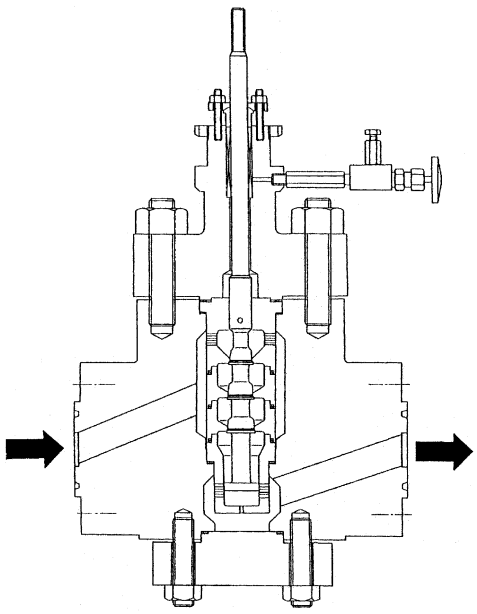
Special-Purpose Valve
Model EGVM / EAVM
Pressure-Reduction Control Valve

OVERVIEW

The multistage pressure-reduction control valve has a three-stage, contoured pressure-reduction mechanism and a two-stage, perforated-cage pressure-reduction mechanism in its trim and is used to control high differential pressure fluid flow. The multistage pressure-reduction mechanism effectively consumes energy and thereby suppresses cavitation that would otherwise occur due to a steep pressure drop. The throttling passage is simple in construction and this prevents scale from depositing or clogging. The multistage pressure-reduction mechanism operates over the entire range from fully closed to fully open.

It is most suitable as a recirculation control valve on a boiler feed water pump or a pressure-reduction valve for high-pressure reactants.



EGVM (straight)

SPECIFICATIONS

Body

Type

EGVM straight

EAVM angle

Nominal size

1½, 2, 3, 4, 5, 6, 8 in.

Pressure rating

ANSI Classes 1500 and 2500

End connection

Stud-bolted end (RF, RJ)

Welded end BW (3 to 8 in.)

Material

JIS SFVA F11A, F22B, F5B,

ASTM A182 F5, F11, F22

Bonnet

General (0 to 230 °C)

Gland type

Bolted gland

Packing

Grease applied; yarn packing, graphite packing and the like

Gasket

Type

Spiral wound, Serrated

Material

Graphite, Stainless steel (SUS316), (PTFE)

Note:PTFE: Polytetrafluoroethylene

Trim

Valve plug

Single-seat, three-stage contoured

Equal percentage (%C)

Linear (LC)

Cage

Three-stage, variable-throttling; perforated, single-stage, variable-throttling; and perforated, single-stage, fixed-throttling

Material

SUS440C, SUS630, SUS316 Stellite (#1, #6)

Actuator

Type

Double acting piston actuator (Model VP)

Action

Direct-action and reverse-action

Supply pressure

490 kPa {5.0 kgf/cm2}

Air connection

Rc 1/4

Ambient temperature

-30 to 70°C

A pneumatic diaphragm actuator or an electric actuator can also be installed to order.

Valve action

Direct action

(in combination with a reverse-action actuator)

Reverse action

(in combination with a direct-action actuator)

Optional Accessories

Positioner, Pressure regulator with filter, Hand-operated device, Limit switch, Solenoid valve, Position transmitter; Volume booster; Air failure backup or lock system, and others.

Note: For optional-accessories specifications, refer to the device specification sheet or installation drawing.

Additional Specifications

- Special inspections
  Flow characteristic inspection; Material inspection (Material certificate); Nondestructive inspections
- Special Air piping and joints

Performance

Rated Cv value

Refer to Table 1.

Flow characteristic

Refer to Figure 1.

Inherent rangeability

30:1

Permissible differential pressure

Refer to Table 2.

Leakage rate through valve seat

IEC 534-4-1982 or JIS B2007-0993 Class V

Hysteresis error

Within 1% of F.S. (with positioner)

Linearity

Within ±1% of F.S. (with positioner)

Finish

Blue (Munsell 10B 5/10) or silver, or customer-specified color

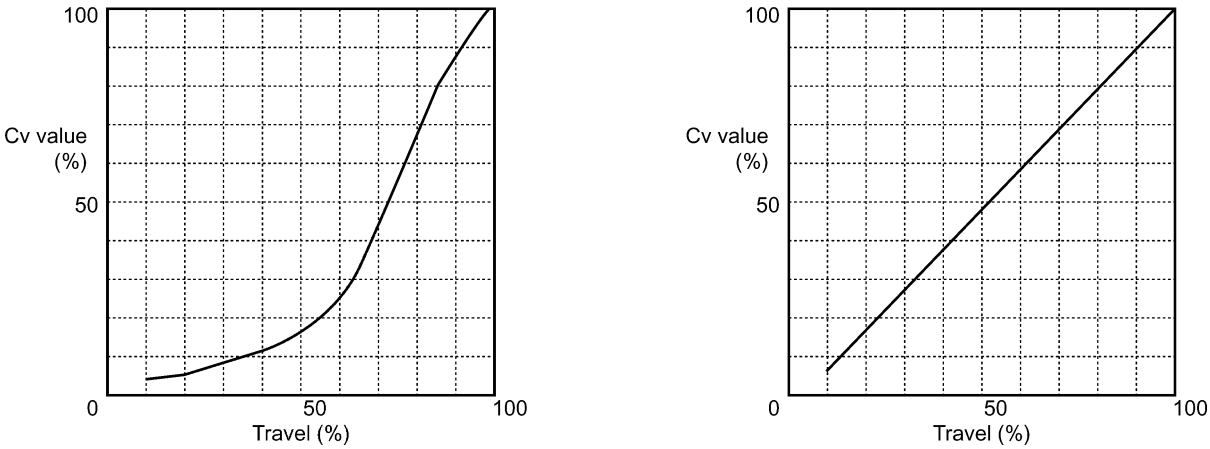
Table 1. Cv value and travels

Nominal size (in.)		1½	2		3		4		6		8 *1
Rated Cv value	ANSI 1500	5	5	10	16	25	25	35	50	70	(110)
	ANSI 2500	2.5	2.5	6.3	10	16	16	25	35	50	(80)
Rated travel (mm)		14.3	14.3		25.0 *2		25.0		37.5		50

Notes: The tolerance for valve capacity is ±10% (conforming to IEC534-11-1976 Standard).

*1: Valve size 8 in. series uses an electric actuator.

*2: For ANSI 2500 and Cv=10, the rated travel is 14.3 mm



a. Equal percentage (%C) **b. Linear (%)**

Figure 1. Flow characteristics

Note: The above graphs indicate typical flow characteristic.

Permissible differential pressure (direct-action and reverse-action)

Table 2. Pressure rating of ANSI Class 1500

Pressure rating	Actuator	Supply Pressure KPa {kgf/cm²}	KPa {kgf/cm²} by rated Cv values						
			5	10	16	25	35	50	70
ANSI 1500	VP5	490 {5.0}	26000 {265}	26000 {265}	20100 {205}	12700 {130}			
	VP6	490 {5.0}			26000 {265}	21600 {220}	15200 {155}	11300 {115}	
	VP7	490 {5.0}				26000 {265}	23500 {240}	16700 {170}	11300 {115}

Table 3. Pressure rating of ANSI Class 2500

Pressure rating	Actuator	Supply Pressure KPa {kgf/cm²}	KPa {kgf/cm²} by rated Cv values						
			2.5	6.3	10	16	25	35	50
ANSI 2500	VP5	490 {5.0}	42700 {435}	42700 {435}	32400 {330}	20100 {205}	12700 {130}		
	VP6	490 {5.0}			42700 {435}	34300 {350}	21600 {220}	15200 {155}	11300 {115}
	VP7	490 {5.0}				42700 {435}	33300 {340}	23500 {240}	16700 {170}

Note: 1) The valve comes standard with a positioner.

2) If a pneumatic backup system is used as a provision against air supply failures, base valve selection on either the normal supply air pressure or the set point of the backup system pressure (the trip pressure), whichever is lower.

3) Take care that the maximum permissible differential pressure does not exceed the highest working pressure in ANSI B16.34-1981

4) Take care that the primary pressure (P1) does not exceed the permissible differential pressure for a closed valve.

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