

Products

133 Series Pressure Reducing Regulators

Introduction

The 133 Series direct-operated regulators are ideal for industrial and commercial applications supplying gas to furnaces, burners, and other appliances. A balancing system enables the regulator to control gas pressure accurately for maximum combustion efficiency despite varying inlet pressures.

Body Size and End Connection Styles

See Table 1

Pressure Registration

External

Flow Coefficients

See Table 3

Features

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- Wide Pressure Range Capability with Single Regulator
- Types 133L and 133H Suitable for Monitoring Applications
- Bubble-Tight Shutoff
- Excellent Shock Characteristics and Fast Speed of Response
- No Special Seat Adjustment Required
- Spring and Diaphragm Effects Minimized
- Easy Access to Trim Parts

Maximum Inlet Pressure

Operating:

133L: 60 psig (4,1 bar)

133H: 60 psig (4,1 bar)

Emergency:

133L: 125 psig (8,6 bar)

133H: 125 psig (8,6 bar)

Maximum Outlet (Casing) Pressure

15 psig (1,03 bar)

Outlet Pressure Range

2-inches w.c. to 10 psig
(5 mbar to 0,69 bar) in 9 ranges

See Table 4

Temperature Capabilities

-20° to 150°F (-29° to 66°C)

Options

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

Additional Technical Data

For more technical information contact your Fisher Sales Representative, refer to Bulletin 71.1:133, or order your Fisher Regulator CD using the card in the back of this handbook.



Figure 1. Type 133 Regulator

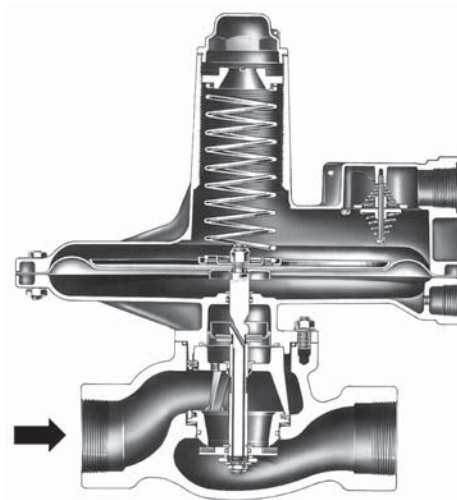


Figure 2. Sectional View

Table 1. Body Size and End Connection Styles

BODY SIZE, INCHES (DN)	END CONNECTION STYLE	
	Cast Iron Body	Steel Body
2 (50)	NPT screwed or 125A FF flanged	NPT screwed or 150 RF flanged

Table 2. Construction Materials

BODY MATERIAL	DIAPHRAGM AND SPRING CASES	DIAPHRAGM AND O-RINGS	SEAT DISK	GUIDE BUSHING
Cast iron or Steel	Aluminum	Nitrile	Neoprene	Nylon

Table 3. Flow Coefficients

CAPACITY	WIDE-OPEN C _g	WIDE-OPEN C _v	C ₁
25% ⁽¹⁾	490	17.4	28.2
40% ⁽¹⁾	760	26.1	29.1
60% ⁽¹⁾	1150	36.2	31.8
100%	1800	51.4	35.0

1. Optional restriction collar used.

133 Series Pressure Reducing Regulators

Table 4. Outlet Pressure Ranges

REGULATOR TYPE NUMBER	MAXIMUM INLET PRESSURE, PSIG (BAR)	OUTLET PRESSURE RANGE		SPRING PART NUMBER	SPRING COLOR CODE
		Psig / Inches w.c.	Bar / mBar		
133L ⁽¹⁾	60 (4,1)	2 to 4-inches w.c.	5 to 10 mbar	1D892527022	Brown
		3.5 to 6-inches w.c.	8,7 to 15 mbar	1D892627022	Red
		5 to 9-inches w.c.	12 to 22,4 mbar	1D892727012	Black
		8.5 to 18-inches w.c.	21,2 to 22,8 mbar	1D893227032	Gray
133H ⁽²⁾	60 (4,1)	14 to 28-inches w.c.	35 to 70 mbar	1D893327032	Green
		0.75 to 2 psig	0,05 to 0,14 bar	1H975827032	Dark blue
		1.5 to 3 psig	0,10 to 0,21 bar	1H975927032	Orange
		2 to 5 psig	0,14 to 0,34 bar	10A9440X012	Yellow
		5 to 10 psig	0,34 to 0,69 bar	1J146927142	Blue stripe

- 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 w.c. (5 mbar) for the Type 133L and by approximately 3-inches w.c. (7,5 mbar) for the Type 133H.
- The 2-inches w.c. to 2 psig (5 mbar to 0,14 bar) springs shown for the Type 133L may also be used in the Type 133H. However, the outlet pressure ranges will increase by approximately 1-inch w.c. (2,5 mbar) due to the weight of the Type 133H parts (assuming that the actuator portion is installed above the body portion).

Table 5. Type 133H Capacities

INLET PRESSURE, PSIG (BAR)	CAPACITIES IN THOUSANDS OF SCFH (m³/h(n)) OF 0.6 SPECIFIC GRAVITY NATURAL GAS									
	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 (0,174)	11.5 (0,308)	---	---	---	---	---	---
5 (0,34)	14 (0,375)	22 (0,590)	11 (0,295)	18 (0,482)	---	---	---	---	---	---
7 (0,52)	21.5 (0,576)	31 (0,831)	13 (0,348)	22 (0,590)	15.5 (0,415)	24 (0,643)	9 (0,241)	15 (0,402)	---	---
10 (0,69)	28 (0,750)	42 (1,13)	15 (0,402)	27 (0,724)	24 (0,643)	35 (0,938)	14 (0,375)	22 (0,590)	---	---
15 (1,0)	40 (1,07)	57 (1,53)	25.5 (0,683)	39 (1,05)	35 (0,938)	51 (1,37)	19 (0,509)	31.5 (0,844)	21 (0,563)	35 (0,938)
20 (1,4)	52 (1,39)	72 (1,93)	35 (0,938)	52 (1,39)	46 (1,23)	67 (1,80)	24 (0,643)	41 (1,10)	31 (0,831)	51 (1,37)
30 (2,1)	76 (2,04)	96 (2,57)	49 (1,31)	73 (1,96)	68 (1,82)	95 (2,55)	35 (0,938)	58 (1,55)	44 (1,18)	74 (1,98)
40 (2,8)	98 (2,63)	119 (3,19)	66 (1,77)	97 (2,60)	88 (2,36)	117 (3,14)	44 (1,18)	73 (1,96)	56 (1,50)	97 (2,60)
50 (3,4)	118 (3,16)	141 (3,78)	84 (2,25)	112 (3,00)	103 (2,76)	138 (3,70)	57 (1,53)	89 (2,39)	74 (1,98)	117 (3,14)
60 (4,1)	136 (3,64)	165 (4,42)	104 (2,79)	132 (3,54)	122 (3,27)	156 (4,18)	65 (1,74)	106 (2,84)	91 (2,44)	136 (3,64)

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

Table 6. Type 133L Capacities

INLET PRESSURE, PSIG (BAR)	CAPACITIES IN THOUSANDS OF SCFH (m³/h(n)) OF 0.6 SPECIFIC GRAVITY NATURAL GAS										
	Outlet Pressure Setting ⁽¹⁾ , Spring Part Number, and Outlet Pressure Range										
	4-Inches w.c. (10 mBar) 1D892527022 2 to 4 Inches w.c. (5 to 10 mBar)	6-Inches w.c. (15 mBar) 1D892627022 3-1/2 to 6 Inches w.c. (8,7 to 15 mBar)	7-Inches w.c. (17 mBar) 1D892727012 5 to 9 Inches w.c. (12 to 22,4 mBar)	14-Inches w.c. (35 mBar) 1D893227032 8-1/2 to 18-inches w.c. (21,2 to 44,8 mBar)	14-Inches w.c. (35 mBar) 1D893327032 14 to 28-Inches w.c. (35 to 70 mBar)	1 Psig (0,069 Bar) 1D893327032 14 to 28-Inches w.c. (35 to 70 mBar)	2 Psig (0,14 Bar) 1H975827032 0,75 to 2 Psig (0,05 to 0,14 Bar)	10% Droop	20% Droop	10% Droop	20% Droop
	1-Inch w.c. (2,5 mBar) Droop	1-Inch w.c. (2,5 mBar) Droop	1-Inch w.c. (2,5 mBar) Droop	1-Inch w.c. (2,5 mBar) Droop	2-Inches w.c. (5 mBar) Droop	1-Inch w.c. (2,5 mBar) Droop	2-Inches w.c. (5 mBar) Droop	10% Droop	20% Droop	10% Droop	20% Droop
1 (0,069)	14 (0,375)	13 (0,348)	12 (0,322)	5 (0,134)	8.4 (0,225)	---	---	---	---	---	
2 (0,14)	20.8 (0,557)	20 (0,536)	17 (0,456)	8.2 (0,220)	15.2 (0,407)	---	---	11.5 (0,308)	16 (0,429)	---	
3 (0,21)	26 (0,697)	24.5 (0,657)	21 (0,563)	12 (0,322)	19.5 (0,523)	---	---	15.5 (0,415)	21.5 (0,576)	12.5 (0,335) 18.5 (0,496)	
5 (0,34)	35 (0,938)	33 (0,884)	32 (0,858)	16 (0,429)	28 (0,750)	14 (0,375)	23 (0,616)	24 (0,643)	31.5 (0,844)	20.5 (0,549) 28 (0,750)	
10 (0,69)	52 (1,39)	52 (1,39)	48 (1,29)	34 (0,911)	45 (1,21)	26 (0,697)	38 (1,02)	37.5 (1,01)	44 (1,18)	38 (1,02) 46 (1,23)	
20 (1,4)	78 (2,09)	77 (2,06)	79 (2,12)	69 (1,85)	76 (2,04)	60 (1,61)	69 (1,85)	70 (1,88)	77 (2,06)	62 (1,66) 76 (2,04)	
30 (2,1)	101 (2,71)	100 (2,68)	100 (2,68)	91 (2,44)	97 (2,60)	87 (2,33)	93 (2,49)	90 (2,41)	101 (2,71)	87 (2,33) 101 (2,71)	
40 (2,8)	124 (3,32)	122 (3,27)	124 (3,32)	109 (2,92)	116 (3,11)	107 (2,87)	115 (3,08)	110 (2,95)	122 (3,27)	105 (2,81) 121 (3,24)	
50 (3,4)	146 (3,91)	144 (3,86)	145 (3,89)	130 (3,48)	136 (3,64)	132 (3,54)	137 (3,67)	127 (3,40)	145 (3,89)	124 (3,32) 145 (3,89)	
60 (4,1)	170 (4,56)	168 (4,50)	166 (4,45)	155 (4,15)	161 (4,31)	152 (4,07)	158 (4,23)	149 (3,99)	167 (4,48)	145 (3,89) 170 (4,56)	

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

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Table 7. Type 133H Restricted Flow Capacities

INLET PRESSURE, PSIG (BAR)	CAPACITIES IN THOUSANDS OF SCFH (m ³ /h(n)) OF 0.6 SPECIFIC GRAVITY NATURAL GAS											
	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 (0,214)	9 (0,241)	---	---	11 (0,295)	15 (0,402)	---	---	13 (0,348)	17 (0,456)	---	---
10 (0,69)	12.3 (0,330)	13 (0,348)	---	---	16.5 (0,442)	20 (0,536)	---	---	20 (0,536)	25 (0,670)	---	---
15 (1,0)	---	---	13 (0,348)	15.5 (0,415)	---	---	---	16.5 (0,442)	23.5 (0,630)	---	---	20 (0,536) 29.5 (0,791)
20 (1,4)	20.8 (0,557)	21.2 (0,568)	17.5 (0,469)	20 (0,536)	31.5 (0,844)	33.5 (0,898)	23.5 (0,630)	30.5 (0,817)	36 (0,965)	46.5 (1,25)	29 (0,777)	39.5 (1,06)
40 (2,8)	33.5 (0,898)	33.5 (0,898)	33 (0,884)	33.5 (0,898)	52 (1,39)	53.2 (1,43)	46 (1,23)	53.2 (1,43)	70 (1,88)	77.5 (2,08)	57 (1,53)	74.5 (2,00)
60 (4,1)	45.5 (1,22)	45.5 (1,22)	45.5 (1,22)	45.5 (1,22)	72.7 (1,95)	72.7 (1,95)	67 (1,80)	72.7 (1,95)	105 (2,81)	107 (2,87)	87 (2,33)	107 (2,87)

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

Table 8. Shipping Weight

BODY TYPES	END CONNECTION STYLES	APPROXIMATE SHIPPING WEIGHT, POUNDS (KG)
133H and 133L	NPT female	35 (15,9)
	125A FF 150 RF	40 (18,1)

F

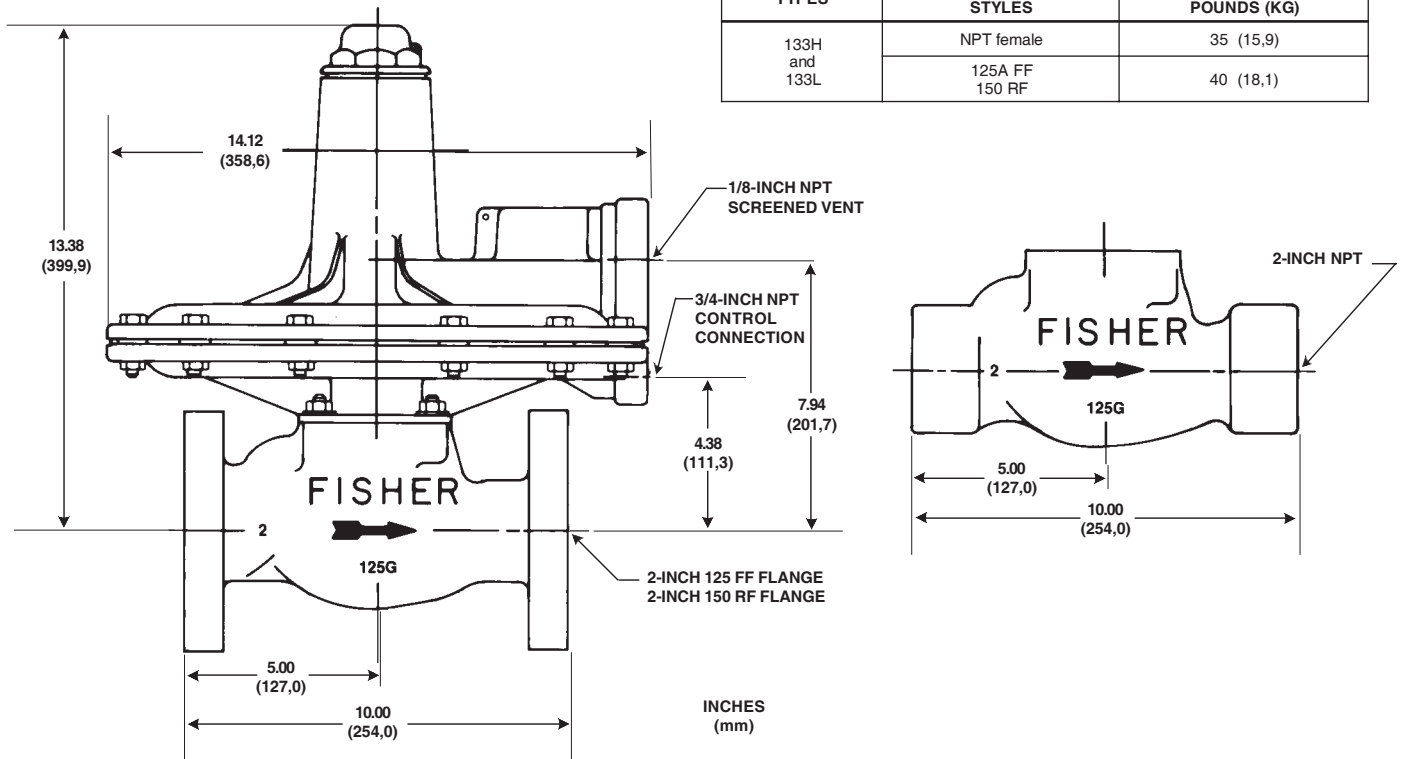


Figure 3. Dimensions



133 Series Pressure Reducing Regulators

Ordering Guide

Type (Select One)

- Type 133L***
- Type 133H***

Body Material and End Connection Style (Select One)

Cast Iron Body

- 2-inch NPT screwed***
- 2-inch 125 FF***

Steel Body

- 2-inch NPT screwed**
- 2-inch 150 RF**

Outlet Pressure Range (Select One)

Type 133L

- 2 to 4-inches w.c. (5 to 10 mbar)**
- 3.5 to 6-inches w.c. (8,7 to 15 mbar)**
- 5 to 9-inches w.c. (12 to 22,4 mbar)***
- 8.5 to 18-inches w.c. (21,2 to 22,8 mbar)**
- 14 to 28-inches w.c. (35 to 70 mbar)***
- 0.75 to 2 psig (0,05 to 0,14 bar)***

Type 133H

- 1.5 to 3 psig (0,10 to 0,21 bar)***
- 2 to 5 psig (0,14 to 0,34 bar)***
- 5 to 10 psig (0,34 to 0,69 bar)***

Trim, Percent of Full Capacity (Select One)

- 100 percent (standard)***
- 60 percent**
- 40 percent**
- 25 percent**

To order this product, complete this page or complete a specification sheet, then provide the information to your Fisher Sales Representative.

If the construction you need is not offered on this page, contact your Fisher Sales Representative.

Fisher Regulators Quick Order Guide	
***	Standard - Readily Available for Shipment
**	Non-Standard - Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult Your Fisher Sales Representative for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Specification Worksheet

Application:
 Specific Use _____
 Line Size _____
 Gas Type and Specific Gravity _____
 Gas Temperature _____
 Does the Application Require Overpressure Protection?
 Yes No If yes, which is preferred:
 Relief Valve Monitor Regulator Shutoff Device
 Is overpressure protection equipment selection assistance desired? _____

Pressure:
 Maximum Inlet Pressure (P_{1max}) _____
 Minimum Inlet Pressure (P_{1min}) _____
 Downstream Pressure Setting(s) (P_2) _____
 Maximum Flow (Q_{max}) _____

Performance Required:
 Accuracy Requirements? _____
 Need for Extremely Fast Response? _____

Other Requirements: _____