

PVC, PP, PVDF & Teflon PTFE

SERIES:	EC – with Direct Acting Actuator EK – with 85 psi Rated Actuator
SIZES:	1/2" – 6"
TYPE:	Single Seat Globe or Needle Type
ENDS:	Flanged
SHAFT SEAL:	Teflon PTFE Bellows
BODY SEAL:	Hypalon, Viton
ACTUATORS:	Pneumatic Spring Diaphragm – Normally Closed or Normally Open

- *Precise & Sensitive Control*
- *Changeable Plugs & Seats*
- *No External Corrosion*

Chemline Characterized Control Valves provide extremely precise flow control of aggressive fluids. Valve flow characteristics (C_v vs. lift) follow theoretical linear or equal percentage curves through the entire range of extremely low to high end of stem travel. This is accomplished by means of hydraulic design incorporating precision made replaceable seats and plugs of various C_v values.

An important feature is the Teflon bellows shaft seal which provides almost frictionless stem movement. This allows the EC model spring diaphragm actuator to operate directly with 3 – 15 psi signal. Usually no positioner is required.

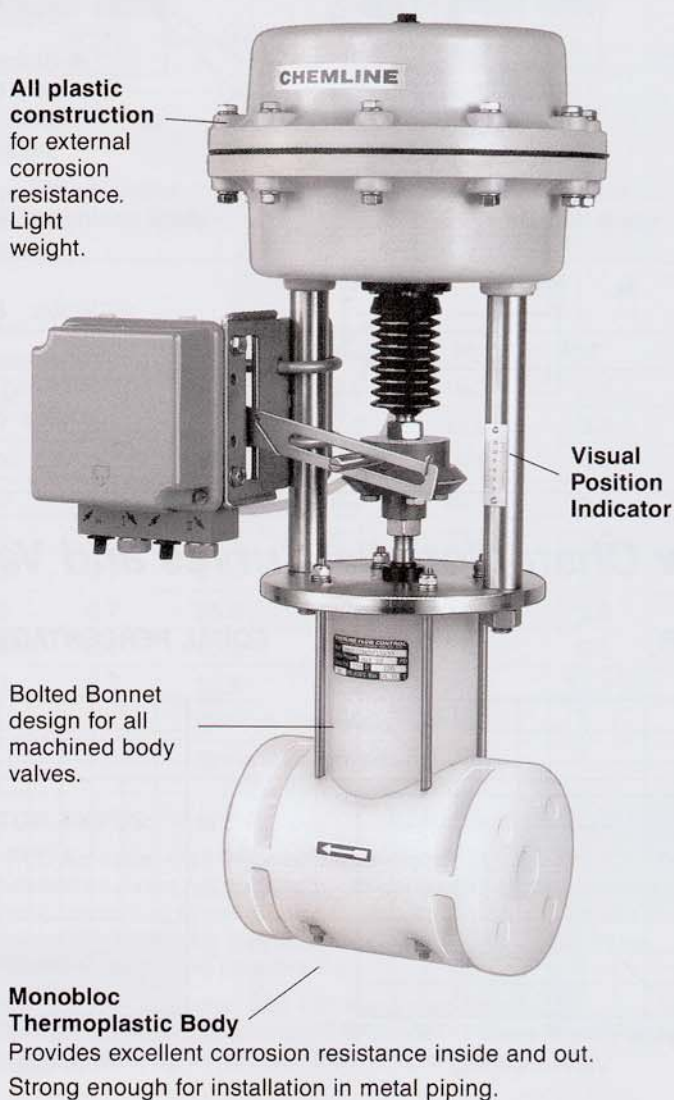
Features

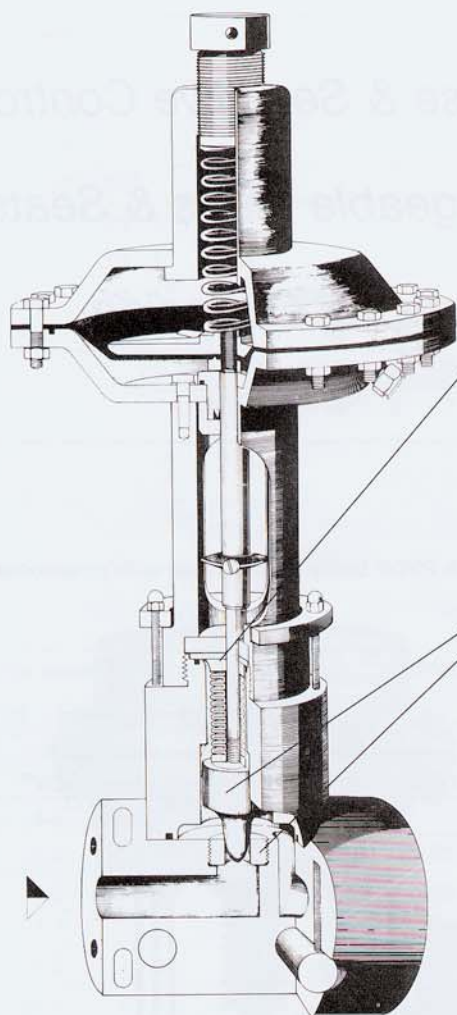
- **Precise and Sensitive Control** – Predictable and repeatable control of media. The valves respond smoothly and quickly to small changes in signal. Deadband and hysteresis is negligible.
- **Large Range** – Excellent performance at both ends of travel.
- **100% Shutoff**
- **Large Choice of C_v Values** – 0.003 to 230
- **Field Interchangeable Seats and Plugs**
- **Abrasion Resistant** – Have outperformed metal valves on slurries and crystallizing services.



EC Series Valve has direct acting actuator accepting 3-15 psi signal without positioner.

EK Series with PVDF body shown here with positioner.





Spring Tensioning Screw

- Adjust when EC Series valve is used as direct acting ie. using 3 – 15 psi signal pressure and no positioner.
- Required spring tension depends on valve inlet pressure and is adjusted so that valve starts to open at 3 psi signal pressure.

Teflon PTFE Bellows Stem Seal provides:

- Almost frictionless stem travel for sensitive operation and direct acting capability.
- High Chemical Resistance – Because the dynamic valve seal is Teflon and not elastomer, the valve will stand up to aggressive services.
- Long Cycling Life – Low maintenance – Safety.

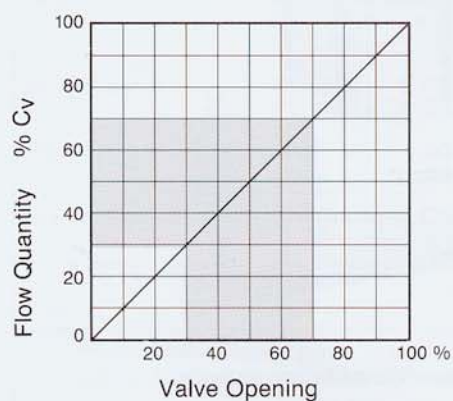
Characterized Plug and Seat Set

- A wide choice of seat/plugs with standard C_V values is available characterized either equal percentage or linear.
- Globe Plugs are available for any special specified C_V value from 0.2 to 230. Needles (linear only) are available, special order for small C_V 's from .003 to 0.2 in Hastelloy, Titanium, Tantalum or 316 stainless steel.
- Seats and plugs are easily replaceable in the field for maintenance or to change the valve C_V if operating conditions change.

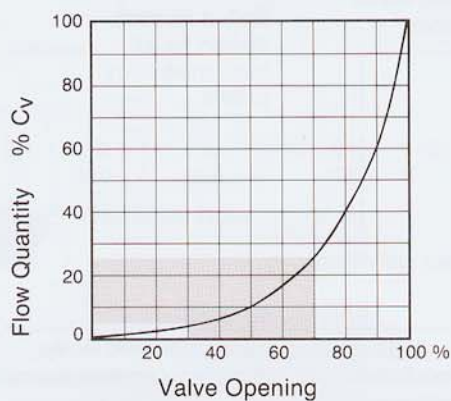
Illustrated is **EC Series with Teflon PTFE flangeless body** showing moulded-in metal reinforcement and flange bolt thread inserts. Only the Teflon body requires this.

Flow Characteristic Curves and Valve Sizing

LINEAR



EQUAL PERCENTAGE



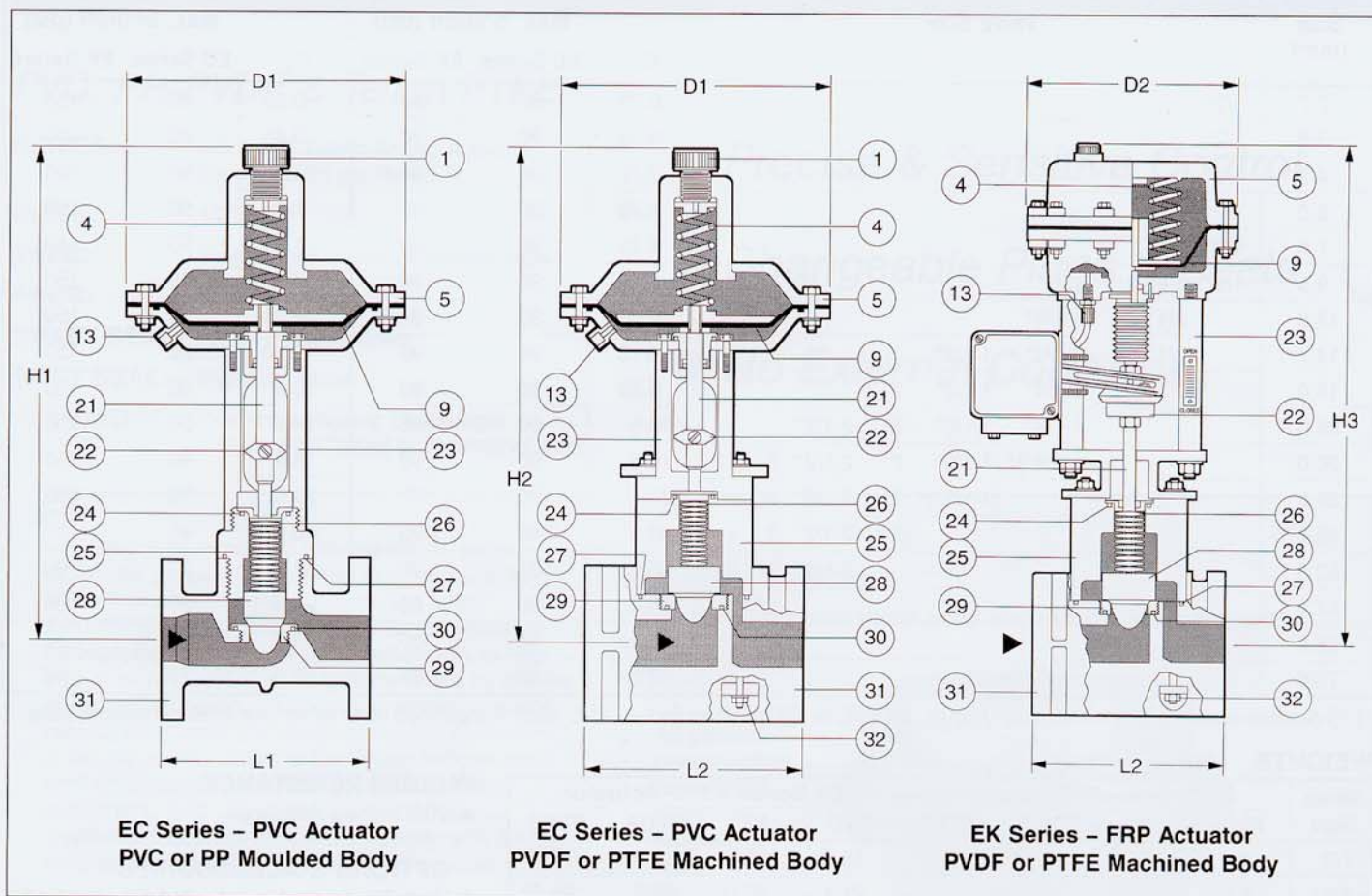
VALVE SIZING GUIDELINES

In general, for optimum system control, the valve should operate between 30% and 70% of stem lift (valve opening).

This means for **linear characteristic** the required C_V 's should be between 30% and 70% of valve C_V .

For **equal percentage characteristic** the required C_V 's should be between 5% and 25% of valve C_V .

Characterized Control Valves



PARTS

▲ = Recommended Spares

No.	Part	Materials
1	Spring Tensioning Screw	PVC
4	Spring*	Coated Steel
5	Pneu. Actuator	PVC, FRP
9	Diaphragm	Nitrile
13	Air Connection	1/4" FNPT
21	Stem	316 SS
22	Position Indicator	PVC
23	Yoke	PVC, 316 SS
24▲	Bellows O-Ring†	Hypalon, Viton
25	Bonnet	PVC, PP, PVDF, PTFE
26▲	Bellows Seal	Teflon PTFE
27▲	Body O-Ring†	Hypalon, Viton
28▲	Characterized Plug	PVC, PP, PVDF, PTFE
29▲	Valve Seat	PVC, PP, PVDF, PTFE
30▲	Seat O-Ring†	Hypalon, Viton
31	Body	PVC, PP, PVDF, PTFE
32	Body Bolts & Nuts	316 SS

DIMENSIONS INCHES

Size	D ₁	D ₂	H ₁	H ₂	H ₃	L ₁	L ₂
1/2"	6.7	8.7	17.8	16.8	19.7	3.4	5.0
3/4"	6.7	8.7	18.0	17.0	19.9	3.8	6.0
1"	10.3	8.7	19.5	20.0	19.9	4.4	6.5
1-1/4"	10.3	8.7	19.8	20.3	20.1	5.4	7.0
1-1/2"	10.3	8.7	19.8	20.3	20.3	7.5	8.0
2"	10.3	8.7	21.0	21.0	20.5	8.0	9.0
2-1/2"	14.3	8.7	25.5	25.3	21.5	8.8	11.5
3"	14.3	8.7	25.5	25.3	21.9	9.5	12.3
4"	14.3	8.7	25.5	25.3	21.9	11.5	13.8
5"	Consult Chemline						
6"	Consult Chemline						

TWO ACTUATOR TYPES:

EC Series – PVC Actuator – 35 PSI maximum supply air.

Valve can be operated as direct acting with 3 – 15 psi control signal to power actuator. The spring tensioning screw is used to zero the valve. Usually no positioner is required. This actuator **will close the valve tightly against up to 90 psi line pressure** depending on valve C_v.

EK Series valves – FRP Actuator – 90 PSI maximum supply air.

A positioner is always required. The actuator **will close the valve tightly against higher line pressure drops, up to 150 psi** depending on valve C_v.

*EC Series has single spring. EK Series has 6 parallel springs.

†EC Series with moulded bodies 1/2" to 1" have a fourth O-Ring not shown. Teflon FEP encapsulated Viton O-Rings are available in machined body valves.

C_v VALUES & MAXIMUM SHUTOFF PRESSURES AT 20°C

Orifice Size (mm)	Valve Size	PVC, PP Moulded Bodies			PVDF, PTFE Machined Bodies		
		C _v	Max. Shutoff (psi)		C _v	Max. Shutoff (psi)	
			EC Series	EK Series		EC Series	EK Series
2.7	1/2"	0.23	90	90	0.23	90	150
3.8	1/2"	0.46	90	90	0.46	90	150
4.7	1/2"	0.70	90	90	0.70	90	150
6.0	1/2"	1.20	90	90	1.20	90	150
7.6	1/2" 3/4"	1.75	90	90	1.75	90	150
9.5	1/2" 3/4" 1"	2.60	90	90	2.60	90	150
12.0	3/4" 1" 1-1/4"	4.00	90	90	4.00	90	150
14.7	3/4" 1" 1-1/4" 1-1/2"	6.10	90	90	6.10	90	150
19.0	(1")* 1-1/4" 1-1/2" 2"	9.50	90	90	10.5	90	150
24.0	1-1/4" 1-1/2" 2" 2-1/2"	10.5	90	90	14.0	90	150
30.0	(1-1/4")* 1-1/2" 2" 2-1/2" 3"	16.0	90	90	18.0	90	150
38.0	(1-1/2")* 2" 2-1/2" 3" 4"	25.0	70	90	29.0	70	150
48.5	(2")* 2-1/2" 3" 4"	40.0	45	90	40.0	45	120
52.0	2-1/2" 3" 4"	46.0	37	90	52.0	37	90
57.0	3" 4"	64.0	30	90	70.0	30	90
68.5	4"	81.0	18	60	93.0	18	60
73.6	4"	93.0	18	60	105.0	18	60

*() denotes available only in machined bodies, not PVC or PP moulded bodies. PVC and PP machined body valves are available special order.

WEIGHTS LBS

Valve Size	EC Series – PVC Actuator				EK Series – FRP Actuator			
	PVC	PP	PVDF	PTFE	PVC	PP	PVDF	PTFE
1/2"	4.6	4.2	6.4	9.5	16.9	16.5	19.1	17.2
3/4"	5.0	4.4	7.0	10.6	21.1	20.0	20.2	21.5
1"	5.9	5.5	8.4	12.5	28.6	26.6	21.1	31.7
1-1/4"	7.7	7.0	9.0	13.6	38.5	35.2	27.5	41.1
1-1/2"	11.2	10.6	12.8	19.1	46.2	44.0	33.4	50.2
2"	23.1	21.1	24.6	37.0	52.4	48.4	43.3	64.9
2-1/2"	26.8	23.8	30.4	45.5	70.4	66.0	54.6	81.8
3"	30.8	26.4	37.2	55.9	90.2	88.0	80.1	120.
4"	35.2	30.8	42.0	63.8	123.	119.	89.1	134.

Note: For weights of 5" and 6" valves consult Chemline.

ORDERING EXAMPLE

Actuator Type	EC – PVC Pneumatic EK – FRP Pneumatic EE – Electric EM – Manual	A	005	NC	H	F
Body Material	A – PVC B – PP K – PVDF P – Teflon PTFE					
Size	005 – 1/2" 007 – 3/4" 010 – 1" 012 – 1-1/4" 015 – 1-1/2" 020 – 2" 025 – 2-1/2" 030 – 3" 040 – 4" 050 – 5" 060 – 6"					
Control Function	NC – Normally Closed NO – Normally Open					
Body Seal	H – Hypalon V – Viton P – Teflon FEP encapsulated Viton (optional in machined body valves)					
Ends	F – Flanged					

Also specify: Characteristic (linear or equal percentage) and C_v Value (from chart above).

Example: Chemline EC Series Pneumatically Actuated Characterized Control Valve, PVC, 1/2", Normally Closed, with Hypalon body seal, flanged, linear characteristic, C_v 1.20.

VACUUM RESISTANCE

- 29.9 inches mercury

OPTIONS & ACCESSORIES

- **High Pressure Model** – 316 SS clad body and special stuffing box for pressures up to 200 psi.
- **Special Construction for Chlorine** – Hastelloy bellows and shaft, stuffing box and additional stem seal with snifting connection.
- **Positioners** – 3 to 15 psi or 4 - 20 mA.
- **Limit Switches** for on/off position feedback.
- **Potentiometer** for continuous position feedback.



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