

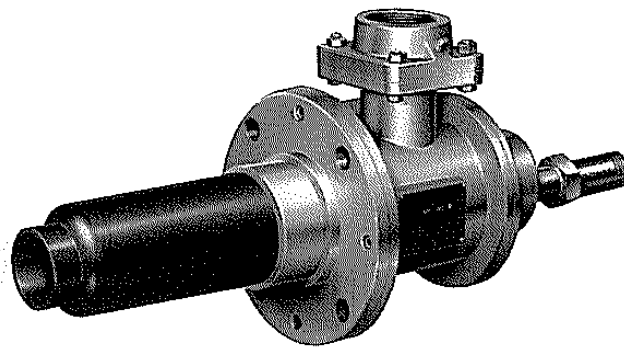
# HOPE

HG0G045E

## HOPE CJ

### CERAMIK JET GAS BURNER

### HANDLING MANUALS



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# TABLE OF CONTENTS

1). Inspection of Product and Accessories, and Outline and Specifications of Product	• • • • 1
2). Matters to be attended for safety	• • • • 2
3). Read without fail	• • • • 3
4). Installation	• • • • 4、 5
5). Piping    6). Flow sheet	• • • • 6
7). Operation (Preparing • Igniting • Adjusting • Extinguishing)	• • • • 7、 8
8). Inspection (Burner Nozzle, Ceramic Tube)	• • • • 8 ~ 10
9). Warning Plate	• • • • 10
10). Troubleshooting	• • • • 11
11). Structural drawing	• • • • 12 ~ 14

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

Thank you for your selection of HOPE CERAMIK JET GAS BURNER type CJ. 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, and Outline and Specifications of Product

### 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 CJ TYPE CERAMIC JET GAS BURNER is a direct ignition, nozzle mixing type gas burner using a light-weight, compact ceramic tube. As this burner uses no burner tile, its installation in furnace bodies, maintenance and others are easy. Flames, which are stirred in the furnace by high-speed combustion gas of 130m/sec, make the distribution of in-furnace temperature homogeneous. This burner can also be used for hot air of 300 °C. Thus, this gas burner can be used widely as a gas burner for various heat treatment furnaces, heating furnaces and the like.

### Specification

Type	Cap. kW	Connection (Rc)		Mass (kg)
		Air	Gas	
CJ-1	58	1 1/2	1/2	15
CJ-2	140	2	3/4	15
CJ-3	233	2 1/2	1	25
CJ-4	233	3	1 1/2	29

● Standard Pressure : Gas 3 ~ 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 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 a 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 a 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 a dangerous situation will happen and the operator or other people will be injured or only material damage described.

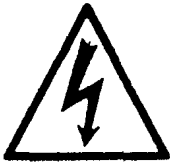
NOTE, Even the matters classified to CAUTION have a possibility of causing serious results. Then, never fail to abide by matters described.

	Meaning of the mark	
 COMPULSION	This is to tell that there is indication to instruct compulsorily your action. Contents of the instruction must be described definitely nearby.	
 PROHIBITION	This is to tell the prohibited action. Specifically prohibited actions 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

### 3. 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**

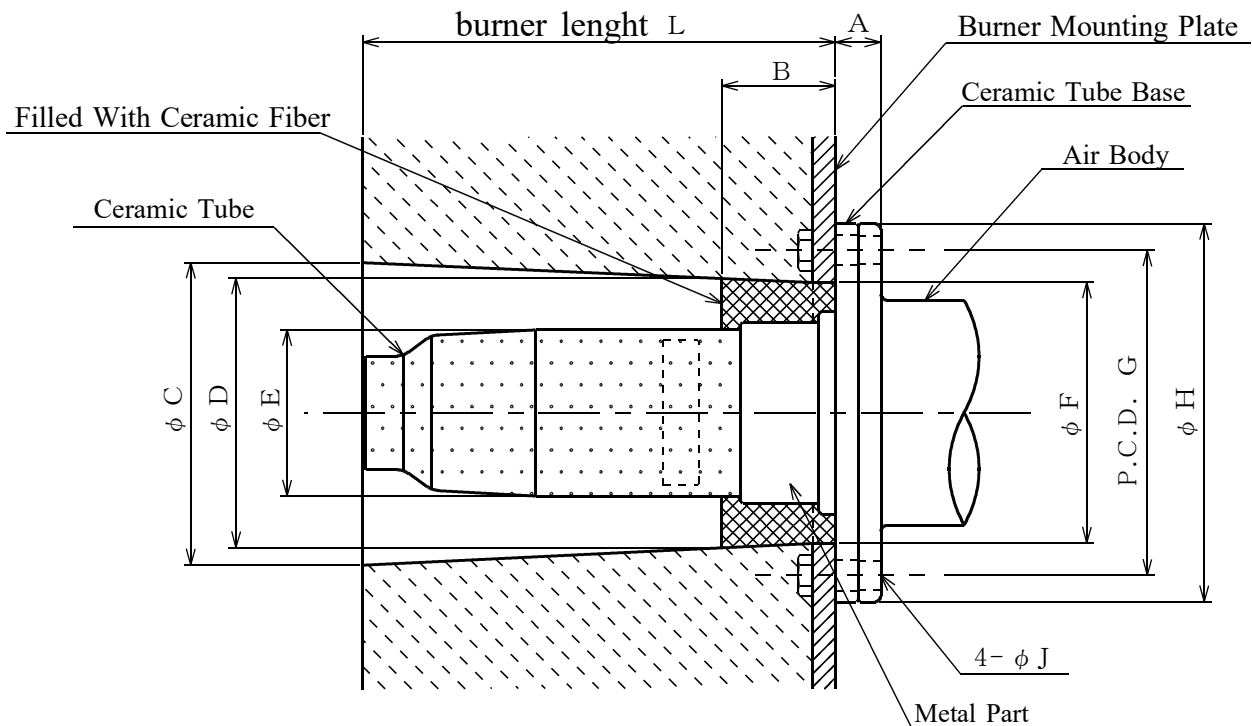
Never touch the mounting plate of the burner and fitting parts of the pilot burner. These area are high temperature when the burner is burning.

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.
3. We do not use any packing containing asbestos.

## 4. Installation

1. Be very careful not to make an impact on the ceramic tube, or the burner may be damaged.
2. Install the burner in such a way that it is free from any up/down, right/left excessive force.
3. Do not cover the ceramic tube directly with any insulating material or the like as shown in the burner installation drawing.
4. Cover the metallic portion of the combustion tube base with flexible refractory, such as ceramic fiber. (Refer to the burner installation drawing.)

### • Burner installation drawing (CJ - 1, 2, 3)

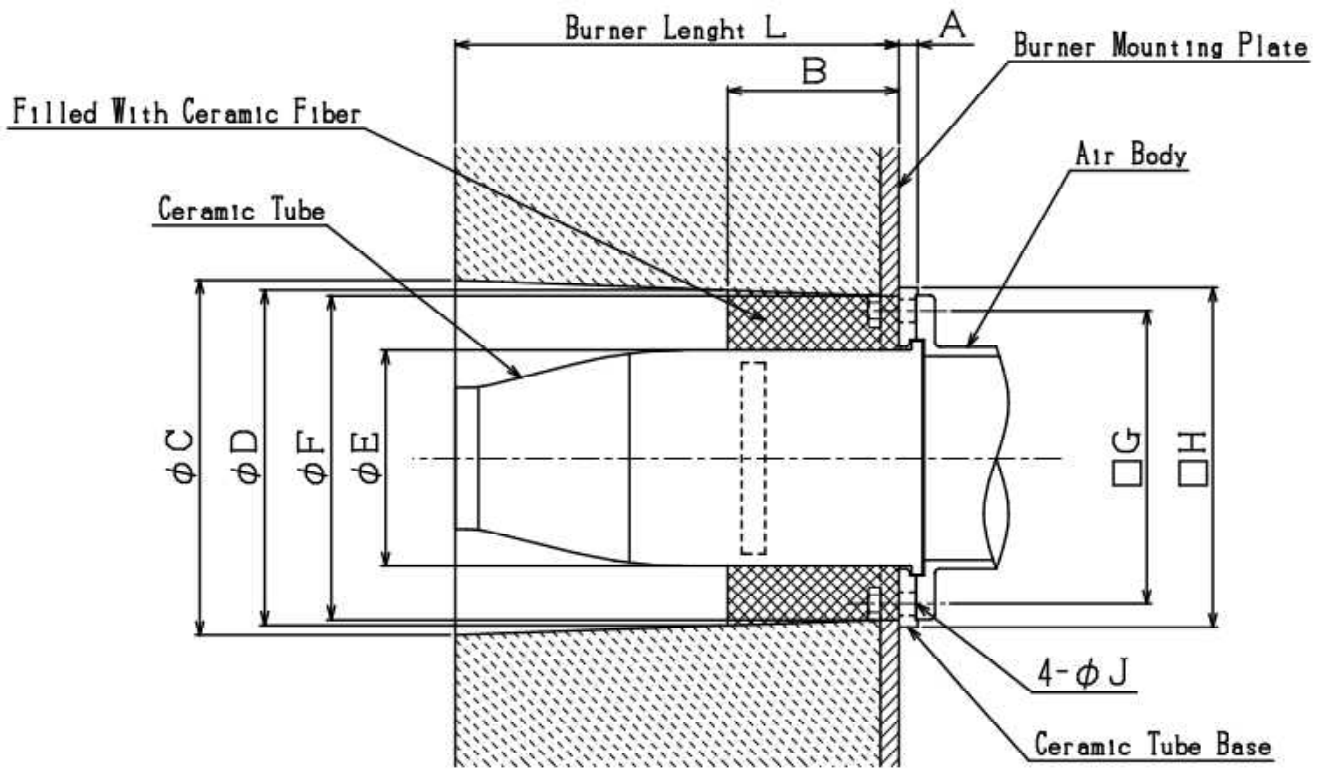


### • Dimension sheet

Type	A	B	φ C	φ D	φ E	φ F	G	φ H	J	L
C J - 1	24	60	160	142	88	138	172	200	15	250
C J - 2	24	60	160	142	88	138	172	200	15	250
C J - 3	24	80	200	177	110	170	206	240	15	300

\*For switching the existing burner to the CJ type burner, refer to the above installation drawing.

• Burner installation drawing (CJ - 4)



• Dimension sheet

Type	A	B	φ C	φ D	φ E	φ F	□ G	□ H	φ J	L
C J - 4	12	110	230	218	139	210	190	220	15	285

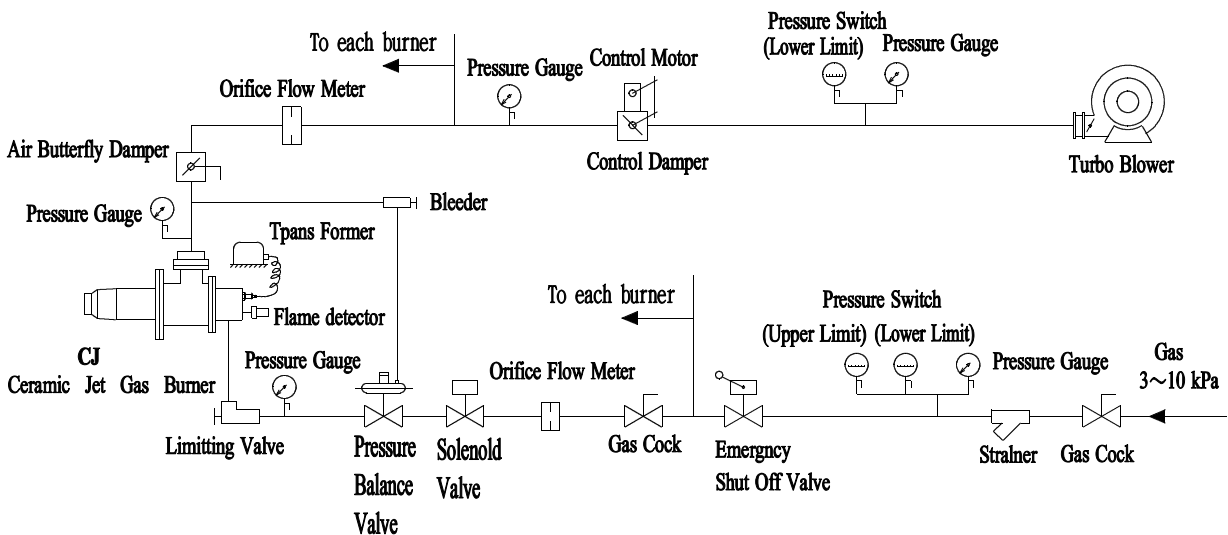
\*For switching the existing burner to the CJ type burner, refer to the above installation drawing.

## 5. Piping

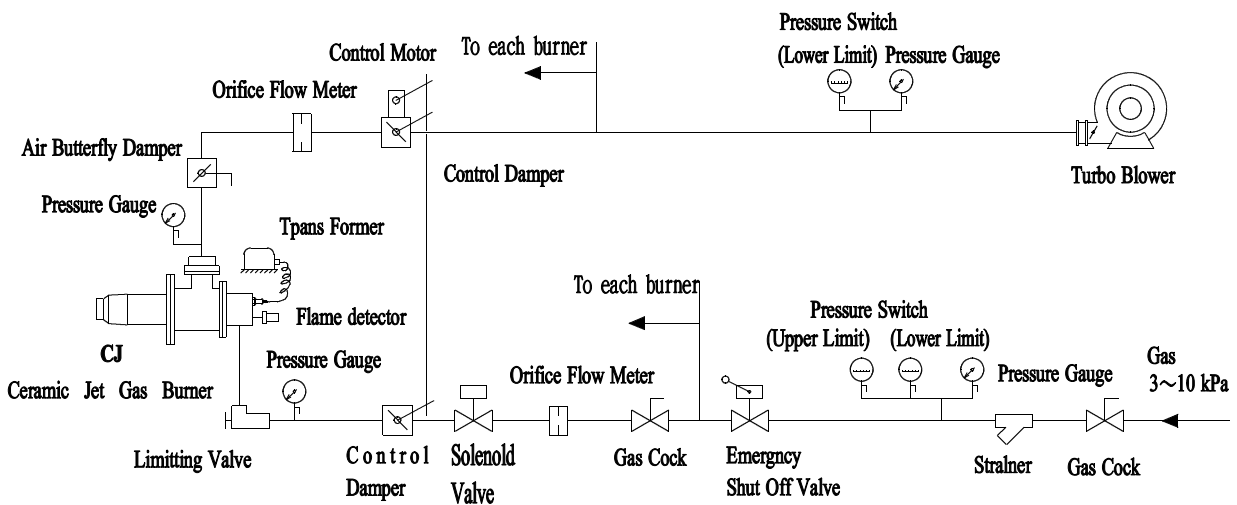
1. Direct good care to the inside of the pipe not to leave seal tape fractions, bond, cutting chips, etc.
2. In connecting the pipes, provide pipe support in proper positions to prevent the application of any excess force.
3. Provide a straight pipe part of about 6 times as large in diameter as the pipe before and behind the orifice flow meter

## 6. Flow sheet

### (1) Pressure balance Valve Method



### (2) Connection Method





# 7. Operation

## 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 per specified
6. Set the pressure to the pressure in the maximum combustion (6 KPa) 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. 3 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 combustion blower after the in-furnace temperature lowers to below 500 °C to protect the nozzle.

## 8. Inspection (Burner Nozzle, Ceramic Tube)

※ Inspection must be made after the furnace has sufficiently been cooled. In inspecting, be sure to wear heat insulating gloves and other protective gear.

(CJ - 1, 2)

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 headed bolts ⑮ fixing the air body ③ and the gas body ④.
4. Hold the gas body ④ firmly, and pull out the gas pipe ⑥, the burner nozzle ⑤, the ignition plug ⑦ and the positioning rod for nozzle ⑧ slowly and simultaneously.
5. Remove the union or the flange from the air piping.
6. Loosen the hexagon headed bolts fixing the air body ③ to the furnace body.
7. When the air body ③ is removed, the combustion tube ① inserted in the furnace can also be removed. (If an excessive force has to be applied, be very careful not to break the combustion tube.)
8. If the insulator or the like of the ignition plug ⑦ has irregularities, such as crack, replace it immediately (or ignition failure will be caused).
9. To replace the burner nozzle ⑤ by a new burner nozzle, loosen the hexagon socket setscrew ⑬ from the burner nozzle ⑤.
10. Check the ceramic tube on the state of the inside and outside. If the combustion tube is broken, contact us for consultation as combustion may often be hampered.
11. Reassemble the burner by reversing the order of the above steps.

(CJ - 3)

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 headed bolts ⑭ fixing the air body ③ and the gas body ④.

4. Hold the gas body ④ firmly, and pull out the gas pipe ⑥, the burner nozzle ⑤, and the ignition plug ⑦ slowly and simultaneously.
5. Remove the union or the flange from the air piping.
6. Loosen the hexagon headed bolts fixing the air body ③ to the furnace body.
7. The combustion tube ① is removed after removing the air body ③. (If an excessive force has to be applied, be very careful not to break the combustion tube.)
8. If the insulator or the like of the ignition plug ⑦ has irregularities, such as crack, replace it immediately (or ignition failure will be caused).
9. To replace the burner nozzle ⑤ by a new burner nozzle, loosen the hexagon socket setscrew ⑫ from the burner nozzle ⑤.
10. Check the ceramic tube on the state of the inside and outside. If the combustion tube is broken, contact us for consultation as combustion may often be hampered.
11. Reassemble the burner by reversing the order of the above steps.

(CJ - 4)

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 headed bolts ⑭ fixing the air body ③ and the gas body ④.
4. Hold the gas body ④ firmly, and pull out the gas pipe ⑦, the air nozzle ⑤, the ignition plug ⑧ and the gas nozzle ⑥ slowly and simultaneously.
5. Remove the union or the flange from the air piping.
6. Loosen the hexagon headed bolts fixing the air body ③ to the furnace body.
7. The combustion tube ① is removed after removing the air body ③. (If an excessive force has to be applied, be very careful not to break the combustion tube ①, ceramic receive packing ⑳ and ceramic press down packing ㉑.)
8. If the insulator or the like of the ignition plug ⑦ has irregularities, such as crack, replace it immediately (or ignition failure will be caused).
9. To replace the air nozzle ⑤ by a new air nozzle, loosen the hexagon socket setscrew ⑫ where it is attached to air nozzle ⑤ after confirmation positioning of the processing hole of air nozzle ⑤ and gas nozzle ⑥, and please work on exchange. If the position of the processed hole of the air nozzle ⑤ and the gas nozzle ⑥ is different from the time of purchase, combustion is hampered.

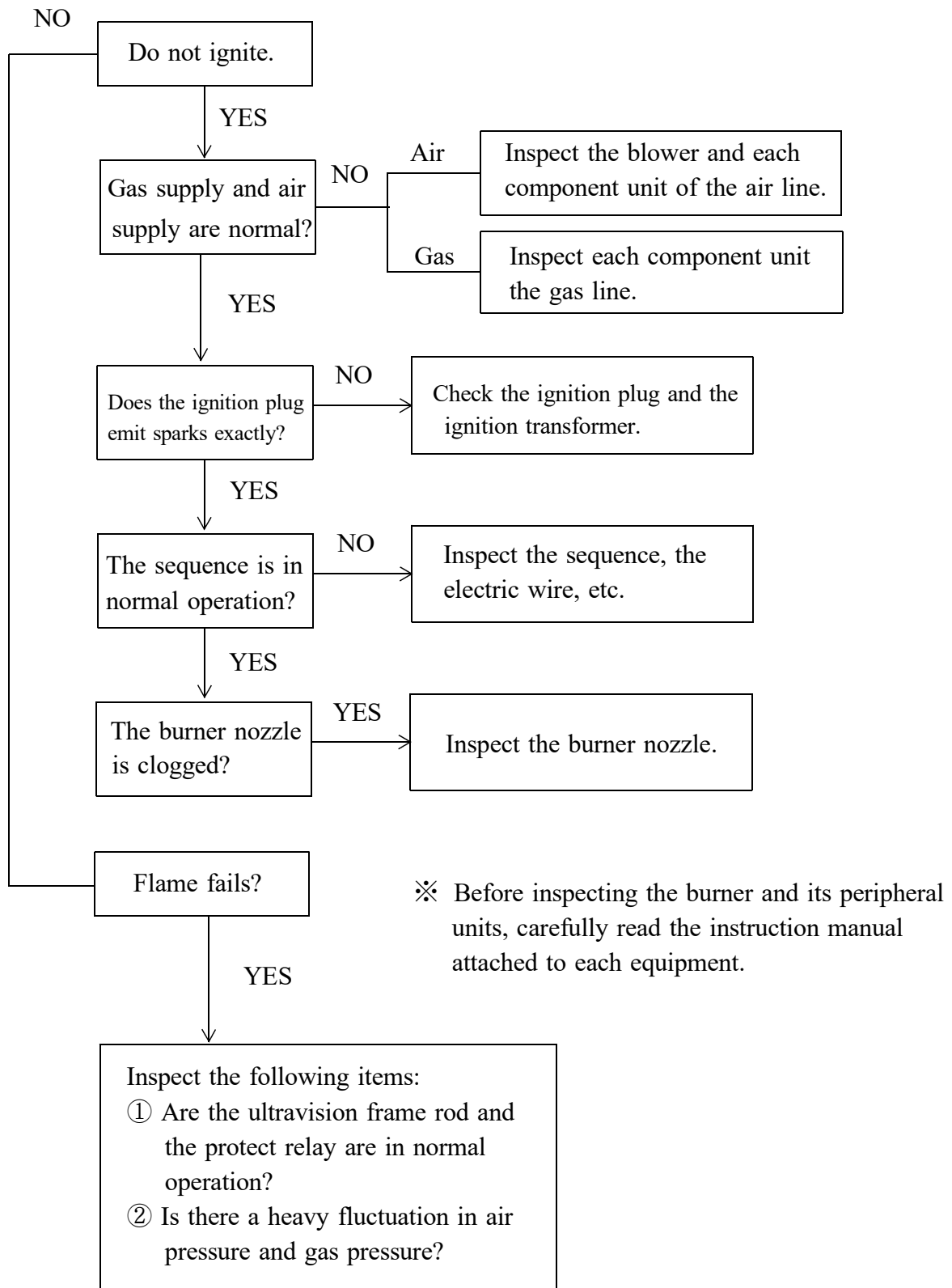
10. Check the ceramic tube on the state of the inside and outside. If the combustion tube is broken, contact us for consultation as combustion may often be hampered.
  11. Reassemble the burner by reversing the order of the above steps.
- ※ Inspect and clean the burner and its accessories from time to time according to the operational 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.



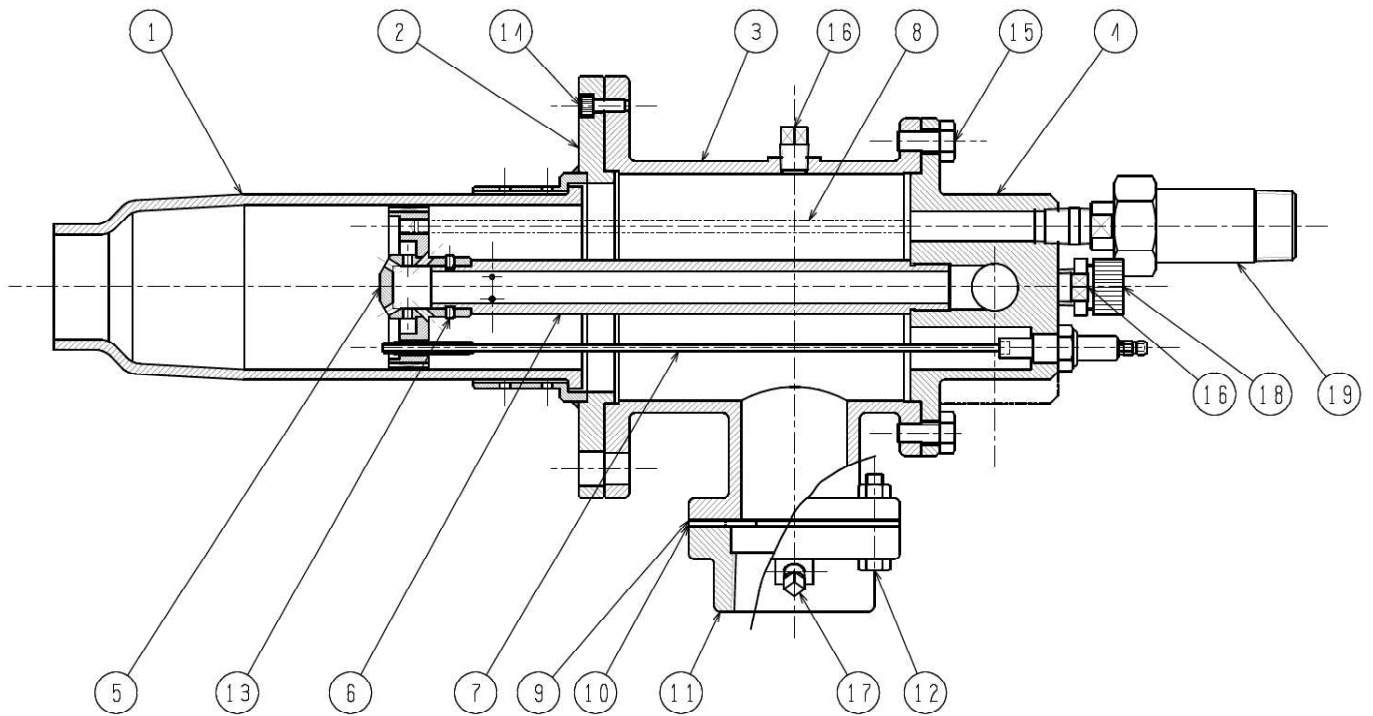
# 10. Troubleshooting



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

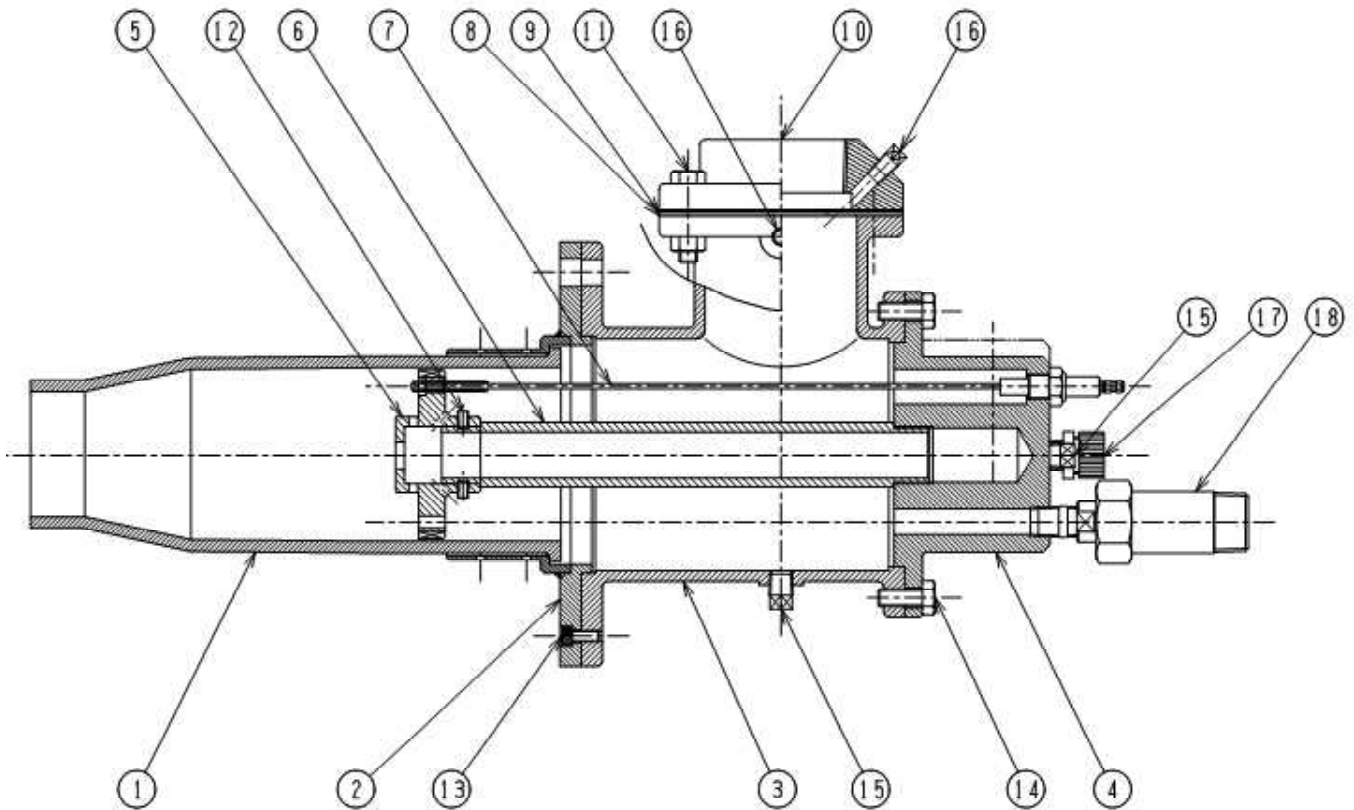
# 11. Structural Drawing

(C J- 1, 2)



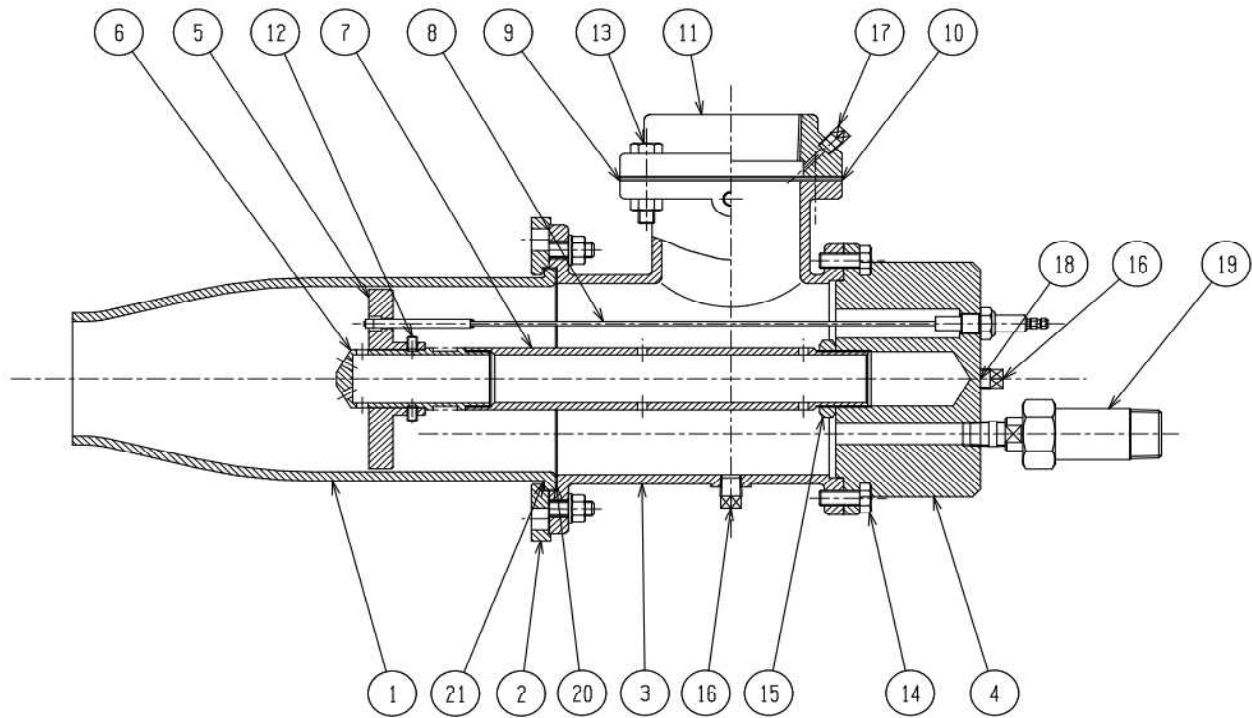
19	Ultra Adapter (SU-10)	1
18	Sight Hole (S-10)	1
17	Plug R 1/8	1
16	Plug R 1/4	1
15	Hexagon Headed Bolt	4
14	Hexagon Socket Head Cap Bolt	4
13	Hexagon Socket Setscrew	4
12	Hexagon Headed Bolt	4
11	Flange	1
10	Orifice Plate	1
9	Packing	2
8	Positioning Rod for Nozzle	1
7	Ignition Plug	1
6	Gas Pipe	1
5	Burner Nozzle	1
4	Gas Body	1
3	Air Body	1
2	Ceramic Tube Base	1
1	Ceramic Tube	1
NO.	PARTICULARS	QUAN.

(CJ - 3)



18	Ultra Adapter (SU-10)	1
17	Sight Hole (S-10)	1
16	Plug R 1/8	1
15	Plug R 1/4	1
14	Hexagon Headed Bolt	4
13	Hexagon Socket Head Cap Bolt	4
12	Hexagon Socket Setscrew	4
11	Hexagon Headed Bolt	4
10	Flange	1
9	Air Orifice	1
8	Packing	2
7	Ignition Plug	1
6	Gas Pipe	1
5	Burner Nozzle	1
4	Gas Body	1
3	Air Body	1
2	Ceramic Tube Base	1
1	Ceramic Tube	1
NO.	PARTICULARS	QUAN.

(CJ - 4)



21	Ceramic Press Down Packing	1
20	Ceramic Receive Packing	1
19	Ultra Adapter (SU-10)	1
18	Sight Glass	1
17	Plug R 1/8	2
16	Plug R 1/4	1
15	Lock Nut	1
14	Hexagon Socket Head Cap Bolt	4
13	Hexagon Headed Bolt	4
12	Hexagon Socket Setscrew	4
11	Flange	1
10	Air Orifice	1
9	Packing	2
8	Ignition Plug	1
7	Gas Pipe	1
6	Gas Nozzle	1
5	Air Nozzle	1
4	Gas Body	1
3	Air Body	1
2	Ceramic Tube Base	1
1	Ceramic Tube	1
NO.	PARTICULARS	QUAN.