



— MODEL — **PCM-50GE-01**  
(Full Internal Port)

**PCM-NGE50-01**  
(Reduced Internal Port)

# Electronic Actuated Pressure Sustaining Control Valve



- Simplified Remote Valve Set-Point Control
- 12 to 24 VDC Input Power
- Isolated Input
- Reverse Polarity Protection
- Reliable Hydraulic Operation
- Submersible IP-68

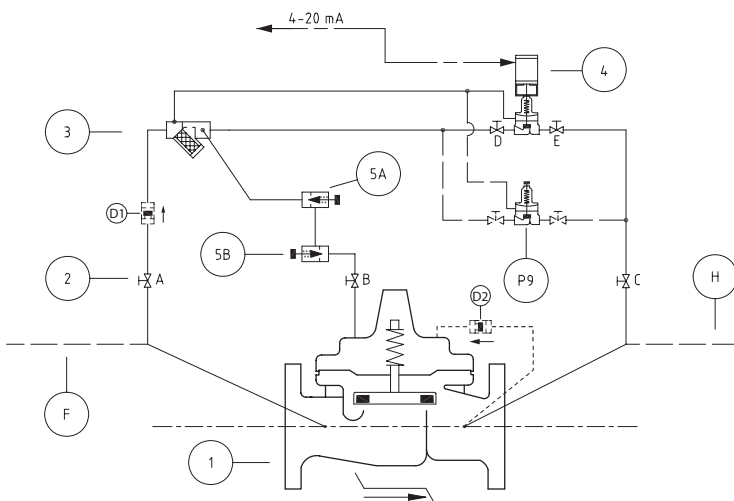
The Cla-Val Model PCM-50GE-01/PCM-NGE50-01 Electronic Actuated Pressure Sustaining Control Valve combines precise control of field proven Cla-Val hydraulic pilots and simple, remote valve control. The Model PCM-50GE-01/PCM-NGE50-01 is a hydraulically operated, pilot controlled, modulating valve designed to maintain constant upstream pressure within close limits. This valve can be used for pressure sustaining, back pressure or unloading functions in a by-pass system. The valve uses a CRL-33 pilot control, consisting of a hydraulic pilot and integral controller, that accepts a remote set-point command input and makes smooth set-point adjustments to the pilot.

## Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	RB-117 Isolation Ball Valve
3	X44-A Strainer with Incorporated Orifice
4	CRL-33 Motorized Pressure Relief Control
5A	One-Way Flow Control (Opening Speed)
5B	One-Way Flow Control (Closing Speed)

## Optional Features

Item	Description
F	Remote Pilot Sensing
H	Drain to Atmosphere
P9	CRL Pressure Relief Control
D	Check Valves with Isolation Valves



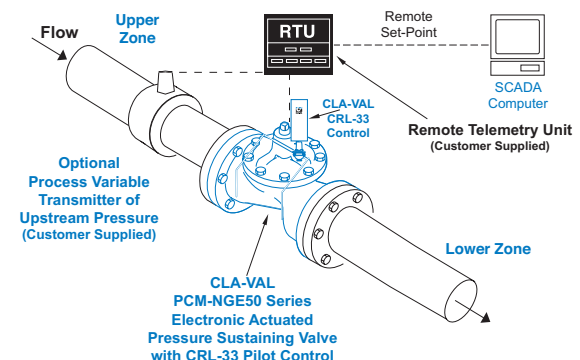
The recommended control method is simple remote set point change from an RTU (Remote Telemetry Unit) to the CRL-33 where the 4-20 mA command signal is ranged to specific pressure range. Very accurate control can be achieved when span does not exceed 6.9 bar. Since the CRL-33 is pre-ranged to the full spring range, some on-site calibration may be necessary when this control method is used. Free downloadable software is available from the Cla-Val website for this purpose. The CRL-33 can also accommodate control systems where the RTU compares pressure transmitter signal to the remote set point command signal. The RTU adjusts the CRL-33 with 4-20 mA command signal containing an adequate deadband to prevent actuator dithering after the two signals agree.

Internal continuous electronic monitoring of actuator position results in virtually instantaneous position change with no backlash or dithering when control signal is changed. In the event of a power or control input failure, the CRL-33 pilot remains in hydraulic control virtually assuring system stability under changing conditions. If check feature ("D") is added, and pressure reversal occurs, the valve closes to prevent return flow.

## Typical Applications

The valve is designed to be used with supervisory control systems (SCADA), having remote analog set-point output and process variable upstream pressure input. It is also an effective solution for lowering costs associated with "confined space" requirements by eliminating need for entry into valve structure for set-point adjustment.

Additional pilot controls, hydraulic and/or electronic, can be easily added to perform multiple control functions to fit exact system requirements.



## Model PCM-50GE-01 (Uses Basic Valve Model 100GE-01)

### Pressure Ratings (Recommended Maximum Pressure - bar)

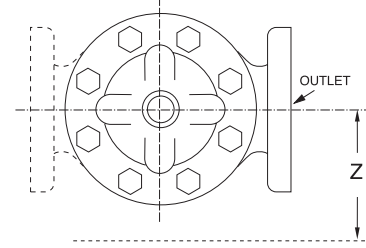
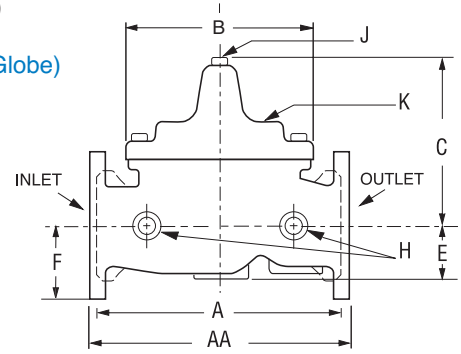
Valve Body & Cover		Pressure Class				
		Flanged				Threaded
Grade	Material	PN10	PN16	PN25	PN40	End Details
ASTM A536	Ductile Iron	10	16	25	40	20

### Materials

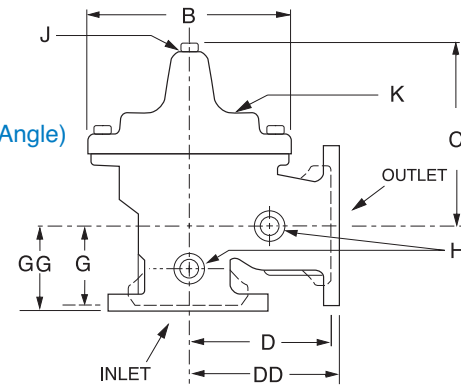
Component	Standard Material Combinations
Body & Cover	Ductile Iron - Fusion Bonded Epoxy coated
Available Sizes	32mm - 400mm *
Disc Retainer & Diaphragm Washer	Cast Iron - Fusion Bonded Epoxy coated
Trim: Disc Guide, Seat & Cover Bearing	Stainless Steel
Disc	EPDM
Diaphragm	Nylon Reinforced EPDM
Stem, Nut & Spring	Stainless Steel
* See TYTAN range for Larger Sizes	

### Dimensions (In mm)

#### 100GE-01 (Globe)



#### 100AE-01 (Angle)



### Model PCM-50GE-01 Dimensions (In mm)

Valve Size (mm)	32-40	50	65	80	100	150	200	250	300	350	400
<b>A</b> Threaded	200	238	280	318	—	—	—	—	—	—	—
<b>AA</b> Flanged	216*	254	279	305	381	508	645	756	864	991	1051
<b>AAAA</b> Grooved End	216	228	279	318	381	508	645	—	—	—	—
<b>B</b> Dia.	145	170	205	235	295	400	510	600	712	832	900
<b>C</b> Max.	140	165	192	208	270	340	406	435	530	614	635
<b>CC</b> Max. Grooved End	120	146	175	184	236	308	371	—	—	—	—
<b>D</b> Threaded	83	121	140	159	—	—	—	—	—	—	—
<b>DD</b> Flanged	102*	127	149	162	191	254	324	378	432	495	528
<b>DDDD</b> Grooved End	—	121	—	152	191	—	—	—	—	—	—
<b>E</b>	29	38	43	52	81	110	135	235	273	321	394
<b>EE</b> Grooved End	52	64	73	79	108	152	192	—	—	—	—
<b>F</b>	75	82.5	93	100	110	142.5	170	236	274	267	295
<b>G</b> Threaded	48	83	102	114	—	—	—	—	—	—	—
<b>GG</b> Flanged	102*	89	110	111	126	153	203	219	349	378	398
<b>GGGG</b> Grooved End	—	83	—	108	127	—	—	—	—	—	—
<b>H</b> BSP Body Tapping	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1
<b>J</b> BSP Cover Center Plug	1/4	1/2	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/2	2
<b>K</b> BSP Cover Tapping	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1
<b>Z</b> (Approx Outer Limits of Pilot System)	150	150	165	203	216	230	285	330	370	400	475
Valve Stem Internal Thread UNF	10-32	10-32	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	3/8-24	3/8-24	1/2-20
Stem Travel	10	15	18	20	28	43	58	71	86	102	114
Approx. Ship Wt. Kgs.	13	20	25	30	50	95	170	310	470	726	970

## Model PCM-NGE50-01 (Uses Basic Valve Model NGE100-01)

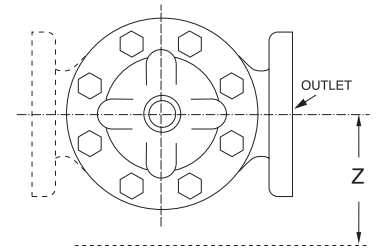
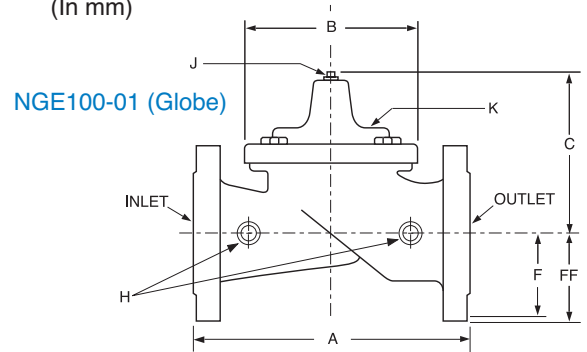
### Pressure Ratings (Recommended Maximum Pressure - bar)

Valve Body & Cover		Pressure Class				
		Flanged				Threaded
Grade	Material	PN10	PN16	PN25	PN40	End Details
ASTM A536	Ductile Iron	10	16	25	40	20

### Materials

Component	Standard Material Combinations
Body & Cover	Ductile Iron - Fusion Bonded Epoxy coated
Available Sizes	50mm - 600mm *
Disc Retainer & Diaphragm Washer	Cast Iron - Fusion Bonded Epoxy coated
Trim: Disc Guide, Seat & Cover Bearing	Stainless Steel
Disc	EPDM
Diaphragm	Nylon Reinforced EPDM
Stem, Nut & Spring	Stainless Steel
* See TYTAN range for Larger Sizes	

### Dimensions (In mm)



### Model PCM-NGE50-01 Dimensions (In mm)









































Valve Size (mm)	50	65	80	100	150	200	250	300	350	400	450	500	600
<b>A</b>	230	290	310	350	480	600	730	850	980	1100	1200	1250	1450
<b>B Dia.</b>	145	170	170	235	295	400	510	600	712	712	712	900	900
<b>C Max.</b>	136	170	178	219	295	381	454	533	530	654	635	800	800
<b>F PN16</b>	83	93	100	110	143	170	200	228	260	290	325	370	430
<b>FF PN25</b>	83	93	100	118	150	180	213	243	278	310	335	370	430
<b>H BSP Body Tapping</b>	3/8	3/8	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1
<b>J BSP Cover Center Plug</b>	1/2	1/2	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/4	2	2	2
<b>K BSP Cover Tapping</b>	3/8	3/8	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1
<b>Z (Approx Outer Limits of Pilot System)</b>	190	200	200	200	250	270	290	365	400	425	450	520	520
Valve Stem Internal Thread UNF	10-32	10-32	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	3/8-24	3/8-24	1/2-20	1/2-20	1/2-20
Stem Travel	10	15	15	20	28	43	58	71	86	86	86	114	114
Approx. Ship Wt. Kgs.	15	20	25	39	70	120	190	330	540	640	681	980	1060

### PCM-50GE-01/PCM-NGE50-01 Purchase Specifications (CRL-33 supplement)

The Electronic Actuated Pressure Sustaining Pilot Control shall have an integral hydraulic pilot and electronic controller contained in a submersible enclosure to provide interface between remote telemetry and valve set-point control. It will compare a remote analog command signal with an internal position sensor signal and adjust the hydraulic pilot control spring mechanism to a new set-point position. 4-20 mA actuator position feedback output shall be supplied standard.

If power fails, the valve shall continue to control to the last set-point command. If the remote set-point signal is lost the actuator is programmable to go to either the 4mA, last, or 20mA command set-point. Adjustments shall include low and high pressure range and cycle time. Range adjustment shall be accomplished only with valve manufacturer's components and instructions to be supplied in a separate kit.

The Electronic Actuated Pressure Sustaining Control Valve shall be Cla-Val Model PCM-50GE-01/PCM-NGE50-01 as manufactured by Cla-Val, Lausanne, Switzerland.

Valve Selection		These Symbols  and  Indicate Available Sizes																
		Inches	1¼	1½	2	2½	3	4	6	8	10	12	14	16	18	20	24	
		mm	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	
Model <b>PCM-50GE-01</b>	Basic Valve 100GE-01	Globe Pattern																
		CV (L/S)	7	8	13	20	28	48	111	185	299	414	552	706				
		Angle Pattern																
		CV (L/S)	6	7	16	24	33	57	130	238	378	601	734	1009				
	Suggested Flow (M <sup>3</sup> /hr)	Max. Continuous	21.6	29	43	72	108	173	389	702	1080	1548	2088	2736				
		Max. Surge	32	47	72	122	184	284	641	1134	1764	2556	3456	4536				
	Suggested Flow (Litres/Sec)	Max. Continuous	6	8	12	20	30	48	108	195	300	430	580	760				
		Max. Surge	9	13	20	34	51	79	178	315	490	710	960	1260				
	Model <b>PCM-NGE50-01</b>	Basic Valve NGE100-01	Globe Pattern															
			CV (L/S)			9	12	16	33	58	133	222	359	455	497	575	847	895
Suggested Flow (M <sup>3</sup> /hr)		Max. Continuous			36	61	90	144	316	565	882	1271	1732	2261	3535	3535	5090	
		Max. Surge			67	85	101	198	482	950	1584	2394	2880	3852	5112	5112	6984	
Suggested Flow (Litres/Sec)		Max. Continuous			10	17	25	40	88	157	245	353	481	620	982	982	1414	
		Max. Surge			18.5	23.5	28	55	134	264	440	665	800	1070	1420	1420	1940	
Contact Factory for Sizes not Shown																		

**PCM-NGE50-01 is the reduced internal port size version of the PCM-50GE-01.**

The flow coefficient CV, expressed as l/s is the flow which produces a 1 bar pressure drop across the fully open valve at a water temperature of 15 °c.

For 100GE-01 basic valves, suggested flow calculations were based on flow through Schedule 40 Pipe. Maximum continuous flow is approx. 6.1 meters/sec & maximum surge is approx. 10 meters/sec. For NGE100-01 basic valves, suggested flow calculations were based on flow through the valve. Approx. 5.0 meters/sec was used for maximum continuous flow & maximum surge is approx. 10 metres/sec.

Many factors should be considered in sizing pressure relief / sustaining valves including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

### Pilot Control Subassembly Specifications

**Adjustment Ranges**

- 0.1 to 5.1 bar
- 1.4 to 14.0 bar
- 7.0 to 21.0 bar

**End Connection**

3/8" BSP

**Temperature Range**

Water: to 65°C

**Materials**

- Pilot Control: Bronze ASTM B62
- Trim: Stainless Steel Type 303
- Rubber: Buna-N® Synthetic Rubber

Available with optional Stainless Steel or Monel materials at additional cost. Consult factory for details.

### When Ordering, Please Specify

1. Catalog No. PCM-50GE-01/PCM-NGE50-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

### e-Drive Electronic Actuator Specifications

- Supply Power Input:** 12V to 24V DC  
No Load draw: 50 mA  
Max. Load draw: 250 mA
- Remote Command Input:** 4-20 mA analog signal  
(Isolated and reverse polarity protected)  
Dry contact closure (CW/CCW)
- Position Feedback Signal:** 4-20 mA
- Alarm Output:** Dry contact closure (High/Low)
- Speed of Rotation:** Adjustable On/Off time, max 6 rpm
- Diagnostic:** LED Indicator
- Loss of Power:** Actuator will remain in last commanded position. (maintains last pressure set-point)
- Loss of Signal:** Programmable - 4mA, Last, or 20mA
- Electrical Connections:** Single, 10 meters permanently attached cable with color-coded power supply and signal wires
- Mechanical Specifications:**  
Environmental  
Protection Class: IP-68 (Temporary submersible)  
Ambient Temperature: -10° to 65° C
- Materials**  
Enclosure and Bracket: Anodized Aluminum  
Coupling Assembly: Stainless Steel  
Gear Train: Stainless Steel, permanently lubricated



CVE-E-PCM-50GE-01/PCM-NGE50-01

### CLA-VAL

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