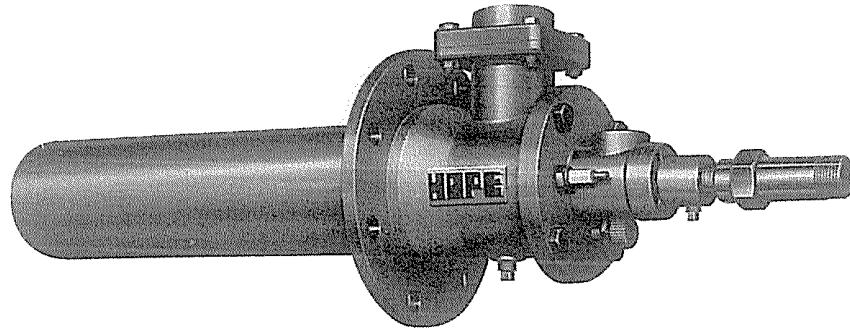


**INSTRUCTION MANUAL
FOR
RADIANT TUBE BURNER
TYPE RTB**



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Thank you for your selection of HOPE RADIANT TUBE BURNER Type RTB. Please carefully read this instruction manual in order for you to be fully satisfied with the performance of this burner and to secure the safety in operation, maintenance and inspection. Also, please be sure to deliver this instruction manual to the end user, as well as to the constructor.

Inspection of product and accessories

Check to confirm whether or not the product is exactly in accordance with your order by referring to the nameplate and the specification table given below. Also check for damage and other irregularities caused by and during transportation.

Outline

RTB Type Radiant Tube Burner is applicable to the tube shapes of the U and W types.

As the structure of its main body is simple and compact, this burner can be maintained easily.

For using at high temperatures, energy saving can be furthered when a heat exchanger is added.

Features

- 1) It's the simple structure, so it can be maintained easily.
- 2) It's compact, so it's suitable for change to gas fired heater from electric furnaces.
- 3) It's a nozzle mixed burner, so there is no worry of a backfire and preheated air can be used.

(Please use our product RL type recuperator.)

Specifications

Type	Capacity (kW)	Connection (Rc)			Tube Size
		Air	Gas	Hold Air	
RTB-100	35	1½	1/2	1/2	100A
RTB-125	58	2	3/4		125A
RTB-150	93	2½	1		150A

● Standard pressure : Gas 2 ~ 10kPa Air 6 ~ 10kPa

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.



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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.

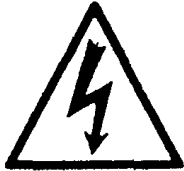
NOTE, Even the matters classified to CAUTION have a possibility of causing serious results. Then, never fail to abide by matters described.

	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 FAIL TO DO
 PROHIBITED	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 fail



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 check the spark of it.



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

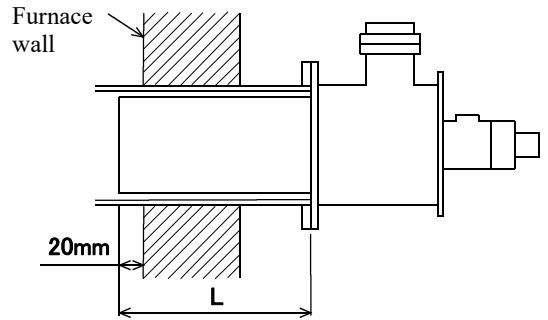


**TOUCHING
PROHIBITED**

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.

Installation

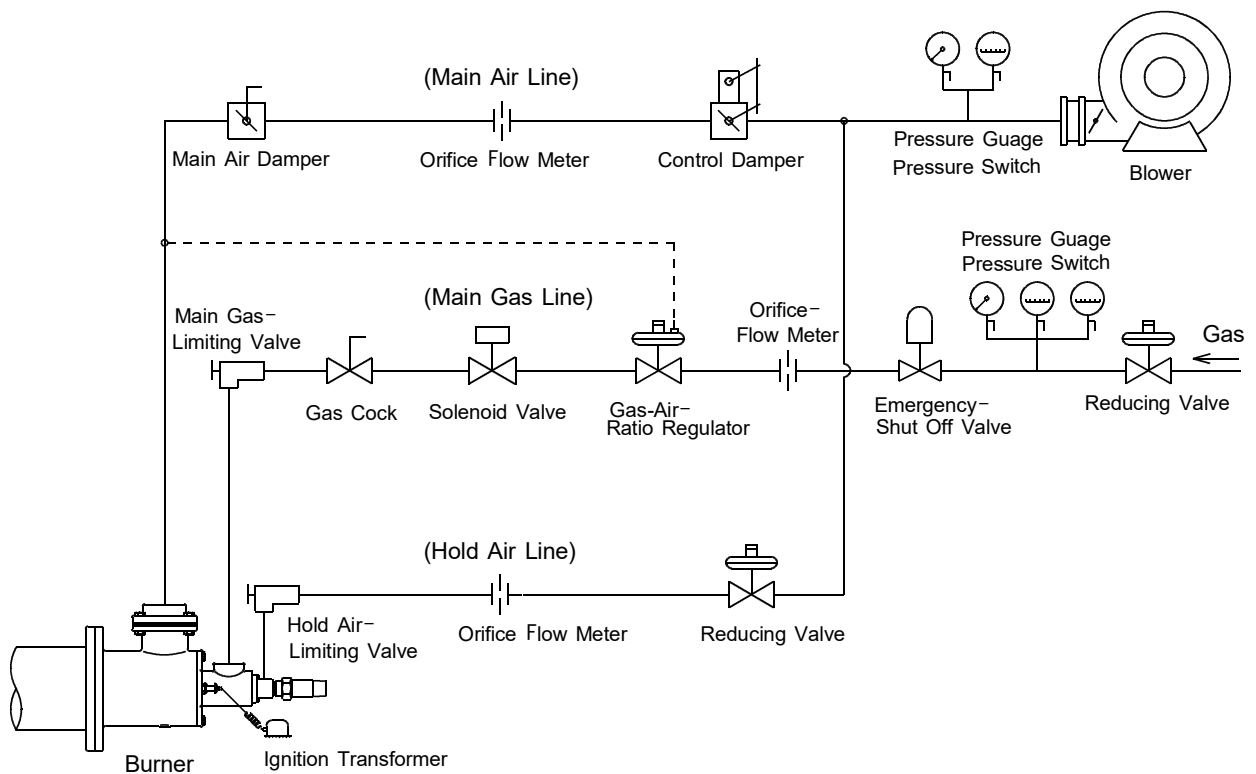
- The porcelain protective tube at the tip end of the spark plug is susceptible to breakage, exercise caution when installing.
- To prevent radiant tube burnout, the length "L" from the tube flange surface to the tip of the burner nozzle should be set to the distance from the tube flange surface to the furnace wall + 20 mm.



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.

Flowsheet



Operating

Operation Prepare

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 measure the differential pressure on the orifice flow meter of the air line.
Confirm with the P-Q chart that the air is flowing at the flow rate of the maximum burning of this burner.
6. The air flow quantity at the time of the maximum combustion and the minimum combustion is set up by control damper.
7. Measure the differential pressure on the orifice flow meter of the hold air line, obtain the air flow rate by referring to the P-Q chart, and set the hold air flow rate to the appropriate value.
8. Fully open the control damper and purge inside the Radiant Tube with air (You need to purge area that is approximately 10 times larger than the Radiant Tube capacity).
9. 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) Press the ignition button. open the cock before the burner and the solenoid valve.
- 3) Slowly open the limiting valve and check if the 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 Gas-air-ratio regulator 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.

※ Caution

- If the fuel in the gas piping has not been displaced, the burner may not ignite easily. If ignition is hard, close the gas cock and the solenoid valve, purge air through the radiant tube, and try ignition again.

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.

Inspection (Check the conditions of the burner and its accessories from time to time according to the usage.)

* Inspection should be performed when the furnace has been cooled. Always wear protective gloves and other safety devices.

1. Make sure that all the powers such as of the combustion blower have been turned off.

2. Check if all the cocks have been closed.

3. Loosen the union and other sections of the gas and air piping.

4. Inspection of a nozzle etc.

- Loosen the hexagon head screws ㉓ fixing the air body ① and the gas body ② .

(Do this after confirming that the air body ① is sufficiently cool.)

- Remove the gas body ② from the air body ① .

(The spark plug ⑩ , the gas pipe ⑧ , the cone ⑤ , the hold air body ③ , etc. are fixed to the gas body ② .)

- Remove the gas body ② , and check the cone ⑤ , the air nozzle plate ⑦ , the spark plug ⑩ , the hold air head ⑥ and other components for damage and looseness.

5. Inspection of an inner tube ④

- After removing the gas body ② , remove the air body ① .

(The air body ① is fixed with the inner tube ④ .)

Note : Watch out for the heat within the furnace.

Note : Do not touch the inner tube ④ directly. It may be extremely hot. Check the inner tube ④ for damage and adherence of foreign objects.

6. Inspection of a hold air head ⑥

- Loosen the hexagon socket screws ㉔ fixing the gas body ② and the hold air body ③ .

- Remove the hold air body ③ from the gas body ② .

(The hold air body ③ is fixed with the hold air pipe ⑨ and the hold air head ⑥ .)

Note : Do not touch the hold air head ⑥ directly. It may be extremely hot.

Note : Check the hold air head ⑥ for damage and adherence of foreign objects.

If there is any damaged component, as it may often cripple burning, contact us for consultation.

If there is any component adhered with foreign objects, clean the component.

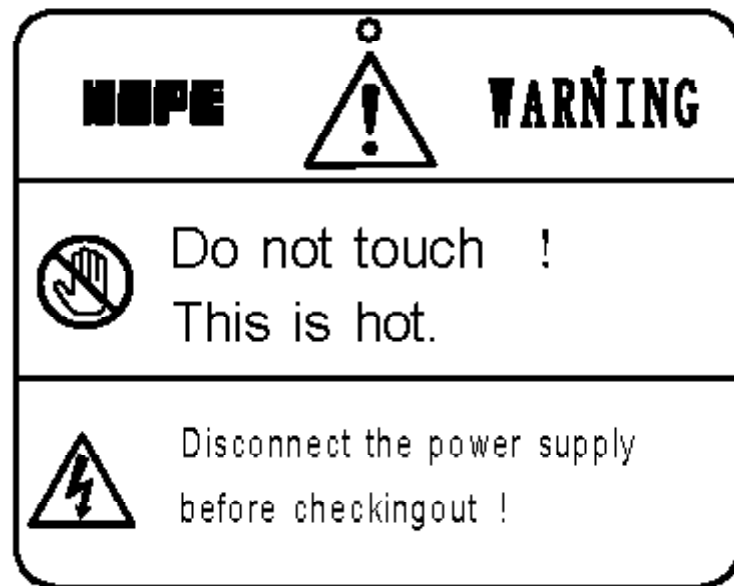
7. When no abnormality is confirmed, reassemble the components by reversing the disassembling procedures. (Be careful not to leave any component, piping, etc. unfastened.)

Note : The porcelain protective tube at the tip end of the spark plug ⑩ is susceptible to breakage, exercise caution when installing.

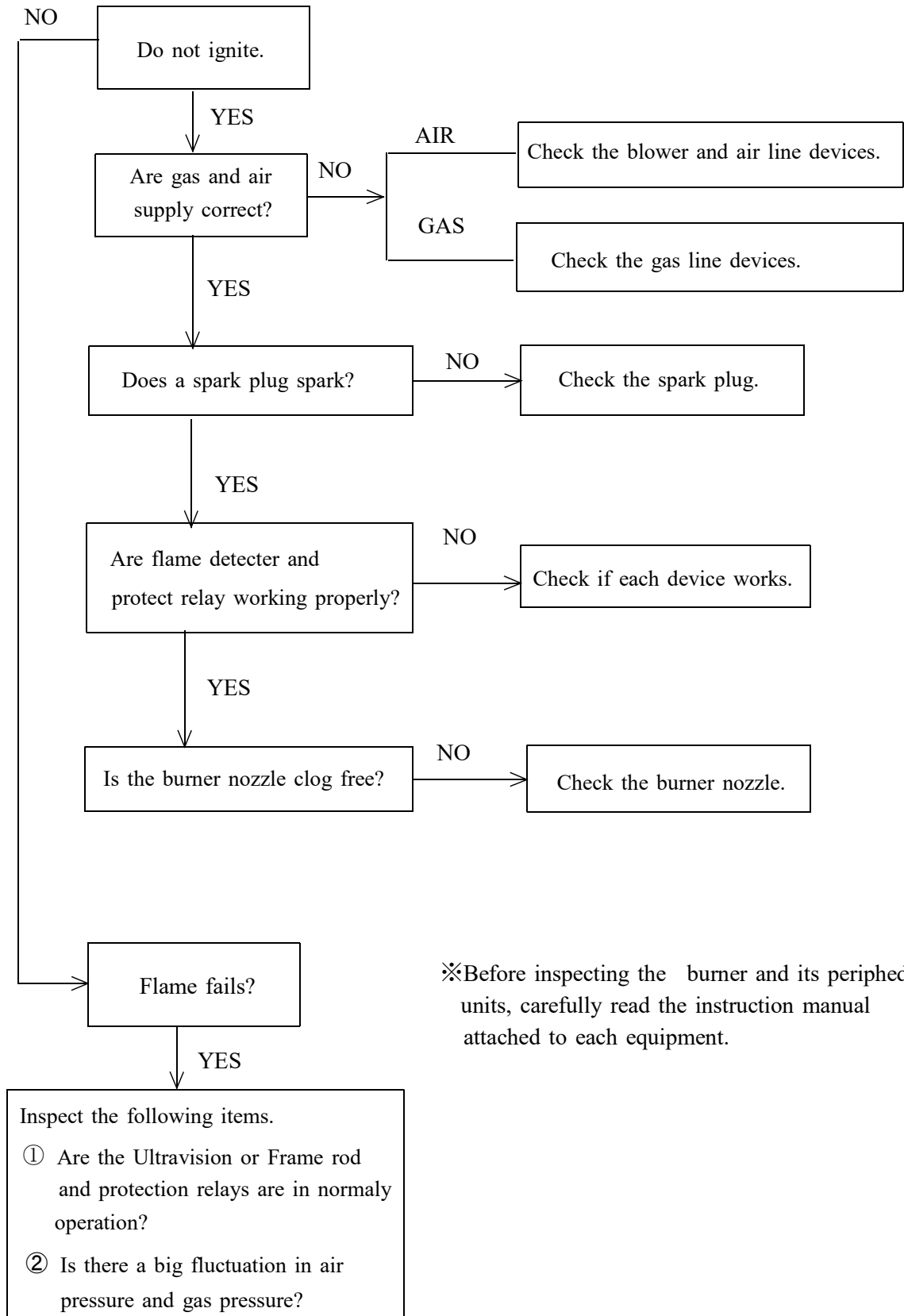
※ When inspecting the burner, its accessories and peripheral instruments, carefully read their instruction manuals beforehand.

※ Warning Plate

After the installation work is completed, be sure to attach the warning plates supplied together with the burner to visible places near the burner. If you miss any warning plates, contact our Sales Department immediately.

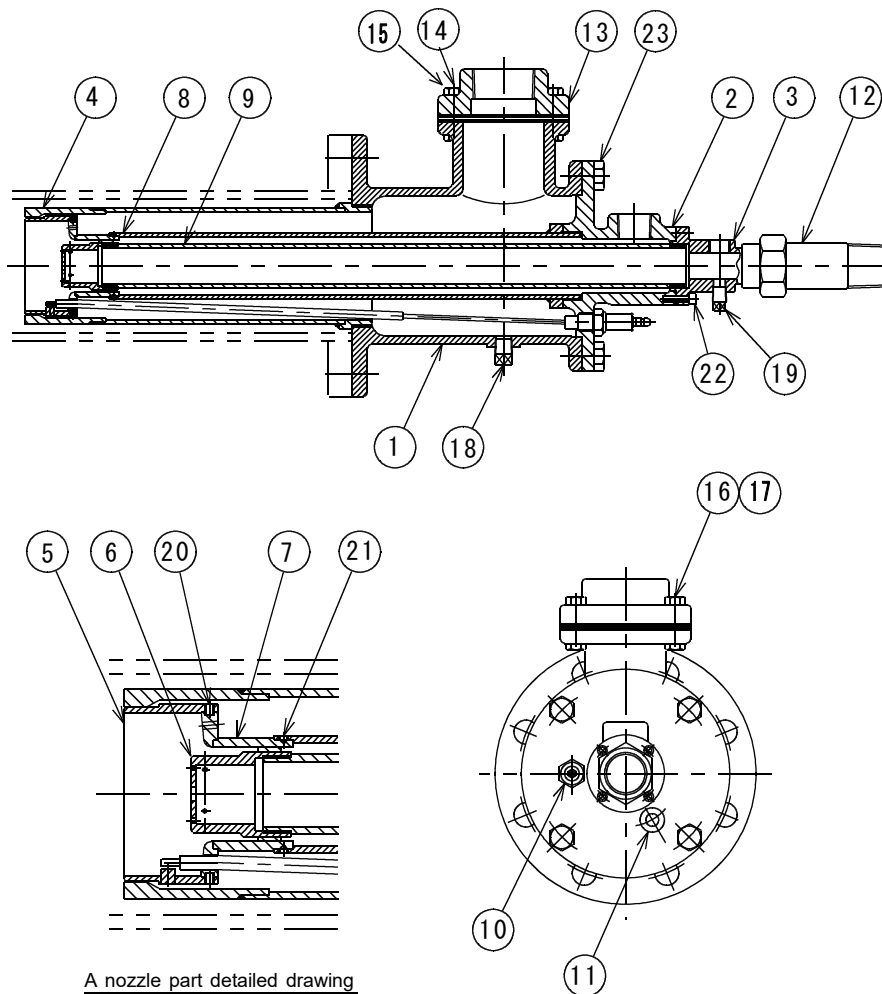


Troubleshooting



※Before inspecting the burner and its periphedal units, carefully read the instruction manual attached to each equipment.

※ If there is any questions, contact our sales department.



A nozzle part detailed drawing

NO.	PARTICULARS	Quan.	NO.	PARTICULARS	Quan.
1	Air Body	1	13	Air Flange	1
2	Gas Body	1	14	Air Orifice	1
3	Hold Air Body	1	15	Air Packing	2
4	Inner Tube	1	16	Hexagon Head Screws	4
5	Cone	1	17	Hexagon Nuts	4
6	Hold Air Head	1	18	Plug 1/4	2
7	Air Nozzle Plate	1	19	Plug 1/8	1
8	Gas Pipe	1	20	Hexagon Socket Set Screws	4
9	Hold Air Pipe	1	21	Hexagon Socket Set Screws	4
10	Spark Plug	1	22	Hexagon Socket Screws	4
11	Sight Hole	1	23	Hexagon Head Screws	4
12	U.V.Socket	1			