

Metering & Flow Rate Control Valve



- Automatically Maintains Flow Rate
- Ideal For SCADA Systems
- Digital Or Analog Communications
- Retransmission Capabilities
- Optional Hydraulic Backup Pilot Control System

The Model 133-11/633-11 Metering and Flow Rate Control Valve accurately meters and maintains flow rate regardless of changing system conditions. It is an electrically operated, electronically directed, hydraulically actuated diaphragm valve. Included is 131VC-1 Electronic Valve Controller Micro-processor that responds to differential pressure produced across a calibrated orifice plate or venturi. Accurate control is assured as very small changes in the differential produce immediate corrective action in the main valve.

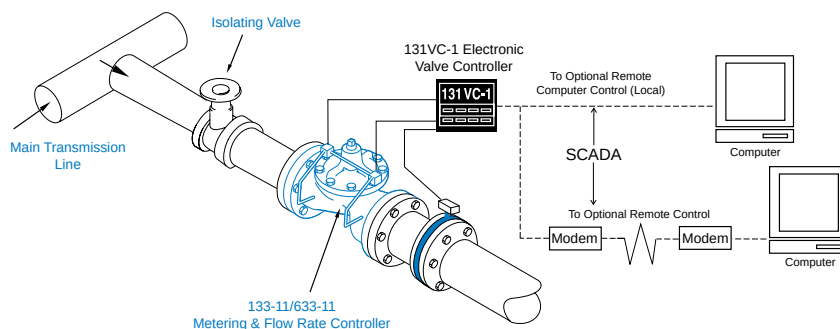
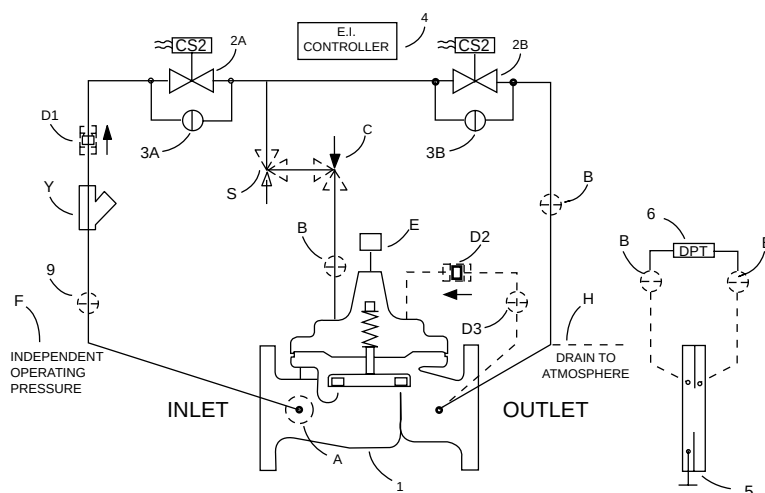
The Model 133-11/633-11 Metering and Flow Rate Control Valve can also be configured to perform a wide variety of secondary functions when combined with hydraulic pilot operation, such as: pressure reducing, pressure sustaining, flow limiting and level control. Any of these functions can be used in conjunction with electronic control or to provide a separate automatic fail safe operation through the use of back up hydraulic pilot systems.

Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	CS2S Solenoid Control
3	CK2 Solenoid By-pass
4	131VC-1 Electronic Control
5	X52D-1 Orifice Plate Assembly
6	DPT-Differential Pressure Transmitter

Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 (Isolation Valve)
C	CV Flow Control (Closing)
D	Check Valve with Isolation Valve
E	X117D Position Transmitter
F	Independent Operation Pressure
H	Atmospheric Drain
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer



Typical Applications

The 133-11/633-11 is typically installed in a fluid delivery system where the flow rate is measured and changed from a remote location such as a SCADA system.

Model 133-11 (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



6" Globe, Flanged

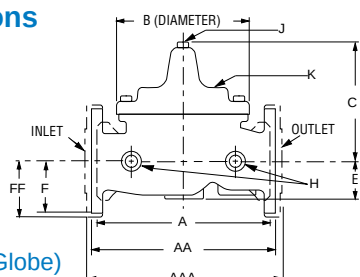


4" Angle, Flanged

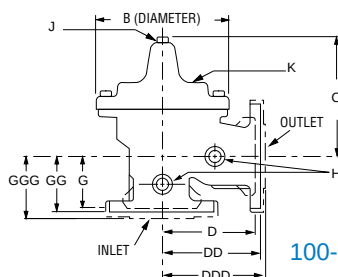
Materials

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						

Dimensions (In inches)



100-01 (Globe)



100-01 (Angle)

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 633-11^{3/4} (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	—

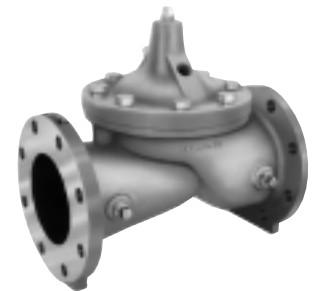
Note: *ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.



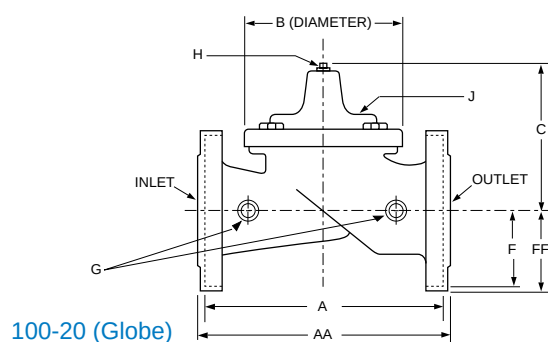
3" Globe, Flanged

Materials

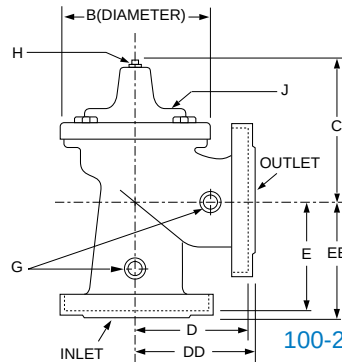
Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	3"-30"	3"-30"	3"-16"	3"-16"	3"-16"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. 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 633-11 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 133-11	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 633-11	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

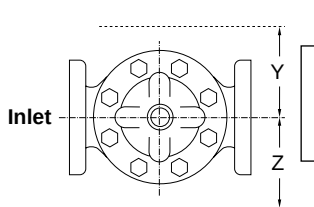
* 633-11 is the reduced internal port size version of the 133-11.

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

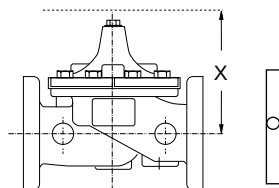
Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

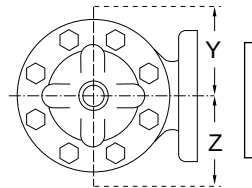
VALVE SIZE		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X	Max.	16.00	21.50	23.25	26.50	28.00	32.50	37.00	38.00	38.00	38.00	62.00	62.00
Y	Max.	12.00	13.00	15.00	17.25	19.00	21.25	23.75	25.00	25.00	25.00	34.00	34.00
Z	Max.	9.00	9.50	10.00	12.25	14.00	15.00	17.25	18.00	18.00	18.00	30.00	30.00



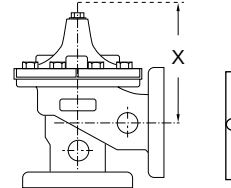
GLOBE



133-11/633-11 Dimensions Only



ANGLE



Inlet

Pilot System Specifications*

Temperature Range

Water: to 180°F

Rubber Parts:

Buna-N® Rubber

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

Voltages:

24, 120, 240, 480 - 60Hz AC

110, 220, -50Hz AC

6, 12, 24, 120, 240 - DC

Others available at extra cost

Max. operating pressure differential:
200 psi

Coil:

Insulation molded Class F
Watts AC 9
AC Volt Amps Inrush 30
AC Volt Amps Holding 16
Watts DC 10.6

Manual operator available at extra cost.

Note:

Orifice plate assembly (X52D-1) 1 1/2" thick and must be installed minimum 5 pipe diameters downstream of valve with 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. 133-11 or No. 633-11*
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. Trim Material
7. Orifice Bore
8. Desired Options
9. When Vertically Installed



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

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