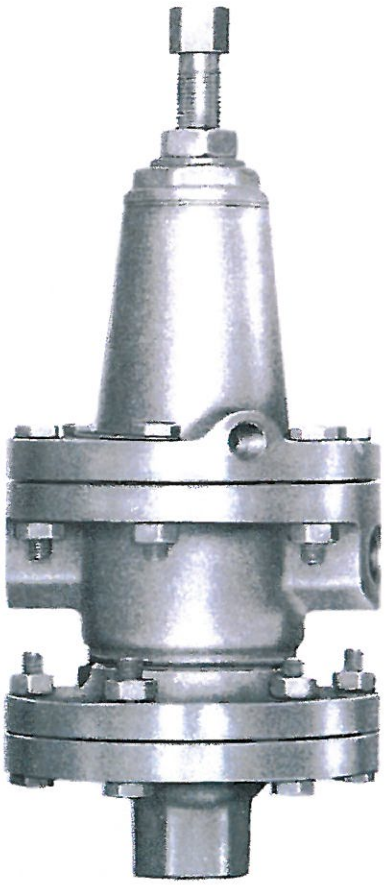
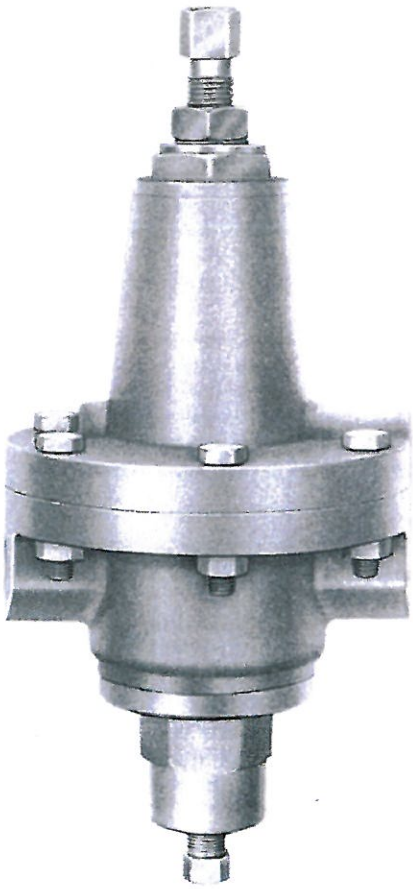
SB 8545 B

American Series Z Pilot Regulators

Maximum Inlet Pressure: 1440 psi
Maximum Outlet Pressure: 600 psi



Type ZSC



Type Z

The use of pilot regulators adds precision and flexibility to pressure regulation. Type Z has a single diaphragm and uses its own output as the controlling medium. Type ZSC has double diaphragms and uses the output of the master regulator as the controlling medium giving fast response.

For low pressure pilot regulators see bulletins on Series 1200 and Series 1800 Regulators.

AMERICAN METER COMPANY
Measurement Engineers Since 1836

TYPE Z PILOT REGULATOR

This pilot regulator is used to pressure balance a main valve diaphragm for positive positioning of the main line valve with respect to flow. It will provide fast, accurate, stable pressure regulation and is especially recommended for installations where large load changes occur, where large pressure reductions are required, and where there is a considerable variation in the inlet pressure. It is also used where the outlet pressure exceeds the practical limits of spring or weight loading.

All cast parts of this pilot are cast iron and ASTM B 145 Alloy 4A bronze for maximum strength. The valve seat disc can be supplied in Buna N rubber, Viton A or nylon. The valve is equipped with a balance spring to ensure tight closing, and to provide a wide range of outlet pressure adjustment.

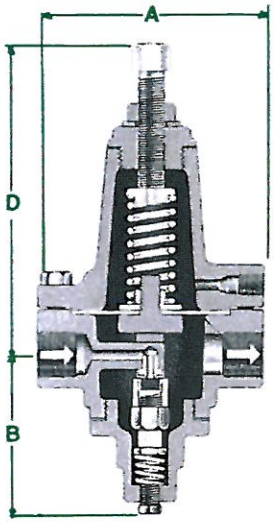
TYPE ZSC PILOT REGULATOR

This pilot regulator retains all the features of the Type Z but has in addition a secondary diaphragm. It is designed for applications where a secondary control pressure is used to operate the main valve. It can be supplied for reducing service or back pressure service.

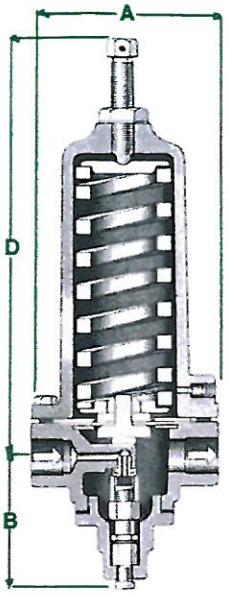
Type Z Pilot Regulators are available with ½ or ¾-inch MPT on the bottom guide plug for direct mounting on the head of the primary regulator. No additional piping is necessary.

TYPE Z

Maximum Inlet Pressure: 1440 psi



TYPE Z
outlet range 1 to 325 psi



TYPE Z—138
outlet range 100 to 600 psi

direct connecting guide plug for Type Z regulator

PRESSURE SPRING RECOMMENDATIONS

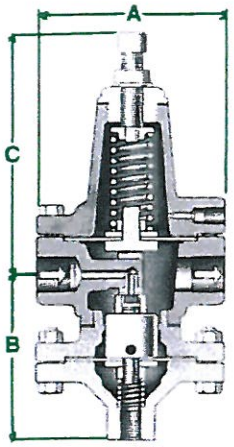
Type	Outlet Pressure, psi	Part Number	Spring Color Code
Z	1 to 5	71411P010	Green
Z	2 to 10	71411P043	Brown/Blue
Z	3 to 30	71411P011	Yellow
Z	10 to 75	71411P012	Red
Z	25 to 150	71411P014	Blue
Z	100 to 225	71411P009	White
Z	200 to 325	71411P046	White/Red
Z-138	150 to 600	71421P008	Gold

DIMENSIONS AND WEIGHTS

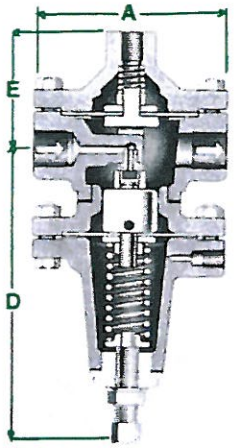
Type	Connection Size, NPT	Dimensions, Inches A	B	D	Vent Size	Net Weight
Z	¼—½	3⅞	2⅞	5⅜	⅛ NPT	5 lb
Z-138	¼—½	3⅞	2⅞	9⅞	⅛ NPT	9

TYPE ZSC

Maximum Inlet Pressure: 1440 psi



ZSC-100
for reducing service
1 to 325 psi



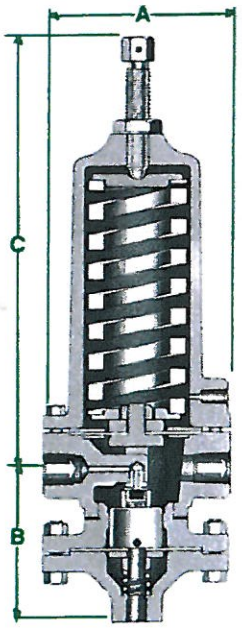
ZSC-150
for back pressure service
1 to 325 psi

PRESSURE SPRING RECOMMENDATIONS			
Type	Outlet Pressure, psi	Part Number	Spring Color Code
ZSC-100 and ZSC-150	1 to 5	71411P010	Green
	2 to 10	71411P043	Brown/Blue
	3 to 30	71411P011	Yellow
	10 to 75	71411P012	Red
	25 to 150	71411P014	Blue
	100 to 225	71411P009	White
	200 to 325	71411P046	White/Red

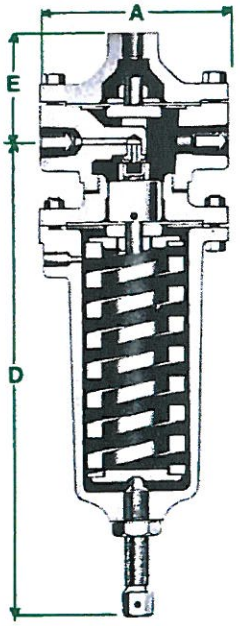
DIMENSIONS AND WEIGHTS								
Type	Connection† Size, NPT	Dimensions, Inches					Vent Size	Net Weight
		A	B	C	D	E		
ZSC-100 and ZSC-150	¼ — ½	3⅞	3¼	5⅜	6⅜	2 3/16	⅛ NPT	8 lb

TYPE ZSC-320

Maximum Inlet Pressure: 1440 psi



ZSC-320-100
for reducing service
150 to 600 psi



ZSC-320-150
for back pressure service
150 to 600 psi

PRESSURE SPRING RECOMMENDATIONS		
Type	Outlet Pressure, psi	Part Number
ZSC-320-100 and ZSC-320-150	150 to 600	71421P008

DIMENSIONS AND WEIGHTS								
Type	Connection† Size, NPT	Dimensions, Inches					Vent Size	Net Weight
		A	B	C	D	E		
ZSC-320-100 and ZSC-320-150	¼ — ½	3⅞	3¼	9⅛	10 3/16	2 3/16	⅛ NPT	12 lb

† Secondary control connection is ¼ NPT.

FORMULA

1 Sub Critical Flow
Outlet psia > 0.53 X inlet psia
$Q = C\sqrt{P2\ h} \times Fg$

2 Critical Flow
$Q = 0.5C \times P1 \times Fg$

LEGEND

Q = SCFH (Cubic Feet per Hour at 30 inches Hg and 60° F.)
P1 = inlet pressure psia
P2 = outlet pressure psia
h = differential pressure (P1 - P2)
C = orifice constant
$^1/_{16}$" = 5.5
$^3/_{32}$" = 11.0 (Standard Size)
$^1/_8$" = 20.7
Fg = Specific Gravity Factor = $\sqrt{\frac{1}{\text{Sp. Gr.}}}$

CAPACITY SCFH — 0.60 Specific Gravity Gas

Inlet	Outlet	Orifice Size $^1/_{16}$"	$^3/_{32}$"	$^1/_8$"
1440	0-600	5160	10321	19423
1300	0-600	4664	9328	17554
1200	0-600	4309	8619	16218
1100	0-576 †	3955	7909	14883
1000	0-523 †	3600	7200	13548
900	0-470 †	3245	6490	12213
800	0-417 †	2890	5780	10878
700	0-364 †	2535	5071	9543
600	0-311 †	2180	4361	8207
500	0-258 †	1826	3652	6872
300	0-152 †	1117	2233	4202
200	0-99 †	762	1524	2867
100	0-46 †	407	814	1532

† Critical flow

REGULATOR PRESSURE RATINGS

P_1 = Maximum recommended inlet pressure for normal service.
$P_1 e$ = Maximum inlet pressure for abnormal or emergency service, without causing damage to regulator.
P_2 = Maximum outlet pressure recommended for normal service.
$P_2 e$ = Maximum outlet pressure for abnormal service, without damage to internal parts.
$P_2 f$ = Maximum outlet pressure which can be contained by pressure carrying components. (No leakage to atmosphere.)

LEGEND

P_1 = 1440 psig
$P_1 e$ = 1600 psig
P_2 = See pages 2 and 3 for recommended pressure spring ranges.
$P_2 e$ = (a) Models Z & ZSC-100 - 400 psig
(b) Models Z-138 & ZSC-320 - 750 psig
$P_2 f$ = $P_2{}^e$ (a) - 800 psig
$P_2{}^e$ (b) - 1125 psig

ORIFICES, All Series Z Pilots

70033P002	Valve, $^1/_{16}$" orifice
70033P001	Valve, $^3/_{32}$" orifice (standard)
70033P003	Valve, $^1/_8$" orifice

ORDERING INFORMATION

Type
Size of Connections
Inlet Pressure
Outlet Pressure or Spring Number
Buna N rubber, Viton A or Nylon Valve Seat Disc

AMERICAN METER COMPANY
Measurement Engineers Since 1836

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