

# Mooney\* Series 20 & 20S Flowgrid\* Pilots

The Series 20 and 20S Flowgrid Pilot is a reversible pressure control regulator designed primarily for use as a control pilot with unloading type pilot systems for pressure reducing (PRV), backpressure (BPV or Relief), and differential pressure (DPV) applications. The Series 20 Pilot is designed for both liquid and gas applications. The unique cartridge design permits quick disassembly and allows the control action to be reversed simply by inverting the plug/stem assembly in the cartridge. The pilot is available in both brass (Series 20) and 304 stainless steel (Series 20S).

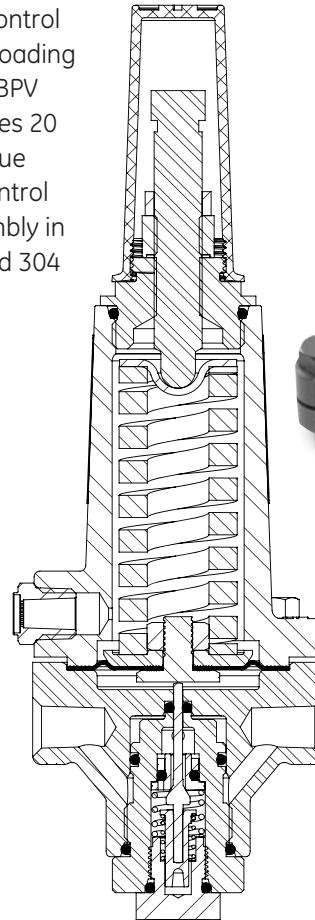
## Specifications

<b>Body Style</b>	Pressure Reducing Valve (PRV) & Back Pressure Valve (BPV)	
<b>Orifice Size</b>	0.15 inches (standard) 0.17 inches (optional)	
<b>Connections</b>	1/4" NPTF	
<b>Temperature Nitrile Diaphragm &amp; O-rings</b>	Working -20°F to 150°F Emergency -40°F to 200°F	
<b>Temperature Viton Diaphragm &amp; O-rings</b>	30° F to 200°F	
<b>Maximum Inlet Pressure</b>	1500 psig	
<b>Maximum Loading Pressure</b>	1500 psig	
<b>Maximum Outlet Pressure</b>	1500 psig	
<b>Maximum Emergency Sensing Pressure</b>	1000 psig	
<b>Maximum Spring Housing Pressure</b>	1000 psig	
<b>Set Pressure Range</b>	3-12 psig 10-40 psig 25-90 psig	60-200 psig 100-260 psig 200-450 psig

\*\* Anytime the Flowgrid Pilot or Valve is exposed to pressures in excess of its rating it should be inspected for damage.

## Flow Coefficients and Constants

Series 20/20S/20H/20HS Pilots			
	$C_1$	MAX $C_g$	MAX $C_v$
0.15 Orifice (standard)	38	9.58	0.25
0.17 Orifice (optional)	38	11.18	0.29



Sectional View



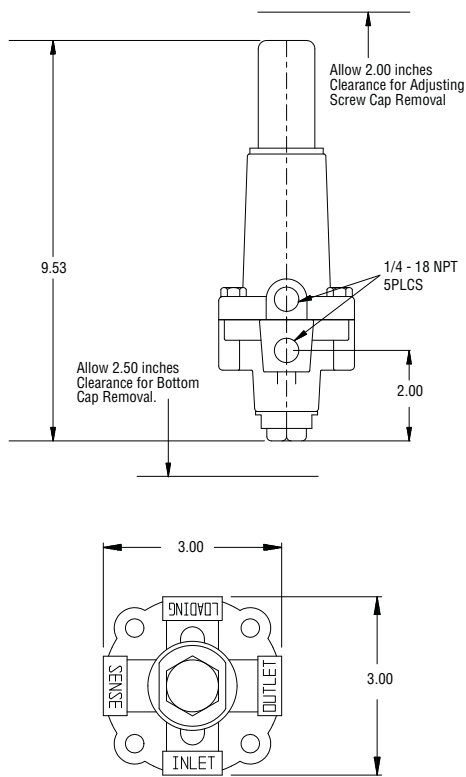
Series 20S Flowgrid Pilot

## Materials of Construction

<b>Body &amp; Spring Housing</b>	Forged Brass or 304 Stainless Steel
<b>Body Insert &amp; Closing Cap</b>	Brass or 304 Stainless Steel
<b>Orifice</b>	304 Stainless Steel or Delrin
<b>Plug &amp; Stem</b>	Nitrile/304 Stainless Steel Viton/304 Stainless Steel 304 Stainless Steel
<b>Diaphragm</b>	Nitrile/Nylon or Viton/Nylon
<b>O-rings</b>	Nitrile or Viton



## Dimensions



## Trim Options

All Series 20 Pilots			
Internal Trim	Std. Construction	Option 1	Option 2
Orifice	304 Stainless	304 Stainless	Delrin
Plug/Stem	Nitrile/304 SST	Viton/304 SST	304 Stainless
Diaphragm	Nitrile/Nylon	Viton/Nylon	Nitrile/Nylon
O-ring	Nitrile	Viton	Nitrile

## Stock Numbers

Series 20 Pilot (Brass)	Spring Color	PRV Stock	BPV Stock	Weight
3-12 psi	Red	FP-57	FP-58	6 lbs
10-40	Silver	FP-6	FP-16	6 lbs
25-90	Blue	FP-7	FP-17	6 lbs
60-200	Purple	FP-8	FP-18	6 lbs
100-260	Black	FP-9	FP-19	6 lbs
200-450	White/Green	FP-10	FP-15	6 lbs
Series 20S Pilot (Stainless)	Spring Color	PRV Stock	BPV Stock	Weight
3-12 psi	Red	FP-59	FP-60	6 lbs
10-40	Silver	FP-26	FP-36	6 lbs
25-90	Blue	FP-27	FP-37	6 lbs
60-200	Purple	FP-28	FP-38	6 lbs
100-260	Black	FP-29	FP-39	6 lbs
200-450	White/Green	FP-30	FP-35	6 lbs

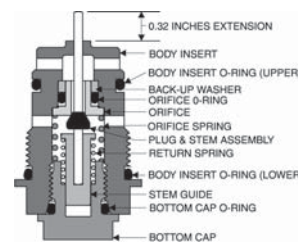
## Pilot Performance

Series 20 Pilot		Pressure Reducing Mode Restrictor Set at 4			Back Pressure Mode Restrictor Set at 4	
Spring Range	Color	Lock-up (psi)	Droop (psi) @ Max. Capacity <sup>1</sup>	Boost @ Constant Flow (psi) <sup>3</sup>	Build up (psi) for Max. Capacity <sup>2</sup>	Lock-up (psi)
3-12 <sup>2</sup>	Red	1.0	0.3	0.7	<sup>2</sup>	<sup>2</sup>
10-40 <sup>2</sup>	Silver	1.0	0.3	0.7	+0.50	-1.0
25-90	Blue	2.0	0.6	0.7	+0.50	-1.0
60-200	Purple	2.0	1.30	0.7	+1.0	-1.0
100-260	Black	5.0	2.00	0.7	+3.0	-1.5
200-450	White/Green	10.0	4.00	0.7	+5.0 <sup>4</sup>	-2.0

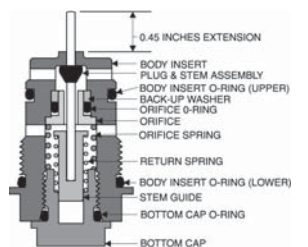
1. Constant Inlet Pressure ( $P_1$ ).
2. Minimum set point for Flowgrid Valve and Pilot when used as a Relief Valve (BPV) is 15 psig or the minimum differential whichever is greater.
3. Per 100 psi decrease in inlet pressure ( $P_1$ ).
4. SST/Delrin trim required.

**Sense point recommendations:** Sense point should be at least 8-10 pipe diameters away from the regulator and away from turbulence causing objects such as valves, tees, elbows, and reducers. Pipeline gas velocity at the sense point should be less than 100 ft/sec (30 m/s).

### PRV Mode



### BPV Mode



### Cartridge Sectional View

NOTE: The difference between PRV and BPV Modes is that the Pilot Stem is inverted and the control action is reversed.

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