Mooney™ FlowMax™ Regulator

Pressure reducing regulator for natural gas pipelines

Mooney
a Baker Hughes business


Baker Hughes

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.

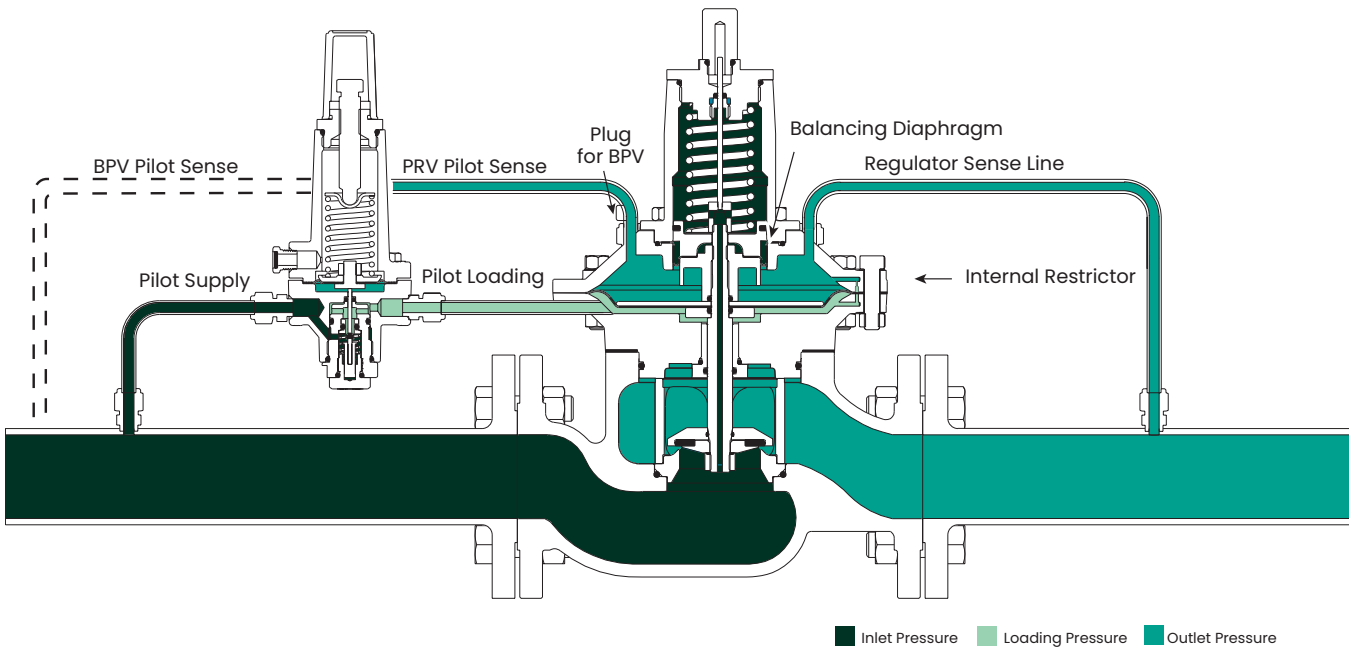
With an increase in demand, the outlet pressure will begin to drop and decrease the pressure above the main diaphragm. The drop of the outlet pressure below the pilot set point will cause the pilot to open. As the pilot opens, pressure increases underneath the main diaphragm faster than pressure can 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 Presure 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 Presure 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)
End Connection	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***
Minimum Differential (fully open)	3 psig (0.21 bar)	4 psig (0.28 bar)	4 psig (0.28 bar)	4 psig (0.28 bar)
Maximum Inlet Pressure	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
Maximum Outlet Pressure	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
Maximum Casing Pressure	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
Outlet Pressures **Series 20 Pilot** **Series 20L Pilot**	3-246 psig (0.21-17 bar) 5 in.W.C.-8 psig (12.5 mbar-0.55 bar)	3-246 psig (0.21-17 bar) 5 in.W.C.-8 psig (12.5 mbar-0.55 bar)	3-246 psig (0.21-17 bar) 5 in.W.C.-8 psig (12.5 mbar-0.55 bar)	3-246 psig (0.21-17 bar) 5 in.W.C.8 psig (12.5 mbar-0.55 bar)
Maximum Differential Pressure	250 psid (17 bar)	250 psid (17 bar)	250 psid (17 bar)	250 psid (17 bar)
Temperature **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)
100% Capacity **Cg** **C_1** **C_v**	 2,250 35 64	 4,200 37 114	 7,500 35 212	 14,500 37 393
50% Capacity **Cg** **C_1** **C_v**	 1,200 31** 39**	 2,100 32** 66**	 3,800 31** 123**	 7,200 31 231
Face to Face Dimensions **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)
Weight **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)

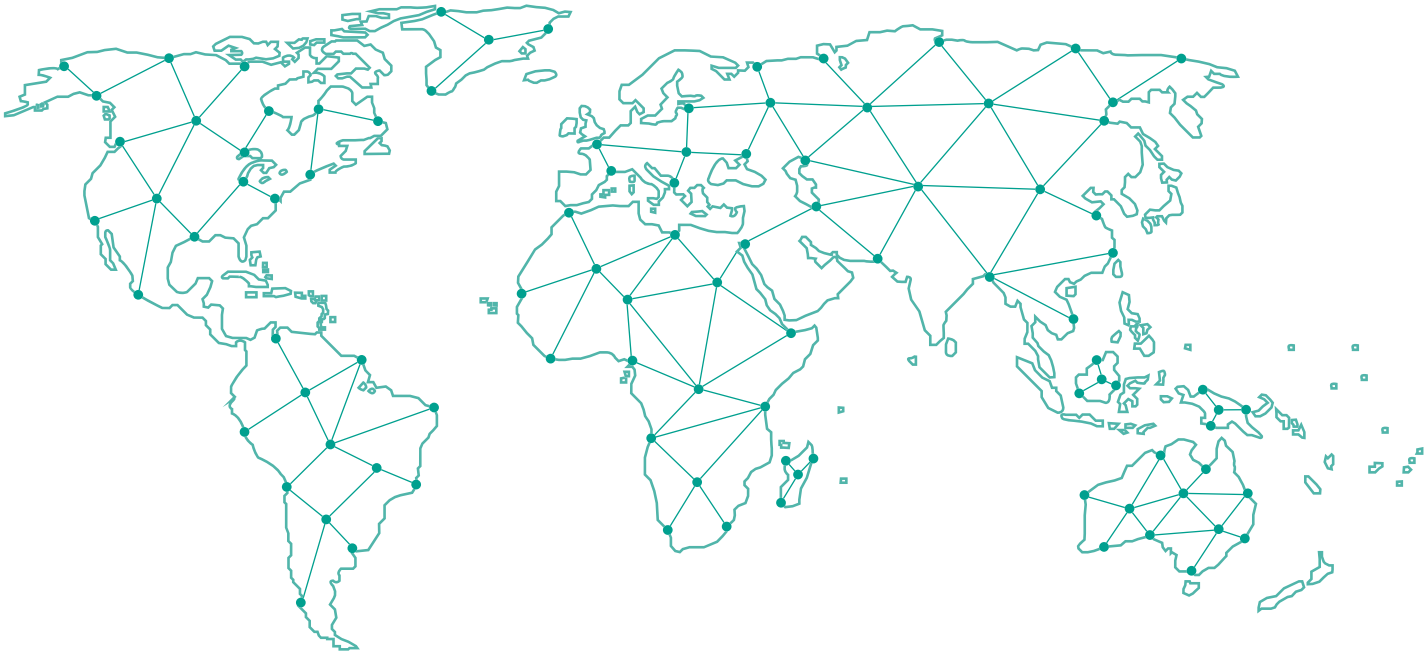
Inlet Pressure psig (bar)	Outlet Pressure psig (bar)	2″ (50 DN)	3″ (80 DN)	4″ (100 DN)	6″ (150 DN)
125 (8.6)	0.25 (0.02)	406	758	1353	2616
	1 (0.07)	406	758	1353	2616
	3 (0.21)	406	758	1353	2616
	5 (0.34)	406	758	1353	2616
	10 (0.69)	406	758	1353	2616
	15 (1.0)	406	758	1353	2616
	20 (1.4)	406	758	1353	2616
	30 (2.1)	406	758	1353	2616
	40 (2.8)	394	721	1314	2488
	50 (3.4)	385	701	1283	2419
	60 (4.1)	372	675	1242	2330
	70 (4.8)	356	642	1186	2217
	100 (6.9)	268	477	893	1648
150 (10.3)	0.25 (0.02)	478	893	1595	—
	1 (0.07)	478	893	1595	—
	3 (0.21)	478	893	1595	3084
	5 (0.34)	478	893	1595	3084
	10 (0.69)	478	893	1595	3084
	15 (1.0)	478	893	1595	3084
	20 (1.4)	478	893	1595	3084
	30 (2.1)	478	893	1595	3084
	40 (2.8)	478	893	1595	3084
	50 (3.4)	464	849	1548	2932
	60 (4.1)	455	930	1518	2864
	70 (4.8)	444	805	1479	2780
	100 (6.9)	386	693	1287	2392
	125 (8.6)	295	525	983	1812
175 (12)	0.25 (0.02)	551	1029	1837	—
	1 (0.07)	551	1029	1837	—
	3 (0.21)	551	1029	1837	—
	5 (0.34)	551	1029	1837	—
	10 (0.69)	551	1029	1837	—
	15 (1.0)	551	1029	1837	3552
	20 (1.4)	551	1029	1837	3552
	30 (2.1)	551	1029	1837	3552
	40 (2.8)	551	1029	1837	3552
	50 (3.4)	551	1029	1837	3552
	60 (4.1)	535	978	1783	3376
	70 (4.8)	526	958	1752	3309
	100 (6.9)	484	873	1613	3014
	125 (8.6)	423	757	1410	2615
	150 (10.3)	320	568	1065	1961

Inlet Pressure psig (bar)	Outlet Pressure psig (bar)	2″ (50 DN)	3″ (80 DN)	4″ (100 DN)	6″ (150 DN)
200 (14)	0.25 (0.02)	624	—	—	—
	1 (0.07)	624	1164	—	—
	3 (0.21)	624	1164	2079	—
	5 (0.34)	624	1164	2079	—
	10 (0.69)	624	1164	2079	4020
	15 (1.0)	624	1164	2079	4020
	20 (1.4)	624	1164	2079	4020
	30 (2.1)	624	1164	2079	4020
	40 (2.8)	624	1164	2079	4020
	50 (3.4)	624	1164	2079	4020
	60 (4.1)	624	1164	2079	4020
	70 (4.8)	605	1106	2017	3820
	100 (6.9)	573	1038	1908	3582
	125 (8.6)	527	949	1757	3276
	150 (10.3)	457	817	1523	2821
	175 (12)	343	609	1142	2010
225 (16)	3 (0.21)	696	1300	—	—
	5 (0.34)	696	1300	—	—
	10 (0.69)	696	1300	—	—
	15 (1.0)	696	1300	2321	4488
	20 (1.4)	696	1300	2321	4488
	30 (2.1)	696	1300	2321	4488
	40 (2.8)	696	1300	2321	4488
	50 (3.4)	696	1300	2321	4488
	60 (4.1)	696	1300	2321	4488
	70 (4.8)	696	1300	2321	4488
	100 (6.9)	656	1194	2188	4120
	125 (8.6)	621	1122	2069	3872
	150 (10.3)	568	1019	1892	3520
	175 (12)	489	873	1629	3013
	200 (14)	364	646	1214	2232
250 (17)	3 (0.21)	769	—	—	—
	5 (0.34)	769	1435	—	—
	10 (0.69)	769	1435	2563	—
	15 (1.0)	769	1435	2563	4956
	20 (1.4)	769	1435	2563	4956
	30 (2.1)	769	1435	2563	4956
	40 (2.8)	769	1435	2563	4956
	50 (3.4)	769	1435	2563	4956
	60 (4.1)	769	1435	2563	4956
	70 (4.8)	769	1345	2563	4956
	100 (6.9)	737	1345	2458	4642
	125 (8.6)	708	1284	2361	4433
	150 (10.3)	666	1201	2220	4145
	175 (12)	606	1086	2019	3749
	200 (14)	519	925	1729	3194
	225 (16)	385	682	1282	2355

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

Find the nearest local Channel Partner in your area:

valves.bakerhughes.com/contact-us



Tech Field Support & Warranty:

Phone: +1-866-827-5378
valvesupport@bakerhughes.com

valves.bakerhughes.com

Baker Hughes

bakerhughes.com

BHMY-FlowMax-Regulator-BR-19188C-X-0820 08/2020