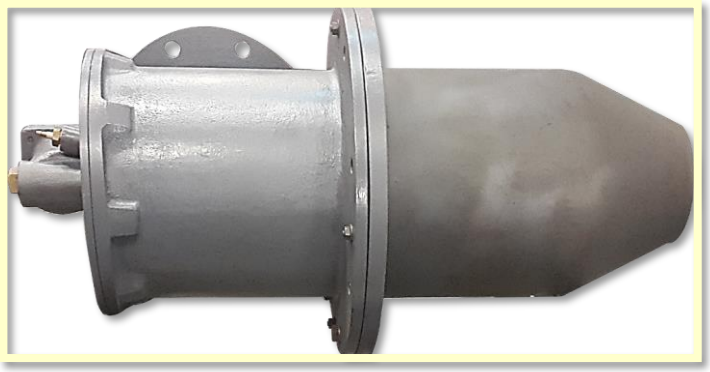
LOW AIR PRESSURE
HIGH VELOCITY GAS BURNERS

MODEL :
LHG (S,M)

BULLETIN: 112

LHG BURNER is a nozzle-mix burner that is designed to fire with low pressure ambient combustion air and produce an intense stream of hot gases through furnace.
LHG type is a powerful high velocity gas burner with wide applications in heat treat and melting furnaces, air heaters, dryers, galvanizing tanks, sintering furnaces, crucible furnaces.
Owing to low combustion air pressure needed, these burners require lower HP blowers in comparison to conventional super high velocity burners.
These burners are designed with Silicon Carbide or Metal tips based on which they will be named as LHG/S and LHG/M respectively.
LHG BURNER can be designed with casting tips (LHG/CI) or high temperature resistance metal alloys like S.S. 310 (LHG/M) to be used for harsh industrial environments. LHG/M BURNER is not as resistant as LHG/S (SiC tip type) in facing high temperatures but it is less fragile.



FEATURES:

a) Wide operating range (with excess-air, turn-down ratio)
b) High velocity (up to 150 m/s) & High Excess-air
c) Flame supervision
d) Simplified piping
e) Simple and reliable operation
f) Low combustion air pressure
g) Up to 1450°C in LHG/S model

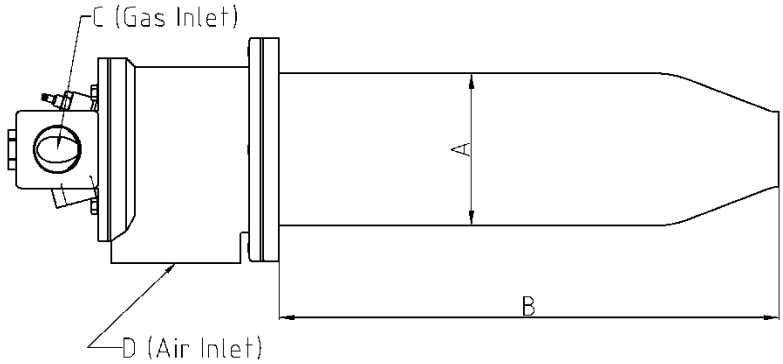
BURNER TYPES:

LHG burners are manufactured in ranges from 350,000 kCal/hr to 1,700,000 kCal/hr and in 3 different models, have shown in the following table. Broadly speaking, maximum gas and air pressures needed for this burner is 10 mbar(g) and 30 mbar(g) respectively in high velocity mode; and 8 mbar(g) and 22 mbar(g) respectively for medium velocity mode.

Burner model	kCal/hr at 14 mbar (air pressure)	Flame Length(cm) with 40 mbar (air pressure)
350 LHG/(S, M)*	220,000	90
750 LHG/(S, M)**	450,000	110
1700 LHG/(S, M)	1700,000	150
**Higher capacity of 350,000 kCal/hr is feasible by applying 40mbar air pressure.*		
***Higher capacity of 750,000 kCal/hr is feasible by applying 40mbar air pressure.*		

LHG/(S, M, C) DIMENSIONS:

General dimensions of LHG(S, M) burners are as follows. For detail dimensions of burner or installation drawing please contact us.



Burner Design	A (ϕ,mm)	B (mm)	C (in)	D (in)
350 LHG/(S, M,C)	148	485	1.1/2	3
750 LHG/(S, M,C)	148	485	2	4
1700 LHG/(S, M,C)	264	382	2	6

OPERATION:

These burners can be lighted at rich, lean or correct air/gas ratio then immediately turned to high fire. These burners can deliver high excess air at any temperature from 100°C to 1150°C.
Restricted tip exit forces hot gases to leave the burner at extremely high velocity and optimization convective heat transfer. Lights readily over a wide range of pressure and it is extremely stable.

LIGHTING/FLAME SUPERVISION

A direct spark ignition of the burner is normally used to light these burners. A standard ultraviolet (UV) or flame rod can be used for monitoring flame. With UV, the burner can operate with up to 3000% excess air which have 100 °C hot mix. With flame rods, excess air is limited to 500%, which coresponds to about 500 °C hot mix.

EXCESS AIR

Excess air improves temperature uniformity by avoiding hot spots in front of burners, churning furnace atmosphere to reduce stratification and creating positive furnace pressure to eliminate cold air infiltration.
Excess air can give very high effective burner turn down. Thus a furnace used for high temperature work with burners firing on stoichiometric air/gas ratio can also be used for low temperature jobs with burners firing on lean ratio.

INSTALLATION

1-Requirements :

a) Maximum allowable inlet pressure to the gas governor is 500 mbar. If greater than 500 mbar, an upstream pressure regulator must be used.
b) Gas supply pressure to the gas governor should be at least 14 mbar greater than the high fire burner air pressure. If less, a bleeder must be installed in the impulse line.
c) Consult your SHOLEH SANAT engineer for automatic shut off and flame supervision requirements.

2-Burner Mounting :

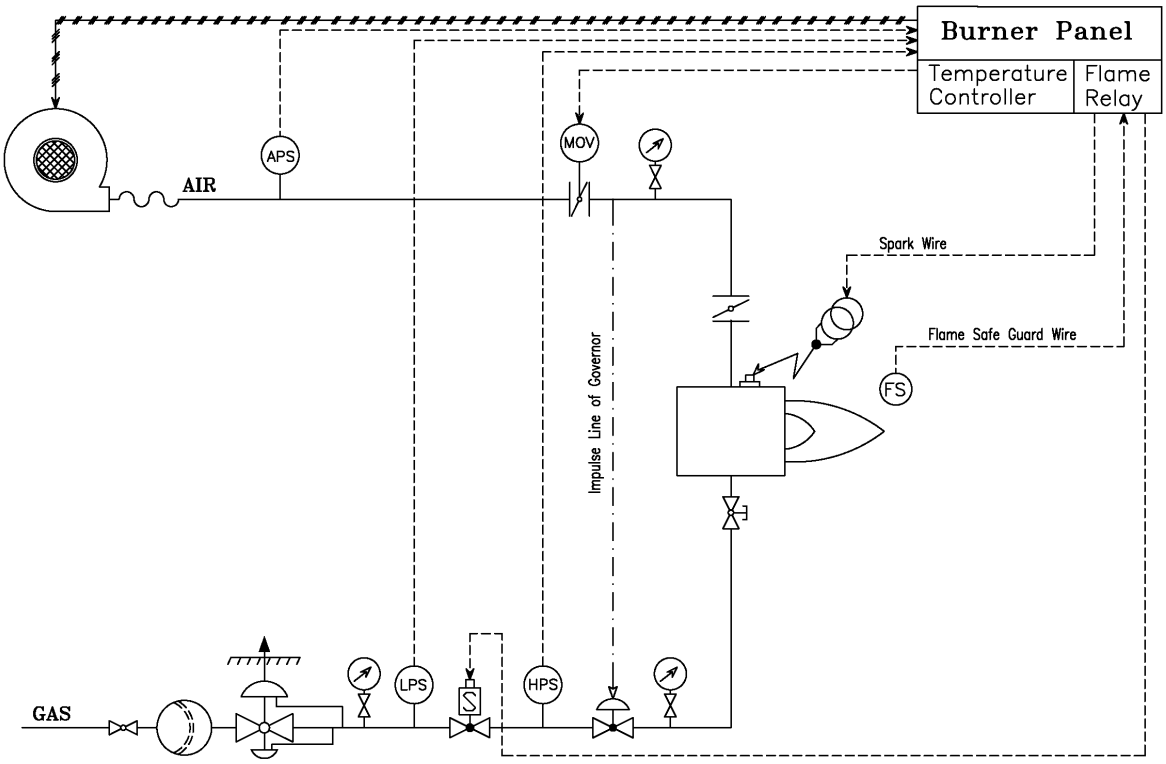
a) WARNING: Burners cannot be rotated with respect to the mounting plate as the flame detector ports must align with notches in the plate.

3-Piping :

a) Minimize piping pressure losses. Use a minimum of elbows. Substitute 45° elbows for 90° elbows when possible. Do not use street elbows. 1/4″ tubing may be used for impulse lines up to 3 m long, 1/2″ tubing or larger for longer runs.

b) Air pipe and gas lines in a manner similar to that shown in next figure. Flexible connections are recommended in air and gas lines to minimize strain from piping and thermal expansion.
c) Connect impulse piping as shown in next figure. These piping arrangements are designed to keep air and gas flows on desired ratio at all firing rates.

d) Governors impulse line connections must be located between the zone control air valve and the manual burner air valve for multiple burner zones.



Suggested arrangement for LHG/(S, M) burner