

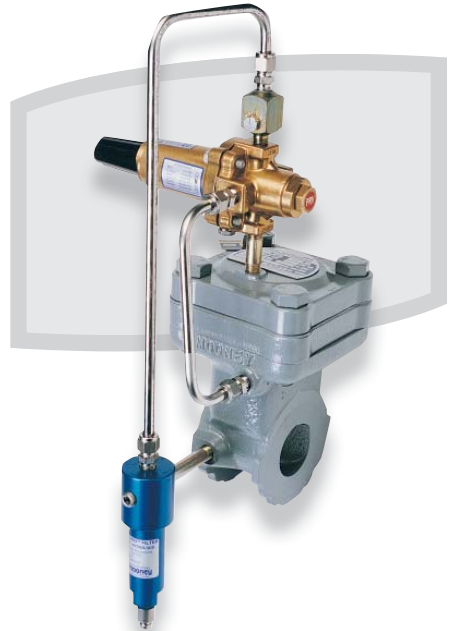


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MOONEY® FLOWGRID® REGULATORS



The Flowgrid® Regulator is designed for ease of maintenance



Universal Gas Sizing Equation

$$Q = \sqrt{\frac{520}{G \cdot T}} \cdot C_g \cdot P_1 \cdot \text{SIN} \left[\frac{3417}{C_1} \sqrt{\frac{\Delta P}{P_1}} \right] \text{ deg.}$$

$$C_g = \frac{Q}{P_1 \cdot \sqrt{\frac{520}{G \cdot T}} \cdot \text{SIN} \left[\frac{3417}{C_1} \sqrt{\frac{P_1 - P_2}{P_1}} \right] \text{ deg.}}$$

Simplifies 1.29
Simplifies 1.00

Natural Gas at 60° F & 0.6 Sg
Critical Flow

Q	Flow Rate (SCFH)
C_g	Gas Sizing Coefficient
P₁	Inlet Pressure (psia)
ΔP	Pressure Drop Across Valve (ΔP = P ₁ - P ₂) (psid)
P₂	Outlet Pressure (psia)
C₁	Valve Recovery Coefficient (C ₁ = C _g /C _v)
C_v	Liquid Sizing Coefficient
G	Specific Gravity (0.6 for Natural Gas) (1.0 for Air)
T	Gas Temperature (°Rankine) (T - 460 + °F)

Simplified Gas Sizing Equation

In the following term (P₁ - P₂) / P₁ equals .64 or greater, then sonic velocity is present in the valve and the simplified version of the gas-sizing equation may be used.

Air: $Q = P_1 C_g$ **Natural Gas:** $Q = P_1 C_g 1.29$

Liquid Sizing

$$Q = C_v F_p \sqrt{\frac{\Delta P_A}{G}}$$

ΔP_A or ΔP	Allowable	G	Liquid Specific Gravity
ΔP_A	P ₁ - P ₂ or .8 (P ₁ - P _v) } whichever is less	P₁	Inlet Pressure (psia)
Q		Flow gpm (gallons per minute)	P₂
C_v	Liquid Specific Gravity	P_v	Vapor Pressure (psia)
		F_p	Piping Swage Factor

Use the minimum inlet and maximum flow conditions for a given application and solve the equation for C_g. For optimum performance, select a regulator to operate in the 10-80% range. A GE representative can help you select and size a Flowgrid® regulator.

Gas Velocity

To avoid generating additional noise in the outlet piping, it is recommended that the body outlet velocity be limited to approximately 0.5 of Mach. This equates to approximately 500 ft/sec for air and 700 ft/sec for natural gas. Swages (reducers) should be used to further reduce the outlet piping velocity to approximately 200 ft/sec or less to minimize pressure loss. The formulas for velocity and pipe size are as follows:

$$V = \frac{748 Q}{d^2 P_2}$$

V	Velocity in ft/sec
d	Internal pipe diameter in inches
Q	Flow in MSCFH
P₂	Outlet Pressure (psia)

NOTE: To avoid the possibility of excessive noise, vibration, and damage to the regulator and piping, the outlet velocity should not exceed 70% of sonic velocity.

Air: 770 ft/sec **Natural Gas:** 1000 ft/sec

Single Port Designs

Nominal Size inches	Stock No.	End Connections	Max Pressure (psig)	Nominal Port Size	C _g	C _v	C ₁	Face to Face inches (metric)	Weight (valve only)
1	FG11 & 12	NPT/SWE	1480	1"	450	13.4	34	7.00 (178)	11 lbs.
1	FG 54**	150 CL FLG	285	1"	450	13.4	34	7.25 (184)	14 lbs.
1	FG 55 **	300 CL FLG	740	1"	450	13.4	34	7.75 (197)	16 lbs.
1	FG 56**	600 CL FLG	1480	1"	450	13.4	34	8.25 (210)	18 lbs.
1-1/4	FG 13 & 14	NPT/SWE	1480	1"	450	13.4	34	7.00 (178)	11 lbs.
1-1/2	FG 47 & 48	NPT/SWE	1480	1"	480	13.4	36	7.00 (178)	11 lbs.
1	FG 24	NPT	250*	1"	428	13.1	32	7.00 (178)	8 lbs.
1-1/4	FG 25	NPT	250*	1"	432	13.6	31	7.00 (178)	8 lbs.
1-1/2	FG 26	NPT	250*	1"	457	14	32	7.00 (178)	8 lbs.
2 x 1	FG 29 & 50	NPT/SWE	1480	1"	500	13.4	37	7.00 (178)	14 lbs.
2 x 1	FG 51	150 CL FLG	285	1"	500	13.4	37	10.00 (254)	23 lbs.
2 x 1	FG 52	300 CL FLG	740	1"	500	13.4	37	10.50 (267)	26 lbs.
2 x 1	FG 53	600 CL FLG	1480	1"	500	13.4	37	11.25 (286)	30 lbs.
2	FG 1 & 2	NPT/SWE	1480	2" Std	1130	32	35	8.00 (203)	25 lbs.
2	FG 3	150 CL FLG	285	2" Std	1130	32	32	10.00 (254)	37 lbs.
2	FG 4	300 CL FLG	740	2" Std	1130	32	35	10.50 (267)	39 lbs.
2	FG 5	600 CL FLG	1480	2" Std	1130	32	35	11.25 (286)	43 lbs.
2	FG 27 & 28	NPT/SWE	1480	2" LP	1420	40	35	8.00 (203)	25 lbs.
2	FG 29	150 CL FLG	285	2" LP	1420	40	35	10.00 (254)	34 lbs.
2	FG 30	300 CL FLG	740	2" LP	1420	40	35	10.50 (267)	37 lbs.
2	FG 31	600 CL FLG	1480	2" LP	1420	40	35	11.25 (286)	40 lbs.
2	FG 82	NPT	250*	2" LP	1600	46	35	8.00 (203)	17 lbs.
2	FG 83	150 CL FLG RF	250*	2" LP	1600	46	35	10.00 (254)	22 lbs.
2	FG 84	150 CL FLG FF	250*	2" LP	1600	46	35	10.00 (254)	22 lbs.
2 x 3	FG 119	150 CL FLG	285	3"	1970	56	35	10.00 (254)	78 lbs.
2 x 3	FG 120	300 CL FLG	740	3"	1970	56	35	10.50 (267)	82 lbs.
2 x 3	FG 121	600 CL FLG	1480	3"	1970	56	35	11.25 (286)	88 lbs.
2 x 3	FG 117	NPT CL 600	1480	3"	1970	56	35	8.00 (203)	68 lbs.
2 x 3	FG 118	SWE CL 600	1480	3"	1970	56	35	8.00 (203)	68 lbs.
3	FG 16	150 CL FLG	285	3"	3450	96	36	11.75 (298)	73 lbs.
3	FG 17	300 CL FLG	740	3"	3450	96	36	12.50 (317)	85 lbs.
3	FG 18	600 CL FLG	1480	3"	3450	96	36	13.25 (337)	94 lbs.
4	FG 39	150 CL FLG	285	4"	6500	172	38	13.88 (352)	103 lbs.
4	FG 40	300 CL FLG	740	4"	6500	172	38	14.50 (368)	117 lbs.
4	FG 41	600 CL FLG	1480	4"	6500	172	38	15.50 (394)	143 lbs.
6	FG 44	150 CL FLG	285	6"	12500	313	40	17.75 (451)	200 lbs.
6	FG 45	300 CL FLG	740	6"	12500	313	40	18.62 (473)	240 lbs.
6	FG 46	600 CL FLG	1480	6"	12500	313	40	20.00 (508)	330 lbs.
8	FG 72	150 CL FLG	285	8"	20200	530	38	21.38 (543)	450 lbs.
8	FG 72	300 CL FLG	740	8"	20200	530	38	22.38 (568)	500 lbs.
8	FG 80	600 CL FLG	1480	8"	20200	530	38	24.00 (610)	650 lbs.

* Ductile Iron & Aluminum ** Special welded assembly

Dual Port Designs

Nominal Size inches	Stock No.	End Connections	Max Pressure (psig)	Nominal Port Size	C _g	C _v	C ₁	Face to Face inches (metric)	Weight (valve only)
2	FG 8	150 CL FLG	285	2" Std	1960	56	35	10.00 (254)	52 lbs.
2	FG 9	300 CL FLG	740	2" Std	1960	56	35	10.50 (267)	55 lbs.
2	FG 10	600 CL FLG	1480	2" Std	1960	56	35	11.25 (286)	59 lbs.
2	FG 32	150 CL FLG	285	2" LP	2050	59	35	10.00 (254)	50 lbs.
2	FG 33	300 CL FLG	740	2" LP	2050	59	35	10.50 (267)	52 lbs.
2	FG 34	600 CL FLG	1480	2" LP	2050	59	35	11.25 (286)	54 lbs.
4	FG 21	150 CL FLG	285	3"	6700	185	36	13.88 (352)	145 lbs.
4	FG 22	300 CL FLG	740	3"	6700	185	36	14.50 (368)	160 lbs.
4	FG 23	600 CL FLG	1480	3"	6700	185	36	15.50 (394)	194 lbs.
10	FG 57	150 CL FLG	285	6"	22000	550	40	26.50 (673)	590 lbs.
10	FG 58	300 CL FLG	740	6"	22000	550	40	27.88 (708)	670 lbs.
10	FG 59	600 CL FLG	1480	6"	22000	550	40	29.60 (752)	900 lbs.
12	FG 74	150 CL FLG	285	8"	40400	1060	38	29.00 (737)	1097 lbs.
12	FG 75	300 CL FLG	740	8"	40400	1060	38	30.50 (775)	1195 lbs.
12	FG 81	600 CL FLG	1480	8"	40400	1060	38	32.25 (819)	1383 lbs.

Flangeless Port Designs

Nominal Size inches	Stock No.	End Connections	Max Pressure (psig)	Nominal Port Size	C _g	C _v	C ₁	Face to Face inches (metric)	Weight (valve only)
2	FG 15	150 CL FLG	285	2" Std	1120	32	35	4.187 (106)	27 lbs.
2	FG 15	300 CL FLG	740	2" Std	1120	32	35	4.187 (106)	27 lbs.
2	FG 15	600 CL FLG	1480	2" Std	1120	32	35	4.187 (106)	27 lbs.
2	FG 35	150 CL FLG	285	2" LP	1300	37	35	4.187 (106)	27 lbs.
2	FG 35	300 CL FLG	740	2" LP	1300	37	35	4.187 (106)	27 lbs.
2	FG 35	600 CL FLG	1480	2" LP	1300	37	35	4.187 (106)	27 lbs.
4 x 3	FG 19	150 CL FLG	285	3"	3400	95	36	5.81 (148)	92 lbs.
4 x 3	FG 20	300 CL FLG	740	3"	3400	95	36	5.81 (148)	92 lbs.
6 x 4	FG 42	150 CL FLG	285	4"	6400	172	37	8.00 (203)	115 lbs.
6 x 4	FG 43	300 CL FLG	740	4"	6400	172	37	8.00 (203)	115 lbs.

Type-A Flangeless Port Designs*

Nominal Size inches	Stock No.	End Connections	Max Pressure (psig)	Nominal Port Size	C _g	C _v	C ₁	Face to Face inches (metric)	Weight (valve only)
2	FG 100	150 CL FLG	285	2" LP	1420	40	35	3.03 (77)	29 lbs.
2	FG 101	300 CL FLG	740	2" LP	1420	40	35	3.03 (77)	29 lbs.
2	FG 102	600 CL FLG	1480	2" LP	1420	40	35	3.41 (87)	29 lbs.
3	FG 103	150 CL FLG	285	3"	3240	95	36	3.72 (94)	60 lbs.
3	FG 104	300 CL FLG	740	3"	3240	95	36	3.72 (94)	60 lbs.
4	FG 106	150 CL FLG	285	4"	5800	168	35	4.50 (114)	85 lbs.
4	FG 107	300 CL FLG	740	4"	5800	168	35	4.50 (114)	85 lbs.

* Same face-to-face dimensions as American Meter Axial® Flow Valves.

About GE® Products

GE brand products are highly engineered, technically superior and are designed to help global customers meet and exceed requirements for mission critical energy applications.

About GE, Inc.

GE, Inc. is a leader in providing highly engineered infrastructure products for the global energy industry. The company has leading positions in a broad portfolio of products, including valves, actuators, meters, switches, regulators, piping products, natural gas-fueled engines, retail fuel dispensers and associated retail point-of-sale systems, and air and gas handling equipment. Leading brand names within the GE portfolio include GE Wayne® retail fueling systems, Waukesha® natural gas-fired engines, Masoneilan® control valves, Consolidated® pressure relief valves, and GE blowers. It has manufacturing and customer service facilities located strategically worldwide and a sales presence in more than 100 countries.

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