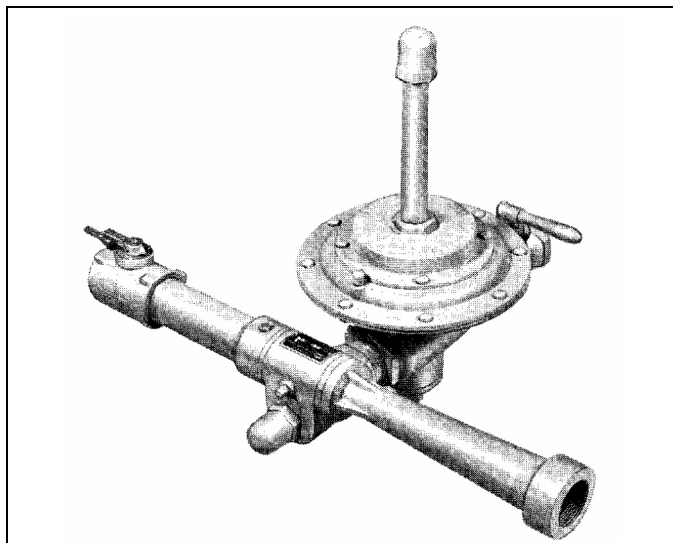


# Eclipse Low Pressure Proportional Mixers

*LP Series*  
Version 1



Eclipse Series "LP" Low Pressure Proportional Mixers are used to mix low pressure air (2 oz. to 4 psi) and any commercially available fuel gas at low pressure (4" w.c. to 16 oz.) and deliver the mixture under pressure to open or sealed premix type gas burners.

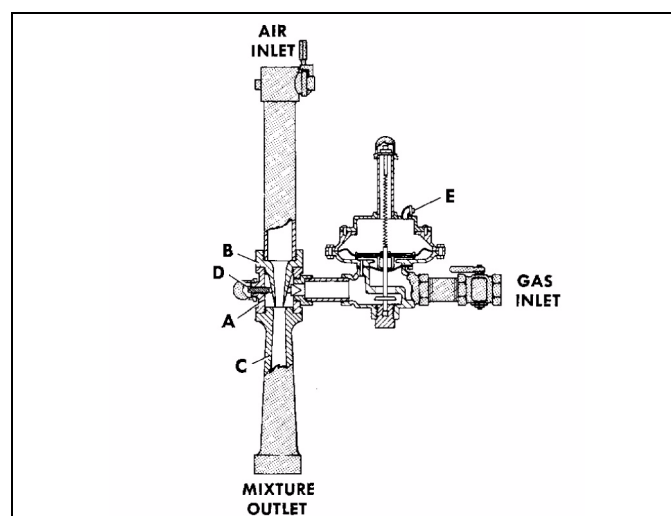
The gas is automatically entrained and mixed with the air in the correct gas:air ratio over the entire range of operation. The amount of air pressure that should be provided from the combustion air blower (Bulletin 610) will depend on the turndown range required, and this will vary according to the application.

Single valve control, as provided by the "LP" Mixer, eliminates the need for the operator to regulate both the gas and air valves as the heat requirements change. Efficiency losses invariably result when manual adjustment of both air and gas valves is dependent on gas:air ratio control. A slight excess air or excess gas condition can cause serious losses in efficiency of operation and extend length of heat-up time. When these losses are eliminated by the Series "LP" Mixer, the investment in equipment is soon repaid in fuel savings.

By providing single valve control, the proportional mixer makes temperature control adaptation very simple. It is necessary to control the air flow only, using a single control valve, and the gas flow automatically changes in direct proportion.

## Operation

The complete mixer, series "LPBG", consists of a manual butterfly valve, a venturi tube and air jet combined to create a suction, an accurate cone-type valve for gas:air ratio adjustment, a zero gas governor, and a lever handle gas shut-off cock. The gas cock is provided to shut off the gas supply when the system is not in operation, as the zero governor is not a tight shut-off valve.



Referring to the sketch, as the air flows through the jet "B" into the venturi tube "C", a suction is created in the suction tee "A". This suction will vary with the velocity of the air flow through the jet. The gas is entrained and mixed inside the venturi sleeve. Its flow into the tee is set by the ratio adjuster valve "D" and will vary directly in proportion to the air flow. If the gas varies in calorific value or specific gravity, a simple change in the setting of the cone adjuster "D" will again provide the correct mixture.

To secure highly accurate gas:air ratio control, the gas pressure must be reduced either to atmospheric or to the same pressure or suction condition as exists in the combustion chamber. If the burners being used are firing in the open or into a furnace at zero pressure, the governor is used with the breathing vent "E" open to the atmosphere. If a suction or pressure condition exists, a pipe or tubing should be run from "E" to the combustion chamber. The governor will then deliver gas only when air flows through the mixer.

If only very low air pressure is available (4 oz. or under), the suction in the entrainment tee may be sufficient to draw enough gas through the governor to maintain proper gas:air ratio. In this case, an impulse line with bleed fitting should be installed between the air manifold, downstream of control valve, and the top diaphragm chamber of zero governor. As a result, any change in air flow is transmitted to the zero governor, and gas:air ratio is maintained throughout the range of operation. Mixers are available from the factory complete with impulse line and bleed fitting installed.

The "LP" mixer can be turned to discharge the mixture in any direction for flexibility of piping, as long as the zero

gas governor is in the horizontal position with spring stem upright so that the balancing spring hangs vertically. Several mixers may be manifolded to one zero governor if located reasonably close together. Each size of "LP" mixer is available in four different assemblies for ease in selecting the mixer and accessory combinations to fit your particular needs.

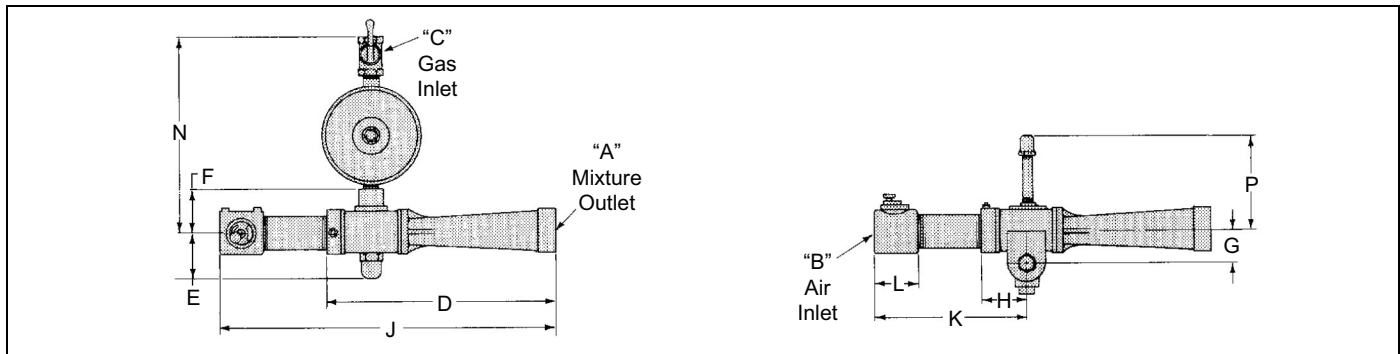
### Selection

Selection Tables 652-1 through 652-5 give mixer selection information for various commercially available fuel gases.

Locate required gas capacity (CFH) in left-hand vertical column of appropriate selection table, locate air pressure available at mixer in upper horizontal column, and select mixer. Approximate mixture pressure is shown in the bottom horizontal column.

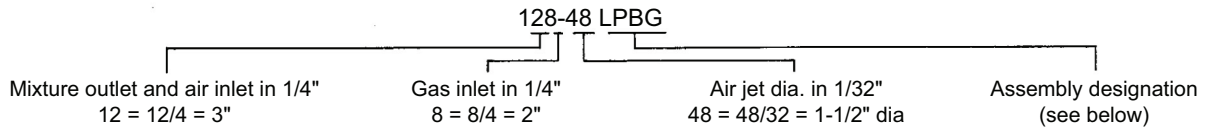
Tables are based on all air for combustion taken through the mixer (100% aeration). When less than 100% aeration is used, as in the case of open burners, correct the capacity for the amount of aeration and use corrected capacity for selecting mixer. (Correction factor for 80% aeration = 0.80; 70% aeration = 0.70; etc.) For smaller capacity mixers, see Bulletin 812, Pilot Mixers.

### Dimensions & Specifications

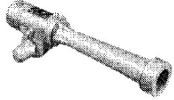


Mixer No.	Mixture Outlet A	Air Inlet B	Gas Inlet C	Dimensions in Inches										Approx. Ship Wt. LPBG
				D	E	F	G	H	J	K	L	N	P	
44-(5-16)	1	1	1	12-9/16	2-19/32	2-5/16	1-1/4	2-17/32	20-1/16	10-1/32	2-7/8	11-1/2	12-5/16	36
64-(12-25)	1-1/2	1-1/2	1	14-17/32	3	5-5/8	1-1/2	2-21/32	22-9/32	10-13/32	3-1/8	11-13/16	12-5/16	36
66-(12-25)	1-1/2	1-1/2	1-1/2	14-17/32	3	2-1/2	1-1/2	2-21/32	22-9/32	10-13/32	3-1/8	12-7/8	12-7/8	52
84-(20-38)	2	2	1	16-1/2	3-15/16	3-1/8	2-3/8	3-3/8	24-1/8	11	3-1/8	12-5/16	12-5/16	53
86-(20-38)	2	2	1-1/2	16-1/2	3-15/16	3	2-3/8	3-3/8	24-1/8	11	3-1/8	13-3/8	12-7/8	62
88-(20-38)	2	2	2	16-1/2	3-15/16	2-15/16	2-3/8	3-3/8	24-1/8	11	3-1/8	17-7/16	14-7/8	90
124-(31-56)	3	3	1	25-9/16	2-1/8	3-11/16	2-3/4	4-13/16	39-3/16	18-7/16	3-7/8	12-7/8	12-15/16	94
126-(31-56)	3	3	1-1/2	25-9/16	2-1/8	3-1/2	2-3/4	4-13/16	39-3/16	18-7/16	3-7/8	13-7/8	12-7/8	97
128-(31-56)	3	3	2	25-9/16	2-1/8	3-7/16	2-3/4	4-13/16	39-3/16	18-7/16	3-7/8	17-15/16	14-7/8	119
1212-(31-56)	3	3	3	25-9/16	2-1/8	4-1/16	2-3/4	4-13/16	39-3/16	18-7/16	3-7/8	24-7/16	16-3/4	200
166-(32-80)	4	4	1-1/2	28-9/16	2-3/8	4-1/2	4	4-15/16	43-1/16	19-7/16	5	14-7/8	12-7/8	167
168-(32-80)	4	4	2	28-9/16	2-3/8	4-1/4	4	4-15/16	43-1/16	19-7/16	5	18-3/4	14-7/8	228
1612-(32-80)	4	4	3	28-9/16	2-3/8	4-7/8	4	4-15/16	43-1/16	19-7/16	5	25-1/4	16-3/4	300
1616-(32-80)	4	4	4	28-9/16	2-3/8	5-1/8	4	4-15/16	43-1/16	19-7/16	5	31-7/8	18-3/4	378

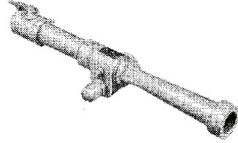
\* Numbers in parentheses show the range of available air jet diameters in 1/32". For exact jet diameters please contact Eclipse.



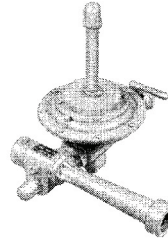
### Assemblies Available



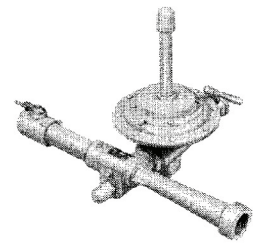
Assembly "LP"  
Basic Mixer Only



Assembly "LPB"  
Assembly "LP" Plus  
Manual Air Valve



Assembly "LPG"  
Assembly "LP" Plus Gas Zero  
Governor and Gas Cock



Assembly "LPBG"  
Complete Mixer - Assembly "LPB"  
Plus Zero Governor and Gas Cock

**NOTE:** All assemblies are furnished complete with pipe fittings shown in the above photos.

