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MANAGEMENT INDUSTRIES



V1 Control Valve



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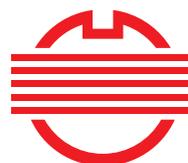


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V1S Control Valves

V1C Control Valves

Stem-Guided Trim:

These stem-guided V1 control valves are used to provide precise proportional control in a wide variety of fluids. They provide a wide range of variation, tight shut-off and ease of change of control characteristic for varying process conditions.

The alloys offered allow maximum resistance to the use of erosive or corrosive fluids.

Long-Lasting Valve Trims:

The standard valve trim (plug and seat) is made of AISI 400 Series stainless steel or AISI 316 stainless steel. These materials and the hardened surface options are highly resistant to both erosion and corrosion. Optional materials for regulating highly corrosive fluids are also available.

Tight Shutoff:

The metal seats of these valves are precisely machined to provide a sealing quality that meets or exceeds industrial standards.

Trim Options for Standard, Reduced, or Low Flow:

Cv values will depend on the diameter and trims selected.

Standard Trim: Available for valves from 15 to 150 mm ($\frac{1}{2}$ " to 6"), with equal percentage, linear, or quick opening characteristics. Cv values range from 1.0 to 400.

Reduced Trim: Available for valves from 15 to 50 mm ($\frac{1}{2}$ " to 2") with equal percentage or linear characteristics. Cv values range from 0.25 to 5.0.

Low Flow Trims: Available for valves from 15 to 25 mm ($\frac{1}{2}$ " to 1") with linear characteristics. Cv values range from 0.0025 to 0.1.

Sleeve-Guided Trim:

The V1 Sleeve-Guided Control Valves are used to provide precise control of relatively clean fluids. They offer a wide range of regulation, tight shut-off, and a wide selection of easily changeable trims to adapt to process conditions, with control characteristics such as equal percentage, linear, or quick opening. They also provide maximum rigidity and durability under high pressure and with high differential pressure.

Long-Lasting Valve Trims:

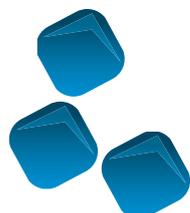
The materials for the standard valve trim (stem, plug, seat, and sleeve) are made of AISI 300 and 400 Series stainless steel, depending on the valve body material, process conditions, and temperature. Both these materials and the hardened surface options are highly resistant to erosion and corrosion.

Tight Shutoff:

The V1C Series provides an exceptional tight seal for balanced valves. The maximum leakage specification is equivalent to that of single-seat valves in the industry. This tightness is due to the excellent seal found between the plug and the sleeve, which is provided by the PTFE sealing ring with a reinforced stainless steel spring. At temperatures higher than 210°C (410°F), those metallic expansion rings are used, compromising the tight seal.

Constant Silent Operation:

These valves provide constant silent operation under extreme pressure drop conditions, without the need for friction packings or extra-stiff actuator springs. The process fluid exerts a reduced force on both the seal and the secondary sealing, ensuring a tight seal. The balanced seal design prevents sudden changes in the sealing force.



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Performance Specifications

Rangeability:

Better than 50:1 for all valve sizes.

Cv Definition:

It is the nominal capacity or flow coefficient of the valve, defined as the number of U.S. gallons per minute (gpm) of water at 60°F that will flow through a fully open valve with a pressure drop of 1 psi across the valve. In Europe, the coefficients Kv and Av are more commonly used, where:

$$Kv = 0.865 \times Cv; y Av = 24 \times 10^{-6} \times Cv$$

The parameters and units of measurement for Cv, Kv, and Av are compared in the following Table.

Parameter	Cv	Kv	Av
Fluid	Water	Water	Liquid
Density	62.4lb/ft ³	1 g/cm ²	1 Kg/m ²
Specific Gravity	1	1	1 x 10 ⁻³
Pressure Drop	1 psi	1 bar	1 Pa
Flow Rate	U.S. gpm	m ³ /h	m ³ /s

Seat Leakage:

According to Standard FCI 70-2, the manufacturing standard is Class IV Shutoff.

The seat leakage values, tabulated in the table below, were obtained with water and a pressure drop of 50 psig. It is not advisable to project other leakage values when the valve is used with different pressure drops and fluids, according to the FCI 70-2 standard. All leakage is based on new valves. See the attached seat leakage table in terms of l/s, U.S. gpm, and Cv value for each valve size.

Valve Size		Run		Seat Leakage		
mm	Plg	mm	Plg	l/s	U.S. gpm	Cv
15 to 25	1/2 to 1	19	3/4	0.00089	0.0141	1, 2, 5, 10, 17
40	1 1/2	25.4	1	0.0015	0.024	5, 10, 20
50	2	31.8	1 1/4	0.0027	0.042	17, 35
80	3	38.1	1 1/2	0.0054	0.085	30, 60
100	4	50.8	2	0.0089	0.0141	60, 120
150	6	57.2	2 1/4	0.0179	0.283	120, 240

Stem Friction (Dead Band)

Nominal Valve Size		Stem Friction (Dead Band)	
mm	Plg	Kg	lb
15	1/2	Less than 4.5 kg	Less than 10 lb
20	3/4		
25	1		
40	1 1/2	Less than 11.3 kg	Less than 25 lb
50	2		
80	3		
100	4	Less than 18.1 kg	Less than 40 lb
150	6		

Operating Specifications

Nominal Valve Size:

15, 20, 25, 40, 50, 80, 100, 150mm (1/2, 3/4, 1, 1 1/2, 2, 3, 4, y 6").

Flow Characteristic:

Equal percentage, linear, or quick opening.

Connections:

The valve body can offer RF flanged ends, NPT threaded, SW weld ends, or RTJ ring-type flanged ends.

Valve Actuator Action:

Normally closed: Opens with Air (ATO).

Normally open: Closes with Air (ATC).

Nominal Signal (Actuators):

0.2 to 1 kg/cm² or 0.4 to 2 kg/cm² (3 to 15 psi or 6 to 30 psi).

Maximum Supply Pressure (Actuators):

4.2 kg/cm² (60 psig).

Ambient Temperature Limits:

Carbon Steel Body: -29° / +427° C (-20° / +800° F).

Stainless Steel Body: -207° / +427° C (-340° / +800° F).

Actuators: -40° / +80° C (-40° / + 176° F).

Process Temperature Limits: See page 5, Table 1.

The highest process temperatures are achieved with laminated graphite packing or with extended bonnets.
See page 8, model code

Pressure-Temperature Ranges:

Refer to Table 1 to see the pressure-temperature curve. The limits of the curve may vary depending on the selected bonnet, stem material, and packing. Additionally, the fluid pressure should be lower than the allowable pressure used by the connections, in compliance with ANSI standards.

Maximum Differential Closing Pressure (a)

Nominal Valve Size		Maximum Differential Closing Pressure	
mm	Ins	Kg/cm ² (b)	psi
15	1/2	105 Kg/cm ²	1500 psi
20	3/4		
25	1		
40	1.1/2	Equal to working pressure range (c)	Equal to working pressure range (c)
50	2		
80	3		
100	4		
150	6		

(a) See also Tables 4, 5 and 6.

(b) Multiply kg/cm² value by 98 to obtain kPa.

(c) Maximum Differential Pressure Limited by Actuator.

Body Material

- Cast Carbon Steel ASTM A216 WCB.
- Cast Stainless Steel ASTM A351 CF8M.

Trim Material

See page 9 for other trim materials.

V1S

- Sleeve, stainless steel Series 400 (standard).
- Plug, 400 Series Stainless Steel (standard) or AISI 316.
- Seat, see plug material.
- Stem, AISI 316 (standard).
- PTFE packing.

V1C

- Sleeve, stainless steel Series 400 (standard).
- Plug, 400 Series Stainless Steel (standard) or AISI 316.
- Seat, see plug material.
- Stem, AISI 316 (standard).
- PTFE packing.

Dimensions and Approximate Weight:

See page 10, "Nominal Dimensions."



Bonnet:

Bolted, with adjustable packing box, made of Carbon Steel or Stainless Steel.

Studs, Nuts, and Bolts:

A 193 Grade B7 Alloy Steel Studs.
A194 Grade 2H Steel Nuts.

Packing Box:

Flanged (Bonnet): Made of Carbon Steel or Stainless Steel.

Studs: 300 Series Stainless Steel.

Nuts: 300 Series Stainless Steel.

Upper Cleaner: AISI 316 with felt ring.

Lower Cleaner: Reinforced PTFE.

Upper Bushing, reinforced PTFE.

Packing: Spring-loaded, molded PTFE "V" rings.

Optional Packing for High Temperature.

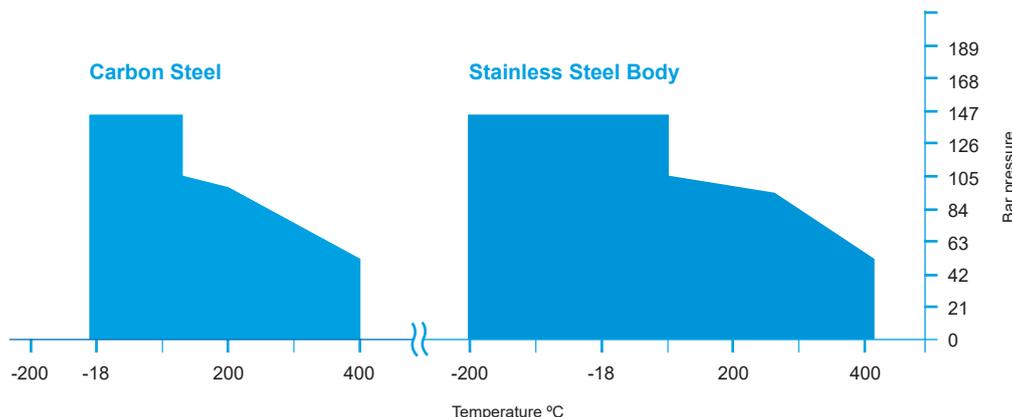
Extended Bonnet for Temperature:

A bonnet for Stainless Steel or Carbon Steel bodies only, extends the temperature limits to the highest or lowest limits of the valve body material. The bonnet material is the same as the body material. Select code "E" for bonnet type.

High Temperature Packing:

The packing is offered for service at temperatures above 210 °C (410 °F). According to this temperature (range), PTFE "V" rings with a laminated graphite ring for the extended bonnet, or a set of laminated and braided graphite rings for the standard bonnet, are available instead of the standard PTFE "V" rings. Select packing code "E" or "A."

Table 1: Pressure-Temperature Range



Permissible Shutoff Pressure: See Tables 4, 5, and 6 for the permissible shutoff pressure for all valve sizes.



XYX
 The digit "X" defines the trim characteristic:
E: Equal percentage (%), **L:** Linear, **A:** Quick Opening.
 The digits "YY" identify the Cv value.

Example:
EBF= Equal Percentage Characteristic and Cv value of 5.0
LCC= Linear Control Characteristic and Cv value of 120.0

Table 2: Selection Table for Characteristic and Trim Size - V1S

Characteristics	Trim Code and CV Value							
	15 mm (1/2")	20 mm (3/4")	25 mm (1")	40 mm (1 1/2")	50 mm (2")	80 mm (3")	100 mm (4")	150 mm (6")
= %	EBF (5.0)	EBK (10.0)	EBN (17.0)	EBV (34.0)	ECA (60.0)	ECC (120.0)	ECE (200.0)	ECH (400.0)
	EBA (2.0)	EBF (5.0)	EBK (10.0)	EBM (15.0)	EBR (24.0)	EBY (48.0)	ECB (80.0)	ECD (160.0)
	EAY (1.0)	EBA (2.0)	EBF (5.0)	-	-	-	-	-
	EAU (0.50)	EAY (1.0)	EBA (2.0)	EBA (2.0)	EBF (5.0)	-	-	-
	EAR (0.25)	EAU (0.50)	EAY (1.0)	-	-	-	-	-
	-	EAR (0.25)	EAU (0.50)	-	-	-	-	-
Linear	LBF (5.0)	LBK (10.0)	LBN (17.0)	LBV (34.0)	LCA (60.0)	LCC (120.0)	LCE (200.0)	LCH (400.0)
	LBA (2.0)	LBF (5.0)	LBK (10.0)	LBM (15.0)	LBR (24.0)	LBY (48.0)	LCB (80.0)	LCD (160.0)
	LAY (1.0)	LBA (2.0)	LBF (5.0)	-	-	-	-	-
	LAU (0.50)	LAY (1.0)	LAB (2.0)	LBA (2.0)	LBF (5.0)	-	-	-
	LAR (0.25)	LAU (0.50)	LAY (1.0)	-	-	-	-	-
	-	LAR (0.25)	LAU (0.50)	-	-	-	-	-
Low Flow	LAD (0.0025)	LAD (0.0025)	LAD (0.0025)	-	-	-	-	-
	LAF (0.006)	LAF (0.006)	LAF (0.006)	-	-	-	-	-
	LAH (0.015)	LAH (0.015)	LAH (0.015)	-	-	-	-	-
	LAK (0.04)	LAK (0.04)	LAK (0.04)	-	-	-	-	-
	LAN (0.10)	LAN (0.10)	LAN (0.10)	-	-	-	-	-

Table 3: Selection Table for Characteristic and Trim Size - V1C

Characteristics	Trims	Trim Code and CV Value				
		40 mm (1 1/2")	50 mm (2")	80 mm (3")	100 mm (4")	150 mm (6")
= %	Standard Trims	EBV (34.0)	ECA (60.0)	ECC (120.0)	ECE (200.0)	ECH (400.0)
Lineal		LBV (34.0)	LCA (60.0)	LCC (120.0)	LCE (200.0)	LCH (400.0)
= %	Trims Anti-Noise - Anti-Cavitation	EBQ (20.0)	EBW (35.0)	PCC (120.0)	ECC (120.0)	ECG (330.0)
		EBK (10.0)	EBN (17.0)	ECA (60.0)	ECA (60.0)	ECF (240.0)
EBF (5.0)		-	EBT (30.0)	-	ECC (120.0)	
-		-	RCC (120.0)	-	LCG (330.0)	
Linear		LBQ (20.0)	LBW (35.0)	LCA (60.0)	LCC (120.0)	LCF (240.0)
		LBK (10.0)	LBN (17.0)	LBT (30.0)	LCA (60.0)	LCC (120.0)
-	LBF (5.0)	-	-	-	-	



Cavitation and Noise Control

Cavitation control is provided with special trims featuring a series of precisely located bores in the sleeve. When the plug moves, a pair of holes are successively exposed in the sleeve, each one opposite the other. This causes the fluid energy to be dissipated by the fluid jets from the center of the sleeve to the sleeve walls and to the plug seating surfaces. Cavitation is thus controlled,

and damage to the valve trim is eliminated. An approximate reduction of 10 dBA in the audible noise level is also achieved. The same sleeve is used to reduce noise in aerodynamic (gas/steam) processes. Keep in mind that the flow direction in this case will tend to open the valve.

Table 4: Permissible Shutoff Pressure for Valves from 15 to 25 mm (1/2 to 1") - **V1S**

Nominal Valve Size mm / plg	Nominal Capacity	Pressure Supply Kg / cm ²	PERMISSIBLE SHUTOFF PRESSURE (kg / cm ²) (1) (2)											
			P50A-E		P50A-G		P50A-H		P110A-E		P110A-G		P110A-H	
			ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC
15-20 1/2" - 3/4"	0.0025 - 0.006 0.015 - 0.04 - 0.10	1.4	166	138	172	172	-	-	172	172	-	-	-	-
		2.4	172	172	172	172	-	-	172	172	-	-	-	-
15 - 20 - 25 1/2" - 3/4" - 1"	0.25 - 0.5	1.4	172	172	-	-	-	-	172	172	-	-	-	-
		2.4	172	172	-	-	-	-	172	172	-	-	-	-
	1.0 - 2.0	1.4	166	138	172	172	-	-	172	172	-	-	-	-
		2.4	172	172	172	172	-	-	172	172	-	-	-	-
	5	1.4	55	45	90	76	97	90	159	138	172	172	172	172
		2.4	90	76	145	131	166	138	172	172	172	172	172	172
20 - 25 3/4" - 1"	10	1.4	28	21	41	35	48	41	76	62	-	-	117	103
		2.4	41	35	69	62	83	76	103	90	-	-	172	172
25 1"	17	1.4	14	10	24	21	28	24	45	38	-	-	69	62
		2.4	24	21	41	38	46	45	62	55	-	-	117	110



Table 5: Permissible Shutoff Pressure for Valves from 40 to 150 mm (1 1/2 a 6") - **V1S**

Nominal Valve Size mm / plg	Nominal Capacity Cv	Pressure Supply Kg / cm ²	PERMISSIBLE SHUTOFF PRESSURE (Kg / cm ²) (1) (2)																		
			P50A-H		P50A-J		P50A-L		P110A-G		P110A-H		P110A-J		P110A-L		P110A-M		P110A-N		
			ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATC(3)
40 1.1/2"	34	1.4	6.2	4.9	6.9	6.2	8.6	8.6	12.1	8.9	17.3	13.8	-	-	24.2	20.7	-	-	-	-	-
		2.4	10.4	8.6	13.8	12.1	17.3	13.8	13.8	12.1	21.2	20.7	-	-	39.6	37.9	-	-	-	-	-
	15	1.4	17.3	13.8	20.7	17.0	27.6	24.3	34.5	27.6	48.3	41.4	-	-	62.1	58.2	-	-	-	-	-
		2.4	31.1	27.6	37.9	34.5	44.8	41.4	41.4	34.5	69.0	62.1	-	-	103.5	96.6	-	-	-	-	-
50 2"	60	1.4	-	-	2.8	2.1	4.9	3.8	-	-	-	-	8.6	5.2	-	-	17.3	15.5	-	-	-
		2.4	-	-	4.5	3.8	8.6	6.9	-	-	-	-	13.8	12.1	-	-	29.3	27.6	-	-	-
	24	1.4	-	-	10.4	8.6	15.5	13.8	-	-	-	-	24.2	20.7	-	-	51.2	44.8	-	-	-
		2.4	-	-	15.5	13.8	27.6	24.2	-	-	-	-	41.4	34.5	-	-	82.3	75.9	-	-	-
80 3"	120	2.4	-	-	-	-	0.8	0.8	-	-	-	-	-	-	3.5	2.4	5.9	5.2	6.9	5.9	-
		1.4	-	-	-	-	2.1	1.7	-	-	-	-	-	-	6.2	5.2	11.2	10.4	13.8	12.1	-
	48	2.4	-	-	-	-	5.2	4.2	-	-	-	-	-	-	10.4	8.5	17.3	13.8	20.7	17.3	-
		1.4	-	-	-	-	6.9	6.2	-	-	-	-	-	-	17.3	15.5	31.1	27.6	37.9	34.5	-
100 4"	200	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	1.3	2.8	2.1	-
		1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	2.8	4.8	4.2	8.8
	80	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	4.2	8.6	6.9	-
		1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.7	8.6	13.8	12.1	25.9
150 6"	400	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.2	-
		1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	0.8	4.1
	160	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	1.1	-
		2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	2.3	9.1

Table 6: Permissible Shutoff Pressure for Valves from 40 to 150 mm (1 1/2 to 6") - **V1C**

Nominal Valve Size mm / plg	Nominal Capacity Cv	Pressure Supply Kg / cm ²	PERMISSIBLE SHUTOFF PRESSURE (Kg / cm ²) (1) (2)																			
			P50A-G		P50A-H		P50A-J		P50A-L		P110A-G		P110A-H		P110A-J		P110A-L		P110A-M		P110A-N (3)	
			ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC	ATO	ATC
40 / 1.1/2"	34, 20, 10, 5	1.4	49	28	126	70	141	84	126	126	141	141	141	141	-	-	-	-	-	-	-	-
		2.4	84	84	141	141	141	141	141	141	141	141	141	169	-	-	-	-	-	-	-	-
50 / 2"	60, 35, 17	1.4	-	-	-	-	21	14	42	42	-	-	-	-	104	104	104	104	-	-	-	-
		2.4	-	-	-	-	42	42	104	98	-	-	-	-	104	104	104	104	-	-	-	-
80 / 3"	120, 60, 30	1.4	-	-	-	-	-	13	7	-	-	-	-	-	21	21	84	84	104	84	-	-
		2.4	-	-	-	-	-	13	11	-	-	-	-	-	84	84	104	104	-	-	-	-
100 / 4"	200, 120, 60	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	14	28	28	-	-
		2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	56	98	104	104	-
150 / 6"	400, 330, 240, 160	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	-	-
		2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	12	63	70

(a) To convert kg/cm² to psi, multiply the kg/cm² value by 14.223.
 (b) Actuator Stroke -E= 19 mm (0.75"); -G= 25,4 mm (1"); +-H= 28,6 mm (1,125"); -J= 31,8 mm (1,25); -L= 38,1 mm (1,5"); -M= 50,8 mm (2"); -N= 57,2 mm (2,25").
 (c) Required Supply Pressure: 2,4 kg/cm² (35 psi), for spring design with a 20 psi range.

V1S = Stem-Guided Valve / V1C = Sleeve-Guided Valve

Body Size (millimeters / inches)

- 0H = 15 mm (1/2")
- 3Q = 20 mm (3/4")
- 01 = 25 mm (1")
- 1H = 40 mm (1.1/2")
- 02 = 50 mm (2")
- 03 = 80 mm (3")
- 04 = 100 mm (4")
- 06 = 150 mm (6")

Body Material

- C = Carbon Steel - ASTM A216 WCB.
- S = Stainless Steel - ASTM A351 CF8M.

Body Lining

- N = None.

Connection Ends

ANSI Raised Face (RF) flanged ends

- A = Class 150.
- C = Class 300.
- E = Class 600.

ANSI Ring Join (RJ) flanged ends

- X = Class 300.
- R = Class 600.

SW weld ends

- Z = 2500 WOG (0H a 01). ANSI Class 600 (0H a 02).

NPT threaded ends

- T = ANSI Class 300 (0H to 02).
- U = 2500 WOG (0H to 01).
- ANSI Class 600 (0H to 02).

Metric Flanged Ends

- K = PN16.
- N = PN40.

Bonnet Type

- S = Standard - Same material as Body.
- E = Extended - Same material as Body, for C and S Body materials.
- B = Bellows Seal up to 4", 316 ss Bellows.
- M = Bellows Seal up to 4", Monel V1S.

Trim Material

V1S (Plug and Seat / Stem) *

- S = Standard for body "C" - AISI 410 / 316ss.
Standard for body "S" - 316ss / 316ss.
- 6 = Only for body "C" - 316ss / 316ss.
- N = 316 ss + Chromium Nitride / 316 ss.
- K = 316 ss + Stellite 6 Overlay / 316 ss
- T = 316 ss + Tungsten Carbide Overlay / AISI 316
- L = Alloy 20 / Alloy 20
- Q = Hastelloy C / Hastelloy C
- 5 = Monel / Monel
- V = Nickel / Nickel
- * Sleeve • Ø 1/2" to 1" AISI 316.
• Ø 1 1/2" to 6" of the same material as the body.

V1C (Plug and Seat / Sleeve). AISI 316 Stem

- S = Standard for body "C" - 420 ss or CA 40ss / CA6NM.
- S = Standard for body "S" - 316 ss / Chrome-plated 316 ss
- Z = Only for body "C" - 316 ss / Chrome-plated 316 ss
- Y = 410 ss + Stellite 6 Overlay / CA6NM
- 3 = 316 ss + Stellite 6 Overlay / Chrome-plated 316 ss
- N = 316 ss + Chromium Nitride / 316 ss.

Trim Characteristics and Size - Cv (b)

See Sheet 6 - Tables 2 and 3 for 3-character code selection.

Packing (for temperatures up to 210 °C (410 °F) unless specified otherwise):

- S = Standard - PTFE "V" ring seals.
- V = Vacuum service - PTFE "V" ring seals.
- N ot suitable for bonnet "B" or "M".
- C = For bonnet "S" only - PTFE braided seals.
- K = Double kit for high shutoff up to 210°C - PTFE seals.
- N ot suitable for bonnet "E".
- D = Kit for composite service with positive pressure and vacuum P TFE "V" ring seals. Not suitable for bonnet "B" or "M".
- E = Temperatures above 210°C - Graphite seals.
- N ot suitable for bonnet "B" or "M".
- A = Temperatures above 210°C - PTFE "V" rings and graphite (not suitable for bonnet "B" or "M").

Optional Selection

- 0 = Standard
- M = P50A Diaphragm Pneumatic Actuator
Only for codes -0H to -03
- P = P110A Diaphragm Pneumatic Actuator
For all diameters.

Code Example: V1S-01-SNA-S-S-EBK-S-0

Note: Alternative materials will be subject to consultation.



V1S

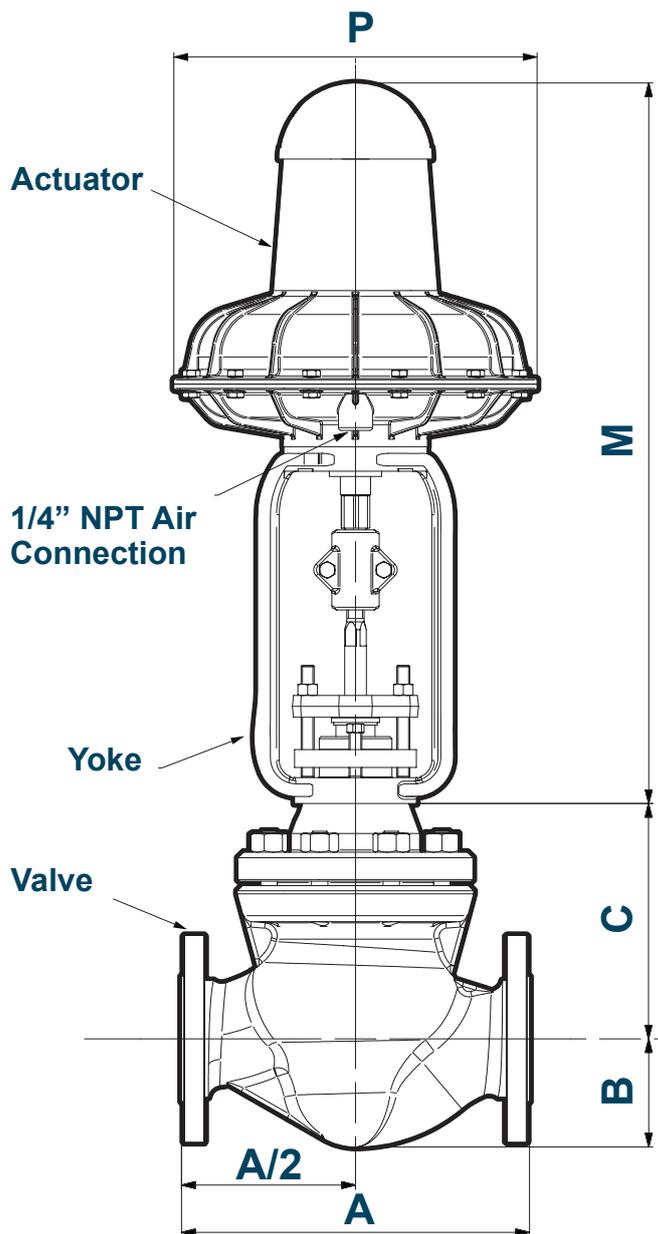
V1C

The drawing corresponds to Normally Closed (ATO)

Actuator Model	Dimensions		M P Approximate Weight (d)
	M	P	
P50	528 20.8	267 10.5	9.3 Kg (20.5 lb)
P110	747 29.4	384 15.1	26.8 kg (59 lb)

Actuator Dimensions and Approximate Weight(d)

(d) Includes yoke and mounting parts.



Nominal Valve Size	Model	Dimension "A"				Dimension "B"		Dimension "C"		Approximate Weight	
		Welded Ends	Flanged Ends			Welded, Threaded Ends	Flanged Ends	Welded, Threaded Ends	Welded, Threaded Ends	Flanged Ends	
			RF ANSI 150	RF ANSI 300	RF ANSI 600						
15 1/2"	V1S	175 6.9	185 7.3	191 7.5	203 8.0	53 2.1	66 2.6	109 4.3	6 kg (14 lb)	10 kg (21 lb)	
20 3/4"		175 6.9	185 7.3	193 7.6	206 8.1	53 2.1	66 2.6	109 4.3	6 kg (14 lb)	10 kg (21 lb)	
25 1"		185 7.3	185 7.3	198 7.8	211 8.3	61 2.4	64 2.5	117 4.6	9 kg (19 lb)	13 kg (28 lb)	
40 1.1/2"	V1S V1C	224 8.8	224 8.8	236 9.3	251 9.9	84 3.3	84 3.3	152 6.0	22 kg (49 lb)	28 kg (62 lb)	
50 2"		290 11.4	254 10.0	267 10.5	287 11.3	86 3.4	97 3.8	175 6.9	31 kg (68 lb)	37 kg (82 lb)	
80 3"		-	300 11.8	318 12.5	338 13.3	-	114 4.5	185 7.3	-	62 kg (137 lb)	
100 4"		-	353 13.9	368 14.5	394 15.5	-	137 5.4	216 8.5	-	98 kg (216 lb)	
150 6"		-	452 17.8	472 18.6	508 20.0	-	178 7.0	262 10.3	-	178 kg (392 lb)	

Note:

The Actuator Dimensions and Weight are shown in the attached table only as a reference. The Detailed Dimensions of the Actuators and their Options are provided in the Actuator Specification Sheet.

V1S Series, Equal Percentage Characteristic

Nominal Body Size	Stem guide passage diameter	Recommended Minimum Controllable CV	VALVE OPENING PERCENTAGE (STROKE)										Nominal CV	Max. CV (4)
			10	20	30	40	50	60	70	80	90	100		
1/2" 3/4" 1"	0.250	0.005	0.006	0.01	0.017	0.026	0.039	0.059	0.094	0.15	0.25	0.39	0.25	0.60
	0.250	0.01	0.005	0.011	0.021	0.033	0.053	0.085	0.14	0.22	0.39	0.64	0.5	1.0
	0.375	0.02	0.013	0.040	0.070	0.10	0.13	0.22	0.35	0.58	0.90	1.40	1.0	2.1
	0.375	0.04	0.025	0.045	0.085	0.15	0.25	0.41	0.66	1.10	1.70	2.5	2.0	3.2
	0.625	0.10	0.09	0.14	0.21	0.36	0.62	1.00	1.55	2.55	4.0	5.9	5.0	7.8
3/4" - 1"	0.875	0.20	0.17	0.32	0.55	0.82	1.15	1.60	2.55	4.10	7.0	10.5	10.0	13.0
1"	1.250	0.34	0.39	0.56	0.88	1.45	2.15	3.5	6.0	11.5	15.5	17.5	17.0	19.0
1.1/2"	1.188	0.30	0.36	0.54	0.83	1.35	2.00	3.10	5.0	8.0	13.3	20.0	15.0	24.0
	1.875	0.68	0.64	1.15	1.70	2.70	4.80	7.40	11.5	19.5	30.0	35.0	34.0	37.0
2"	1.375	0.48	0.40	0.67	1.10	1.75	2.80	4.75	7.20	12.5	22.0	30.0	24.0	35.0
	2.250	1.20	1.45	2.80	4.9	8.0	13.0	20.0	31.0	47.0	58.0	61.0	60.0	64.0
3"	2.000	0.96	0.97	1.40	2.40	3.80	6.0	9.7	15.5	23.5	35.0	53.0	48.0	63.0
	3.250	2.40	2.2	3.7	5.9	10.0	16.1	26.7	42.0	72.8	104.4	123.7	120.0	129.0
4"	2.625	1.60	1.55	2.60	4.20	6.60	10.5	16.5	25.0	38.0	59.0	87.0	80.0	115.0
	4.188	4.0	4.2	8.8	14.8	22.7	33.6	50.9	79.4	125.8	183.4	216.1	200.0	226.5
6"	4.250	3.2	4.0	6.0	9.5	15.0	23.0	34.0	53.0	82.0	125.0	180.0	160.0	210.0
	5.875	8	10.0	17.0	28.0	45.0	76.0	130.0	215.0	300.0	370.0	400.0	400.0	415.0

V1S Series, Linear Characteristic

Nominal Body Size	Stem guide passage diameter	Recommended Minimum Controllable CV	VALVE OPENING PERCENTAGE (STROKE)										Nominal CV	Max. CV (4)
			10	20	30	40	50	60	70	80	90	100		
1/2" 3/4" 1"	0.250	0.008	0.013	0.037	0.063	0.082	0.105	0.135	0.18	0.217	0.255	0.30	0.25	0.40
	0.250	0.017	0.010	0.067	0.12	0.17	0.23	0.28	0.35	0.43	0.50	0.57	0.5	0.66
	0.375	0.033	0.04	0.13	0.25	0.37	0.49	0.61	0.76	0.89	1.01	1.15	1.0	1.32
	0.375	0.067	0.08	0.27	0.50	0.76	1.04	1.30	1.52	1.74	2.00	2.47	2.0	2.92
	0.625	0.17	0.17	0.70	1.25	1.65	2.15	2.63	3.15	3.70	4.40	5.0	5.0	5.4
3/4" - 1"	0.875	0.33	0.30	1.50	2.50	3.60	4.75	5.90	7.0	8.2	9.6	10.9	10.0	11.8
1"	1.250	0.57	0.60	2.3	4.2	6.3	8.2	10.2	12.7	15.4	17.8	19.3	17.0	20.5
1.1/2"	1.188	0.50	0.60	2.2	3.8	5.4	7.1	8.8	10.7	12.6	14.7	17.7	15.0	20.0
	1.875	1.13	1.2	5.2	9.6	13.3	17.0	21.0	24.9	28.6	32.3	35.8	34.0	39.3
2"	1.375	0.80	1.2	3.8	6.4	9.1	11.6	14.6	17.2	20.0	23.2	26.8	24.0	29.8
	2.250	2.0	2.5	9.5	16.5	23.5	30.0	36.7	44.5	52.5	58.5	63.5	60.0	65.0
3"	2.000	1.6	2.7	8.0	13.0	18.5	23.8	29.0	34.5	40.0	45.5	54.0	48.0	61.5
	3.250	4.0	5.0	20.0	35.0	48.0	61.0	75.0	91.0	105.0	115.0	123.0	120.0	126.0
4"	2.625	2.67	5.75	14.5	23.0	31.5	40.0	48.5	57.5	66.5	75.0	83.0	80.0	93.5
	4.188	6.7	16.0	40.0	64.0	86.0	108.0	132.0	152.0	172.0	192.0	208.0	200.0	220.0
6"	4.250	5.3	15.0	32.0	48.0	66.5	84.0	101.0	118.0	136.5	155.0	177.0	160.0	193.0
	5.875	13.3	30.0	74.0	120.0	164.0	210.0	252.0	296.0	336.0	376.0	406.0	400.0	414.0

V1C Series, Equal Percentage Characteristic

Nominal Body Size	Sleeve Guide Passage Diameter	Recommended Minimum Controllable CV	VALVE OPENING PERCENTAGE (STROKE)										Nominal CV	Max. CV (4)
			10	20	30	40	50	60	70	80	90	100		
1.1/2"	2.125	0.68	0.10	0.48	1.05	2.00	3.80	5.90	9.8	18.2	27.0	35.0	34.0	39.0
2"	2.625	1.20	1.03	1.60	2.70	4.60	8.9	16.5	29.0	45.0	58.0	64.0	60.0	65.0
3"	3.682	2.40	1.5	2.65	5.1	9.1	18.5	36.0	68.0	96.0	115.0	125.0	120.0	125.0
4"	4.558	4.0	3.90	6.40	11.0	18.3	32.0	50.0	112.0	165.0	185.0	195.0	200.0	198.0
6"	6.500	8.0	4.7	11.5	23.5	45.0	87.0	155.0	237.0	310.0	362.0	395.0	400.0	398.0

V1C Series, Linear Characteristic

Nominal Body Size	Sleeve Guide Passage Diameter	Recommended Minimum Controllable CV	VALVE OPENING PERCENTAGE (STROKE)										Nominal CV	Max. CV (4)
			10	20	30	40	50	60	70	80	90	100		
1.1/2"	2.125	1.13	0.9	1.6	3.9	6.9	11.3	16.7	22.1	28.1	33.8	39.2	34.0	40.2
2"	2.625	2.0	3.75	8.75	15.5	23.2	30.5	37.2	46.5	57.5	65.0	67.5	60.0	68.0
3"	3.682	4.0	5.0	11.0	22.0	36.0	50.1	65.0	80.0	98.0	115.0	128.5	120.0	130.0
4"	4.558	6.7	6.0	17.0	34.0	53.0	73.0	94.0	117.0	144.0	172.0	195.0	200.0	195.0
6"	6.500	13.3	5.0	44.0	102.0	163.0	222.0	282.0	330.0	383.0	410.0	425.0	400.0	425.0

Control Valve Features



Normally closed
Air to Open
(ATO)



Normally open
Air to Close
(ATC)

V1S/V1C Characteristics

Extended Life Packing

Extended packing life results from the use of an upper stem guide bushing above the packing and the lower guide in the sleeve (V1S / V1C). This prevents the bending and lateral movement of the stem, which would otherwise cause packing distortion. The guide wiper and bushing isolate the packing from foreign particles and reduce or eliminate occasional leaks.

Sleeve-retained flexible internal design

These valves have been designed with trims retained by a sleeve allowing easy conversion from one trim to another. Therefore, for an appropriate valve size, a standard trim can be swapped for a reduced or low flow trim, and vice versa; an equal percentage regulation can be converted to linear regulation; and a stem-guided valve (V1S Series) can be transformed into a sleeve-guided valve (V1C Series).

Variety of Connection Ends

ANSI Flanged Ends, Metric, and Ring Joint (RTJ): All valve sizes.

NPT Threaded Ends: Valves up to 50 mm (2").

SW weld ends, WOG valves of 1/2", 3/4" and 1" (15, 20 and 25 mm) and up to 2" (50 mm) for ANSI 600 Class valves.

Diaphragm Actuators

P50A and P110A pneumatic diaphragm actuators have been time and field tested for over 30 years. These actuators are made of aluminum with an epoxy coating, providing accurate and fast response to pressure signal changes. The epoxy coating and the internally protected spring enhance their resistance and safety against atmospheric corrosion. The guides feature a PTFE surface, and the bushings are placed at the top and bottom of the actuator housings. Low friction seals provide minimal dead band. The preformed nylon-nitrile diaphragm ensures a constant area throughout the entire stroke. These actuators are easily reversible in the field. The air connection is 1/4" NPT. The signal range is 0 to 20 psi or 0 to 60 psi (3 to 15 or 6 to 30 psi, nominal). The maximum pressure supply is 60 psig (4.2 kg/cm²). See Tables 4, 5, and 6 for actuator selection.

Flow Management Industries
Manufactures, under license since 1991,
Control Valves,
being the only manufacturer in the
world. **V1S** and **V1C** Control Valves are
ISO 9001 by Det Norske Veritas.

Warranty

Flow Management Industries guarantees its products for a period of one year, for any defect in materials, manufacture and/or operation. To provide better service to users and in accordance with our Quality System, we ask customers to communicate any issues detected in the operation of the products, as our technical support backs them throughout their entire service life, even after the warranty period has expired.

Flow Management Industries reserves the right to modify this information without prior notice, for product development reasons.

AUTOMATION OIL AND GAS SERVICES



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