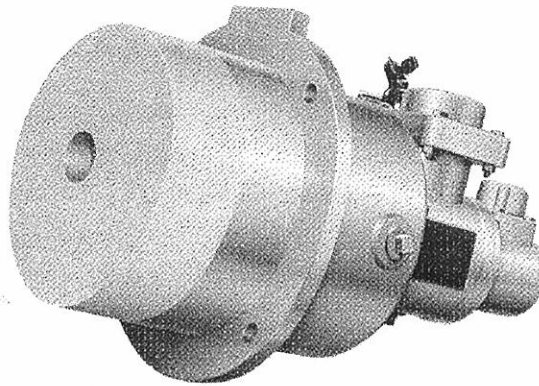


HOPE

**HOPE HGS
HIGHSPEED GAS BURNER
HANDLING MANUALS**



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HGS

Thank you very much for choosing the HOPE HGS type pilot gas burner. To get maximum performance out of your new gas burner and to properly maintain and inspect the unit, please read through this manual carefully. Keep it handy for future reference. Please ensure that both construction company and end user will get this manual.

Inspection after Purchase

Check the name plate and the following specification table to make sure that the product is per your order. Also check if it is free from any transportation damage.

Overview

The HGS type high-speed gas burner has superior performance for stirring inside the furnace and uniform temperature distribution. The nozzle-mix type structure eliminates inverse fire, and can even be used for hot air. The features of this unit include:

- 1) High-speed jet (150 m/sec) eliminates the need for furnace-stirring fan, and keeps the furnace temperature uniform.
- 2) High turndown ratio allows you to use it for a variety of applications, from low to high excess air combustion.
- 3) High-temperature, high-speed jet heats objects instantly by directly applying high-temperature gas.
- 4) Metering orifice built in to the gas and air bodies enables you to measure the flow rate easily and allows easy adjustment and setting.

Specifications

Model	Capacity $\times 10^4$ kcal/h	Connection (A)		Weight Kg
		Air	Gas	
HGS-1	8	40	25	46
HGS-2	12	50		45
HGS-3	20	65		89
HGS-4	30	80	40	88
HGS-5	40			86

- Standard pressure: Gas 600 - 1000 mmH₂O, Air 600 mmH₂O at burner feed opening

Matters to be attended for safety

Before installing, trial- operating, maintaining or inspecting this burner, please learn the inside of this burner, information of safety and other matters to be attended by reading this instruction manual and all of attached documents.

The rank of the matters to be attended is classified to "Top danger"

"Danger" and "Caution" in this instruction manual.



In case of wrong operating, it is predicted that serious dangerous situation will happen and the operator or other people.

May die or may be seriously injured.









In case of wrong operating, it is predicted that dangerous situation will happen and operator or other people may die or may be seriously injured.



In case of wrong operating, it is predicted that dangerous situation will happen and the operator or other people will be injured or only material described.

NOTE, Even the matters classified to CAUTION have a possibility of causing serious results. Then, never fail to abide by matters described.

	Meaning of the mark	Sample
 COMPULSION	This is to tell that there is indication to instruct compulsorily your action. contents of the instruction must be described definitely nearby.	 never fuel to do
 PROHIBITION	This is to tell the prohibited action. Specifically prohibited action are described.	 TOUCH PROHIBITED
 CAUTION	This is to tell that there is a thing to be attended. The specifically attended thing is described nearby.	 CAUTION HIGH TEMPERATURE

Read without foil



Never fail to exhaust the air in the furnace (pr-purge) before igniting. Repeated ignitions may cause explosion due to the gas stagnated in the furnace. please install safety devices like a flame supper visor.



Never fail to cut the electricity of transformer when you take off the ignition plug in order to i check the spark of it.

**ELECTRIC SHOCK
CAUTION**



Never fail to take off the site hole when igniting or firinf the burner.
※ flame in the furnace may blow out.



Never touch the mounting plate of the burner and fitting parts of the pilot burner. These area are high temperature when the burner is burning.

**TOUCHING
PROHIBITED**

1. Do not use the attached gasket for sering this burner.
2. Put the replaced old gaskets pouch and thrae'away therm according to the waste disposal regulation or the waste cleaning regulation.
Never burn up them.

Mounting

- 1) Support the exterior surface of the burner tile, particularly the bottom face with fire block, castable refractories or other appropriate materials so that the burner tile will not fall down.
- 2) When mounting the burner to the furnace, secure it by filling the space between the mounting hole and the burner tile with the fire-resisting mortar.

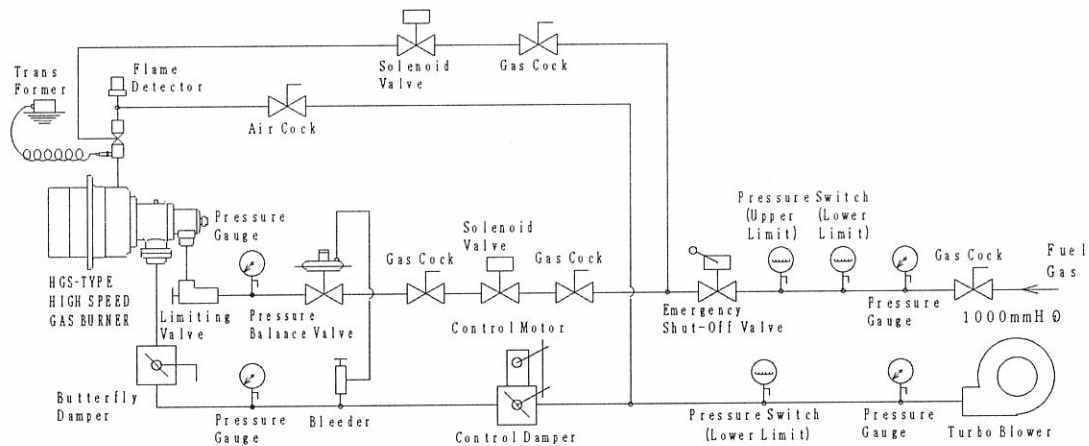
Piping

- 1) Clean the piping thoroughly so that any seal tape, bond, chip or other materials will not be left inside. Failure to do so may result in the malfunction of solenoid valve, governor, other valves and parts.
- 2) Attach piping support when connecting the pipes so that the burner will not be under unnecessary load.
- 3) The air orifice is built in to the HGS. Perform piping in such a way so that the straight pipe before the burner entrance will be at least 3 times longer than the pipe diameter. Attach pressure cocks to the air and gas pressure difference detection taps (4 areas).
- 4) When you choose the fan, pay attention to the non-combustion air capacity listed in the catalog.

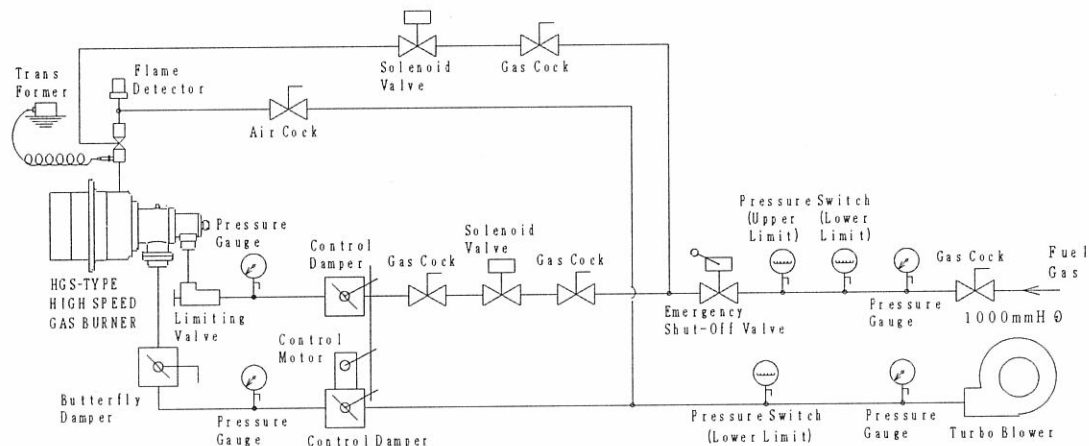
HGS-TYPE

HIGH SPEED GAS BURNER

(1) PRESSURE BALANCE VALVE METHOD



(2) INTERLOCKING METHOD



OPERATION MANUAL

Preparation

- 1) Make sure that all the gas cocks are closed.
- 2) Use air, nitrogen or other appropriate gas to check the leak inside the gas piping.
- 3) Check if all the equipment for air and gas lines work properly.
- 4) Make sure that the gas is supplied as per specified pressure and that the gas inside the piping has been replaced.
- 5) Start the blower and check if the outlet pressure is per specifications.
- 6) Use the control damper to set the maximum combustion (600mmH₂O) and the minimum combustion (10-50mmH₂O).
- 7) Fully open the control damper and purge inside the furnace with air (You need to purge area that is approximately 3 times larger than the furnace capacity).
- 8) Set the control damper to the minimum combustion.

Ignition

- 1) Make sure that the cock before the burner, solenoid valve and limiting valve are fully closed.
- 2) Ignite the pilot burner by pressing the ignition button. (Always use the pilot burner. Use of torch or igniter rod is dangerous. Also, check if the ignition was made securely.)
- 3) Fully open the cock before the burner and the solenoid valve. Slowly open the limiting valve and check if the main burner was ignited securely.

Adjustment

- 1) Measure the pressure difference of air orifice and acquire the air capacity from the table.
- 2) Calculate the required gas capacity and acquire the pressure difference of orifice that suits the flow. Use the limiting valve to set the pressure difference. At this time, make sure to convert the specific gravity of the atmosphere.
- 3) When using the equalizing valve control, slowly open the control damper to the maximum combustion as you check the combustion status. Check the flow rates.
- 4) Use the flame detector to check the current value.
- 5) When the air ratio setting is completed, set the control damper to the minimum combustion again. Joint the control motor and the control damper so that the necessary turndown will be obtained.

Notes

- 1) The pressure inside the burner tile becomes high during the combustion, and removing the sight hole may expose you to the flame. Pay special attention to the looseness of the sight hole or glass damage.
- 2) There are 3 types of orifices available depending on the type of gas. A plate that indicates the orifice size is attached to the flange bolt where the gas orifice is fitted. Use the following table to confirm the orifice size.
- 3) An orifice built in to the burner is intended to serve as adjustment guide. If you need more accurate value, we recommend to install MO type metering orifice at some midpoint in the piping.

Extinction

Fully close the cock before the burner and the solenoid valve, and check if the flame has been extinguished. To protect the nozzle, wait until the furnace temperature falls down below 500 °C before stopping the combustion blower.

Replacing the Gas Orifice

When you change the working gas, you need to replace the gas orifice with the one that suits the new working gas. Replace the plate engraved with the orifice diameter at the same time.

To replace the orifice, remove the 4 hex bolts that secure the orifice holder (10) to the gas body (2). Replace the plate that is engraved with the orifice diameter, which is attached to this hex bolt. Then remove the orifice holder and the packing to replace the gas orifice (13). Reassembly is the reverse order of disassembly. The orifice diameter for each type of gas is shown in the following table:

Gas	HGS-1	HGS-2	HGS-3	HGS-4	HGS-5
LPG	ϕ 8	ϕ 10	ϕ 11.5	ϕ 15.5	ϕ 23
LNG and dilution	ϕ 9	ϕ 11.5	ϕ 14	ϕ 18	ϕ 28
Town gas and COG	ϕ 12.5	ϕ 17	ϕ 16	ϕ 21	ϕ 32

Inspection

- 1) Check the orifice pressure difference of air and gas. Readjust as necessary (Do this once in 6 months or as necessary).
- 2) Periodically check the flame condition, red heat of the front panel, crack in the sight hole glass, etc. Fix any problems immediately, such as by replacing the parts.

Disassembly

- * Disassembly should be performed when the furnace has been cooled. Always wear protective gloves and other safety devices.
- 1) Make sure that all the power such as of the combustion blower have been turned off.
 - 2) Check if all the gas cocks are closed.
 - 3) Loosen union and other sections of the gas piping.
 - 4) Remove the bolt that secures the air flange (9) and remove the air flange. At this time, take precautions against losing the air orifice (11) and the packing (12) that are inserted between the air flange and the main body.
 - 5) Remove the back plate (7) bolt and remove the center pipe (6), back plate, sight hole (8), and packing (15)
 - 6) Remove the gas body (2) bolt and remove the gas body, gas pipe (5), orifice holder (10), gas orifice (13) and packing (14).
 - 7) Remove the 4 hex bolts securing the air body (1) and remove the air body, nozzle mounting plate (3), air nozzle (4), and protective plate (16) (Always replace the seal packing (17) with a new part when you disassemble this section).
 - 8) Remove the 3 bolts with hex holes fitted to the air body and remove the nozzle-mounting plate set ((3), (4) and (16)). This section does not need to be disassembled under normal circumstances but when you replace the air nozzles, you need to replace them as a set.

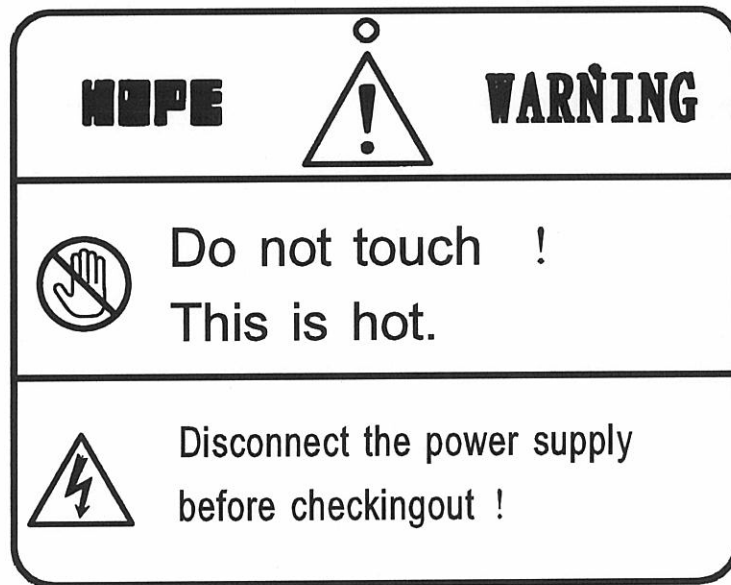
Cleaning and Reassembly

- 1) Remove any carbon or other deposits from the center pipe (6).
- 2) Clean the inner/outer surface and side hole of the gas pipe (5).
- 3) Clean the air nozzle (4) and the protective plate. Replace any parts that are in the defective condition (such as burn, oxidation, deformation) as a set.
- 4) Clean the inner surface of the burner tile (19) and check for any crack or fracture. Replace it with the front panel (18) as a set if any.

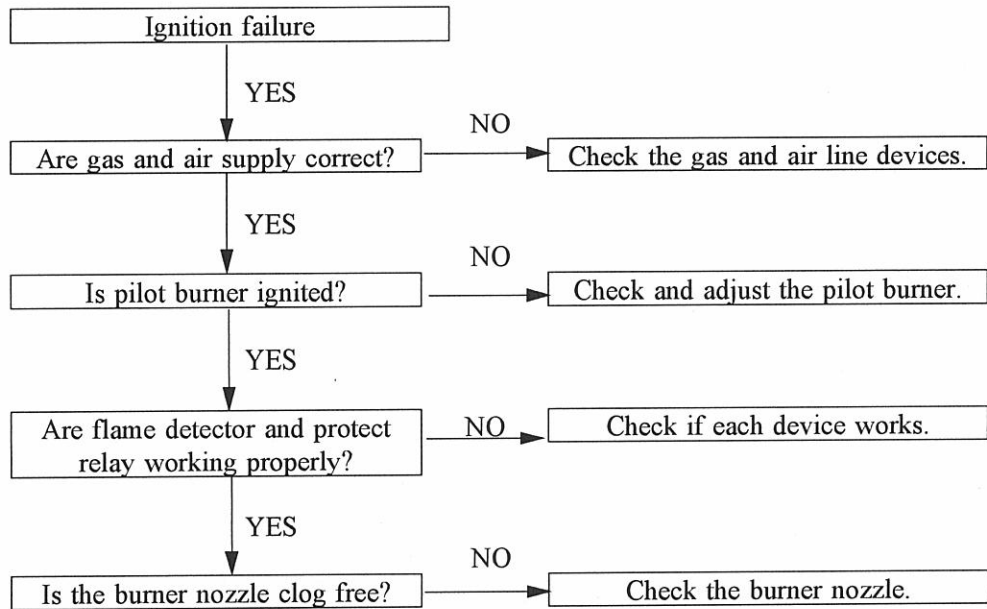
- 5) Reassembly is the reverse sequence of disassembly.
- 6) When assembling the nozzle-mounting plate set ((3), (4) and (16)) and the air body (1), keep in mind that the 3 bolt holes are not evenly located.
- 7) Make sure you do not forget to tighten any parts or piping.

※ **WARNING PLATE**

Please check whether the warning plate shown below is removed from the burner body after installation looks finished . If the warning plate was lost , please let our sales department know it.



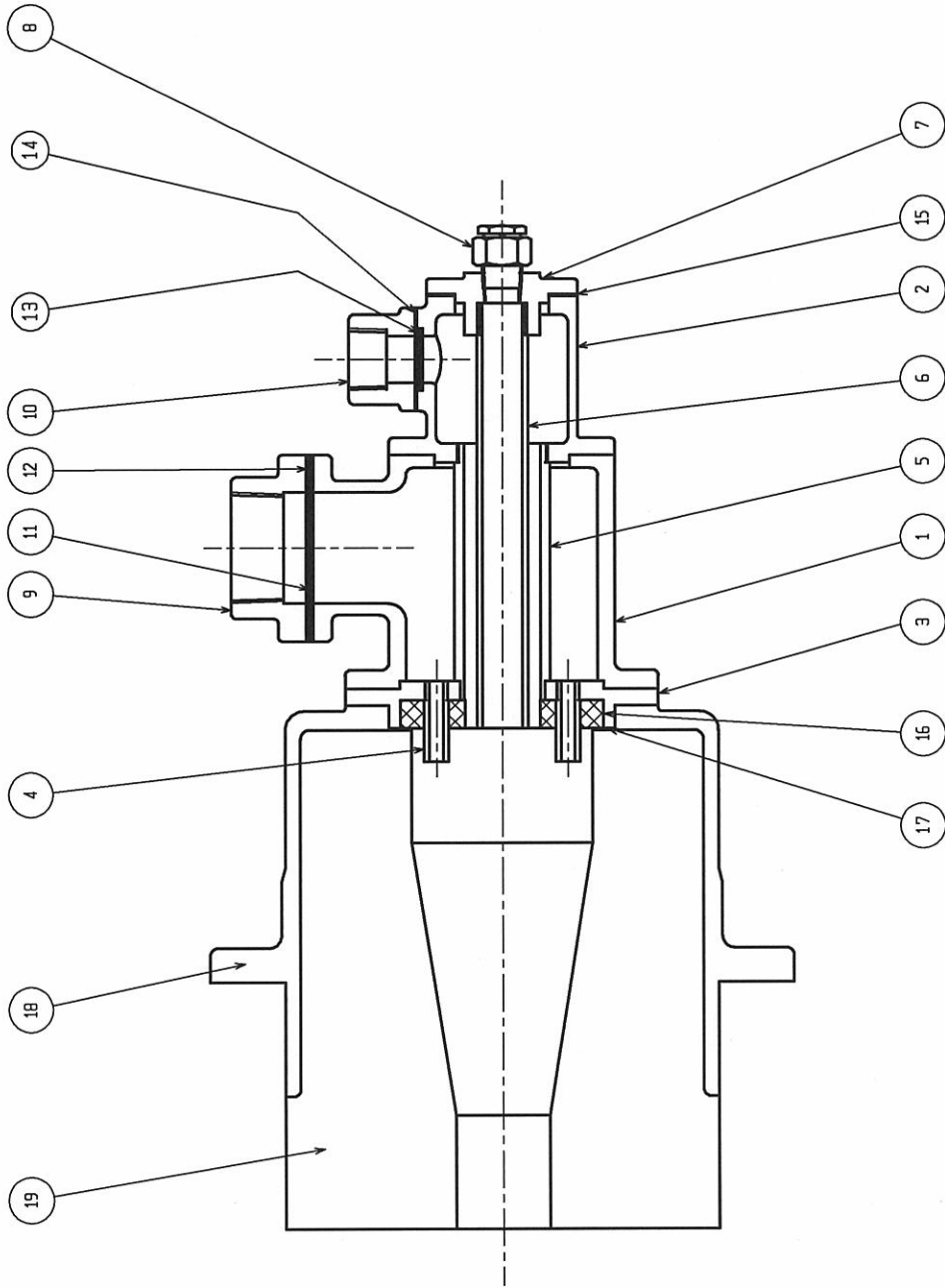
Troubleshooting



* For details on how to inspect the burner and peripheral devices, see the user's manual of each unit.

* Contact our Sales Department for any questions:
Tel 52-736-0773
Fax 52-736-0258

HGS-TYPE HIGH SPEED GAS BURNER



NO.	PARTICULARS	QUAN.	REMARKS
19	Burner Tile	1	
18	Burner Plate	1	
17	Seal Packing	1	
16	Plate	1	
15	Gas Packing	1	
14	Packing	2	
13	Gas Orifice	1	
12	Packing	2	
11	Air Orifice	1	
10	Orifice Holder	1	
9	Air Flange	1	
8	Sight Hole	1	
7	Back Plate	1	
6	Center Pipe	1	
5	Gas Pipe	1	
4	Air Nozzle	9	
3	Nozzle Plate	1	
2	Gas Body	1	
1	Burner Body	1	