133 Series Self-Operated Regulators

◆ **Wide Pressure Range Capability with Single Regulator** Type 133H may also use Type 133L springs, allowing pressure settings to be varied between 2-inches wc and 10 psig (5 mbar and 0.69 bar) by changing springs.

◆ **Types 133L, 133H and 133HP Suitable for Monitoring Applications** O-ring stem seal on Types 133L, 133H and 133HP isolates body pressure from controlled pressure.

◆ **Excellent Shock Characteristics and Fast Speed of Response** Due to two-way stabilizer vent valve, which vents the spring case more rapidly than conventional vents, lag in diaphragm and valve disk movement is minimized.

w1327

Types 133H, 133L and 133Z Regulators


W6803

◆ **Bubble-Tight Shutoff** Single-port construction, large diaphragm area, and light-rate springs along with disk material and seat design provide low lock-up pressures.

◆ **Spring and Diaphragm Effects Minimized** Boosting system provides excellent performance over a wide range of flow conditions.

◆ **No Seat-to-Seat Adjustment Required** Balanced single-port design eliminates necessity for seat-to-seat adjustments to achieve bubble-tight shutoff.

◆ **Easy Access to Trim Parts** Valve seat, disk, and cage easily removed with body remaining in line and without disassembly of actuator portion; orifice is not threaded in.

◆ **Reusable Pressure Seals** O-rings used for pressure seals, unlike gaskets, are not ordinarily damaged by disassembling the regulator.

◆ **Resistance to Piping Stresses** Steel constructions are available to help resist pipe stresses.

D100118X012

Specifications

Available Configurations

Type 133H: Self-operated regulator for inlet pressures to 60 psig (4.1 bar) and outlet pressures from 1.5 to 10 psig (0.10 to 0.69 bar), three ranges
Type 133HP: Self-operated regulator for inlet pressures to 150 psig (10 bar) and outlet pressures from 2 to 60 psig (0.14 to 4.1 bar), seven ranges
Type 133L: Self-operated regulator for inlet pressures to 60 psig (4.1 bar) and outlet pressures from 2-inches wc to 2 psig (5 mbar to 0.14 bar), six ranges
Type 133Z Zero Governor: Self-operated regulator for inlet pressures to 20 psig (1.4 bar) and outlet pressures from -1 to 4-inches wc (- 2.5 to 10 mbar), two ranges

End Connections

2-inch ■ Cast iron NPT female, ■ cast iron ANSI Class 125 flat-face flanged, ■ steel NPT female or ■ steel ANSI Class 150 raised-face flanged

Maximum Inlet Pressures(1)

See table 2

Outlet Pressure Ranges(1)

See table 1

Maximum Outlet Pressures(1)

See table 2

Pressure Registration

External; downstream control line is required

Control Line Connection

133H, 133L and 133Z: 3/4-inch NPT female; connection will be positioned ■ directly over body outlet (standard position) or 90 degrees ■ right or ■ left of standard position if specified
133HP: 1/4- NPT female connection positioned directly over body outlet

Vent Connection

133H, 133L and 133Z: 1-inch NPT female with screen; standard position is in line with control line connection directly over body outlet. Vent will always be positioned over the control line connection
133HP: 1/2-inch NPT female connection positioned directly over body inlet with a Fisher Type Y602-7

Temperature Capabilities(1)

-20 to 150°F (-29 to 66°C)

Flow Capacities

See tables 3 through 10

Wide-Open Flow Coefficients

Capacity	Wide-Open C_g for Relief Valve Sizing	Representative C1
25%(2)	490	28.2
40%(2)	760	29.1
60%(2)	1150	31.8
100%	1800	35.0

Construction Materials

Body: ■ Cast iron or ■ Steel
Orifice and Cage: Aluminum
Valve Disk: Aluminum/neoprene
O-Rings: Nitrile
Diaphragms: Nitrile/nylon (neoprene in actuator)
Guide Bushing: Nylon
Stem and Stem Sleeve: Stainless steel
Diaphragm Plate: Steel
Balancing Diaphragm Plate: Plated steel
Spring Case
133HP: Cast Iron
133H, 133L and 133Z: Aluminum
Lower Casing: Aluminum
Closing Cap: Cast iron
Adjusting Screw: Steel
Optional Restriction Collar: Aluminum

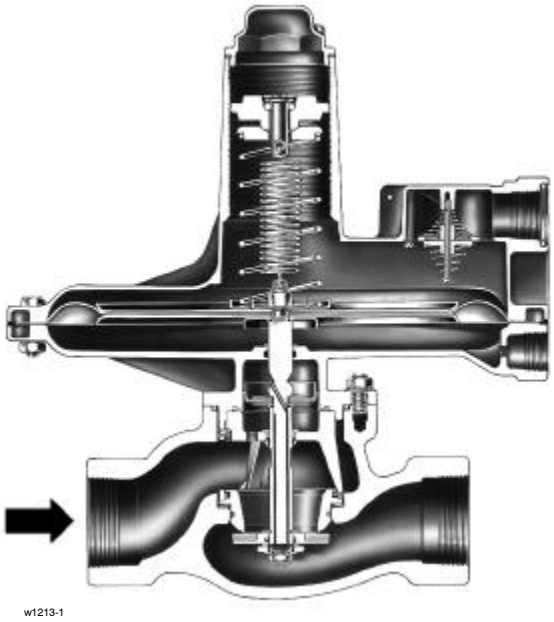
Approximate Shipping Weight

133H, 133L and 133Z Screwed End Connections: 35 lb (15.9 kg)
133H, 133L and 133Z Flanged End Connections: 40 lb (18.1 kg)
133HP Screwed End Connections: 56.5 lb (25.6 kg)
133HP Flanged End Connections: 62.5 lb (28.3 kg)

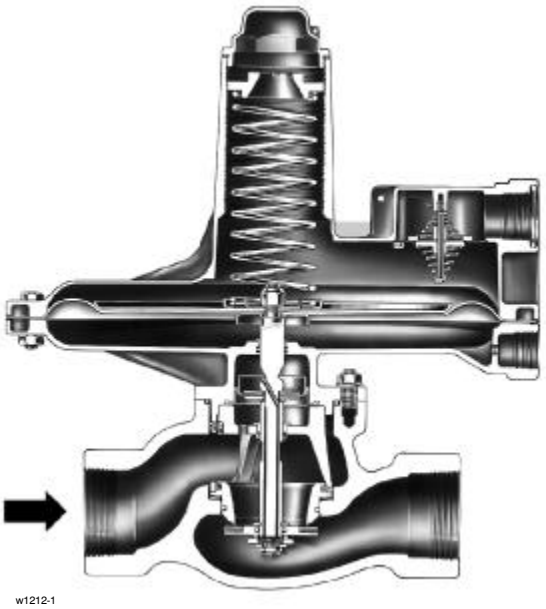
Option

Restriction collar to reduce wide-open capacity to approximately ■ 25%, ■ 40%, or ■ 60% of standard wide-open capacity

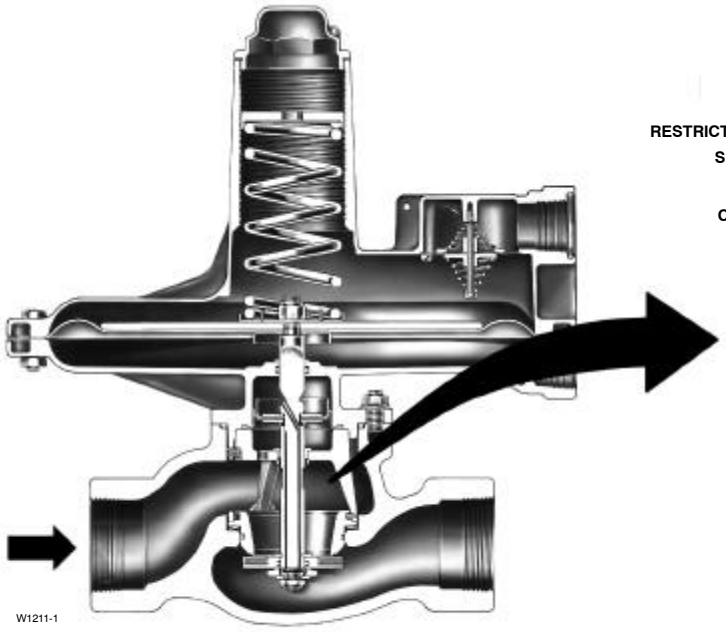
1. None of the pressure/temperature limits in this bulletin, nor any applicable standard limitation, should be exceeded.
2. Using optional restriction collar.



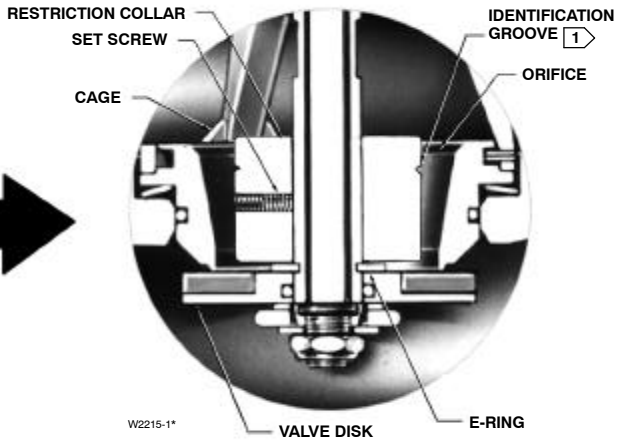
TYPE 133Z ZERO GOVERNOR



TYPE 133L LOW-PRESSURE REGULATOR



TYPE 133H WITHOUT
RESTRICTION COLLAR



TRIM PARTS WITH RESTRICTION COLLAR
(40% CAPACITY COLLAR IS SHOWN)

1 IDENTIFICATION GROOVES:
25% CAPACITY COLLAR NO GROOVES
40% CAPACITY COLLAR ONE GROOVE
60% CAPACITY COLLAR TWO GROOVES

Figure 2. *Types 133Z, 133L and 133H Regulators*

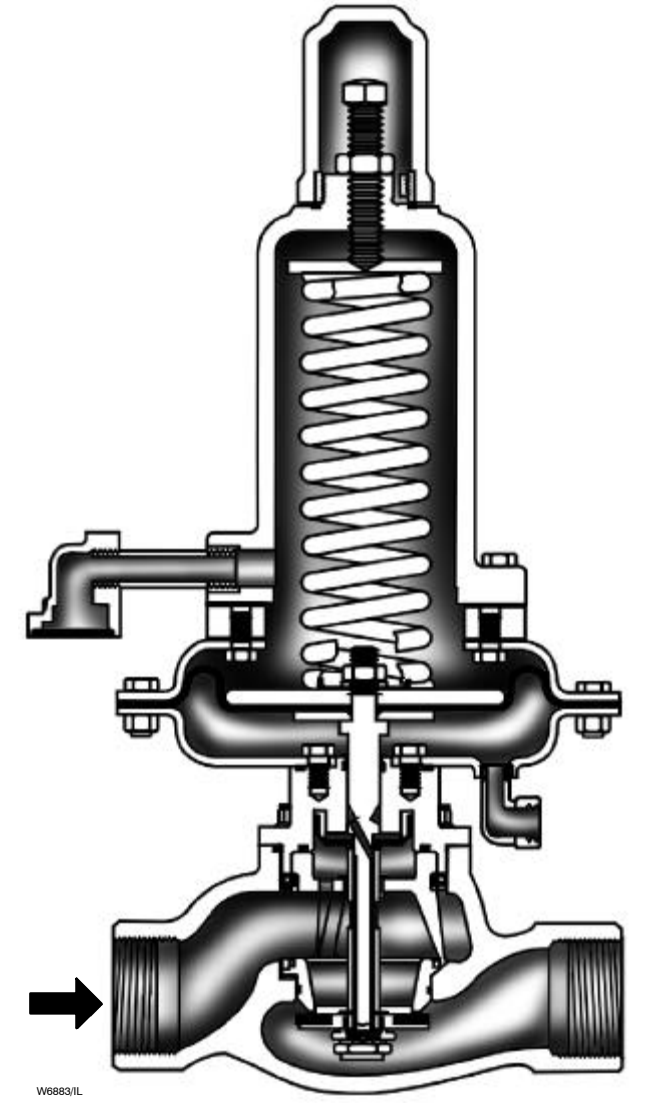


Figure 3. *Type 133HP Regulator*

Description

The 133 Series self-operated gas regulators, shown on the cover are primarily designed for industrial and commercial applications supplying gas to furnaces, burners and other appliances. The 133 Series balancing system enables the regulator to provide accurate control of gas pressure for maximum combustion efficiency despite varying inlet pressure conditions. The single port construction provides bubble tight shutoff. An external downstream control line is required for the operation of the regulator. Refer to table 1 for outlet pressure ranges of each type. 133 Series regulators are available in a 2-inch body size with either screwed or flanged end connections.

An optional restriction collar (figure 2) can be installed if wide-open capacity is too high for applications using a relief valve as overpressure protection. The collar reduces wide-open capacity to 25, 40, or 60 percent of standard wide-open capacity.

Type 133H-High pressure construction for outlet pressure range of 1-1/2 to 10 psig (0.10 to 0.69 bar). The Type 133H can also use the 2-inches wc to 2 psig (5 mbar to 0.14 bar) springs of the Type 133L. The maximum operating inlet pressure is 60 psig (4.1 bar) with a maximum emergency inlet pressure of 125 psig (8.6 bar).

Type 133HP-Extra high pressure construction for outlet pressure range of 2 to 60 psig (0.14 to 4.1 bar). The maximum inlet pressure rating is 150 psig (10 bar).

Type 133L-Low pressure construction for outlet pressure range of 2-inches wc to 2 psig (5 mbar to 0.14 bar). The maximum operating inlet pressure is 60 psig (4.1 bar) with a maximum emergency inlet pressure of 125 psig (8.6 bar).

Type 133Z-Zero governor construction for outlet pressure range of -1 to 4-inches wc (-2.5 to 10 mbar). The maximum operating inlet pressure is 20 psig (1.4 bar) with a maximum emergency inlet pressure of 125 psig (8.6 bar).

Principle of Operation

Refer to the operational schematics in figure 4. In the 133 Series, downstream pressure is registered under the diaphragm via the external control line and is used as the operating medium. Increased demand lowers the downstream pressure and allows the spring to move the diaphragm and stem assembly down, opening the valve disk and supplying more gas to the downstream system. Decreased demand increases the downstream pressure and moves the diaphragm and stem assembly up, closing the valve disk and decreasing the gas supply to the downstream system.

Boosting System

The 133 Series incorporates a balancing diaphragm and a boosting system. When the regulator is locked up, inlet pressure is registered on the top of the valve disk and on the bottom of the balancing diaphragm through registration holes in the top of the cage. Also,

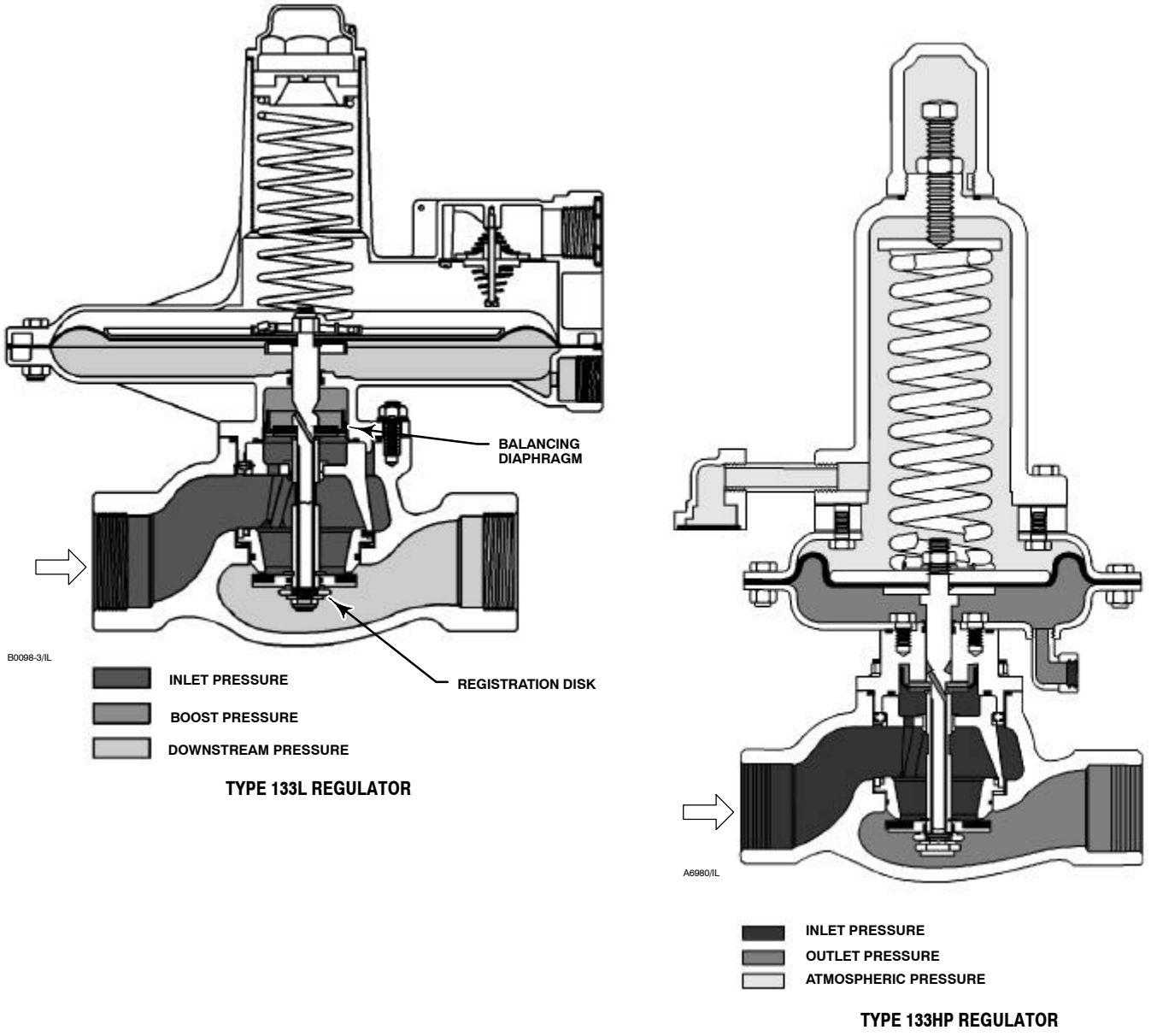


Figure 4. *Operational Schematics*

downstream pressure is registered on the bottom of the valve disk and on the top of the balancing diaphragm through a passage formed by grooves in the registration disk and an annular space between the stem and stem sleeve.

When the valve disk is open, gas flows from the inlet over the edge of the valve disk to the outlet. Under the valve disk near the registration disk, there is little gas flow. The gas pressure near the registration disk is higher than it is in the flow path where gas velocity tends to lower the pressure. The higher pressure near the disk is registered on the top of the balancing diaphragm through the registration disk and the annular space between the stem and stem sleeve.

This pressure registered on the top of the balancing diaphragm aids downward disk travel and compensates for spring and diaphragm effect. This improves regulator range-ability and performance.

Table 1. *Series 133 Outlet Pressure Ranges, Control Springs*

TYPE	OUTLET PRESSURE RANGE		CONTROL SPRINGS			
	Inches wc/psig	Bar/mbar	Part Number	Color Code	Free Length Inch (mm)	Wire Diameter Inch (mm)
133H[1]	1.5 to 3 psig	0.10 to 0.21 bar	1H975927032	Orange	7-3/8 (187.3 mm)	.250 (6.35 mm)
	2 to 5 psig	0.14 to 0.34 bar	10A9440X012	Yellow	6-15/32 (164 mm)	.283 (7.19 mm)
	5 to 10 psig	0.34 to 0.69 bar	1J146927142	Blue	6-3/16 (157.2mm)	.375 (9.53 mm)
133HP[1]	2 to 5 psig	0.14 to 0.34 bar	17B8632X012	Yellow	8-1/2 (216 mm)	.281 (7.14 mm)
	5 to 10 psig	0.34 to 0.69 bar	17B8633X012	Orange	8-1/2 (216 mm)	.343 (8.71 mm)
	10 to 20 psig	0.69 to1.4 bar	1F177027092	Tan	8-1/4 (209.6 mm)	.406 (10.3 mm)
	20 to 30 psig	1.4 to 2.1 bar	1F177227092	Pink	8-1/4 (209.6 mm)	.500 (12.7 mm)
	30 to 40 psig	2.1 to 2.8 bar	1E805327092	Dark Gray	8-1/4 (209.6 mm)	.500 (12.7 mm)
	40 to 50 psig	2.8 to 3.4 bar	1E805727092	Light Green	8-1/4 (209.6 mm)	.531 (13.5 mm)
	50 to 60 psig	3.4 to 4.1 bar	1E805827082	White	8-1/4 (209.6 mm)	.225 (5.72 mm)
133L[1] and 133H[2]	2 to 4-inches wc	5 to 10 mbar	1D892527022	Brown	6-1/8 (155.6 mm)	.109 (2.77 mm)
	3.5 to 6-inches wc	8.7 to 15 mbar	1D892627022	Red	7-1/2 (190.5 mm)	.120 (3.05 mm)
	5 to 9-inches wc	12 to 22.4 mbar	1D892727012	Black	7-7/8 (200.0 mm)	.130 (3.30 mm)
	8.5 to 18-inches wc	21.2 to 44.8 mbar	1D893227032	Gray	7-1/2 (190.5 mm)	.156 (3.96 mm)
	14 to 28-inches wc	35 to 70 mbar	1D893327032	Green	7-1/4 (184.2 mm)	.182 (4.62 mm)
	0.75 to 2 psig	0.05 to 0.14 bar	1H975827032	Dark Blue	7-3/8 (187.3 mm)	.225 (5.72 mm)
133Z[1]	- 1 to 1-inch wc	-2.5 to 2.5 mbar	1K633427012 (Ext. Spring)	Silver	2 (50.8 mm)	.075 (1.91 mm)
	0 to 4-inches wc	0 to 10 mbar	1K633427012 Ext. Spring) & 1K892527022 (Comp. Spring)	Silver Brown	2 (50.8 mm) 6-1/8 (155.6 mm)	.075 (1.91 mm) .109 (2.77 mm)

1. Pressure ranges shown are correct if the regulator is installed with the actuator portion above the body portion. If the regulator is installed with the actuator portion below the body, the pressure ranges will be lowered by approximately 2-inches wc (5 mbar) for the Type 133L and by approximately 3-inches wc (7.5 mbar) for the Type 133H and 133Z.
2. If the 2-inch wc to 2 psig springs (all 6 ranges) are used in the Type 133H, the pressure ranges will increase by approximately 1-inch wc due to the weight of the Type 133H parts (assuming that the actuator is installed above the body).

Table 2. *Maximum Inlet and Outlet Pressures*

Pressures	TYPE NUMBER			
	133H Psig (Bar)	133HP Psig (Bar)	133L Psig (Bar)	133Z Psig (Bar)
Maximum Operating Inlet Pressure,	60 (4.1)	150 (10)	60 (4.1)	20 (1.4)
Maximum Emergency Inlet Pressure,	125 (8.6)	150 (10)	125 (8.6)	125 (8.6)
Maximum Operating Outlet Pressure[1]	10 (0.69)	Setpoint Plus 40 psi (2.8 bar)	2 (0.14)	4-inches wc (10 mbar)
Maximum Outlet Pressure Over Outlet Pressure Setting,	3 (0.21)	- - -	3 (0.21)	3 (0.21)
Maximum Emergency Outlet (Casing) Pressure,	15 (1.03)	150 (10)	15 (1.03)	15 (1.03)

1. With highest spring range available only.

Two-Way Stabilizer Vent Valve On Types 133H, 133L and 133Z

When the regulator responds to an increase in downstream pressure, the diaphragm moves upward. As the diaphragm rises, movement of air forces the lower vent flapper upward, carrying the upper flapper with it (see figure 5). This allows the air above the diaphragm to vent to atmosphere rapidly enough to minimize lag in diaphragm movement.

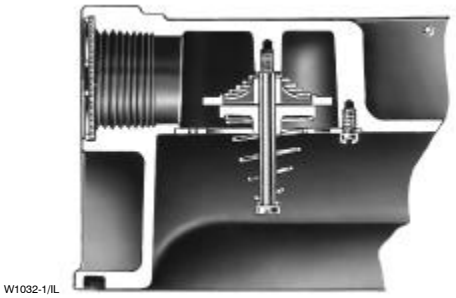
As the diaphragm falls, air rushes in the vent to fill the partial vacuum created, forcing the upper vent flapper against the orifice plate. Air flowing through the webs of the upper flapper opens the lower flapper (see figure 5).

With the regulator at steady-state conditions, both flappers are closed and only a small hole is open to help stabilize normal operation.

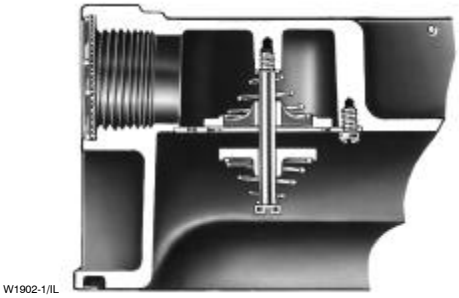
Overpressure Protection

As is the case with most regulators, the 133 Series regulators have outlet pressure ratings that are lower than the inlet pressure ratings. Some type of overpressure protection is needed if the actual inlet pressure ever exceeds the outlet pressure rating.

Maximum inlet and outlet pressures for the 133 Series are given in table 2. All models must be protected against inlet pressure above the maximum emergency inlet pressure (refer to table 2).



TWO-WAY STABILIZER VENT VALVE IN UP POSITION AS DIAPHRAGM RISES



VENT VALVE IN DOWN POSITION AS DIAPHRAGM LOWERS

Figure 5. *133H, 133L and 133Z Stabilizer Vent*

Outlet pressure more than 3 psig (0.21 bar) or 40 psig (2.8 bar) for 133HP over the outlet pressure setting of the regulator may damage internal parts such as the diaphragm plate and valve disk.

Regulator operation below these emergency pressure limitations does not preclude the possibility of damage from external sources or from debris in the gas line. The regulator should be inspected for damage after any overpressure condition. Complete instructions for installation, operation, and maintenance are provided with each regulator.

Capacity Data

Flow capacities for various inlet pressures and outlet pressure settings are shown in tables 3 to 10. Capacities for tables 3 to 10 are in thousands of cubic feet per hour of 0.6 specific gravity gas at 60°F and 14.7 psia. To convert to equivalent capacities of other gases, multiply the values shown by the appropriate factor: air-0.775; propane-0.628, butane-0.548; nitrogen-0.789.

Note

For optimum performance, select the lowest spring range that includes the desired outlet pressure setting.

For restricted-capacity constructions, determine flow capacities for outlet pressure settings of 2 psig (0.14 bar) or less by multiplying the values from tables 3 to 10 by 25, 40, or 60% (depending upon which restriction collar is selected). For pressure settings over 2 psig (0.14 bar), capacities are given in table 6. If flow capacities for inlet pressures lower than those shown are required, contact the sales Representative. The representative regulating C_g of 1650 may be used for regulator sizing of full-capacity constructions only if capacity table data is not available. The representative regulating C_g is an approximation only for pressure drops greater than 5 psi, because, at a given offset in controlled pressure, the regulating C_g varies with the spring being used with the pressure drop across the valve.

To determine capacity using the flow coefficient C_g, use the appropriate procedure below.

1. If flow is critical (absolute outlet pressure is equal to or less than one-half the absolute inlet pressure), use the equation:

Capacity = (Absolute Inlet Pressure) (C_g) (1.29)

The capacity determined will be in standard cubic feet per hour of 0.6 specific gravity gas.

2. If flow is less than critical (absolute outlet pressure is greater than one-half the absolute inlet pressure), use the Fisher sizing slide rule or the sizing nomograghs in fisher Catalog 10 to determine capacity.

Table 3. *Full-Capacity Type 133Z Regulated Flow in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 PSIA and 60°F)*

INLET PRESSURE	1-INCH WC OUTLET PRESSURE SETTING(1) (EITHER SPRING RANGE)	
	0.5-inch wc Droop	1-inch wc Droop
8-inches wc (20 mbar)	2.4	5.1
14-inches wc (35 mbar)	4.1	7.4
1 psig (0.07 bar)	6.5	12
2 psig (0.14 bar)	11.5	18
5 psig (0.34 bar)	22	32
10 psig (0.69 bar)	44	50
20 psig (1.4 bar)	76	78

1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.

Table 4. *Full-Capacity Type 133L Regulated Flow in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 PSIA and 60°F)*

INLET PRESSURE, PSIG (BAR)	OUTLET PRESSURE SETTING(1), SPRING PART NUMBER, AND OUTLET PRESSURE RANGE										
	4-inches wc (10 mbar) 1D892527022 2 to 4-inches wc (5 to 10 mbar)	6-inches wc (15 mbar) 1D892627022 3.5 to 6-inches wc (8.7 to 15 mbar)	7-inches wc (17 mbar) 1D892727012 5 to 9-inches wc (12 to 22.4 mbar)	14-inches wc (35 mbar) 1D893227032 8.5 to 18-inches wc (21.2 to 44.8 mbar)		14-inches wc (35 mbar) 1D893327032 14 to 28-inches wc (35 to 70 mbar)		1 psig (0.07 bar) 1D893327032 14 to 28-inches wc (35 to 70 mbar)		2 psig (0.14 bar) 1H975827032 0.75 to 2 psig (0.05 to 0.14 bar)	
	1-inch wc (2.5 mbar) Droop	1-inch wc (2.5 mbar) Droop	1-inch wc (2.5 mbar) Droop	1-inch wc (2.5 mbar) Droop	2-inch wc (5 mbar) Droop	1-inch wc (2.5 mbar) Droop	2-inch wc (5 mbar) Droop	10% Droop	20% Droop	10% Droop	20% Droop
1 (0.07)	14	13	12	5	8.4	- - -	- - -	- - -	- - -	- - -	- - -
2 (0.14)	20.8	20	17	8.2	15.2	- - -	- - -	11.5	16	- - -	- - -
3 (0.21)	26	24.5	21	12	19.5	- - -	- - -	15.5	21.5	12.5	18.5
5 (0.34)	35	33	32	16	28	14	23	24	31.5	20.5	28
10 (0.69)	52	52	48	34	45	26	38	37.5	44	38	46
20 (1.4)	78	77	79	69	76	60	69	70	77	62	76
30 (2.1)	101	100	100	91	97	87	93	90	101	87	101
40 (2.8)	124	122	124	109	116	107	115	110	122	105	121
50 (3.4)	146	144	145	130	136	132	137	127	145	124	145
60 (4.1)	170	168	166	155	161	152	158	149	167	145	170

1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.

Table 5. *Full-Capacity Type 133H Regulated Flow in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 PSIA and 60°F)*

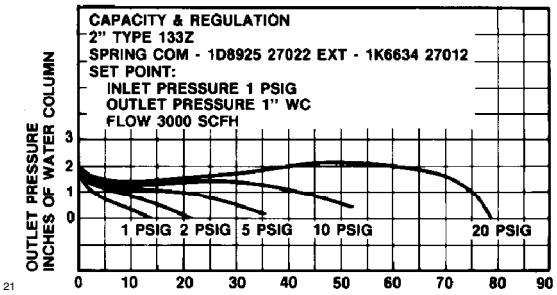
INLET PRESSURE, PSIG (BAR)	OUTLET PRESSURE SETTING(1), SPRING PART NUMBER, AND OUTLET PRESSURE RANGE									
	3 Psig (0.21 bar) 1H975927032 1.5 to 3 psig (0.10 to 0.21 bar)		2 psig (0.14 bar) 10A9440X012 2 to 5 psig (0.14 to 0.34 bar)		5 psig (0.34 bar) 10A9440X012 2 to 5 psig (0.14 to 0.34 bar)		5 psig (0.34 bar) 1J146927142 5 to 10 psig (0.34 to 0.69 bar)		10 psig (0.69 bar) 1J146927142 5 to 10 psig (0.34 to 0.69 bar)	
	10% Droop	20% Droop	10% Droop	20% Droop	10% Droop	20% Droop	10 % Droop	20 % Droop	10 % Droop	20% Droop
3 (0.21)	- - -	- - -	6.5	11.5	- - -	- - -	- - -	- - -	- - -	- - -
5 (0.34)	14	22	11	18	- - -	- - -	- - -	- - -	- - -	- - -
7 (0.52)	21.5	31	13	22	15.5	24	9	15	- - -	- - -
10 (0.69)	28	42	15	27	24	35	14	22	- - -	- - -
15 (1.0)	40	57	25.5	39	35	51	19	31.5	21	35
20 (1.4)	52	72	35	52	46	67	24	41	31	51
30 (2.1)	76	96	49	73	68	95	35	58	44	74
40 (2.8)	98	119	66	97	88	117	44	73	56	97
50 (3.4)	118	141	84	112	103	138	57	89	74	117
60 (4.1)	136	165	104	132	122	156	65	106	91	136

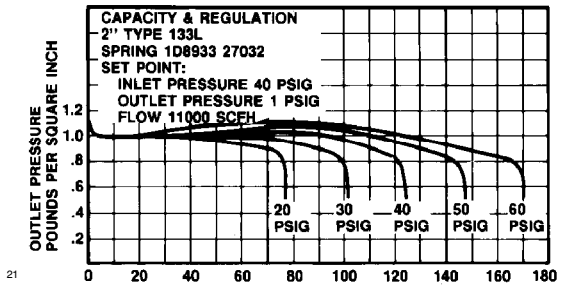
1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.

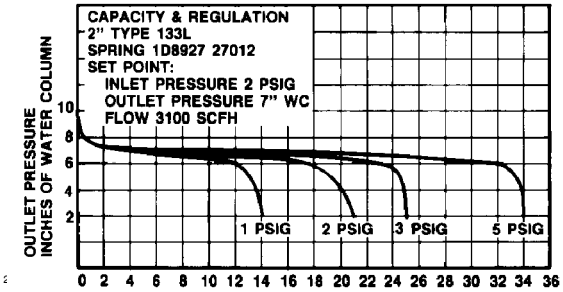
Table 6. *Restricted-Capacity Type 133H Regulated Flow in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 PSIA and 60°F)*

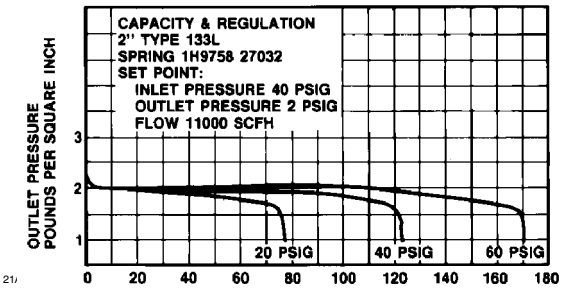
INLET PRESSURE, PSIG (BAR)	OUTLET PRESSURE SETTING(1), SPRING PART NUMBER, AND OUTLET PRESSURE RANGE											
	25% Capacity				40% Capacity				60% Capacity			
	5 Psig (0.34 bar) 10A9440X012 2 to 5 psig (0.14 to 0.34 bar)		10 psig (0.69 bar) 1J146927142 5 to 10 psig (0.34 to 0.69 bar)		5 psig (0.34 bar) 10A9440X012 2 to 5 psig (0.14 to 0.34 bar)		10 psig (0.69 bar) 1J146927142 5 to 10 psig (0.34 to 0.69 bar)		5 psig (0.34 bar) 10A9440X012 2 to 5 psig (0.14 to 0.34 bar)		10 psig (0.69 bar) 1J146927142 5 to 10 psig (0.34 to 0.69 bar)	
	10 % Droop	20% Droop	10% Droop	20% Droop	10% Droop	20% Droop	10% Droop	20% Droop	10 % Droop	20 % Droop	10 % Droop	20% Droop
7 (0.52)	8.0	9.0	- - -	- - -	11.0	15.0	- - -	- - -	13.0	17.0	- - -	- - -
10 (0.69)	12.3	13.0	- - -	- - -	16.5	20.0	- - -	- - -	20.0	25.0	- - -	- - -
15 (1.0)	- - -	- - -	13.0	15.5	- - -	- - -	16.5	23.5	- - -	- - -	20.0	29.5
20 (1.4)	20.8	21.2	17.5	20.0	31.5	33.5	23.5	30.5	36.0	46.5	29.0	39.5
40 (2.8)	33.5	33.5	33.0	33.5	52.0	53.2	46.0	53.2	70.0	77.5	57.0	74.5
60 (4.1)	45.5	45.5	45.5	45.5	72.7	72.7	67.0	72.7	105.0	107.0	87.0	107.0

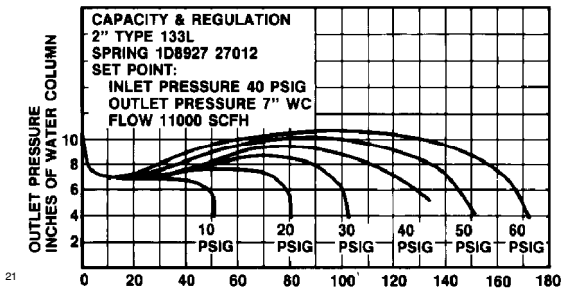
1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.

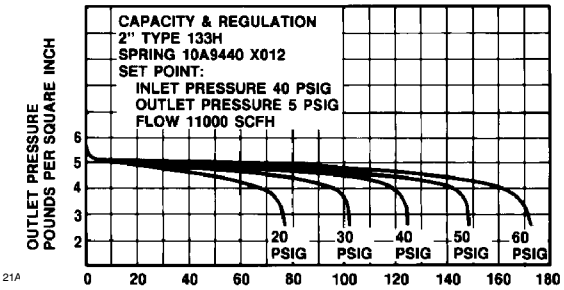


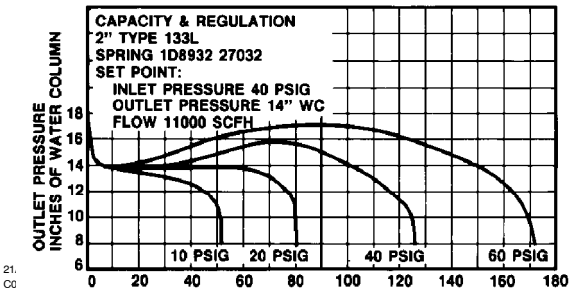












NOTE: FLOW RATE - 1000 CUBIC FEET PER HOUR
0.6 SPECIFIC GRAVITY GAS AT 14.7 PSIA & 60°F

Figure 6. *Capacity Curves Full-Capacity Constructions*

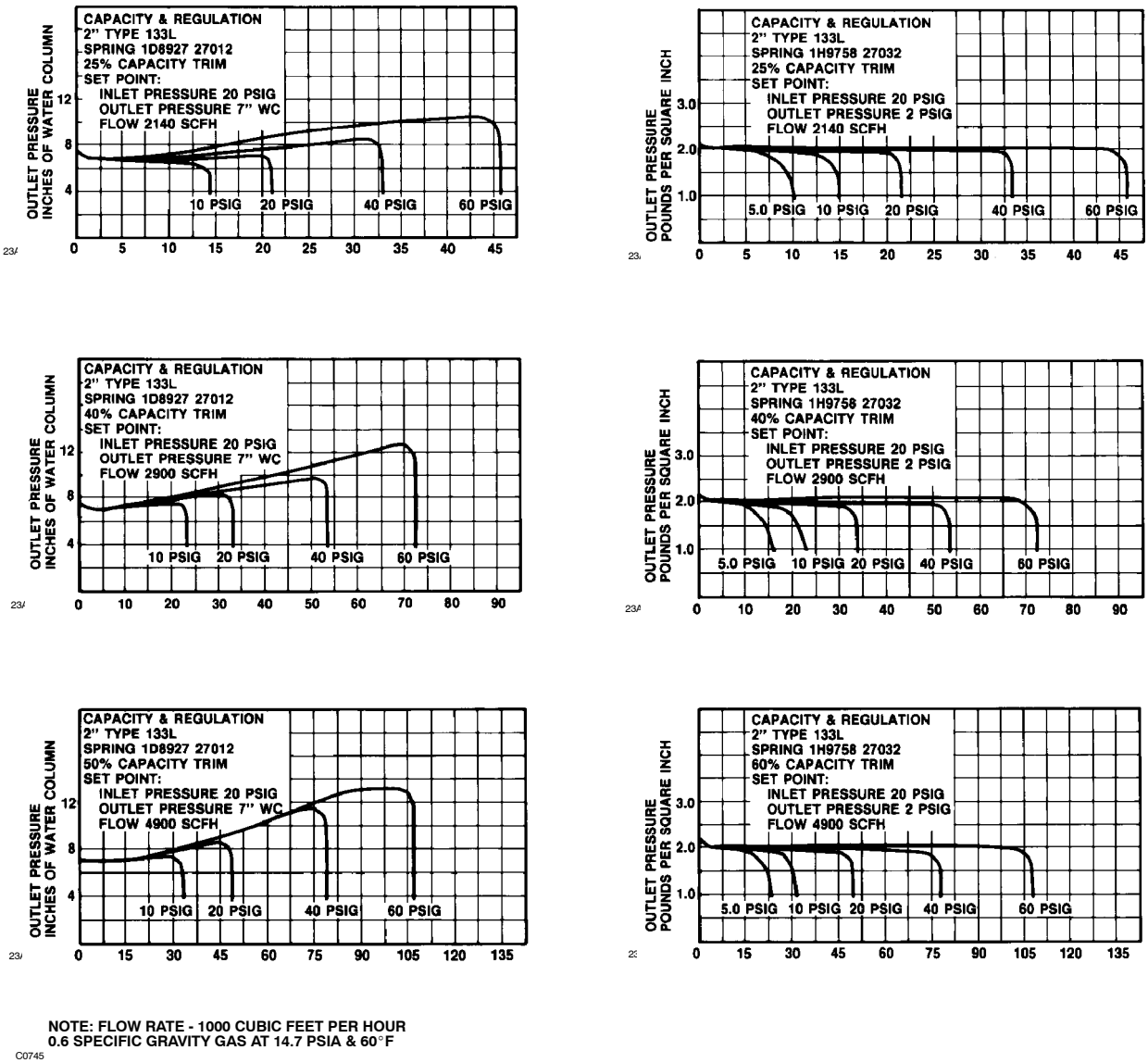


Figure 7. *Capacity Curves Restricted Capacity Constructions*

Table 7. *Type 133HP Regulator 100% Capacities in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 Psia and 60°F)*

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE		
					DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
2 to 5 psig (0.14 to 0.34 bar) 17B8632X012 Yellow	2	0.14	10	0.69	10.4	18.9	27.5
			20	1.4	16.4	29.8	43.3
			40	2.8	27.0	49.1	71.2
			60	4.1	37.1	67.5	97.9
			80	5.5	47.2	85.7	124.3
			100	6.9	57.1	103.9	150.6
			125	8.6	69.5	126.5	183.4
			150	10.3	82.0	149.1	216.3
	5	0.34	10	0.69	20.2	41.5	42.8
			20	1.4	35.1	71.7	72.3
			40	2.8	59.6	121.3	121.5
			60	4.1	82.4	167.9	168.0
			80	5.5	104.9	213.6	213.6
			100	6.9	127.2	258.9	258.9
			125	8.6	155.0	315.4	315.4
			150	10.3	182.7	371.8	371.8
5 to 10 psig (0.14 to 0.69 bar) 17B8633X012 Orange	5	0.34	10	0.69	11.4	21.4	32.0
			20	1.4	19.6	36.4	53.4
			40	2.8	33.0	61.3	89.6
			60	4.1	45.7	84.7	123.7
			80	5.5	58.1	107.7	157.3
			100	6.9	70.5	130.6	190.7
			125	8.6	85.8	159.0	232.2
			150	10.3	101.2	187.5	273.8
	10	0.69	25	1.7	40.3	80.5	81.7
			30	2.1	47.1	93.9	94.8
			40	2.8	59.9	119.1	119.7
			60	4.1	84.0	166.8	167.1
			80	5.5	107.4	213.0	213.2
			100	6.9	130.4	258.7	258.8
			125	8.6	159.0	315.4	315.4
			150	10.3	187.5	371.8	371.8
10 to 20 psig (0.69 to 1.4 bar) 1F177027092 Tan	10	0.69	15	1.0	16.4	32.0	51.9
			20	1.4	22.1	42.2	67.7
			40	2.8	39.9	75.4	111.0
			60	4.1	55.9	105.0	155.0
			80	5.5	71.4	134.0	198.0
			100	6.9	86.8	163.0	240.0
			125	8.6	106.0	199.0	292.0
			150	10.3	125.0	235.0	344.0
	20	1.4	25	1.7	38.8	65.0	70.0
			30	2.1	50.3	82.3	86.0
			40	2.8	69.4	112.0	114.0
			60	4.1	102.0	163.0	164.0
			80	5.5	133.0	211.0	211.0
			100	6.9	162.0	257.0	258.0
			125	8.6	198.0	315.0	315.0
			150	10.3	234.0	372.0	372.0

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE		
					DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
20 to 30 psig (1.4 to 2.1 bar) 1F177227092 Pink	20	1.4	25	1.7	24.8	50.4	70.0
			30	2.1	31.8	62.6	86.0
			40	2.8	43.5	84.0	114.0
			60	4.1	63.8	122.0	164.0
			80	5.5	83.0	158.0	211.0
			100	6.9	101.0	192.0	258.0
			125	8.6	124.0	235.0	315.0
			150	10.3	146.0	277.0	372.0
	30	2.1	35	2.4	43.0	80.6	88.2
			40	2.8	53.8	98.4	104.0
			60	4.1	88.0	156.0	159.0
			80	5.5	117.0	207.0	208.0
			100	6.9	145.0	255.0	256.0
			125	8.6	178.0	313.0	314.0
			150	10.3	211.0	371.0	371.0
30 to 40 psig (2.1 to 2.8 bar) 1E805327092 Dark Gray	30	2.1	35	2.4	28.9	59.6	88.2
			40	2.8	35.7	71.0	104.0
			60	4.1	57.5	110.0	159.0
			80	5.5	76.4	146.0	208.0
			100	6.9	94.3	179.0	256.0
			125	8.6	116.0	220.0	314.0
			150	10.3	137.0	260.0	371.0
	40	2.8	45	3.1	43.5	96.2	106.0
			50	3.4	52.6	114.0	122.0
			60	4.1	68.4	146.0	151.0
			80	5.5	95.4	186.0	204.0
			100	6.9	120.0	232.0	253.0
			125	8.6	149.0	287.0	312.0
			150	10.3	177.0	341.0	370.0
40 to 50 psig (2.8 to 3.4 bar) 1E805727092 Light Green	40	2.8	45	3.1	36.2	76.1	106.0
			50	3.4	43.4	88.1	122.0
			60	4.1	56.2	110.0	151.0
			80	5.5	78.1	150.0	204.0
			100	6.9	97.9	187.0	253.0
			125	8.6	122.0	232.0	312.0
			150	10.3	145.0	276.0	370.0
	50	3.4	55	3.7	50.4	112.0	124.0
			60	4.1	59.5	130.0	141.0
			80	5.5	90.2	191.0	197.0
			100	6.9	116.0	227.0	248.0
			125	8.6	147.0	283.0	309.0
			150	10.3	176.0	338.0	368.0
50 to 60 psig (3.4 to 4.1 bar) 1E805827082 White	50	3.4	55	3.7	43.5	92.7	124.0
			60	4.1	51.0	105.0	141.0
			80	5.5	76.9	151.0	197.0
			100	6.9	99.0	191.0	248.0
			125	8.6	125.0	239.0	309.0
			150	10.3	149.0	285.0	368.0
	60	4.1	65	4.4	57.5	127.0	143.0
			70	4.8	66.5	146.0	159.0
			80	5.5	83.2	179.0	188.0
			100	6.9	112.0	236.0	242.0
			125	8.6	144.0	280.0	305.0
			150	10.3	174.0	336.0	365.0

1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.
2. Shaded area is equal to maximum flow capacity.

Table 8. *Type 133HP Regulator 25% Capacities in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 Psia and 60°F)*

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
2 to 5 psig (0.14 to 0.34 bar) 17B8632X012 Yellow	2	0.14	10	0.69	4.0	7.8	13.4
			20	1.4	6.4	12.5	12.2
			40	2.8	10.5	20.6	34.9
			60	4.1	14.5	28.4	48.1
			80	5.5	18.4	36.0	61.1
			100	6.9	22.3	43.7	74.0
			125	8.6	27.2	53.2	90.1
			150	10.3	32.0	62.7	106.2
	5	0.34	10	0.69	8.3	11.5	11.9
			20	1.4	14.9	20.3	20.5
			40	2.8	25.4	34.6	34.7
			60	4.1	35.2	47.9	48.0
			80	5.5	44.8	61.0	61.0
			100	6.9	54.3	74.0	74.0
			125	8.6	66.2	90.1	90.1
			150	10.3	78.1	106.2	106.2
5 to 10 psig (0.34 to 0.69 bar) 17B8633X012 Orange	5	0.34	10	0.69	4.4	8.7	11.9
			20	1.4	7.8	15.4	20.5
			40	2.8	13.3	26.1	34.7
			60	4.1	18.4	36.2	48.0
			80	5.5	23.4	46.1	61.0
			100	6.9	28.4	55.9	74.0
			125	8.6	34.6	68.1	90.1
			150	10.3	40.8	80.2	106.2
	10	0.69	25	1.7	17.0	22.6	23.0
			30	2.1	19.9	26.5	26.8
			40	2.8	25.5	33.8	34.0
			60	4.1	35.9	47.5	47.6
			80	5.5	45.9	60.8	60.9
			100	6.9	55.8	73.9	73.9
			125	8.6	68.0	90.1	90.1
			150	10.3	80.2	106.2	106.2
10 to 20 psig (0.69 to 1.4 bar) 1F177027092 Tan	10	0.69	15	1.0	6.3	13.3	14.1
			20	1.4	8.8	18.3	18.9
			40	2.8	16.4	33.8	34.0
			60	4.1	23.1	47.5	47.6
			80	5.5	29.5	60.8	60.9
			100	6.9	35.8	73.9	73.9
			125	8.6	43.7	90.1	90.1
			150	10.3	51.5	106.2	106.2
	20	1.4	25	1.7	15.7	16.8	18.6
			30	2.1	21.6	22.3	23.5
			40	2.8	30.7	31.1	31.9
			60	4.1	45.9	46.1	46.5
			80	5.5	59.8	60.0	60.2
			100	6.9	73.3	73.4	73.5
			125	8.6	89.8	89.8	89.9
			150	10.3	106.1	106.1	106.2

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
20 to 30 psig (1.4 to 2.1 bar) 1F177227092 Pink	20	1.4	25	1.7	9.2	16.8	18.6
			30	2.1	12.6	22.3	23.5
			40	2.8	17.8	31.1	31.9
			60	4.1	26.6	46.1	46.5
			80	5.5	34.6	60.0	60.2
			100	6.9	42.3	73.4	73.5
			125	8.6	51.9	89.8	89.9
			150	10.3	61.3	106.1	106.2
	30	2.1	35	2.4	18.5	20.2	23.0
			40	2.8	21.5	26.1	28.1
			60	4.1	37.1	43.6	44.6
			80	5.5	50.0	58.4	59.0
			100	6.9	62.1	72.3	72.7
			125	8.6	76.6	89.2	89.4
			150	10.3	90.9	105.7	105.9
30 to 40 psig (2.1 to 2.8 bar) 1E805327092 Dark Gray	30	2.1	35	2.4	10.3	20.2	23.0
			40	2.8	13.6	26.1	28.1
			60	4.1	23.4	43.6	44.6
			80	5.5	31.6	58.4	59.0
			100	6.9	39.1	72.3	72.7
			125	8.6	48.3	89.2	89.4
			150	10.3	57.3	105.7	105.9
	40	2.8	45	3.1	15.5	23.7	27.5
			50	3.4	20.3	29.7	32.7
			60	4.1	27.8	39.6	41.6
			80	5.5	39.9	56.0	57.2
			100	6.9	50.6	70.7	71.5
			125	8.6	63.2	88.1	88.6
			150	10.3	75.4	105.0	105.4
40 to 50 psig (2.8 to 3.4 bar) 1E805727092 Light Green	40	2.8	45	3.1	12.5	23.7	27.5
			50	3.4	16.4	29.7	32.7
			60	4.1	22.4	39.6	41.6
			80	5.5	32.1	56.0	57.2
			100	6.9	40.7	70.7	71.5
			125	8.6	50.8	88.1	88.6
			150	10.3	60.6	105.0	105.4
	50	3.4	55	3.7	17.5	27.0	31.9
			60	4.1	22.5	33.3	37.2
			80	5.5	37.1	52.5	54.6
			100	6.9	48.7	68.4	69.8
			125	8.6	61.9	86.6	87.5
			150	10.3	74.5	103.9	104.5
50 to 60 psig (3.4 to 4.1 bar) 1E805827082 White	50	3.4	55	3.7	14.8	27.0	31.9
			60	4.1	18.9	33.3	37.2
			80	5.5	31.1	52.5	54.6
			100	6.9	40.9	68.4	69.8
			125	8.6	52.0	86.6	87.5
			150	10.3	62.5	103.9	104.5
	60	4.1	65	4.4	19.5	30.4	36.4
			70	4.8	24.7	36.9	41.7
			80	5.5	33.1	47.6	51.1
			100	6.9	46.3	65.2	67.4
			125	8.6	60.4	84.5	85.9
			150	10.3	73.5	102.4	103.4

1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.
2. Shaded area is equal to maximum flow capacity.

Table 9. *Type 133HP Regulator 40% Capacities in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 Psia and 60°F)*

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
2 to 5 psig (0.14 to 0.34 bar) 17B8632X012 Yellow	2	0.14	10	0.69	6.9	13.2	19.7
			20	1.4	10.5	20.1	29.7
			40	2.8	16.6	31.9	47.2
			60	4.1	22.7	43.6	64.4
			80	5.5	28.8	55.2	81.7
			100	6.9	34.8	66.9	99.0
			125	8.6	42.4	81.5	120.5
			150	10.3	50.0	96.0	142.1
	5	0.34	10	0.69	14.5	19.8	20.4
			20	1.4	24.4	32.8	32.9
			40	2.8	39.5	52.9	52.9
			60	4.1	54.0	72.3	72.3
			80	5.5	68.5	91.6	91.6
			100	6.9	82.9	111.0	111.0
			125	8.6	101.0	135.2	135.2
			150	10.3	119.1	159.3	159.3
5 to 10 psig (0.34 to 0.69 bar) 17B8633X012 Orange	5	0.34	10	0.69	3.8	7.1	10.4
			20	1.4	5.8	10.7	15.7
			40	2.8	9.2	17.0	24.9
			60	4.1	12.5	23.3	34.0
			80	5.5	15.9	29.5	43.1
			100	6.9	19.3	35.7	52.2
			125	8.6	23.5	43.5	63.6
			150	10.3	27.7	51.3	75.0
	10	0.69	25	1.7	28.2	37.0	37.4
			30	2.1	32.5	42.6	42.8
			40	2.8	40.5	52.9	52.9
			60	4.1	55.5	72.3	72.3
			80	5.5	70.4	91.6	91.6
			100	6.9	85.2	111.0	111.0
			125	8.6	103.8	135.2	135.2
			150	10.3	122.4	159.3	159.3
10 to 20 psig (0.69 to 1.4 bar) 1F177027092 Tan	10	0.69	15	1.0	11.3	23.6	24.7
			20	1.4	15.1	30.9	31.5
			40	2.8	26.3	52.9	52.9
			60	4.1	36.0	72.3	72.3
			80	5.5	45.6	91.6	91.6
			100	6.9	55.2	111.0	111.0
			125	8.6	67.3	135.2	135.2
			150	10.3	79.3	159.3	159.3
	20	1.4	25	1.7	28.5	31.2	33.2
			30	2.1	37.1	38.8	40.1
			40	2.8	50.4	51.2	51.9
			60	4.1	72.0	72.2	72.3
			80	5.5	91.6	91.6	91.6
			100	6.9	111.0	111.0	111.0
			125	8.6	135.2	135.2	135.2
			150	10.3	159.3	159.3	159.3
20 to 30 psig (1.4 to 2.1 bar) 1F177227092 Pink	20	1.4	25	1.7	17.2	31.2	33.2
			30	2.1	22.1	38.8	40.1
			40	2.8	29.8	51.2	51.9
			60	4.1	42.5	72.2	72.3
			80	5.5	54.1	91.6	91.6
			100	6.9	65.5	111.0	111.0
			125	8.6	79.8	135.2	135.2
			150	10.3	94.0	159.3	159.3
	30	2.1	35	2.4	34.4	38.7	41.8
			40	2.8	38.4	46.6	48.8
			60	4.1	61.2	71.0	71.6
			80	5.5	79.7	91.5	91.6
			100	6.9	96.9	111.0	111.0
			125	8.6	118.0	135.2	135.2
			150	10.3	139.1	159.3	159.3
30 to 40 psig (2.1 to 2.8 bar) 1E805327092 Dark Gray	30	2.1	35	2.4	19.7	38.7	41.8
			40	2.8	24.6	46.6	48.8
			60	4.1	39.0	71.0	71.6
			80	5.5	50.7	91.5	91.6
			100	6.9	61.6	111.0	111.0
			125	8.6	75.0	135.2	135.2
			150	10.3	88.4	159.3	159.3
	40	2.8	45	3.1	30.3	46.2	50.4
			50	3.4	37.1	54.3	57.4
			60	4.1	48.0	67.8	69.7
			80	5.5	65.6	90.5	91.2
			100	6.9	80.9	110.9	111.0
			125	8.6	98.9	135.2	135.2
			150	10.3	116.6	159.3	159.3
40 to 50 psig (2.8 to 3.4 bar) 1E805727092 Light Green	40	2.8	45	3.1	24.6	46.2	50.4
			50	3.4	30.0	54.3	57.4
			60	4.1	38.8	67.8	69.7
			80	5.5	52.9	90.5	91.2
			100	6.9	65.3	110.9	111.0
			125	8.6	79.8	135.2	135.2
			150	10.3	94.0	159.3	159.3
	50	3.4	55	3.7	34.8	53.7	59.0
			60	4.1	41.8	61.9	66.0
			80	5.5	62.9	88.1	89.8
			100	6.9	79.7	110.0	110.7
			125	8.6	98.7	135.2	135.2
			150	10.3	116.6	159.3	159.3
50 to 60 psig (3.4 to 4.1 bar) 1E805827082 White	50	3.4	55	3.7	29.5	53.7	59.0
			60	4.1	35.3	61.9	66.0
			80	5.5	53.0	88.1	89.8
			100	6.9	67.2	110.0	110.7
			125	8.6	83.1	135.2	135.2
			150	10.3	98.1	159.3	159.3
	60	4.1	65	4.4	39.5	61.3	67.6
			70	4.8	46.7	69.5	74.6
			80	5.5	58.6	83.8	87.2
			100	6.9	77.8	108.0	109.6
			125	8.6	98.1	134.6	135.1
			150	10.3	116.8	159.3	159.3

1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.
2. Shaded area is equal to maximum flow capacity.

Table 10. *Type 133HP Regulator 60% Capacities in Thousands of CFH of (0.6 Specific Gravity Gas at 14.7 Psia and 60°F)*

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE		
					DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
2 to 5 psig (0.14 to 0.34 bar) 17B8632X012 Yellow	2	0.14	10	0.69	9.1	17.7	26.4
			20	1.4	14.5	28.3	42.1
			40	2.8	24.2	47.1	70.0
			60	4.1	33.5	65.2	96.9
			80	5.5	42.6	83.0	123.4
			100	6.9	51.8	100.8	149.8
			125	8.6	63.2	122.9	182.7
			150	10.3	74.5	145.0	215.6
	5	0.34	10	0.69	18.8	26.1	27.0
			20	1.4	33.6	45.7	46.1
			40	2.8	57.8	78.4	78.5
			60	4.1	80.5	109.1	109.2
			80	5.5	102.9	139.4	139.4
			100	6.9	125.1	169.4	169.4
			125	8.6	152.7	206.7	206.8
			150	10.3	180.2	244.0	244.0
5 to 10 psig (0.14 to 0.69 bar) 17B8633X012 Orange	5	0.34	10	0.69	10.0	20.0	27.0
			20	1.4	17.7	34.8	46.1
			40	2.8	30.4	59.5	78.5
			60	4.1	42.3	82.9	109.2
			80	5.5	54.0	105.8	139.4
			100	6.9	65.7	128.6	169.4
			125	8.6	80.1	157.0	206.8
			150	10.3	94.6	185.2	244.0
	10	0.69	25	1.7	38.3	51.2	52.1
			30	2.1	45.1	60.0	60.7
			40	2.8	57.8	76.6	77.1
			60	4.1	81.8	108.0	108.3
			80	5.5	105.1	138.6	138.8
			100	6.9	128.0	168.8	168.9
			125	8.6	156.5	206.3	206.4
			150	10.3	184.9	243.7	243.8
10 to 20 psig (0.69 to 1.4 bar) 1F177027092 Tan	10	0.69	15	1.0	14.6	31.1	32.7
			20	1.4	20.0	41.8	42.9
			40	2.8	37.3	76.6	77.1
			60	4.1	52.7	108.0	108.3
			80	5.5	67.7	138.6	138.8
			100	6.9	82.5	168.8	168.9
			125	8.6	100.8	206.3	206.4
			150	10.3	119.1	243.7	243.8
	20	1.4	25	1.7	36.9	40.9	44.2
			30	2.1	49.2	52.0	54.5
			40	2.8	69.2	71.1	72.7
			60	4.1	103.6	104.7	105.7
			80	5.5	135.5	136.3	136.9
			100	6.9	166.5	167.0	167.6
			125	8.6	204.6	205.0	205.4
			150	10.3	242.3	242.7	243.0

OUTLET PRESSURE RANGE, CONTROL SPRING NUMBER & COLOR	OUTLET PRESSURE SETTING(1)		INLET PRESSURE		2 INCH BODY SIZE 1.91 INCHES (48.5 mm) ORIFICE SIZE		
					DROOP FROM SETPOINT		
	Psig	Bar	Psig	Bar	10%	20%	30%
20 to 30 psig (1.4 to 2.1 bar) 1F177227092 Pink	20	1.4	25	1.7	22.0	40.9	44.2
			30	2.1	28.9	52.0	54.5
			40	2.8	40.5	71.1	72.7
			60	4.1	60.4	104.7	105.7
			80	5.5	78.9	136.3	136.9
			100	6.9	96.9	167.0	167.6
			125	8.6	119.0	205.0	205.4
			150	10.3	141.0	242.7	243.0
	30	2.1	35	2.4	39.1	50.7	55.7
			40	2.8	50.1	62.1	66.0
			60	4.1	84.3	99.7	101.8
			80	5.5	113.6	132.8	134.3
			100	6.9	141.2	164.5	165.6
			125	8.6	174.8	203.1	203.9
			150	10.3	207.9	241.2	241.8
30 to 40 psig (2.1 to 2.8 bar) 1E805327092 Dark Gray	30	2.1	35	2.4	25.0	50.7	55.7
			40	2.8	31.9	62.1	66.0
			60	4.1	53.4	99.7	101.8
			80	5.5	71.9	132.8	134.3
			100	6.9	89.3	164.5	165.6
			125	8.6	110.5	203.1	203.9
			150	10.3	131.4	241.2	241.8
	40	2.8	45	3.1	38.5	60.5	67.1
			50	3.4	48.0	72.1	77.5
			60	4.1	63.9	92.5	96.4
			80	5.5	90.8	128.1	130.7
			100	6.9	115.0	161.0	162.9
			125	8.6	144.0	200.5	201.9
			150	10.3	172.1	239.1	240.2
40 to 50 psig (2.8 to 3.4 bar) 1E805727092 Light Green	40	2.8	45	3.1	31.2	60.5	67.1
			50	3.4	38.8	72.1	77.5
			60	4.1	51.5	92.5	96.4
			80	5.5	73.1	128.1	130.7
			100	6.9	92.6	161.0	162.9
			125	8.6	115.8	200.5	201.9
			150	10.3	138.5	239.1	240.2
	50	3.4	55	3.7	44.2	70.3	78.6
			60	4.1	53.9	82.1	89.0
			80	5.5	84.8	121.7	125.9
			100	6.9	110.9	156.4	159.4
			125	8.6	140.9	197.1	199.3
			150	10.3	169.7	236.5	238.2
50 to 60 psig (3.4 to 4.1 bar) 1E805827082 White	50	3.4	55	3.7	37.3	70.3	78.6
			60	4.1	45.4	82.1	89.0
			80	5.5	71.4	121.7	125.9
			100	6.9	93.2	156.4	159.4
			125	8.6	118.4	197.1	199.3
			150	10.3	142.6	236.5	238.2
	60	4.1	65	4.4	50.0	80.1	90.1
			70	4.8	59.9	92.0	100.5
			80	5.5	77.0	113.2	119.8
			100	6.9	105.8	150.5	155.0
			125	8.6	137.5	192.9	196.2
			150	10.3	167.4	233.2	235.8

1. Outlet pressure setting was made at approximately 10% of the maximum capacity for the listed conditions.
2. Shaded area is equal to maximum flow capacity.

Installation

The regulator may be installed in any position but is normally installed with the actuator portion vertical above the body portion. Flow through the body must be in the direction indicated by the flow direction arrow cast on the body portion. A downstream control line is required for operation of the regulator.

A remote vent line may be required for some installations. Vent openings must be protected against the entrance of rain, snow, insects, or any other foreign material that may plug the vent.

External dimensions are shown in figure 9.

Ordering Information

When ordering, specify:

Application

1. Type of gas being controlled (natural gas, air, etc.): list any factors such as impurities in the gas that may affect compatibility of the gas with the regulator trim parts.
2. Specific gravity of the gas
3. Temperature of the gas
4. Range of flowing inlet pressures to regulator
5. Outlet pressure
6. Flow rates
   a) Minimum controlled flow
   b) Normal flow
   c) Maximum flow
7. Line size and end connection size of adjacent piping

Regulator

Refer to the Specifications table on page 2. Carefully review the description to the right of each specification and in the referenced tables. Specify the desired selection wherever there is a choice to be made. Always specify the regulator type number.

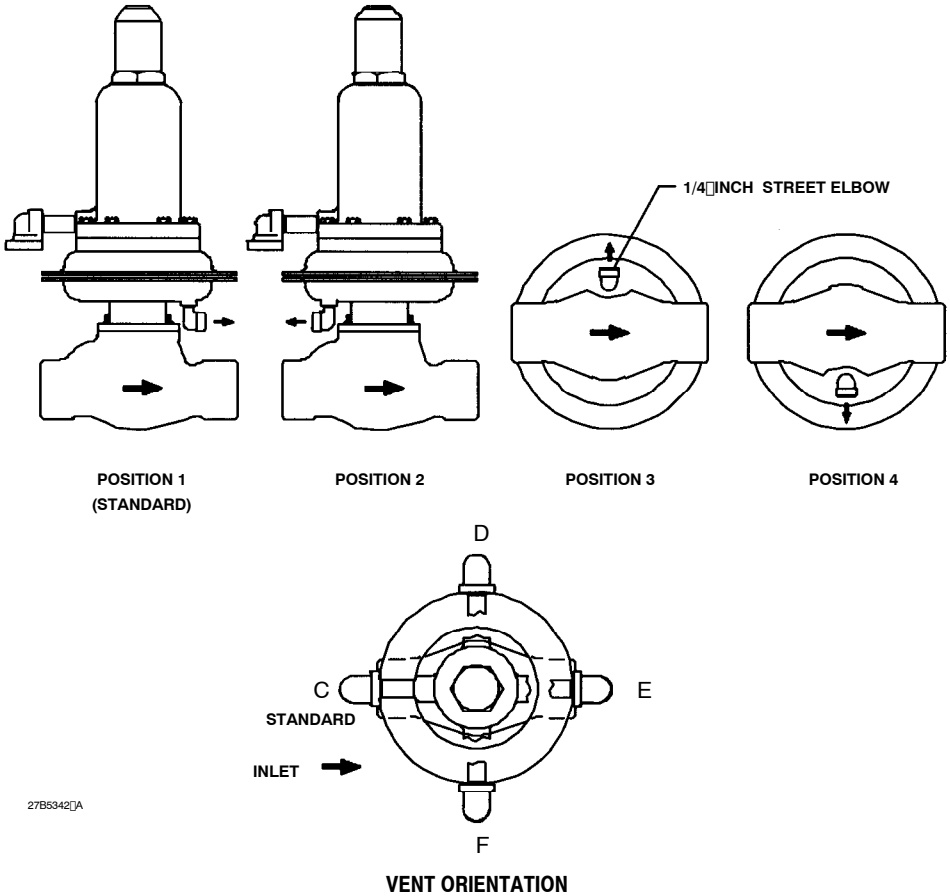


***Figure 8**. Type 133HP Assembly Positions for Body/Spring Case Orientation*

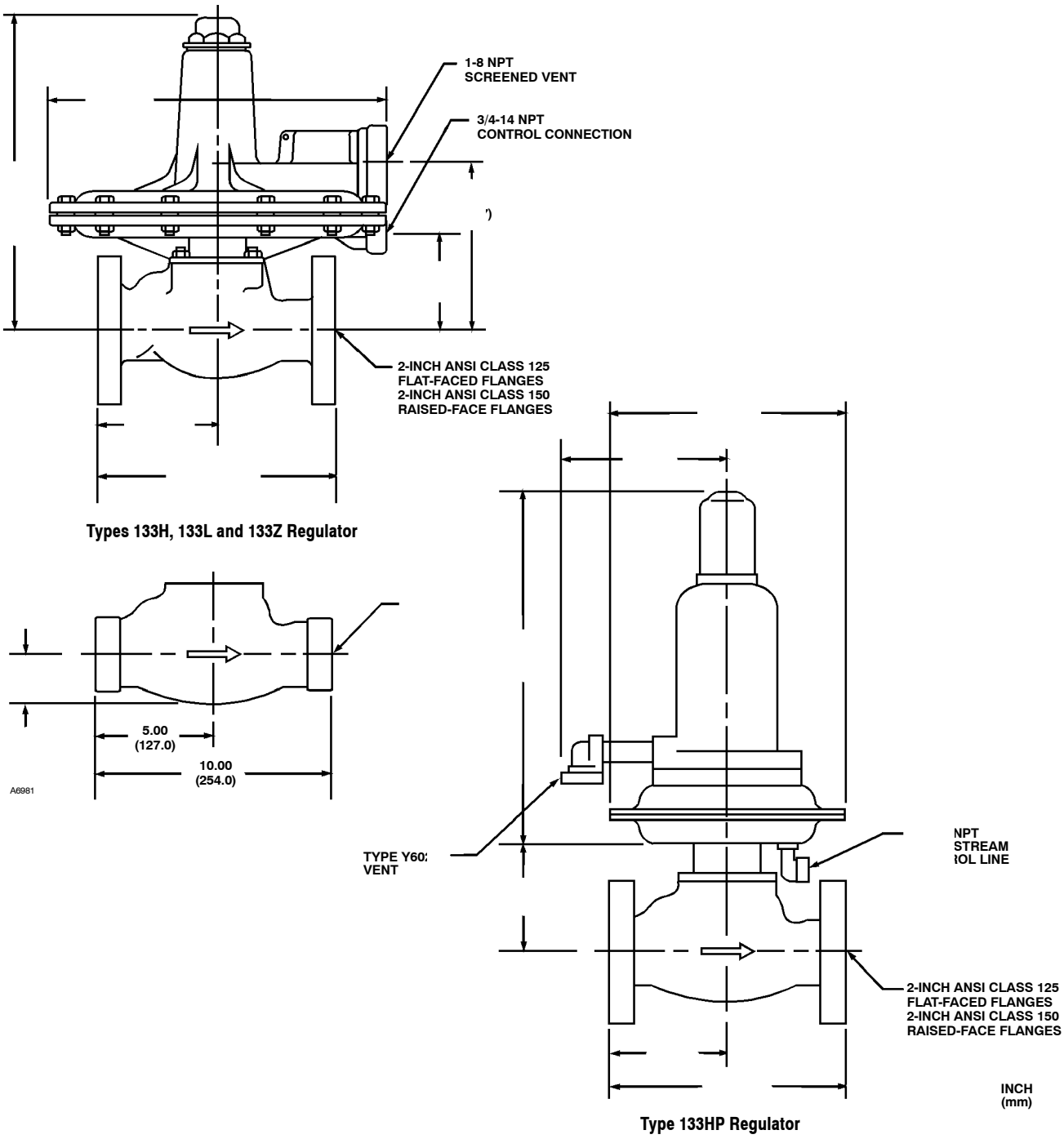


Figure 9. *Dimensions*

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