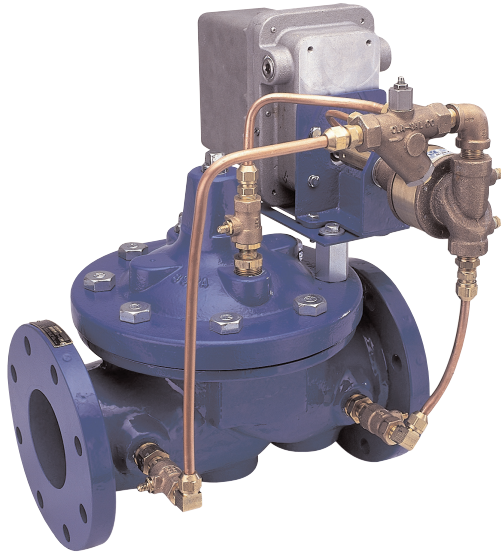


# Electronic Actuated Differential Pressure Relief Valve



- Simplified Interfacing with SCADA Systems
- Accepts Local or Remote SetPoint
- Integral Loop Power Supply
- Accurate Flow and Pressure Control
- Reliable Hydraulic Operation
- Rugged Durable Design

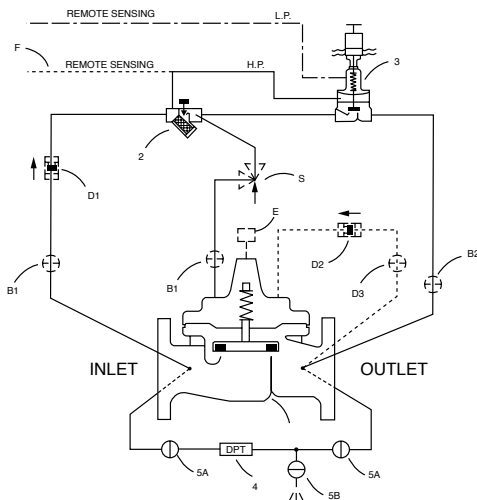
The Cla-Val Model 3250-01/3605-01 Electronic Actuated Differential Relief Pressure Control Valve combines the precise control of a field proven Cla-Val hydraulic pilot and the convenience and versatility of remote setpoint control. The Model 3250-01/3605-01 Control Valve is a hydraulically operated, pilot controlled, modulating valve. It is designed to maintain a constant pressure differential between any two pressure points in a system where the closing of the valve directly causes the differential pressure to increase. The valve tends to open on an increase in differential pressure and close on a decrease in differential pressure. The pilot control, consisting of a hydraulic pilot and integral controller, accepts a setpoint and compares it with a differential pressure or internal potentiometer position signal and makes incremental adjustments to modulate the valve to a setpoint.

## Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X42N-2 Stainer & Needle Valve
3	CDB-30 Electronic Differential Pressure Pilot
4	DPT- Differential Pressure Transmitter
5	CK2 (Isolation Valve)

## Optional Features

Item	Description
B	CK2 (Isolation Valve)
D	Check Valves with Isolation Valve
E	X117D Position Transmitter
F	Remote Pilot Sensing (H.P.)
S	CV Flow Control (Opening)

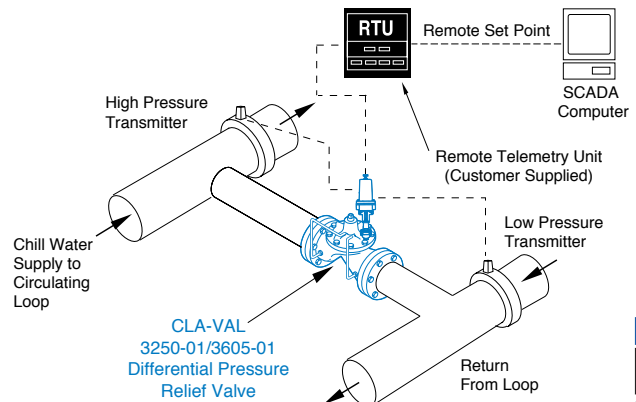


Adjustable solid-state limit switches eliminate over ranging. In the event of a power or transmitter failure, the CDB-30 hydraulic pilot remains in valve control virtually assuring system stability under changing conditions. If check feature ("D") is added, and pressure reversal occurs, the valve closes to prevent return flow.

## Typical Applications

The valve is designed to be used with supervisory control systems having an isolated remote analog setpoint output and a process variable system differential pressure input. On a chill water circulating closed-loop system the 3250-01/3605-01 Differential Pressure Relief Valve is installed between loop supply and return lines to maintain a constant differential across the loop. The loop differential pressure remains constant regardless of the loop demand changes thereby increasing cooling system efficiency. It is also an effective solution for lowering costs associated with "confined space" requirements by eliminating need for entry into valve structure for setpoint adjustment and system information.

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



## Model 3250-01 (Uses Basic Valve Model 100-01)

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

Valve Body & Cover		Pressure Class			
		Flanged		Threaded	
Grade	Material	ANSI Standards*	150 lb.	300 lb.	End** Details
ASTM A536	Ductile Iron	B16.42	250	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
ASTM B62	Bronze	B16.24	225	400	400

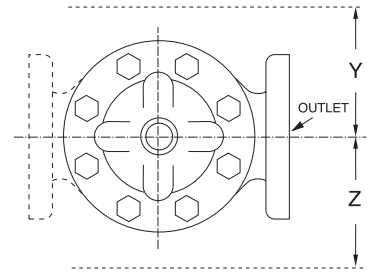
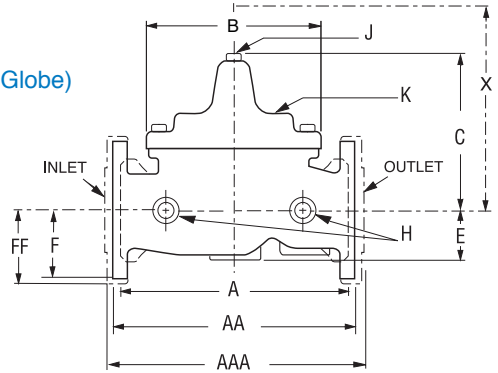
Note: \* ANSI standards are for flange dimensions only.  
 Flanged valves are available faced but not drilled.  
 \*\* End Details machined to ANSI B2.1 specifications.

### Materials

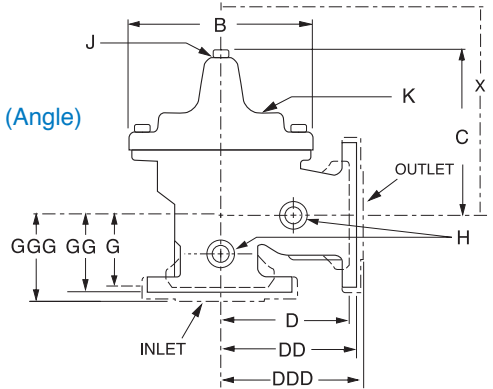
Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	1½" - 36"	1½" - 16"	1½" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.

100-01 (Globe)



100-01 (Angle)



### Model 3250-01 Dimensions (In Inches)

Valve Size (Inches)	1½-1½	2	2 ½	3	4	6	8	10	12	14	16	24	36
<b>A</b> Threaded	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—	—
<b>AA</b> 150 ANSI	8.50*	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	61.50	76.00
<b>AAA</b> 300 ANSI	9.00*	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	63.24	78.00
<b>B</b> Dia.	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	53.16	66.00
<b>C</b> Max.	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	43.93	61.50
<b>D</b> Threaded	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—
<b>DD</b> 150 ANSI	4.00*	4.75	5.50	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—	—
<b>DDD</b> 300 ANSI	4.25*	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—
<b>E</b>	1.12	1.50	1.69	2.56	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75	24.56
<b>F</b> 150 ANSI	2.50	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	19.25	28.00
<b>FF</b> 300 ANSI	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—	—
<b>G</b> Threaded	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—	—
<b>GG</b> 150 ANSI	4.00*	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—
<b>GGG</b> 300 ANSI	4.25*	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—
<b>H</b> NPT Body Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1	2
<b>J</b> NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1¼	1½	2	1½	2
<b>K</b> NPT Cover Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1	2
Valve Stem Internal Thread UNF	10-32	10-32	10-32	¼-28	¼-28	¾-24	¾-24	¾-24	¾-24	¾-24	¾-24	½-20	¾-16
Stem Travel	0.4	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.75	10.12
Approx. Ship Wt. Lbs.	15	35	50	70	140	285	500	780	1165	1600	2265	6200	11470
<b>X</b> Pilot System	11.00	13.00	14.00	15.00	17.00	29.00	31.00	33.00	36.00	40.00	40.00	68.00	86.00
<b>Y</b> Pilot System	9.00	9.00	10.00	11.00	12.00	20.00	22.00	24.00	26.00	29.00	30.00	39.00	45.00
<b>Z</b> Pilot System	9.00	9.00	10.00	11.00	12.00	20.00	22.00	24.00	26.00	29.00	30.00	39.00	45.00

\*1½" Size Only

**Model 3605-01** (Uses Basic Valve Model 100-20)

**Pressure Ratings** (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 lb.	300 lb.
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400

Note: \*ANSI standards are for flange dimensions only.  
Flanged valves are available faced but not drilled.

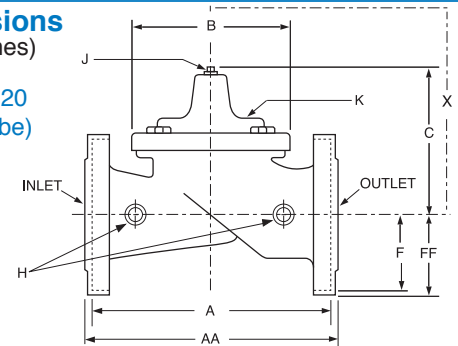
**Materials**

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 48"	3" - 16"	3" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

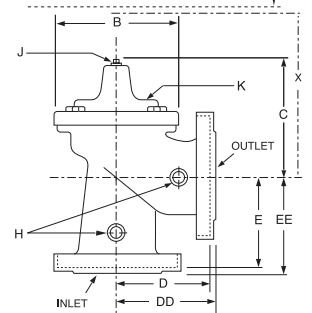
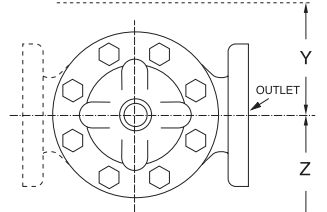
For material options not listed, consult factory.  
Cla-Val manufactures valves in more than 50 different alloys.

**Dimensions**  
(In inches)

100-20  
(Globe)



100-20  
(Angle)



**Model 3605-01 Dimensions** (In Inches)

Valve Size (Inches)	3	4	6	8	10	12	14	16	18	20	24	30
<b>A</b> 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00	63.25
<b>AA</b> 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
<b>B</b> Dia.	6.62	9.12	11.50	15.75	20.00	23.62	28.00	28.00	35.44	35.44	35.44	53.19
<b>C</b> Max.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00	43.94
<b>D</b> 150 ANSI	—	6.94	8.88	10.69	—	—	—	—	—	—	—	—
<b>DD</b> 300 ANSI	—	7.25	9.38	11.19	—	—	—	—	—	—	—	—
<b>E</b> 150 ANSI	—	5.50	6.75	7.25	—	—	—	—	—	—	—	—
<b>EE</b> 300 ANSI	—	5.81	7.25	7.75	—	—	—	—	—	—	—	—
<b>F</b> 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50	11.00	11.75	15.88	14.56	17.00	19.88
<b>FF</b> 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
<b>H</b> NPT Body Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
<b>J</b> NPT Cover Center Plug	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/4	2	2	2	2
<b>K</b> NPT Cover Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
Valve Stem Internal Thread UNF	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	3/4-16
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	3.4	4.5	4.5	6.5
Approx. Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	1500	2551	2733	6500
<b>X</b> Pilot System	13.00	15.00	27.00	30.00	33.00	36.00	36.00	41.00	40.00	46.00	55.00	68.00
<b>Y</b> Pilot System	10.00	11.00	18.00	20.00	22.00	24.00	26.00	26.00	30.00	30.00	30.00	39.00
<b>Z</b> Pilot System	10.00	11.00	18.00	20.00	22.00	24.00	26.00	26.00	30.00	30.00	30.00	39.00



















































**3250-01/3605-01 Purchase Specifications**

The 3250-01/3605-01 Electronic Actuated Differential Pressure Control Valve shall have an integral hydraulic and electronic controller contained in a NEMA 4 enclosure to provide the interface between remote telemetry and valve control. It will compare a selectable remote analog or local setpoint with a process variable signal or internal position sensor signal and automatically adjust the hydraulic pilot control until the main control valve reaches desired setpoint.

The electronic actuator will supply loop power for the process variable signal. Retransmission of the process variable shall be with an isolated non-powered analog signal. The actuator speed will be infinitely adjustable between 1/3 and 5 RPM and will have an adjustable dead band. In the event of an erroneous communications signal, actuator output will be capable of being limited to a predetermined process variable value. If these signals (SP and /or PV) are lost, the valve shall remain under control of the differential pressure relief hydraulic control. The actuator can also be programmed to drive the main valve to the open or closed position if these signals are lost.

All setup and adjustments will be capable of being made prior to placing the valve into service using actuator test points for signal measurement and subsequent calibration. Actuator diagnostics will be displayed using LEDs. Manual operation of the hydraulic pilot will be fully adjustable using a non-rotating handwheel.

The Electronic Actuated Differential Pressure Control Valve shall be the Cla-Val Model 3250-01/3605-01 as manufactured by Cla-Val, Newport Beach, CA.

Valve Selection		These Symbols  and  Indicate Available Sizes																		
		Inches	1 ¼	1 ½	2	2 ½	3	4	6	8	10	12	14	16	18	20	24	30	36	
		mm	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900	
		End Detail	Threaded			Threaded & Flanged			Flanged											
Model 3250-01	Basic Valve 100-01	Globe																		
		Angle																		
	Suggested Flow (gpm)	Max. Continuous	93	125	210	300	460	800	1800	3100	4900	7000	8400	11000			25000		50000	
		Max. Surge	120	280	470	670	1000	1800	4000	7000	11000	16000	19000	25000			56500		120000	
	Suggested Flow (Liters/Sec)	Max. Continuous	6	8	13	19	29	50	113	195	309	441	529	693			1575		3150	
		Max. Surge	13	18	30	42	63	113	252	441	693	1008	1197	1575			3560		7570	
Model 3605-01	Basic Valve 100-20	Globe																		
		Angle																		
	Suggested Flow (gpm)	Max. Continuous					260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	31300		
		Max. Surge					440	990	1760	3970	7050	11000	15900	15900	28200	28200	28200	56500		
	Suggested Flow (Liters/Sec)	Max. Continuous					16	37	65	145	258	403	581	581	1040	1040	1040	1972		
		Max. Surge					28	62	111	250	444	693	1002	1002	1777	1777	1777	3560		

**3605-01 is the reduced internal port size version of the 3250-01.**

For 100-01 basic valves suggested flow calculations were based on flow through Schedule 40 Pipe. Maximum continuous flow is approx. 20 ft/sec (6.1 meters/sec) & maximum surge is approx. 45 ft/sec (13.7 meters/sec). For 100-20 basic valves suggested flow calculations were based on flow through the valve seat. Approx. 26 ft/sec (7.9 meters/sec) is used for continuous flow & 45 ft/sec (13.7 meters/sec) is used for surge flow. Maximum continuous flow through the valve seat for the 30" 100-20 is approx. 20 ft/sec (6.1 meters/sec). \*\*Flanged End Detail Only

We recommend providing adequate space around valve for maintenance work

### Pilot System Specifications

#### Adjustment Ranges

0 to 7 psi      50 to 150 psi  
 5 to 25 psi    65 to 180 psi  
 20 to 80 psi

#### Temperature Range

Water: to 180°F

#### Materials

##### Standard Pilot System Materials

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

##### Optional Pilot System Materials

Pilot Systems are available with optional Aluminum, Stainless Steel or Monel materials at extra cost.

### Electronic Actuator - CDB-30 Pilot Control

**Input Voltage:** 120/240 Vac +/- 10%, 50/60 Hz

**Operating Current:** 2 Amperes at 120 Vac

**Process Variable:** Field Selectable between 4-20mA transmitter (supplied by others) or internal potentiometer

**Loop Power Supply:** 0-24 VDC

**Retransmission:** Isolated non-powered 4-20mA

**Input Signal Monitor:** If process variable is lost, actuator holds in present position opens or closes, field selectable

**Setpoint:** Field selectable between local and remote 4-20 mA, 0-5 Volt, 0-10 Volt

**Manual Adjustment:** Non-rotating handwheel

**Limit Switches:** Electronic full range adjustable

**Terminations:** Terminal blocks accepting up to #16 Awg solid or stranded wire

**Operating Temperature:** 0°F to 150 °F (-18 C to 65 C)

**Environmental Rating:** Enclosure rated NEMA type 4 indoor/outdoor, corrosion resistant aluminum

### When Ordering, Please Specify

- Catalog No. 3250-01 or 3605-01
- Valve Size
- Pattern - Globe or Angle
- Pressure Class
- Threaded or Flanged
- Trim Material
- Adjustment Range
- Desired Options
- When Vertically Installed



E-3250-01/3605-01 (R-8/05)

## CLA-VAL

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### Represented By: