.12	21.28	25.20	28	
		3A					0.54	0.79	1.17	1.98	3.60	5.94	9.72	13.68	16.20	18	
3	80	FC	3.5	89.0	2.0	50	4.80	7.04	10.40	17.60	32.00	52.80	86.40	121.60	144.00	160	
		1A					2.94	4.31	6.37	10.78	19.60	32.34	52.92	74.48	88.20	98	
		2A					1.80	2.64	3.90	6.60	12.00	19.80	32.40	45.60	54.00	60	
		3A					1.08	1.58	2.34	3.96	7.20	11.88	19.44	27.36	32.40	36	
4	100	FC	4.4	113.0	2.0	50	7.68	11.26	16.64	28.16	51.20	84.48	138.24	194.56	230.40	256	
		1A					4.68	6.86	10.14	17.16	31.20	51.48	84.24	118.56	140.40	156	
		2A					2.82	4.14	6.11	10.34	18.80	31.02	50.76	71.44	84.60	94	
		3A					1.80	2.64	3.90	6.60	12.00	19.80	32.40	45.60	54.00	60	
6	150	FC	5.2	132.0	2.4	60	12.90	18.92	27.95	47.30	86.00	141.90	232.20	326.80	387.00	430	
		1A					7.80	11.44	16.90	28.60	52.00	85.80	140.40	197.60	234.00	260	
		2A					4.68	6.86	10.14	17.16	31.20	51.48	84.24	118.56	140.40	156	
		3A					2.88	4.22	6.24	10.56	19.20	31.68	51.84	72.96	86.40	96	
8	200	FC	7.0	177.0	2.8	70	22.20	32.56	48.10	81.40	148.00	244.20	399.60	562.40	666.00	740	
		1A					13.50	19.80	29.25	49.50	90.00	148.50	243.00	342.00	405.00	450	
		2A					8.10	11.88	17.55	29.70	54.00	89.10	145.80	205.20	243.00	270	
		3A					4.92	7.22	10.66	18.04	32.80	54.12	88.56	124.64	147.60	164	
10	250	FC	8.5	217.0	3.1	80	34.20	50.16	74.10	125.40	228.00	376.20	615.60	866.40	1026.00	1140	
		1A					20.40	29.92	44.20	74.80	136.00	224.40	367.20	516.80	612.00	680	
		2A					12.30	18.04	26.65	45.10	82.00	135.30	221.40	311.60	369.00	410	
		3A					7.50	11.00	16.25	27.50	50.00	82.50	135.00	190.00	225.00	250	
12	300	FC	10.1	256.0	3.9	100	49.50	72.60	107.25	181.50	330.00	544.50	891.00	1254.00	1485.00	1650	
		1A					30.00	44.00	65.00	110.00	200.00	330.00	540.00	760.00	900.00	1000	
		2A					19.20	28.16	41.60	70.40	128.00	211.20	345.60	486.40	576.00	640	
		3A					11.52	16.90	24.96	42.24	76.80	126.72	207.36	291.84	345.60	384	
14	350	FC	12.2	311.0	4.7	120	69.00	101.20	149.50	253.00	460.00	759.00	1242.00	1748.00	2070.00	2300	
		1A					42.00	61.60	91.00	154.00	280.00	462.00	756.00	1064.00	1260.00	1400	
		2A					25.20	36.96	54.60	92.40	168.00	277.20	453.60	638.40	756.00	840	
		3A					15.60	22.88	33.80	57.20	104.00	171.60	280.80	395.20	468.00	520	
16	400	FC	13.1	333.0	5.5	140	81.00	118.80	175.50	297.00	540.00	891.00	1458.00	2052.00	2430.00	2700	
		1A					49.20	72.16	106.60	180.40	328.00	541.20	885.60	1246.40	1476.00	1640	
		2A					29.40	43.12	63.70	107.80	196.00	323.40	529.20	744.80	882.00	980	
		3A					18.00	26.40	39.00	66.00	120.00	198.00	324.00	456.00	540.00	600	

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

AB, Tendril 1-stage

ASME Class: 150# ~ 600#

Size: 2" ~ 16"

Flow Characteristic: LINEAR

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sing	Inch	mm	Inch	mm											
2	50	FT	2.5	64.0	1.6	40	7.1	14.1	21.2	28.2	35.3	42.4	49.4	56.5	63.5	72	
		1T					4.3	8.6	12.9	17.3	21.6	25.9	30.2	34.5	38.8	44	
		2T					2.6	5.1	7.6	10.2	12.7	15.3	17.8	20.4	22.9	26	
		3T					1.8	3.5	5.3	7.1	8.8	10.6	12.4	14.1	15.9	18	
3	80	FT	3.5	89.0	2.0	50	15.3	30.6	45.9	61.2	76.5	91.8	107.0	122.3	137.6	156	
		1T					9.2	18.4	27.7	36.9	46.1	55.3	64.5	73.7	82.9	94	
		2T					5.5	11.0	16.5	22.0	27.5	32.9	38.4	43.9	49.4	56	
		3T					3.3	6.7	10.0	13.3	16.7	20.0	23.3	26.7	30.0	34	
4	100	FT	4.4	113.0	2.0	50	24.6	49.1	73.6	98.1	122.6	147.1	171.6	196.1	220.6	250	
		1T					15.3	30.6	45.9	61.2	76.5	91.8	107.0	122.3	137.6	156	
		2T					9.2	18.4	27.7	36.9	46.1	55.3	64.5	73.7	82.9	94	
		3T					5.9	11.8	17.7	23.5	29.4	35.3	41.2	47.1	52.9	60	
6	150	FT	5.2	132.0	2.4	60	41.2	82.4	123.6	164.7	205.9	247.0	288.2	329.4	370.5	420	
		1T					25.1	50.2	75.3	100.4	125.5	150.6	175.7	200.8	225.8	256	
		2T					15.3	30.6	45.9	61.2	76.5	91.8	107.0	122.3	137.6	156	
		3T					9.2	18.4	27.7	36.9	46.1	55.3	64.5	73.7	82.9	94	
8	200	FT	7.0	177.0	2.8	70	70.7	141.3	211.8	282.4	352.9	423.5	494.1	564.6	635.2	720	
		1T					42.2	84.4	126.5	168.6	210.8	252.9	295.1	337.2	379.3	430	
		2T					25.5	51.0	76.5	102.0	127.5	152.9	178.4	203.9	229.4	260	
		3T					15.3	30.6	45.9	61.2	76.5	91.8	107.0	122.3	137.6	156	
10	250	FT	8.5	217.0	3.1	80	110.0	219.7	329.5	439.3	549.0	658.8	768.5	878.3	988.1	1120	
		1T					66.8	133.4	200.1	266.7	333.3	400.0	466.6	533.3	599.9	680	
		2T					41.2	82.4	123.6	164.7	205.9	247.0	288.2	329.4	370.5	420	
		3T					24.7	49.4	74.1	98.8	123.5	148.2	172.9	197.6	222.3	252	
12	300	FT	10.1	256.0	3.9	100	159.1	317.8	476.6	635.4	794.1	952.9	1111.6	1270.4	1429.2	1620	
		1T					96.2	192.3	288.3	384.4	480.4	576.4	672.5	768.5	864.6	980	
		2T					57.9	115.8	173.6	231.4	289.2	347.0	404.9	462.7	520.5	590	
		3T					35.4	70.6	105.9	141.2	176.5	211.8	247.0	282.3	317.6	360	
14	350	FT	12.2	311.0	4.7	120	222.9	445.4	667.8	890.3	1112.8	1335.2	1557.7	1780.1	2002.6	2270	
		1T					135.3	270.8	406.0	541.2	676.5	811.7	947.0	1082.2	1217.4	1380	
		2T					81.4	162.8	244.2	325.5	406.9	488.2	569.5	650.9	732.2	830	
		3T					49.0	98.1	147.1	196.1	245.1	294.1	343.1	392.1	441.1	500	
16	400	FT	13.1	333.0	5.5	140	260.7	521.9	782.6	1043.3	1303.9	1564.6	1825.3	2086.0	2346.7	2660	
		1T					156.8	313.9	470.7	627.5	784.3	941.1	1097.9	1254.7	1411.5	1600	
		2T					96.1	192.3	288.3	384.4	480.4	576.4	672.5	768.5	864.6	980	
		3T					58.8	117.7	176.5	235.3	294.1	352.9	411.7	470.5	529.3	600	

NOTE

C_v : Valve flow coefficient

F_L : Liquid pressure recovery factor

FC: Full Capacity

1A: 1-Step reduction

2A: 2-Step reduction

3A: 3-Step reduction

AM - Omega, 10 turns

ASME Class: 150# ~ 2500

Size: 1" ~ 16"

Flow Characteristic: LINEAR

Valve Travel [%]							10	20	30	40	50	60	70	80	90	100	
F _L							1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Valve Size		Orifice Dia.			Travel		Rated Cv										
Inch	mm	Sign	Inch	mm	Inch	mm											
1	25	FC	0.6	15.7	1.2	30	0.69	1.37	2.06	2.75	3.43	4.12	4.80	5.49	6.18	7.0	
		1A					0.29	0.59	0.88	1.18	1.47	1.76	2.06	2.35	2.65	3.0	
		2A					0.16	0.31	0.47	0.63	0.78	0.94	1.10	1.25	1.41	1.6	
		3A					0.08	0.16	0.24	0.31	0.39	0.47	0.55	0.63	0.71	0.8	
1-1/2	40	FC	0.9	23.0	1.2	30	1.57	3.14	4.71	6.28	7.84	9.41	10.98	12.55	14.12	16.0	
		1A					0.79	1.57	2.35	3.14	3.92	4.71	5.49	6.27	7.06	8.0	
		2A					0.39	0.78	1.18	1.57	1.96	2.35	2.74	3.14	3.53	4.0	
		3A					0.20	0.39	0.59	0.78	0.98	1.18	1.37	1.57	1.76	2.0	
2	50	FC	1.5	37.0	1.6	40	2.55	5.10	7.65	10.20	12.75	15.29	17.84	20.39	22.94	26.0	
		1A					1.18	2.35	3.53	4.71	5.88	7.06	8.23	9.41	10.59	12.0	
		2A					0.59	1.18	1.77	2.35	2.94	3.53	4.12	4.71	5.29	6.0	
		3A					0.29	0.59	0.88	1.18	1.47	1.76	2.06	2.35	2.65	3.0	
3	80	FC	3.0	77.0	2.0	50	5.30	10.59	15.89	21.18	26.47	31.76	37.05	42.35	47.64	54	
		1A					2.75	5.49	8.24	10.98	13.73	16.47	19.21	21.96	24.70	28	
		2A					1.37	2.75	4.12	5.49	6.86	8.23	9.61	10.98	12.35	14	
		3A					0.69	1.37	2.06	2.75	3.43	4.12	4.80	5.49	6.18	7	
4	100	FC	3.6	91.0	2.0	50	8.2	16.5	24.7	32.9	41.2	49.4	57.6	65.9	74.1	84	
		1A					5.1	10.2	15.3	20.4	25.5	30.6	35.7	40.8	45.9	52	
		2A					2.6	5.1	7.6	10.2	12.7	15.3	17.8	20.4	22.9	26	
		3A					1.4	2.7	4.1	5.5	6.9	8.2	9.6	11.0	12.4	14	
6	150	FC	4.1	105.0	2.4	60	14.3	28.6	43.0	57.3	71.6	85.9	100.2	114.5	128.8	146	
		1A					8.8	17.7	26.5	35.3	44.1	52.9	61.8	70.6	79.4	90	
		2A					4.4	8.8	13.2	17.6	22.1	26.5	30.9	35.3	39.7	45	
		3A					2.2	4.3	6.5	8.6	10.8	12.9	15.1	17.3	19.4	22	
8	200	FC	6.9	176.0	3.1	70	24.7	49.4	74.1	98.8	123.5	148.2	172.9	197.6	222.3	252	
		1A					15.3	30.6	45.9	61.2	76.5	91.8	107.0	122.3	137.6	156	
		2A					7.7	15.3	22.9	30.6	38.2	45.9	53.5	61.2	68.8	78	
		3A					3.9	7.8	11.8	15.7	19.6	23.5	27.4	31.4	35.3	40	
10	250	FC	8.1	206.0	3.5	80	37.7	75.3	113.0	150.6	188.2	225.9	263.5	301.1	338.8	384	
		1A					23.0	45.9	68.8	91.8	114.7	137.6	160.6	183.5	206.4	234	
		2A					11.4	22.8	34.1	45.5	56.9	68.2	79.6	91.0	102.3	116	
		3A					5.7	11.4	17.1	22.7	28.4	34.1	39.8	45.5	51.2	58	
12	300	FC	10.1	256.0	4.7	100	55.0	109.9	164.8	219.6	274.5	329.4	384.3	439.2	494.0	560	
		1A					33.4	66.7	100.0	133.3	166.7	200.0	233.3	266.6	299.9	340	
		2A					16.7	33.4	50.0	66.7	83.3	100.0	116.7	133.3	150.0	170	
		3A					8.2	16.5	24.7	32.9	41.2	49.4	57.6	65.9	74.1	84	
14	350	FC	12.2	311.0	5.5	120	75.6	151.1	226.5	302.0	377.5	452.9	528.4	603.8	679.3	770	
		1A					46.1	92.2	138.3	184.3	230.4	276.5	322.5	368.6	414.6	470	
		2A					23.0	45.9	68.8	91.8	114.7	137.6	160.6	183.5	206.4	234	
		3A					11.4	22.8	34.1	45.5	56.9	68.2	79.6	91.0	102.3	116	
16	400	FC	13.1	333.0	6.3	140	100.0	200.1	300.1	400.0	500.0	600.0	699.9	799.9	899.8	1020	
		1A					61.2	122.4	183.6	244.7	305.9	367.0	428.2	489.3	550.5	624	
		2A					30.4	60.8	91.2	121.6	152.0	182.3	212.7	243.1	273.5	310	
		3A					15.1	30.2	45.3	60.4	75.5	90.6	105.7	120.8	135.9	154	

NOTE

C_v : Valve flow coefficient

F_L : Liquid pressure recovery factor

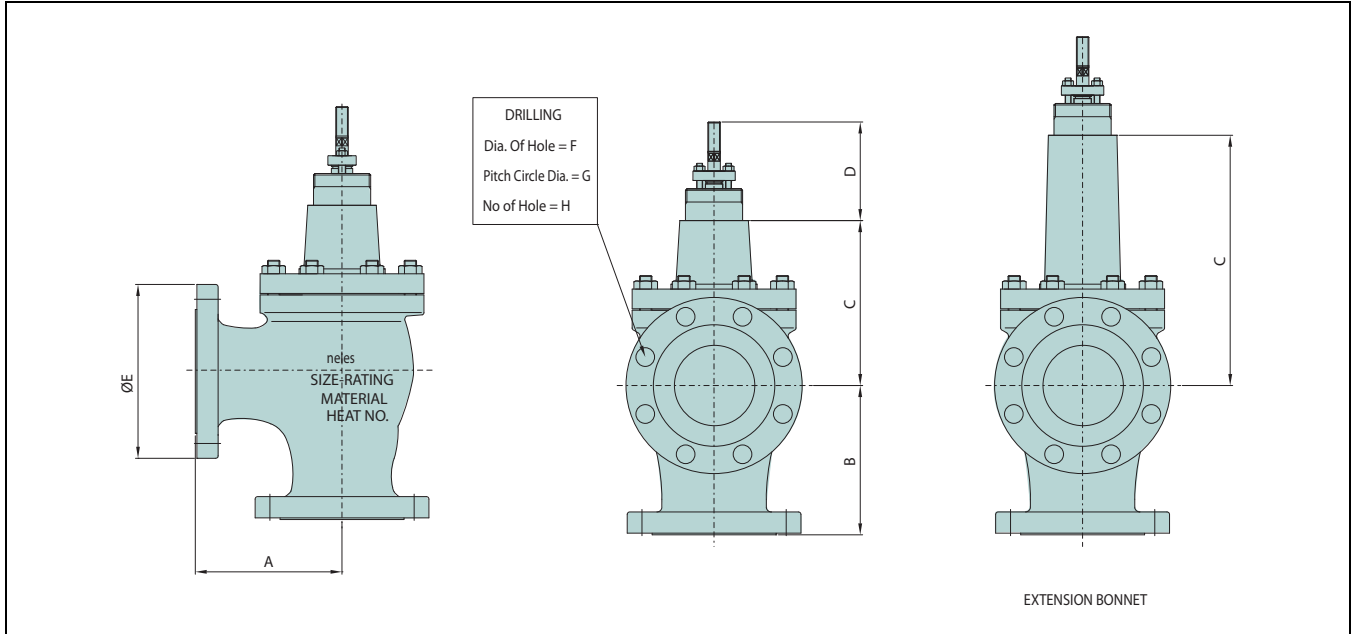
FC: Full Capacity

1A: 1-Step reduction

2A: 2-Step reduction

3A: 3-Step reduction

A series, 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"	92	99	105	92	99	105	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"	111	118	126	111	118	126	161	295	110	125	155	155	15.9	22.4	22.4	98.4	114.3	114.3	4	4	4	22	23	27
2"	127	134	143	127	134	143	178	295	110	150	165	165	19.1	19.1	19.1	120.7	127	127	4	8	8	25	27	32
3"	149	159	169	149	159	169	222	330	115	190	210	210	19.1	22.2	22.4	152.4	168.3	168.3	4	8	8	65	67	72
4"	176	184	197	176	184	197	248	380	140	230	255	275	19.1	22.2	25.4	190.5	200	215.9	8	8	8	100	103	112
6"	226	237	254	226	237	254	340	430	150	280	320	355	22.2	22.2	28.6	241.3	269.9	292.1	8	12	12	185	195	240
8"	272	284	305	272	284	305	451	490	150	345	380	420	22.2	25.4	31.8	298.5	330.2	349.2	8	12	12	363	385	443
10"	337	354	376	337	354	376	488	600	150	405	445	510	25.4	28.6	34.9	362	387.4	431.8	12	16	16	552	595	681
12"	369	388	410	369	388	410	543	660	150	485	520	560	25.4	31.8	34.9	431.8	450.8	489	12	16	20	905	955	1020
14"	445	464	486	445	464	486	616	740	210	535	585	605	28.6	31.8	38.1	476.3	514.4	527	12	20	20	1170	1230	1311
16"	508	529	554	508	529	554	692	820	220	595	650	685	28.6	34.9	41.3	539.8	571.5	603.2	16	20	20	1380	1460	1587

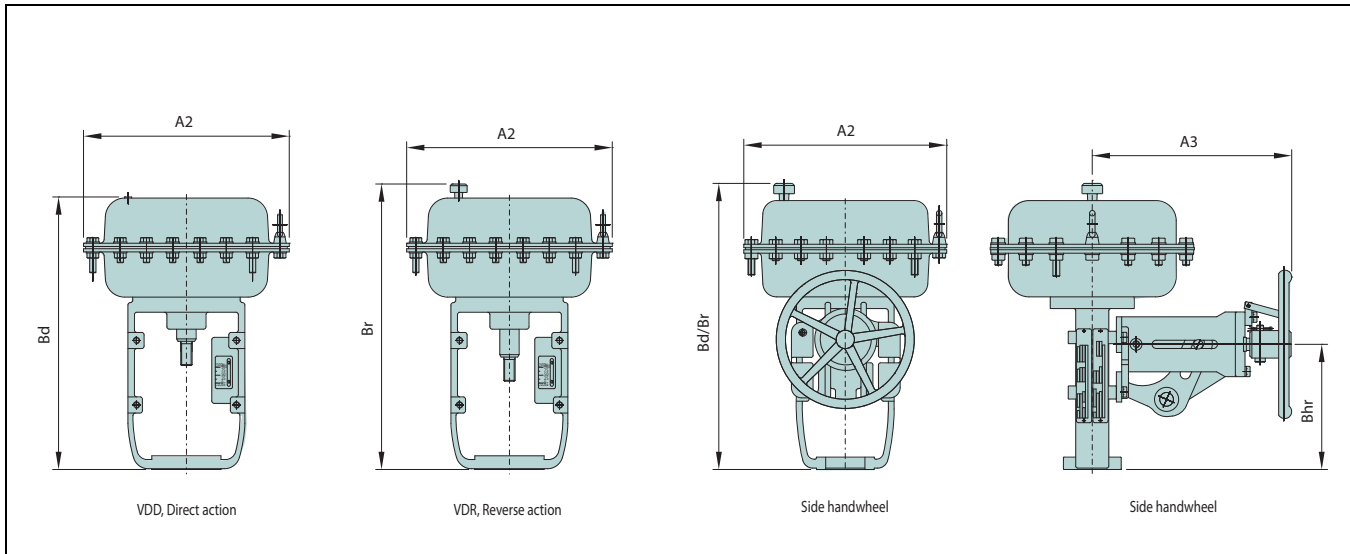
900 # / 1500 # (UNIT: mm)

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"	146	146	146	146	229	330	110	150	150	25.4	25.4	101.6	101.6	4	4	44	46
1-1/2"	167	167	167	167	278	380	110	180	180	28.6	28.6	123.8	123.8	4	4	63	63
2"	188	188	188	188	300	400	110	215	215	25.4	25.4	165.1	165.1	8	8	67	67
3"	221	230	221	230	330	430	115	240	265	25.4	31.8	190.5	203.2	8	8	150	163
4"	256	265	256	265	350	450	140	290	310	31.8	34.9	235	241.3	8	8	244	255
6"	357	384	357	384	393	500	150	380	395	31.8	38.1	317.5	317.5	12	12	530	540
8"	457	486	457	486	480	600	150	470	485	38.1	44.5	393.7	393.7	12	12	698	821
10"	496	534	496	534	518	650	150	545	585	38.1	50.8	469.9	482.6	16	12	955	1137
12"	565	610	565	610	680	800	150	610	675	38.1	54	533.4	571.5	20	16	1180	1240
14"	629	629	629	629	770	920	210	640	750	41.3	60.3	558.8	635	20	16	1387	1477
16"	711	711	711	711	850	1050	220	705	825	44.5	66.7	616	704.8	20	16	1601	1721

* Larger sizes and ASME class 2500 & 4500 ratings are available, please contact Metso.

Actuator dimensions

VD Diaphragm actuators



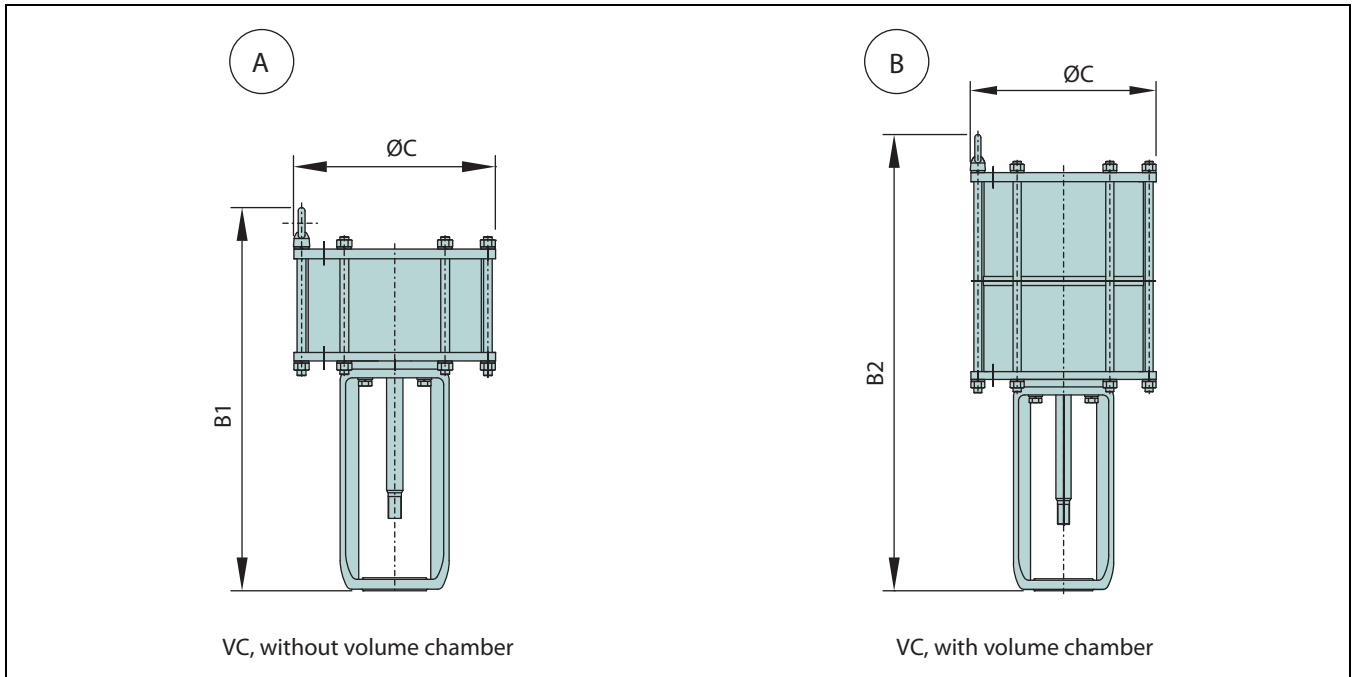
(UNIT: mm)

Without handwheel					With handwheel					
Size	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		
	ØC	370			ØC	460			ØC	560	
	B1	Weight (kg)			B1	Weight (kg)			B1	Weight (kg)	
	B2	A	B	B2	A	B	B2	A	B		
40	640	92	115	810	120	148	810	186	234		
	760			935							
50	650	94	118	820	123	152	820	189	237		
	790			965							
60	660	97	121	830	126	155	830	192	242		
	820			995							
70	670	100	124	840	128	159	840	195	246		
	850			1025							
80	680	103	127	850	131	162	850	198	251		
	880			1055							
90	690	106	130	860	134	166	860	201	256		
	910			1085							
100	700	108	133	870	137	173	870	203	261		
	940			1115							
120	720	114	139	890	142	177	890	209	270		
	1000			1175							
				910	148	184	910	215	279		
				1235							
				950	159	198	950	227	298		
				1355							

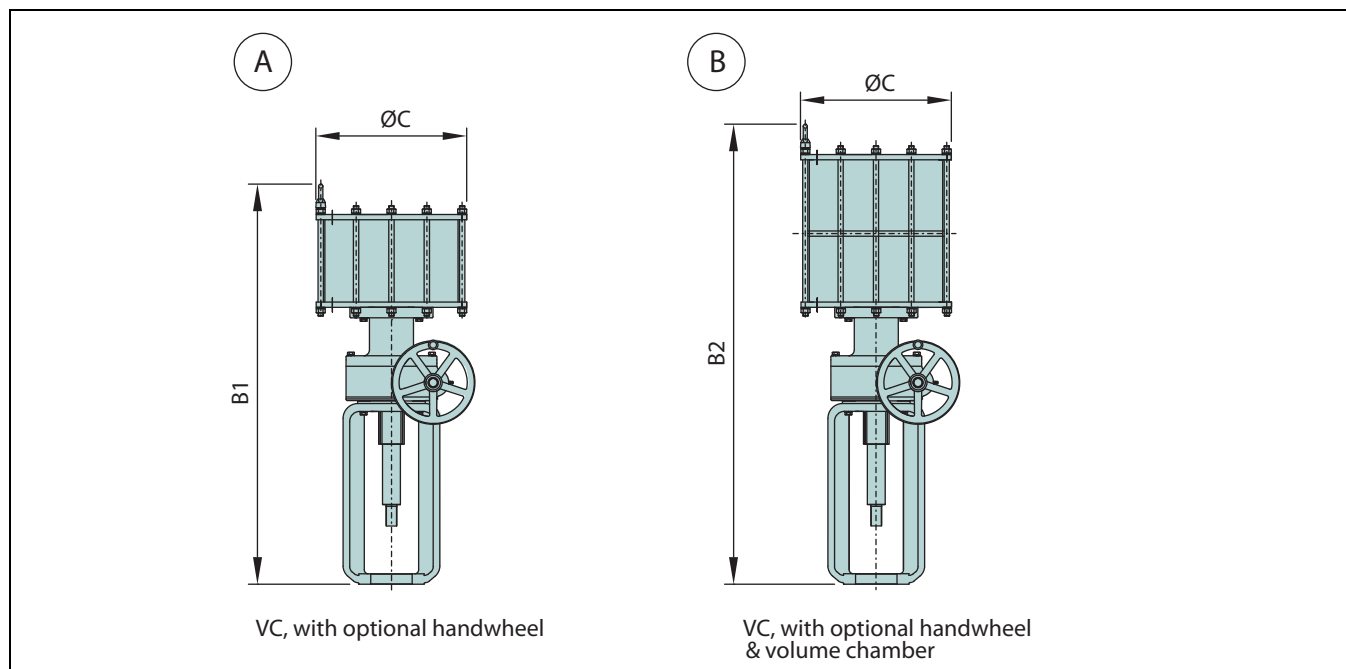
VC actuators without handwheel

(UNIT: mm)

Stroke (mm)	#60			Stroke (mm)	#70			Stroke (mm)	#80		
	ØC	660			ØC	710			ØC	820	
	B1	Weight (kg)			B1	Weight (kg)			B1	Weight (kg)	
	B2	A	B	B2	A	B	B2	A	B		
100	954	255	344	955	322	438	954	378	519		
	1199			1203							
120	974	262	355	975	330	450	974	386	531		
	1259			1263							
140	994	269	365	995	338	461	994	394	543		
	1319			1323							
180	1034	283	386	1035	354	484	1034	410	567		
	1439			1443							
240	1094	303	417	1095	377	518	1094	435	604		
	1619			1623							
							1134	451	628		
							1747				

Actuator dimensions

VC Cylinder actuators with handwheel



VC actuators with handwheel

(UNIT: mm)

Stroke (mm)	#30			Stroke (mm)	#40			Stroke (mm)	#50		
	ØC	370			ØC	460			ØC	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						

VC actuators with handwheel

(UNIT: mm)

Stroke (mm)	#60			Stroke (mm)	#70			Stroke (mm)	#80		
	ØC	660			ØC	710			ØC	820	
	B1	Weight (kg)			B1	Weight (kg)			B1	Weight (kg)	
	B2	A	B		B2	A	B		B2	A	B
100	1239	315	404	100	1240	368	502	100	1289	438	579
	1484				1488				1542		
120	1259	322	415	120	1260	376	514	120	1309	446	591
	1544				1548				1602		
140	1279	329	425	140	1280	384	525	140	1329	454	603
	1604				1608				1662		
180	1319	343	446	180	1320	400	548	180	1369	470	627
	1724				1728				1782		
240	1379	363	477	240	1380	423	582	240	1429	495	664
	1904				1908				1962		
								280	1469	511	688
								2082	2082		

HOW TO ORDER

Angle single seated, Series A, AU/AB/AM

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
AM	O2	H	Z	A	J2	X	P2	X	BC	S1	P2	X	S	G	G	S	A	X	A	L	FG

VALVE CONSTRUCTIONS

1.	VALVE SERIES			
AM	Angle Omega trim, Multi-stage type			
2.	BODY SIZE			
01	1" / DN 25	1H	1-1/2" / 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	YY	Special	
3.	PRESSURE RATING			
C	ASME class 150	D	ASME class 300	
Optional pressure rating				
F	ASME class 600	G	ASME class 900	
H	ASME class 1500	I	ASME class 2500	
A	ASME class 4500	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)		
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			
P2	SUS 420J2			
YY	Special			
9.	PLUG APPLICATION			
X	Not applicable			
A	Cobalt based alloy			
Optional plug application				
C	Hard chrome			
D	Cobalt based alloy + HCr			
Y	Special			
10.	STEM MATERIAL			
BC	630 SS + HCr			
YY	Special			

11.	SEAT TYPE			
S1	Single metal seat			
YY	Special			
12.	SEAT / DISK STACK MATERIAL			
	Seat	Disk stack	Cage guide	
P2	SUS 420J2	SUS 420J2	SUS 420J2	
YY	Special	Special	Special	
13.	SEAT APPLICATION			
X	Not applicable			
A	Cobalt based alloy			
Optional seat application				
Y	Special			

OTHERS

14.	PACKING TYPE			
S	Standard packing			
Optional packing type				
L	Live loaded packing			
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			
G	PTFE + Graphite			
Optional seals material				
T	PTFE			
F	Graphite			
C	Metal C-seal ring			
M	Metal (Ductile)			
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			

TRIM TYPE & RATED Cv - Series AU

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	14 (20)	28 (20)	52 (20)	124 (40)	220 (40)			
				1A	1-Step reduction	8 (20)	16 (20)	30 (20)	74 (40)	128 (40)			
				2A	2-Step reduction	5 (20)	10 (20)	18 (20)	46 (40)	78 (40)			
				3A	3-Step reduction	3 (20)	6 (20)	12 (20)	28 (40)	46 (40)			
		L	Quick opening	FT	Tendril 1 stage / Full capacity	12 (20)	24 (20)	44 (20)	100 (40)	196 (40)			
				1T	Tendril 1 stage / 1-Step reduction	8 (20)	14 (20)	28 (20)	62 (40)	114 (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)	32 (20)	74 (40)	130 (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	12 (20)	24 (20)	44 (20)	100 (40)	196 (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)	32 (20)	74 (40)	130 (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)	9 (20)	18 (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							

- NOTE
1. Rated Cvs are applied differently depending on the trim type & trim characteristics.
 2. The larger Cvs and sizes are available, please contact Metso.
 3. Micro (Mini flow) trims are available.-
 4. (Srk) means the valve stroke in mm.
 5. The other Cvs and trim types, please contact Metso.

TRIM TYPE & RATED Cv - Series AB

20. Sign	TRIM TYPE	21. Sign	TRIM CHARACTERISTIC	22. Sign	RATED Cv													
					Description	Body size												
						2" Srk.	3" Srk.	4" Srk.	6" Srk.	8" Srk.	10" Srk.	12" Srk.	14" Srk.	16" Srk.				
A P	Standard plug type Pilot balanced plug type	L Q	Linear Quick opening	FC	Full capacity	82 (40)	174 (50)	280 (50)	470 (60)	810 (70)	1250 (80)	1810 (100)	2530 (120)	2960 (140)				
				1A	Tendril 1 stage / 1-Step reduction	74 (40)	104 (50)	170 (50)	284 (60)	500 (70)	760 (80)	1100 (100)	1540 (120)	1780 (140)				
2A	Tendril 2 stage / 2-Step reduction			44 (40)	62 (50)	100 (50)	170 (60)	320 (70)	460 (80)	680 (100)	940 (120)	1080 (140)						
3A	Tendril 3 stage / 3-Step reduction			26 (40)	40 (50)	64 (50)	100 (60)	200 (70)	280 (80)	420 (100)	580 (120)	660 (140)						
FT	Tendril 1 stage / Full capacity			72 (40)	156 (50)	250 (50)	420 (60)	720 (70)	1120 (80)	1620 (100)	2270 (120)	2660 (140)						
1T	Tendril 1 stage / 1-Step reduction			44 (40)	94 (50)	156 (50)	256 (60)	430 (70)	680 (80)	980 (100)	1380 (120)	1600 (140)						
2T	Tendril 1 stage / 2-Step reduction			26 (40)	56 (50)	94 (50)	156 (60)	260 (70)	420 (80)	590 (100)	830 (120)	980 (140)						
3T	Tendril 1 stage / 3-Step reduction			18 (40)	34 (50)	60 (50)	94 (60)	156 (70)	252 (80)	360 (100)	500 (120)	600 (140)						
FM	Tendril 2 stage / Full capacity			52 (40)	110 (50)	174 (50)	300 (60)	510 (70)	800 (80)	1150 (100)	1610 (120)	1890 (140)						
1M	Tendril 2 stage / 1-Step reduction			30 (40)	68 (50)	110 (50)	180 (60)	310 (70)	500 (80)	700 (100)	980 (120)	1140 (140)						
2M	Tendril 2 stage / 2-Step reduction			18 (40)	40 (50)	70 (50)	110 (60)	186 (70)	310 (80)	420 (100)	600 (120)	680 (140)						
3M	Tendril 2 stage / 3-Step reduction	12 (40)	26 (50)	48 (50)	72 (60)	114 (70)	120 (80)	252 (100)	360 (120)	420 (140)								
Y	Special	E	Equal %	FC	Full capacity	76 (40)	160 (50)	256 (50)	430 (60)	740 (70)	1140 (80)	1650 (100)	2300 (120)	2700 (140)				
				1A	Tendril 1 stage / 1-Step reduction	46 (40)	98 (50)	156 (50)	260 (60)	450 (70)	680 (80)	1000 (100)	1400 (120)	1640 (140)				
				2A	Tendril 2 stage / 2-Step reduction	28 (40)	60 (50)	94 (50)	156 (60)	270 (70)	410 (80)	640 (100)	840 (120)	980 (140)				
				3A	Tendril 3 stage / 3-Step reduction	18 (40)	36 (50)	60 (50)	96 (60)	164 (70)	250 (80)	384 (100)	520 (120)	600 (140)				
				FT	Tendril 1 stage / Full capacity	68 (40)	140 (50)	230 (50)	384 (60)	660 (70)	1020 (80)	1480 (100)	2050 (120)	2420 (140)				
				1T	Tendril 1 stage / 1-Step reduction	42 (40)	84 (50)	140 (50)	230 (60)	400 (70)	620 (80)	890 (100)	1240 (120)	1460 (140)				
				2T	Tendril 1 stage / 2-Step reduction	24 (40)	50 (50)	86 (50)	142 (60)	250 (70)	380 (80)	540 (100)	760 (120)	880 (140)				
				3T	Tendril 1 stage / 3-Step reduction	16 (40)	30 (50)	54 (50)	88 (60)	160 (70)	240 (80)	340 (100)	460 (120)	540 (140)				
				FM	Tendril 2 stage / Full capacity	48 (40)	100 (50)	160 (50)	274 (60)	470 (70)	726 (80)	1050 (100)	1470 (120)	1720 (140)				
				1M	Tendril 2 stage / 1-Step reduction	28 (40)	60 (50)	94 (50)	164 (60)	284 (70)	440 (80)	640 (100)	890 (120)	1040 (140)				
				2M	Tendril 2 stage / 2-Step reduction	16 (40)	36 (50)	54 (50)	100 (60)	170 (70)	264 (80)	384 (100)	540 (120)	640 (140)				
				3M	Tendril 2 stage / 3-Step reduction	10 (40)	24 (50)	32 (50)	64 (60)	100 (70)	160 (80)	240 (100)	340 (120)	384 (140)				
				YY	Special				Contact Metso for Cv details									

NOTE

1. Rated Cvs are applied differently depending on the trim type & trim characteristics.
2. The larger Cvs and sizes are available, please contact Metso.
3. Micro (Mini flow) trims are available.
4. (Srk) means the valve stroke in mm.
5. The other Cvs and trim types, please contact Metso.

TRIM TYPE & RATED Cv - Series AM

20. Sign	TRIM TYPE	21. Sign	TRIM CHARACTERISTIC	22. Sign	Description	RATED Cv											
						Body size and stroke											
						1" Srk	1-1/2" Srk	2" Srk	3" Srk	4" Srk	6" Srk	8" Srk	10" Srk	12" Srk	14" Srk	16" Srk	
A P U	Balanced plug type	L	Linear	FG	Full capa. / Gas	7 (30)	16 (30)	26 (40)	54 (50)	84 (50)	146 (60)	252 (70)	384 (80)	560 (100)	770 (120)	1020 (140)	
	P			Quick opening	FL	Full capa. / Liquid	3 (30)	8 (30)	12 (40)	28 (50)	52 (50)	90 (60)	156 (70)	234 (80)	340 (100)	470 (120)	624 (140)
					1G	1-Step red. / Gas	1.6 (30)	4 (30)	6 (40)	14 (50)	26 (50)	45 (60)	78 (70)	116 (80)	170 (100)	234 (120)	310 (140)
	U		Unbalanced plug type	Quick opening	1L	1-Step red. / Liquid	0.8 (30)	2 (30)	3 (40)	7 (50)	14 (50)	22 (60)	40 (70)	58 (80)	84 (100)	116 (120)	154 (140)
					2G	2-Step red. / Gas	5 (30)	10 (30)	18 (40)	38 (50)	60 (50)	104 (60)	176 (70)	268 (80)	390 (100)	540 (120)	710 (140)
					2L	2-Step red. / Liquid	2.5 (30)	6 (30)	11 (40)	24 (50)	36 (50)	64 (60)	108 (70)	164 (80)	236 (100)	328 (120)	430 (140)
	U		Unbalanced plug type	Quick opening	3G	3-Step red. / Gas	1.2 (30)	3 (30)	5 (40)	12 (50)	18 (50)	32 (60)	54 (70)	82 (80)	118 (100)	164 (120)	214 (140)
					3L	3-Step red. / Liquid	0.6 (30)	1.5 (30)	2 (40)	6 (50)	9 (50)	16 (60)	27 (70)	40 (80)	60 (100)	82 (120)	106 (140)
					E	Equal %	FG	Full capa. / Gas	5 (30)	10 (30)	18 (40)	38 (50)	60 (50)	104 (60)	176 (70)	268 (80)	390 (100)
	Y	Special	Y	Special	FL	Full capa. / Liquid	2.5 (30)	6 (30)	11 (40)	24 (50)	36 (50)	64 (60)	108 (70)	164 (80)	236 (100)	328 (120)	430 (140)
					1G	1-Step red. / Gas	1.2 (30)	3 (30)	5 (40)	12 (50)	18 (50)	32 (60)	54 (70)	82 (80)	118 (100)	164 (120)	214 (140)
					1L	1-Step red. / Liquid	0.6 (30)	1.5 (30)	2 (40)	6 (50)	9 (50)	16 (60)	27 (70)	40 (80)	60 (100)	82 (120)	106 (140)
					2G	2-Step red. / Gas	Contact Metso for Cv details										
					2L	2-Step red. / Liquid	Contact Metso for Cv details										
					3G	3-Step red. / Gas	Contact Metso for Cv details										

NOTE

1. Rated Cvs are applied differently depending on the trim type & trim characteristics.
2. The larger Cvs and sizes are available, please contact Metso.
3. Micro (Mini flow) trims are available.
4. (Srk) means the valve stroke in mm.
5. The other Cvs and trim types, please contact Metso.

Subject to change without prior notice.

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