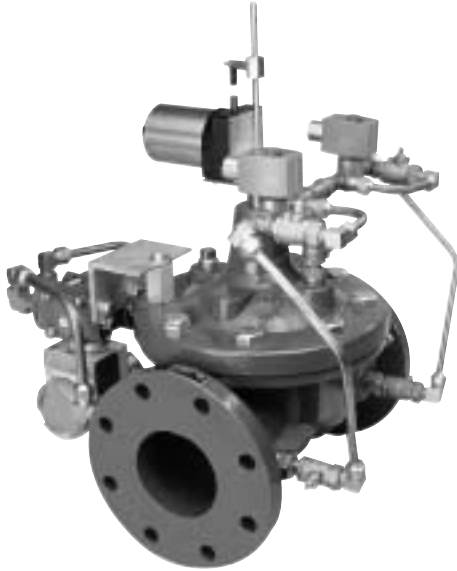


Metering Valve

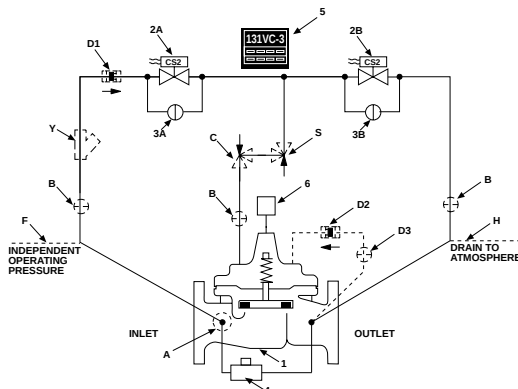


Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	CS2S Solenoid Control
3	CK2 Solenoid By-pass
4	DPT Delta P Transmitter
5	Electronic Controller
6	X117C (LS) Position Transmitter

Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 Isolation Valve
C	CV Flow Control (Closing)
D	Check Feature
F	Independent Operation Pressure
H	Atmospheric Drain
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer



- Automatically Measures & Controls Flow Rate Without a Separate Metering Device
- Completely Self Contained
- Analog Or Digital Communications
- Retransmission Capabilities
- Ideal For Retrofitting Existing Valves
- Optional Totalizing Capabilities

The Cla-Val Model 133-01/633-01 Metering Valve is a completely self contained valve and control system that accurately meters and/or controls flow rate when used on valves with pressure differentials of less than 100 PSID.

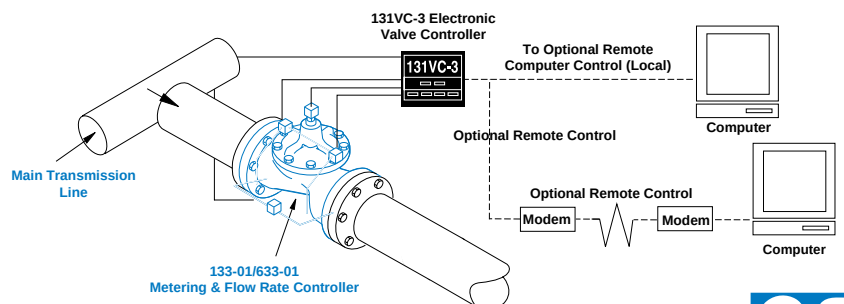
Using a 131VC-3 Cla-Val Microprocessor, data from differential pressure and position transmitters are assimilated into a proprietary algorithm program that is based on valve size and configuration to arrive at a flow measurement. This information can then be used for retransmission and/or compared with a local or remote set point for valve flow control. The 131VC-3 Control System can also be installed on new or existing hydraulic pilot control valves such as: pressure reducing, pressure sustaining, flow limiting and level control to transmit flow rate without disturbing the valves primary hydraulic function(s). Specify 131VC-3KT Kit for these applications.

For all applications, specify voltage, minimum / maximum pressures & flow rates, valve size, pressure class and optional features. Consult your local representative or the factory for engineering assistance and valve selection if required.

Please refer to the 131VC "Electronic Control Systems" brochure for specific information regarding valve theory of operation, standard & optional features, control parameters and electrical component specifications.

Typical Applications

The Model 133-01/633-01 Metering and Flow Rate Controller is typically installed in a fluid delivery system where the flow rate is measured or changed from a remote location such as a SCADA system.



Model 133-01 (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 drilled to ANSI B2.1 specifications.

Materials

Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	3"- 16", 24"	3"- 16", 24"	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						



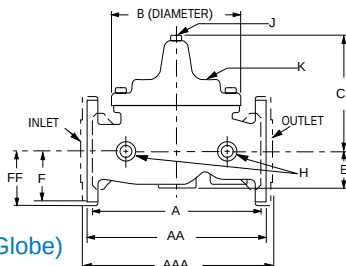
2" Globe, Screwed



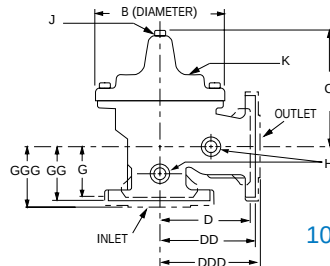
4"Globe, Flanged



4" Angle, Flanged



100-01 (Globe)



100-01 (Angle)

Model 133-01 Dimensions (In inches)

Valve Size (Inches)	3	4	6	8	10	12	14	16	24
A Screwed	12.50	—	—	—	—	—	—	—	—
AA 150 ANSI	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	61.50
AAA 300 ANSI	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	63.24
B Dia.	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	53.16
C Max.	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	43.93
D Screwed	6.25	—	—	—	—	—	—	—	—
DD 150 ANSI	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—
DDD 300 ANSI	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—
E	2.56	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75
F 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	19.25
FF 300 ANSI	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—
G Screwed	4.50	—	—	—	—	—	—	—	—
GG 150 ANSI	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	½	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	½	¾	¾	1	1	1 ¼	1 ½	2	1 ½
K NPT Cover Tapping	½	¾	¾	1	1	1	1	1	1
Valve Stem Internal Thread UNF	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	3/4-16
Stem Travel	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.50
Approx. Ship Wt. Lbs.	70	140	285	500	780	1165	1600	2265	6200

Model 633-01 (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.



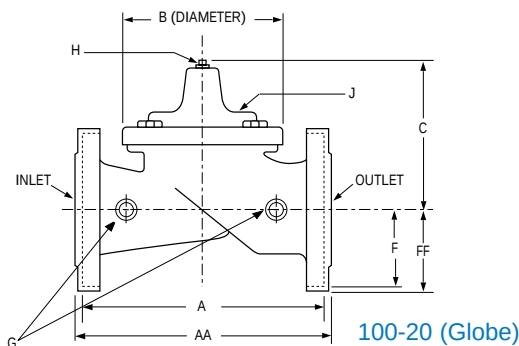
3" Globe, Flanged

Materials

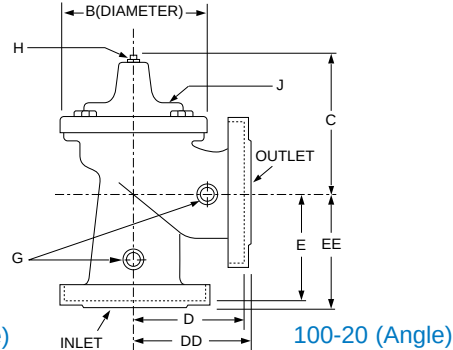
Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	3"-30"	3"-30"	3"-16"	3"-16"	3"-16"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard.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



6" Globe, Flanged



100-20 (Globe)



100-20 (Angle)



6" Angle, Flanged

Model 633-01 Dimensions (In inches)

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	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
H NPT Cover Center Plug	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/4	2	2	2	2
J 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	4.5	4.5	4.5	6.5
Approx Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	2733	2551	2733	6500

Valve Selection

Valve Selection		These Symbols  and  Indicate Available Sizes												
		Inches	3	4	6	8	10	12	14	16	18	20	24	30
		mm	80	100	150	200	250	300	350	400	450	500	600	750
		End Detail	Screwed	Screwed & Flanged				Flanged						
Model 133-01	Basic Valve 100-01	Globe												
		Angle												
	Suggested Flow (GPM)	Max. Continuous	460	800	1800	3100	4900	7000	8400	11000			25000	
		Max. Intermittent	580	990	2250	3900	6150	8720	10540	13700			31300	
		Min. Continuous	30	50	115	200	300	400	500	650			1750	
	Suggested Flow (Liters/sec)	Max. Continuous	29	50	113	195	309	441	529	693			1575	
		Max. Intermittent	37	62	142	246	387	549	664	863			1972	
		Min. Continuous	1.9	3.2	7.2	13	19	25	32	41			110	
Model 633-01	Basic Valve 100-20	Globe	 **											
		Angle												
	Suggested Flow (GPM)	Max.Continuous	260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	28000
		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
		Min. Continuous	.9	1.9	3.2	7.2	13	19	32	32	57	57	57	117

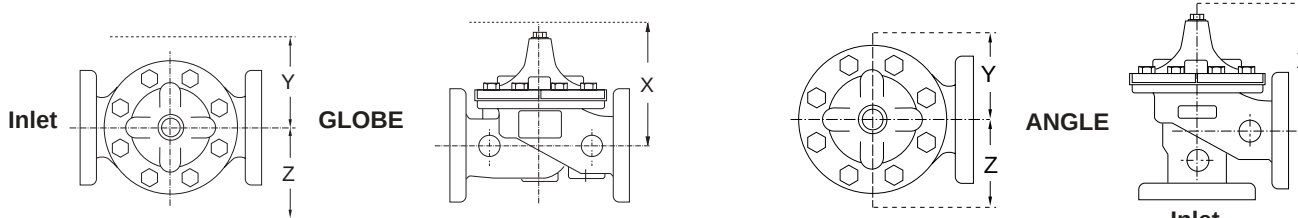
* 633-01 is the reduced internal port size version of the 133-01.

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 is approx. 25 ft/sec (7.6 meters/sec) and 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) was 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

Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

VALVE SIZE		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X	Max.	16.00	21.50	23.25	26.50	28.00	32.50	37.00	38.00	38.00	38.00	62.00	62.00
Y	Max.	12.00	13.00	15.00	17.25	19.00	21.25	23.75	25.00	25.00	25.00	34.00	34.00
Z	Max.	9.00	9.50	10.00	12.25	14.00	15.00	17.25	18.00	18.00	18.00	30.00	30.00



Pilot System Specifications*

Temperature Range

Water: to 180°F

Rubber Parts:

Buna-N® Rubber Synthetic

Solenoid Control

Body: Brass ASTM B283

Enclosure: NEMA Type 1,2,3,3S,4,4X general purpose watertight

NEMA Type 6,6P,7,9 watertight explosion proof available at extra cost

*For specifications on other 133/633 Series Valves, please consult factory. The 133-01/633-01 is shown.

Voltages:

110 -50Hz AC
24, 120, 240, 480 - 60Hz AC
24 - DC

Max. operating pressure differential:

100 psi

Coil:

Insulation molded Class F
Watts AC 6
AC Volt Amps Inrush 30
AC Volt Amps Holding 16
Watts DC 10.6

Manual operator available at extra cost.

When Ordering, Please Specify

1. Catalog No. 133-01 or No. 633-01*
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. Trim Material
7. Electrical Specifications
8. Desired Options
9. When Vertically Installed



E-133-01/633-01 (R-11/01)

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