MODEL 340-01
3640-01

Electronic Actuated Rate of Flow Control Valve

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

The Cla-Val Model 340-01/3640-01 Electronic Actuated Rate of Flow Control Valve combines the precise control of field proven Cla-Val hydraulic pilots and the convenience and versatility of remote setpoint control. The Model 340-01/3640-01 control valve prevents excessive flow by limiting flow to a preselected maximum rate regardless of changing line pressure. It is a hydraulically operated, pilot controlled, diaphragm actuated control valve.

The pilot control responds to the differential pressure produced across an orifice plate or other differential producing devices installed downstream of the valve. Accurate control is assured as very small changes in the controlling differential pressure produce immediate corrective action of the main valve. The pilot control, consisting of a hydraulic pilot and integral controller accepts a setpoint and compares it with the flow or internal position potentiometer signal and makes incremental adjustments to modulate the valve to a setpoint.

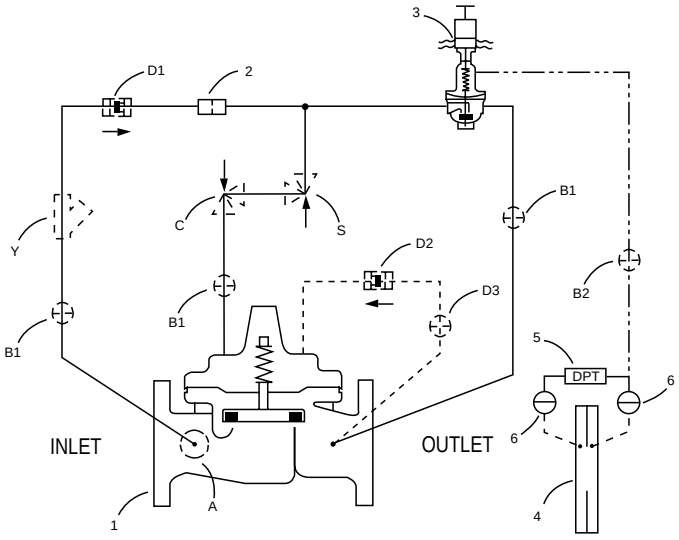
Adjustable solid state limit switches eliminate over ranging. In the event of a power or transmitter failure, the CDHS-30 hydraulic pilot remains in control of the main valve virtually assuring system stability under changing conditions. If check feature (“D”) is added, and pressure reversal occurs,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

Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X58C Restriction Fitting
3	CDHS-30 Electronic Differential Control
4	X52D-1 Orifice Plate Assembly
5	DPT-Differential Pressure Transmitter
6	CK2 Cock (Isolation Valve)

Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 Cock (Isolation Valve)
C	CV Flow Control (Closing)
D	Check Valves with Cock
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer

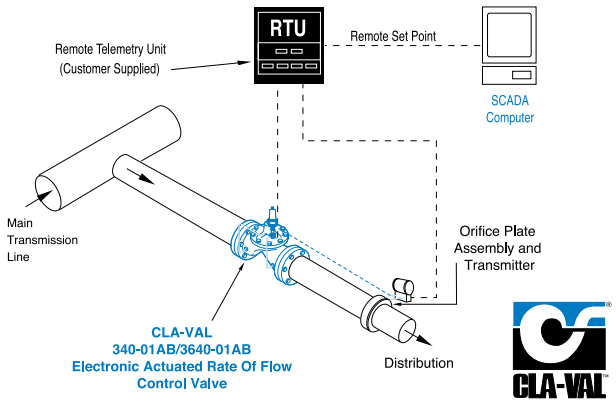


Typical Applications

This valve is designed to be used with supervisory control systems having an isolated remote analog setpoint output and a process variable flow transmitter input. The 340-01/3640-01 is typically installed in systems requiring remote setpoint changes of flow rates.

It is also an effective solution for lowering costs associated with “confined space” requirements by eliminating the 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 340-01 (Uses Basic Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Screwed
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
ASTM A743	Stainless Steel	B16.5	285	400	400
356-T6	Aluminum	B16.1	275	—	—

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

2 Globe, Screwed

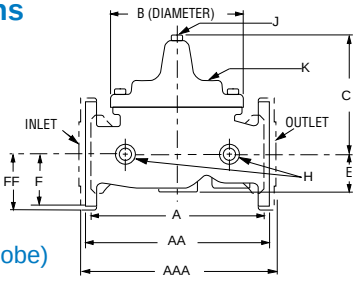
Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	1½" - 16", 24"	1½" - 16", 24"	1½" - 16"	1½" - 16"	1½" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.	
Disc	Buna-N® Rubber				
Diaphragm	Nylon Reinforced Buna-N® Rubber				
Stem, Nut & Spring	Stainless Steel				

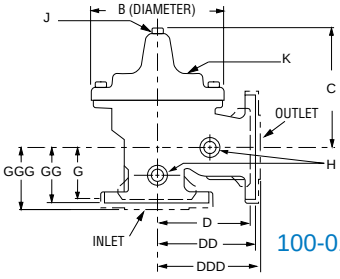
4"Globe, Flanged

4" Angle, Flanged

Dimensions
(In inches)



100-01 (Globe)



100-01 (Angle)

*1½" Size Only

Valve Size (Inches)	1¼-1½	2	2 ½	3	4	6	8	10	12	14	16	24
A Screwed	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—
AA 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
AAA 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
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
C 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
D Screwed	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—
DD 150 ANSI	4.00*	4.75	5.50	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—
DDD 300 ANSI	4.25*	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—
E	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75
F 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
FF 300 ANSI	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—
G Screwed	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—
GG 150 ANSI	4.00*	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	4.25*	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	⅜	⅜	½	½	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1 ¼	1 ½	2	1½
K NPT Cover Tapping	⅜	⅜	½	½	¾	¾	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	10-32	10-32	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	3/4-16
Stem Travel	0.4	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.50
Approx. Ship Wt. Lbs.	15	35	50	70	140	285	500	780	1165	1600	2265	6200

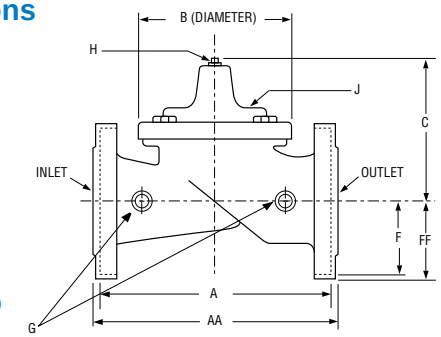
Model 3640-01 (Uses Basic Valve Model 100-20)

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
ASTM A743	Stainless Steel	B16.5	285	400
356-T6	Aluminum	B16.1	275	—

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

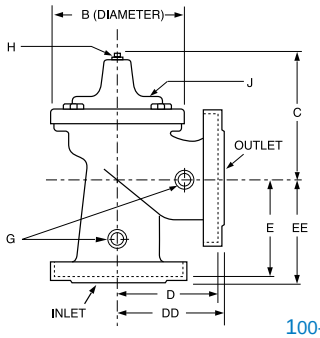
Dimensions
(In inches)



100-20 (Globe)

Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	3"-30"	3"-30"	3"-16"	3"-16"	3"-16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.	
Disc	Buna-N® Rubber				
Diaphragm	Nylon Reinforced Buna-N® Rubber				
Stem, Nut & Spring	Stainless Steel				



100-20 (Angle)

3" Globe, Flanged

VALVE SIZE (Inches)	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**24**	**30**
A 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
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
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
C 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
D 150 ANSI	—	6.94	8.88	10.69	—	—	—	—	—	—	—	—
DD 300 ANSI	—	7.25	9.38	11.19	—	—	—	—	—	—	—	—
E 150 ANSI	—	5.50	6.75	7.25	—	—	—	—	—	—	—	—
EE 300 ANSI	—	5.81	7.25	7.75	—	—	—	—	—	—	—	—
F 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
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
G NPT Body Tapping	⅜	½	¾	¾	1	1	1	1	1	1	1	1
H NPT Cover Center Plug	½	½	¾	¾	1	1	1¼	1¼	2	2	2	2
J NPT Cover Tapping	⅜	½	¾	¾	1	1	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	½-20	½-20	¾-16
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5	4.5	6.5
Approx Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	2733	2551	2733	6500

340-01/3640-01 Purchase Specifications

The 340-01/3640-01 Electronic Actuated Rate of Flow 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 flow limiting 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 Rate of Flow Control Valve shall be the Cla-Val Model 340-01/3640-01 as manufactured by Cla-Val, Newport Beach, CA.

Valve Selection

		These Symbols ▲ and ▲ Indicate Available Sizes															
	Inches	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30
	mm	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750
	End Detail	Screwed	Screwed & Flanged				Flanged										
Model 340-01	Basic Valve 100-01 Globe	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲			▲	
	Basic Valve 100-01 Angle		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲			▲	
	Suggested Flow (GPM) Max. Continuous	93	125	210	300	460	800	1800	3100	4900	7000	8400	11000			25000	
	Suggested Flow (GPM) Max. Intermittent	120	160	260	370	580	990	2250	3900	6150	8720	10540	13700			31300	
	Suggested Flow (GPM) Min. Continuous	10	10	15	20	30	50	115	200	300	400	500	650			1750	
	Suggested Flow (Liters/sec) Max. Continuous	6	8	13	19	29	50	113	195	309	441	529	693			1575	
	Suggested Flow (Liters/sec) Max. Intermittent	7.6	10.1	16.4	23	37	62	142	246	387	549	664	863			1972	
	Suggested Flow (Liters/sec) Min. Continuous	.6	.6	.9	1.3	1.9	3.2	7.2	13	19	25	32	41			110	
Model 3640-01	Basic Valve 100-20 Globe					▲**	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
	Basic Valve 100-20 Angle						▲	▲	▲								
	Suggested Flow (GPM) Max.Continuous					260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	28000
	Suggested Flow (GPM) Min. Continuous					15	30	50	115	200	300	500	500	900	900	900	1850
	Suggested Flow (Liters/sec) Max.Continuous					16	37	65	145	258	403	581	581	1040	1040	1040	1764
	Suggested Flow (Liters/sec) Min. Continuous					.9	1.9	3.2	7.2	13	19	32	32	57	57	57	117

※ **3640-01 is the reduced internal port size version of the 340-01.**

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 intermittent flow is approx. 25 ft/sec (7.6 meters/sec) & minimum continuous flow is approx. 1 ft/sec (.3 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 maximum continuous flow & 1 ft/sec (.3 meters/sec) is used for minimum continuous 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 Range

Low flow equals one-forth maximum flow

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.

Note: Orifice plate assembly (X52E) is 1 1/2" thick and must be installed minimum 5 pipe diameters downstream of valve with a minimum of 3 pipe diameters of straight pipe downstream of orifice plate assembly. Orifice plate assembly sensing connections should be located to the side of the pipeline. To increase measurement accuracy recommended minimum is 10 pipe diameters upstream and 5 pipe diameters downstream of the orifice plate assembly.

When Ordering, Please Specify

1. Catalog No. 340-01 or 3640-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

Electronic Actuator - CDHS-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

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Represented By:

E-340-01/3640-01 (R-11/01)