

# HOPE

HG0B043E

## HOPE MJ METAL JET GAS BURNER HANDLING MANUALS



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## 1) Inspection of Product and Accessories, and Outline and Specifications of Product

Thank you for your selection of HOPE METAL JET GAS BURNER type MJ. 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 u-ser, as well as to the constructor.

### ■ Inspection

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

HOPE MJ TYPE METAL JET GAS BURNER is a metal combustion cylinder without burner tiles made of castable refractories. . Moreover, since the direct ignition system is used, the piping around the burner is simple, and equipment costs can be reduced.

Depending on the usage conditions, you can also select a ceramic combustion cylinder instead of a metal one. (Type MJ-□C)

### ■ Specification

Type	Capacity kW (kcal/h)	Connection		Mass (Kg)
		Air (JIS5KF)	Gas (Rc)	
MJ-1	58 (50,000)	40A	3/4	18
MJ-2	116 (100,000)	40A	3/4	18
MJ-3	174 (150,000)	65A	1	24
MJ-4	233 (200,000)	65A	1	24
MJ-5	350 (300,000)	80A	1 1/2	32
MJ-6	460 (400,000)	80A	1 1/2	32

※Standard Pressure : Gas 2~10kPa Air 6kPa

2) 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 matless 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		Example
 Compulsion	This symbol indicates the contents that force or direct an action. Specific contents of such action are given nearby.	 Be sure to do!
 Prohibition	This symbol indicates the contents that prohibit an action. Specific contents of such action are given nearby.	 Don't touch!
 Precaution	This symbol indicates the contents that call attention. Specific contents of such attention calling are given nearby.	 Be careful. It's hot!

3) Read without fail



 Be sure to do!

Never fail to exhaust the air in the furnace (pre-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.



 Electric-shock  
Caution

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

 Prohibited

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



 Don't touch!

Never touch the mounting plate of the burner and fitting parts of the burner, Ceramic-tube-base, Air-body.  
These area are high temperature when the burner is burning.

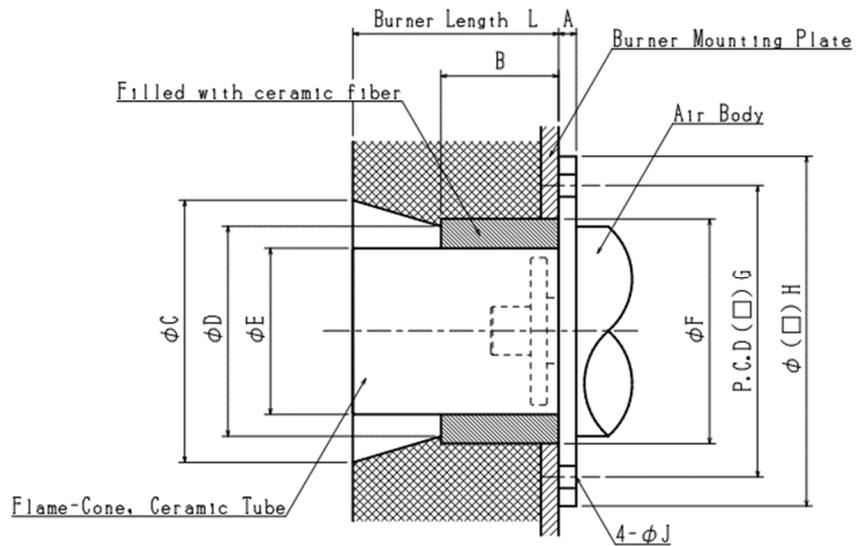
**Packings**

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

#### 4) Installation

1. Install the burner in such a way that it is free from any up/down, right/left excessive force.
2. Cover the flame-cone with a flexible refractory material such as ceramic fiber.  
(Refer to the burner installation drawing)

#### ■ Burner installation drawing



#### ■ Dimension sheet

Type	A	B	$\phi C$	$\phi D$	$\phi E$	$\phi F$	PCD G	$\phi H$	$\phi J$	L
MJ-1	12(17)	80	$>D$	=F or $>(E+30)$	102	152	160	200	15	120
MJ-2	12(17)	80			102	152	160	200	15	120
MJ-3	12	80			114	164	200	240	15	140
MJ-4	12	80			114	164	200	240	15	140
MJ-5	12	80			140	190	240	280	15	160
MJ-6	12	80			140	190	240	280	15	160

※If the furnace wall length is longer than the combustion tube length L, provide a taper of 10° or more on one side so that it is larger than  $\phi C$ .

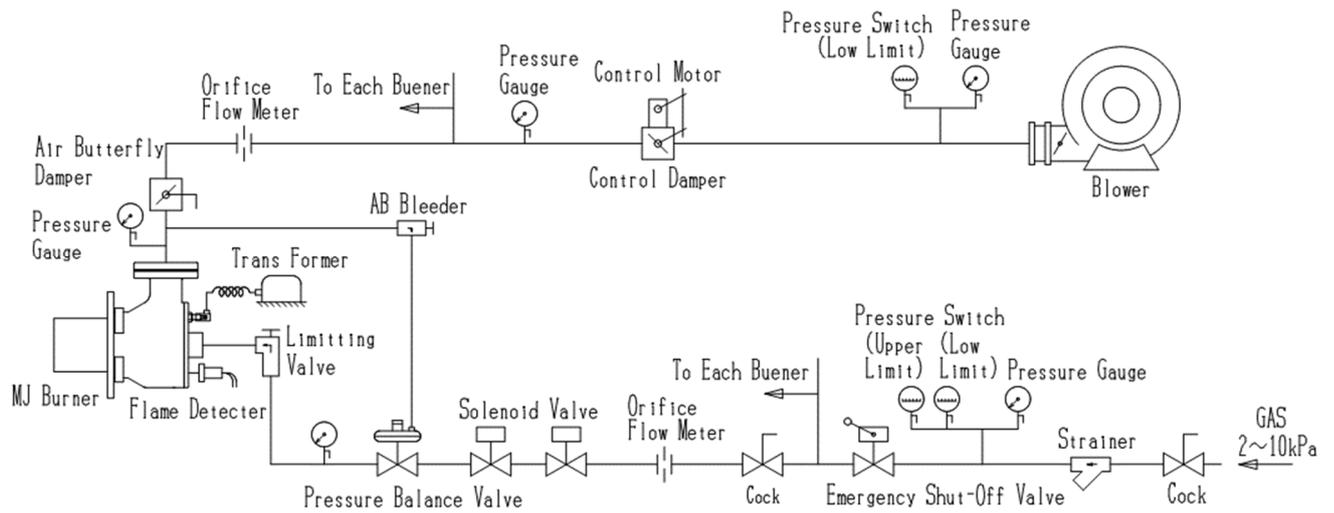
※Column A ( ) dimensions are for ceramic tube.

## 5) Piping

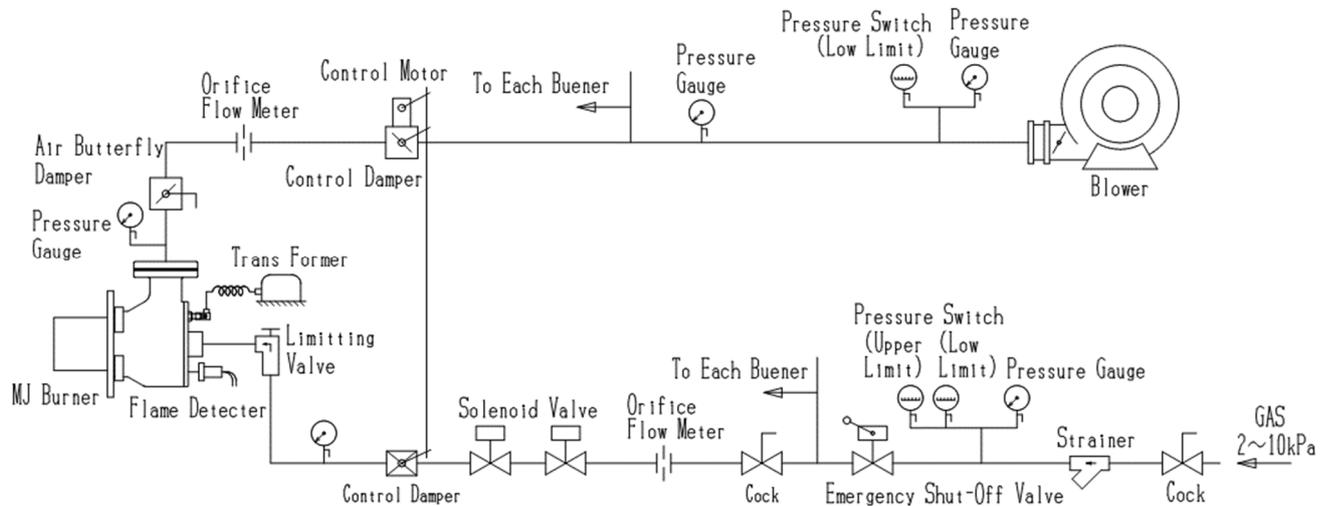
1. Be sure to clean the piping so that no sealing tape, sealing agent, chips, etc. remain in the piping. It may cause malfunction of solenoid valves, governors, valves, etc.
2. When connecting the pipes, provide a pipe support at an appropriate position so that excessive force is not applied to the burner.
3. In order to detect the air pressure at the burner inlet, the air pipe to the burner inlet should be straight pipe with a diameter of 3 times or more. Also, before and after the orifice flowmeter, be sure to provide a straight pipe section that is about 6 times the pipe diameter.

## 6) Flow sheet

### (1) Pressure balance Valve Method



### (2) Connection Method



## 7) Operation (Preparing · Igniting · Adjusting · Extinguishing)

### ■ Preparing

1. Check to confirm that all the gas cocks have been closed.
2. Check for in-pipe gas leakage with air or nitrogen.
3. Check to confirm that each component unit of the air and gas lines are in normal operation.
4. Check to confirm that gas is being supplied under the specified pressure and that the inside of the pipe has been subjected to replacement purge.
5. Start the blower, and confirm that the rotational direction is correct and the exit pressure is as prespecified.
6. Set the pressure to the pressure in the maximum combustion (6kPa) and to the pressure of the minimum combustion (0.1~0.5 kPa) by using the damper.
7. Fully open the control damper, and air-purge the inside of the furnace. (Use approx. 5 times as much as the furnace volume as the reference volume of air-purge.)
8. Set the control damper to the position for the minimum combustion.

### ■ Igniting

9. Check to confirm that the cock, solenoid valve and limiting valve located immediately before the burner have fully been closed.
10. Fully open the cock and solenoid valve located immediately before the burner, slowly open the regulating cock, and check to confirm that the main burner has exactly been ignited. (Be sure to check them visually or by using a flame detector.)

### ■ Adjusting

11. Read the air quantity referring to the burner air quantity characteristic table (burner PQ characteristic table)
12. Calculate the necessary gas quantity, and adjust the gas quantity by using an orifice flow meter (MO) or other flow meter and manipulating the limiting valve until the specified excess air ratio is obtained.
13. When the equalizing valve method is used, slowly open the control damper to the position for the maximum combustion while checking the combustion state, and check to confirm the flowrates of gas and air.
14. When a safety circuit has been incorporated into the flame detector, also check to conform the flame current value.
15. After setting the excess air ratio, return the control damper to the position for the minimum combustion.
16. When the control motor is used, joint the control damper to the specified position.

■ Extinguishing

17. Fully close the cock and solenoid valve located immediately before the burner, and check to confirm that the fire has been extinguished.

※Stop the blower after the in-furnace temperature lowers to below 500°C to protect the nozzle.

8) Inspection (Nozzle, Combustion cylinder)

1. Confirm that the shut-off valve, the solenoid valve and the combustion blower are powered OFF.
2. Loosen the union and others of the gas piping.
3. Loosen the hexagon head bolt ⑮ that holds the air body ② and gas body ③ together.
4. Hold the gas body firmly and slowly pull out the air nozzle ⑥, gas pipe ⑤ and spark plug ⑫ at the same time.
5. Remove the air pipe union or flange.
6. Loosen the hexagon head bolt ⑯ that holds the frame cone ① and air body ② together, and remove the air body.
7. Loosen the hex nuts holding the furnace body and flame cone ①, and remove the flame cone from the furnace body.
8. Check for burnt-out around the gas hole of the gas pipe ⑤, air nozzle ⑥, and spark plug ⑫, and check for loose parts.
9. Visually check the sparking condition of the spark plug, and replace the insulator if there are cracks or other abnormalities. Failure to do so may cause misfiring.
10. When replacing the air nozzle, after checking the position setting with the spark plug, loosen the hexagon socket set screw ⑦ attached to the air nozzle and perform the replacement work.
11. Check the condition of the inner and outer surfaces of the frame cone, and clean it if foreign matter is attached. In addition, if the combustion cylinder is damaged or burned, please contact us as it may affect combustion.
12. The ceramic tube ⑳ is fragile, so please handle it with care. Doing so may cause damage. For the ceramic tube, loosen the dish screw ㉔ and remove the ceramic tube. At this time, if the packing ㉒㉓ is torn, replace it. cause air leakage
13. Assemble in the reverse order.

※Perform the inspection after cooling the furnace. Also, be sure to wear protective gloves.

※Please refer to the attached sheet and structural drawing.

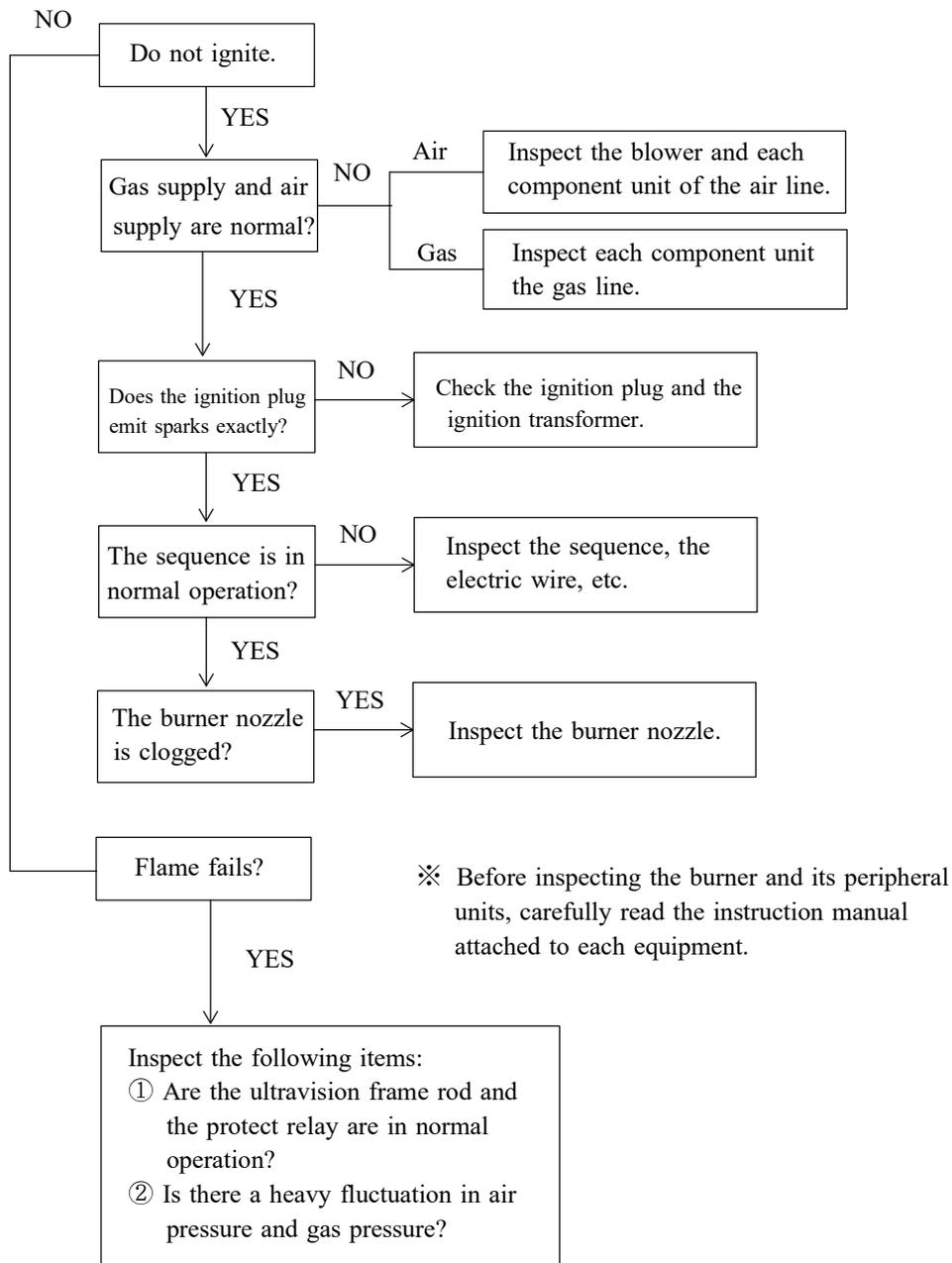
※Check and clean the burner and accessories as needed depending on the usage conditions.

9) Warning Plate

When the installation construction has been completed, check to confirm that the warning plate shown below is firmly attached to the burner body. If the warning plate is lost, immediately contact our sales department for instructions.

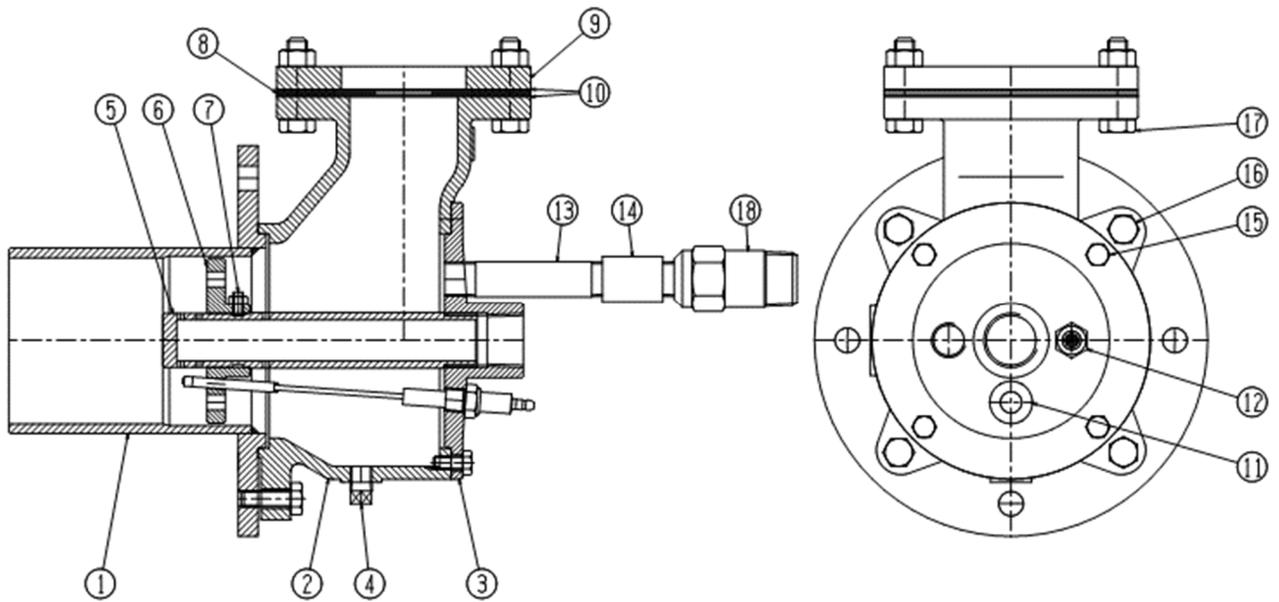


10) Troubleshooting



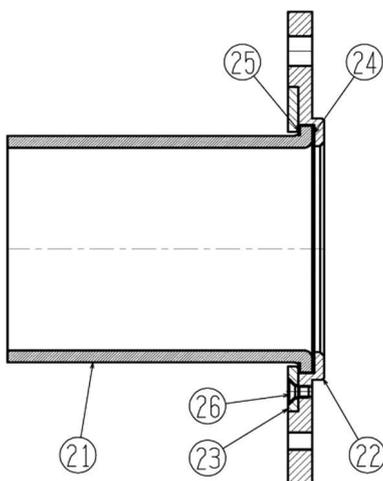
※ If there is any questions, contact our sale department.

11) Structural drawing



NO.	部品名	個数	NO.	部品名	個数
1	Flame Cone	1	11	Sight hole	1
2	Air Body	1	12	Spark Plug	1
3	Gas Body	1	13	Long Nipple	1
4	Plug R1/4	1	14	Socket	1
5	Gas Pipe	1	15	Hexagon Headed Bolt	4
6	Air Nozzle	1	16	Hexagon Headed Bolt	4
7	Hexagon Socket Screw with nut	4	17	Hexagon Headed Bolt with nut	4
8	Air Orifice	1	18	Ultra Adapter	1
9	Air Flange (JIS5K)	1	19		
10	Sheet Packing	2	20		

- For high temperature specifications, if the flame cone ① is replaced with a ceramic tube ②①, the structure is as follows.



NO.	部品名	個数
21	Combustion Chamber	1
22	Chamber base	1
23	Chamber holder	1
24	Chamber base Packing	1
25	Chamber holder Packing	1
26	Dish screw	4