

# Mooney™ FlowMax™ Regulator

Pressure reducing  
regulator for natural  
gas pipelines



**Mooney**  
a Baker Hughes business





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The Mooney FlowMax regulator is a pressure reducing regulator that offers bubble tight shut-off at all pressure differentials and full capacity at very low differential pressures. This innovative Baker Hughes design compliments the Mooney *Flowgrid™* regulator. The FlowMax regulator maximizes capacity, speed of response, and accuracy while incorporating many of the same original maintenance and performance features for which the Flowgrid regulator is renowned.

#### Product Features

- Top-entry design for ease of maintenance
- One actuator for all pressure control ranges
- Oversized balanced diaphragm provides shut off force
- Full portal designs for ultra high capacity
- Guiding piston
- Positive bubble tight shut-off at all pressure differentials
- Control range - 5 in.W.C. to 247 psig (12 mbar to 17 bar)
- Full open differential - as low as 3 psig (0.21 bar)
- Quick acting two-path pilot control system
- Low-volume casing (actuator)
- Lightweight and compact design
- Reversible plug seal

#### Designed for a range of applications

- District regulator
- Monitor, first stage, or second stage regulator
- Industrial service regulator
- Boiler/burner fuel gas regulator





# Designed for bubble tight shut-off at all pressures and full capacity at very low differential pressures.

## Pressure Reducing Valve

When the downstream pressure is greater than the set point of the pilot, the pilot is closed, resulting in equal pressure above and below the main diaphragm. With a balancing diaphragm area slightly larger than the seat area, the resulting closing force, along with the force of the main spring, forces the plug against the seat.

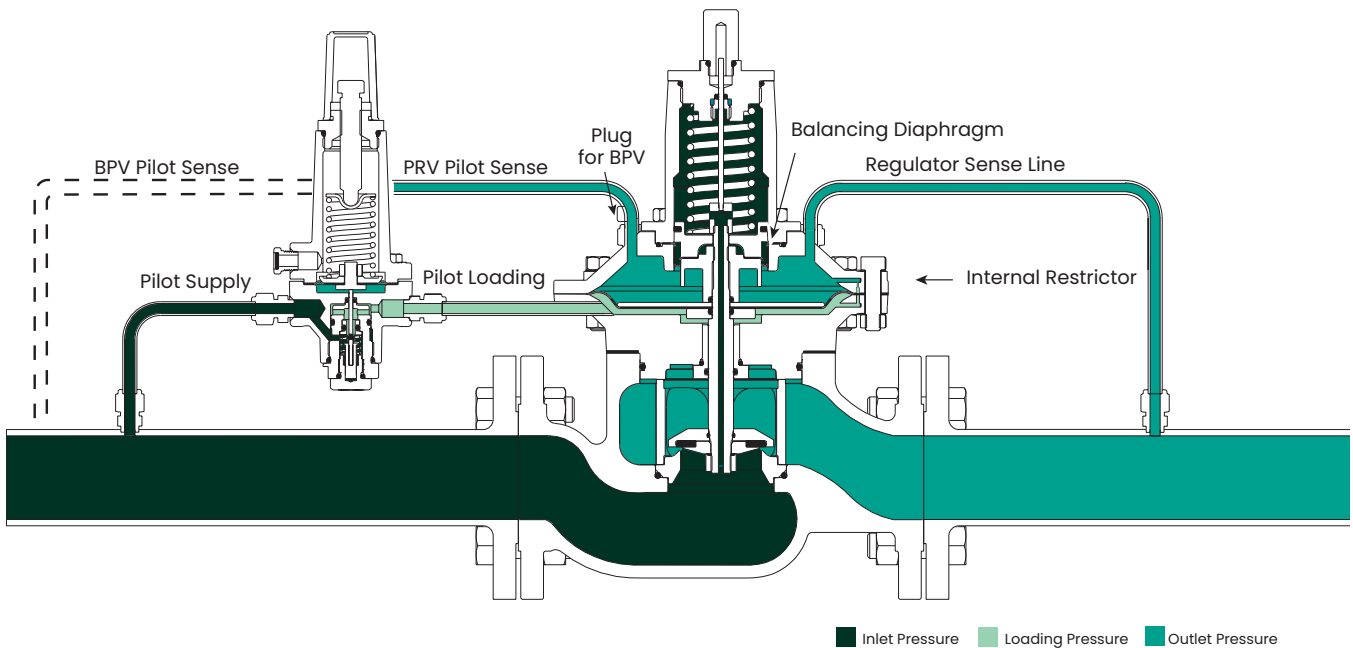
With an increase in demand, the outlet pressure will begin to drop and decrease the pressure above the main diaphragm. The drop of the outlet pressure below the pilot set point will cause the pilot to open. As the pilot opens, pressure increases underneath the main diaphragm faster than pressure can bleed through the internal restrictor. The imbalance in pressure on the main diaphragm overcomes the spring force and the additional closing force from the balancing diaphragm, causing the plug to rise off the seat and satisfy the flow demand.






Once the flow demand is satisfied and the downstream pressure begins to increase, the pressure above the main diaphragm and in the pilot sense cavity rises.






This causes the pilot to close. The pressure below the main diaphragm bleeds through the internal restrictor until pressure equalizes above and below the main diaphragm. The forces of the main spring and the over-sized balancing diaphragm then close the plug on the seat.

## Back Pressure Valve

In a back pressure relief application (BPV) the valve functions to maintain upstream pressure at the pilot set point. The sense line for the control pilot is located upstream of the regulator. The extra sense port on the actuator is plugged for BPV pilot configuration. The action of the pilot is the reverse of a pressure reducing pilot, such that the pilot opens when the upstream pressure increases above its set point. The pilot will close when the upstream pressure is less than its set point.



Spring Color	Series 20 Pilot	Outlet Pressure Range
White 	20L	5-15 in.W.C. (12 mbar - 37 mbar)
Brown 	20L	10-40 in.W.C. (25 mbar - 100 mbar)
Yellow 	20L	1-3 psig (0.02 bar - 0.21 bar)
Orange 	20L	2-5 psig (0.14 bar - 0.34 bar)
Gray 	20L	4-8 psig (0.28 bar - 0.55 bar)

Spring Color	Series 20 Pilot	Outlet Pressure Range
Red 	20	3-12 psig (0.21 bar - 0.83 bar)
Cadmium 	20	10-40 psig (0.69 bar - 3 bar)
Blue 	20	25-90 psig (2 bar - 6 bar)
Purple 	20	60-200 psig (4 bar - 14 bar)
Black 	20	100-260 psig (7 bar - 18 bar)

## Specifications

Body Size	2" (DN 50)	3" (DN 80)	4" (DN 100)	6" (DN 150)
<b>End Connection</b>	NPT ANSI CL 150 RF CL 150 FF***	ANSI CL 150 RF CL 150 FF***	ANSI CL 150 RF CL 150 FF***	ANSI CL 150 RF CL 150 FF***
<b>Minimum Differential (fully open)</b>	3 psig (0.21 bar)	4 psig (0.28 bar)	4 psig (0.28 bar)	4 psig (0.28 bar)
<b>Maximum Inlet Pressure</b>	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
<b>Maximum Outlet Pressure</b>	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
<b>Maximum Casing Pressure</b>	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
<b>Outlet Pressures</b> Series 20 Pilot	3-246 psig (0.21-17 bar)	3-246 psig (0.21-17 bar)	3-246 psig (0.21-17 bar)	3-246 psig (0.21-17 bar)
Series 20L Pilot	5 in.W.C.-8 psig (12.5 mbar-0.55 bar)	5 in.W.C.-8 psig (12.5 mbar-0.55 bar)	5 in.W.C.-8 psig (12.5 mbar-0.55 bar)	5 in.W.C.8 psig (12.5 mbar-0.55 bar)
<b>Maximum Differential Pressure</b>	250 psid (17 bar)	250 psid (17 bar)	250 psid (17 bar)	250 psid (17 bar)
<b>Temperature</b> Emergency Temperature	-20°F to 150°F (-29°C to 66°C) -40°F to 175°F (-40°C to 79°C)	-20°F to 150°F (-29°C to 66°C) -40°F to 175°F (-40°C to 79°C)	-20°F to 150°F (-29°C to 66°C) -40°F to 175°F (-40°C to 79°C)	-20°F to 150°F (-29°C to 66°C) -40°F to 175°F (-40°C to 79°C)
<b>100% Capacity</b> C <sub>g</sub> C <sub>1</sub> C <sub>v</sub>	2,250 35 64	4,200 37 114	7,500 35 212	14,500 37 393
<b>50% Capacity</b> C <sub>g</sub> C <sub>1</sub> C <sub>v</sub>	1,200 31** 39**	2,100 32** 66**	3,800 31** 123**	7,200 31 231
<b>Face to Face Dimensions</b> NPT CL 150 RF & CL 150 FF	10.50 (267 mm) 10.00 (254 mm)	N/A 11.75 (298 mm)	N/A 13.88 (353 mm)	N/A 17.75 (451 mm)
<b>Weight</b> NPT CL 150 RF & CL 150 FF	31 lbs (14 kg) 36 lbs (16 kg)	N/A 59 lbs (27 kg)	N/A 103 lbs (47 kg)	N/A 190 lbs (86 kg)

\*\* Estimated

\*\*\* CL150 FF mates with 125 FF cast iron pipe.

## Flow Capacity Charts (MSCFH)

Inlet Pressure psig (bar)	Outlet Pressure psig (bar)	2" (50 DN)	3" (80 DN)	4" (100 DN)	6" (150 DN)
3 (0.21)	0.25 (0.02)	32	57	107	197
	1 (0.07)	28	50	93	171
5 (0.34)	0.25 (0.02)	43	76	142	263
	1 (0.07)	40	71	133	245
	3 (0.21)	30	53	99	181
10 (0.69)	0.25 (0.02)	63	114	210	393
	1 (0.07)	62	111	205	382
	3 (0.21)	57	101	189	350
	5 (0.34)	50	89	166	307
15 (1.0)	0.25 (0.02)	80	146	268	505
	1 (0.07)	79	144	265	498
	3 (0.21)	76	138	254	475
	5 (0.34)	72	130	240	448
	10 (0.69)	56	99	185	342
25 (1.7)	0.25 (0.02)	97	177	323	610
	1 (0.07)	96	175	320	604
	3 (0.21)	94	170	312	587
	5 (0.34)	91	164	303	567
	10 (0.69)	80	143	266	495
	15 (1.0)	61	108	203	373
30 (2.1)	0.25 (0.02)	130	243	433	837
	1 (0.07)	130	243	433	837
	3 (0.21)	126	230	420	795
	5 (0.34)	124	226	414	782
	10 (0.69)	118	214	393	738
	15 (1.0)	108	195	361	673
	20 (1.4)	94	167	312	578
40 (2.8)	0.25 (0.02)	159	297	530	1025
	1 (0.07)	159	297	530	1025
	3 (0.21)	159	297	530	1025
	5 (0.34)	156	285	518	984
	10 (0.69)	151	276	505	952
	15 (1.0)	145	263	484	908
	20 (1.4)	136	246	454	848
30 (2.1)	106	189	353	651	
50 (3.4)	0.25 (0.02)	188	351	627	1212
	1 (0.07)	188	351	627	1212
	3 (0.21)	188	351	627	1212
	5 (0.34)	188	351	627	1212
	10 (0.69)	183	335	610	1156
	15 (1.0)	179	325	595	1123
	20 (1.4)	172	312	575	1078
	30 (2.1)	153	274	509	946
	40 (2.8)	117	208	389	717

Inlet Pressure psig (bar)	Outlet Pressure psig (bar)	2" (50 DN)	3" (80 DN)	4" (100 DN)	6" (150 DN)
60 (4.1)	0.25 (0.02)	217	405	724	1399
	1 (0.07)	217	405	724	399
	3 (0.21)	217	405	724	1399
	5 (0.34)	217	405	724	1399
	10 (0.69)	217	405	724	1399
	15 (1.0)	210	385	701	1328
	20 (1.4)	206	375	686	1293
	30 (2.1)	191	346	638	1193
	40 (2.8)	168	300	558	1036
	50 (3.4)	127	225	422	778
70 (4.8)	0.25 (0.02)	246	459	820	1586
	1 (0.07)	246	459	820	1586
	3 (0.21)	246	459	820	1586
	5 (0.34)	246	459	820	1586
	10 (0.69)	246	459	820	1586
	15 (1.0)	246	459	820	1586
	20 (1.4)	238	434	792	1499
	30 (2.1)	227	411	756	1419
	40 (2.8)	209	376	696	1298
	50 (3.4)	181	324	604	1119
60 (4.1)	136	242	453	834	
80 (5.5)	0.25 (0.02)	275	514	917	1773
	1 (0.07)	275	514	917	1773
	3 (0.21)	275	514	917	1773
	5 (0.34)	275	514	917	1773
	10 (0.69)	275	514	917	1773
	15 (1.0)	275	514	917	1773
	20 (1.4)	269	492	896	1700
	30 (2.1)	260	473	867	1633
	40 (2.8)	246	445	820	1536
	50 (3.4)	225	405	751	1397
60 (4.1)	194	347	647	1197	
70 (4.8)	145	257	482	887	
100 (6.9)	0.25 (0.02)	333	622	1111	2148
	1 (0.07)	333	622	1111	2148
	3 (0.21)	333	622	1111	2148
	5 (0.34)	333	622	1111	2148
	10 (0.69)	333	622	1111	2148
	15 (1.0)	333	622	1111	2148
	20 (1.4)	333	622	1111	2148
	30 (2.1)	324	592	1079	2044
	40 (2.8)	314	572	1048	1974
	50 (3.4)	301	544	1002	1878
60 (4.1)	282	507	938	1749	
70 (4.8)	255	457	850	1576	

Note: High differentials may result in high outlet piping velocities. Swaging up outlet piping is required.

## Flow Capacity Charts (MSCFH)

Inlet Pressure psig (bar)	Outlet Pressure psig (bar)	2" (50 DN)	3" (80 DN)	4" (100 DN)	6" (150 DN)	Inlet Pressure psig (bar)	Outlet Pressure psig (bar)	2" (50 DN)	3" (80 DN)	4" (100 DN)	6" (150 DN)
<b>125 (8.6)</b>	<b>0.25 (0.02)</b>	406	758	1353	2616	<b>200 (14)</b>	<b>0.25 (0.02)</b>	624	—	—	—
	<b>1 (0.07)</b>	406	758	1353	2616		<b>1 (0.07)</b>	624	1164	—	—
	<b>3 (0.21)</b>	406	758	1353	2616		<b>3 (0.21)</b>	624	1164	2079	—
	<b>5 (0.34)</b>	406	758	1353	2616		<b>5 (0.34)</b>	624	1164	2079	—
	<b>10 (0.69)</b>	406	758	1353	2616		<b>10 (0.69)</b>	624	1164	2079	4020
	<b>15 (1.0)</b>	406	758	1353	2616		<b>15 (1.0)</b>	624	1164	2079	4020
	<b>20 (1.4)</b>	406	758	1353	2616		<b>20 (1.4)</b>	624	1164	2079	4020
	<b>30 (2.1)</b>	406	758	1353	2616		<b>30 (2.1)</b>	624	1164	2079	4020
	<b>40 (2.8)</b>	394	721	1314	2488		<b>40 (2.8)</b>	624	1164	2079	4020
	<b>50 (3.4)</b>	385	701	1283	2419		<b>50 (3.4)</b>	624	1164	2079	4020
	<b>60 (4.1)</b>	372	675	1242	2330		<b>60 (4.1)</b>	624	1164	2079	4020
	<b>70 (4.8)</b>	356	642	1186	2217		<b>70 (4.8)</b>	605	1106	2017	3820
<b>100 (6.9)</b>	268	477	893	1648	<b>100 (6.9)</b>	573	1038	1908	3582		
<b>150 (10.3)</b>	<b>0.25 (0.02)</b>	478	893	1595	—	<b>225 (16)</b>	<b>125 (8.6)</b>	527	949	1757	3276
	<b>1 (0.07)</b>	478	893	1595	—		<b>150 (10.3)</b>	457	817	1523	2821
	<b>3 (0.21)</b>	478	893	1595	3084		<b>175 (12)</b>	343	609	1142	2010
	<b>5 (0.34)</b>	478	893	1595	3084		<b>3 (0.21)</b>	696	1300	—	—
	<b>10 (0.69)</b>	478	893	1595	3084		<b>5 (0.34)</b>	696	1300	—	—
	<b>15 (1.0)</b>	478	893	1595	3084		<b>10 (0.69)</b>	696	1300	—	—
	<b>20 (1.4)</b>	478	893	1595	3084		<b>15 (1.0)</b>	696	1300	2321	4488
	<b>30 (2.1)</b>	478	893	1595	3084		<b>20 (1.4)</b>	696	1300	2321	4488
	<b>40 (2.8)</b>	478	893	1595	3084		<b>30 (2.1)</b>	696	1300	2321	4488
	<b>50 (3.4)</b>	464	849	1548	2932		<b>40 (2.8)</b>	696	1300	2321	4488
	<b>60 (4.1)</b>	455	930	1518	2864		<b>50 (3.4)</b>	696	1300	2321	4488
	<b>70 (4.8)</b>	444	805	1479	2780		<b>60 (4.1)</b>	696	1300	2321	4488
<b>100 (6.9)</b>	386	693	1287	2392	<b>70 (4.8)</b>	696	1300	2321	4488		
<b>125 (8.6)</b>	295	525	983	1812	<b>100 (6.9)</b>	656	1194	2188	4120		
<b>175 (12)</b>	<b>0.25 (0.02)</b>	551	1029	1837	—	<b>250 (17)</b>	<b>125 (8.6)</b>	621	1122	2069	3872
	<b>1 (0.07)</b>	551	1029	1837	—		<b>150 (10.3)</b>	568	1019	1892	3520
	<b>3 (0.21)</b>	551	1029	1837	—		<b>175 (12)</b>	489	873	1629	3013
	<b>5 (0.34)</b>	551	1029	1837	—		<b>200 (14)</b>	364	646	1214	2232
	<b>10 (0.69)</b>	551	1029	1837	—		<b>3 (0.21)</b>	769	—	—	—
	<b>15 (1.0)</b>	551	1029	1837	3552		<b>5 (0.34)</b>	769	1435	—	—
	<b>20 (1.4)</b>	551	1029	1837	3552		<b>10 (0.69)</b>	769	1435	2563	—
	<b>30 (2.1)</b>	551	1029	1837	3552		<b>15 (1.0)</b>	769	1435	2563	4956
	<b>40 (2.8)</b>	551	1029	1837	3552		<b>20 (1.4)</b>	769	1435	2563	4956
	<b>50 (3.4)</b>	551	1029	1837	3552		<b>30 (2.1)</b>	769	1435	2563	4956
	<b>60 (4.1)</b>	535	978	1783	3376		<b>40 (2.8)</b>	769	1435	2563	4956
	<b>70 (4.8)</b>	526	958	1752	3309		<b>50 (3.4)</b>	769	1435	2563	4956
<b>100 (6.9)</b>	484	873	1613	3014	<b>60 (4.1)</b>	769	1435	2563	4956		
<b>125 (8.6)</b>	423	757	1410	2615	<b>70 (4.8)</b>	769	1345	2563	4956		
<b>150 (10.3)</b>	320	568	1065	1961	<b>100 (6.9)</b>	737	1345	2458	4642		
					<b>125 (8.6)</b>	708	1284	2361	4433		
					<b>150 (10.3)</b>	666	1201	2220	4145		
					<b>175 (12)</b>	606	1086	2019	3749		
					<b>200 (14)</b>	519	925	1729	3194		
					<b>225 (16)</b>	385	682	1282	2355		

Note: High differentials may result in high outlet piping velocities. Swagging up outlet piping is required.

# Direct Sales Office Locations

## Australia

Brisbane  
Phone: +61-7-3001-4319

Perth  
Phone: +61-8-6595-7018

Melbourne  
Phone: +61-3-8807-6002

## Brazil

Phone: +55-19-2104-6900

## China

Phone: +86-10-5738-8888

## France

Courbevoie  
Phone: +33-1-4904-9000

## India

Mumbai  
Phone: +91-22-8354790

New Delhi

Phone: +91-11-2-6164175

## Italy

Phone: +39-081-7892-111

## Japan

Tokyo  
Phone: +81-03-6871-9008

## Korea

Phone: +82-2-2274-0748

## Malaysia

Phone: +60-3-2161-03228

## Mexico

Phone: +52-55-3640-5060

## Russia

Veliky Novgorod  
Phone: +7-8162-55-7898

Moscow

Phone: +7-495-585-1276

## Saudi Arabia

Phone: +966-3-341-0278

## Singapore

Phone: +65-6861-6100

## South Africa

Phone: +27-11-452-1550

## South & Central America and the Caribbean

Phone: +55-12-2134-1201

## Spain

Phone: +34-935-877-605

## United Arab Emirates

Phone: +971-4-8991-777

## United Kingdom

Phone: +44-7919-382-156

## United States

Houston, Texas

Phone: +1-713-966-3600

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## Tech Field Support & Warranty:

Phone: +1-866-827-5378  
[valvesupport@bakerhughes.com](mailto:valvesupport@bakerhughes.com)

[valves.bakerhughes.com](http://valves.bakerhughes.com)

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