

Paloma

Multi-Outlet Instantaneous AUTOMATIC GAS WATER HEATER

This Instruction Manual is for the installing contractor, to provide requirements and recommendations for the water heater, and for the owner — operator to explain the features, operation, safety precautions, maintenance, parts lists and trouble shooting of the water heater.

The sole warranties of Paloma are those set forth on the Warranty Card provided with each unit. So please fill the information upon purchase of the water heater.

It is imperative that all persons who are expected to install, operate or adjust this water heater read the instructions carefully so that they may understand how to do so.

Any question regarding the operation, maintenance, service or warranty of this water heater should be directed to the entity from whom it was purchased. If additional information is required, refer to whom you purchased or us.

MODELS

For use with NAT. Gas.

PH-6DN

PH-12M-DN

PH-24M-DN

For use with L.P. Gas.

PH-6DP

PH-12M-DP

PH-24M-DP



WARNING: If the information in these instructions are not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

■ WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately, call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Do not expose the water heater to freezing temperature in the venting system or surrounding room. Severe damage to unit including possible explosion of the unit, and attendant injury to person can occur due to freezing if unit is not properly drained.

INSTRUCTION MANUAL

WITH INSTALLATION INSTRUCTIONS FOR THE CONTRACTOR.

Model No. : _____

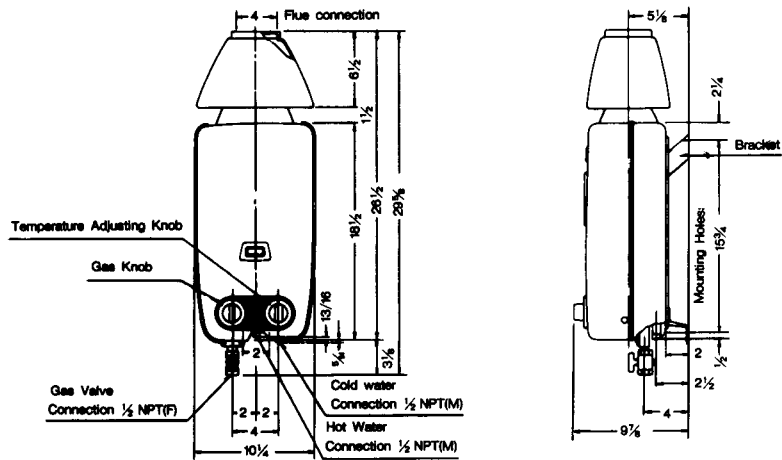
Date of Installation : _____

Serial No. : _____

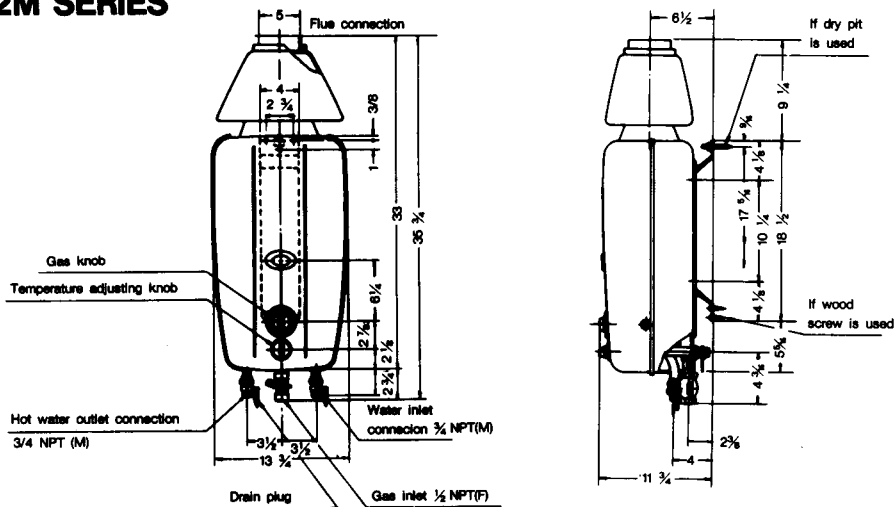
Installed by : _____

CONFIGURATION AND DIMENSIONS

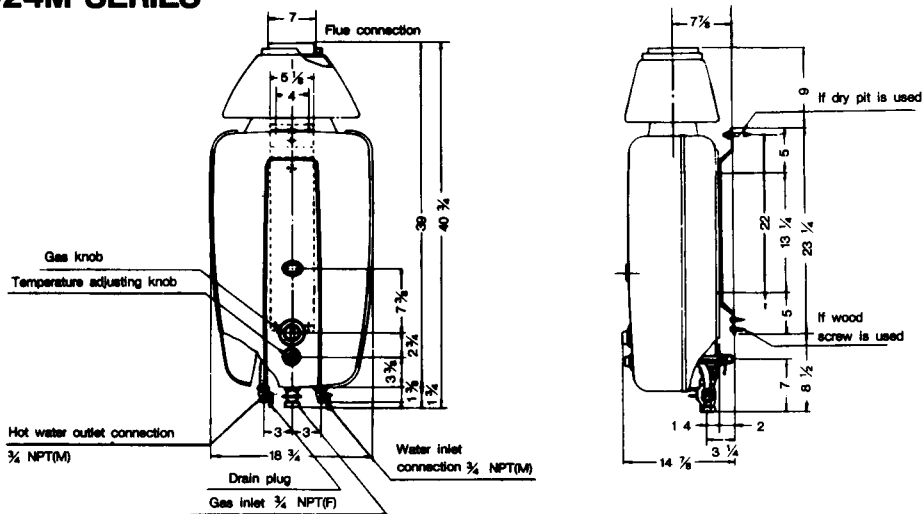
MODEL PH-6 SERIES



MODEL PH-12M SERIES



MODEL PH-24M SERIES



(Dimensions in Inches)

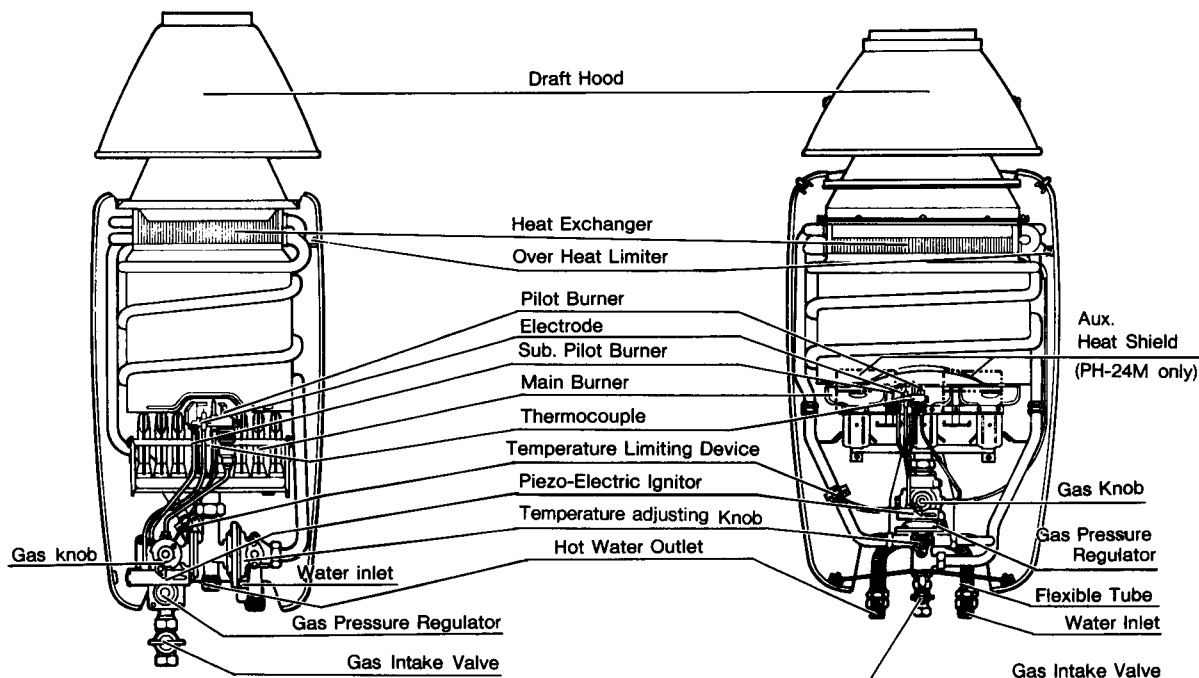
SPECIFICATIONS (APPROX.)

Model No.		PH-6DP	PH-6DN	PH-12M-DP	PH-12M-DN	PH-24M-DP	PH-24M-DN
Type of gas		L.P.	NAT.	L.P.	NAT.	L.P.	NAT.
Rated input (BTU/Hr.)	Full	43,800	43,800	89,300	89,300	178,500	178,500
	Half			30,000	30,000	37,700	37,700
Manifold Pressure (in. W. C.)	Full	9.0	3.2	10.0	3.7	9.0	3.7
	Min.			1.14	0.40	0.42	0.16
Hot water output degree rise (U.S. gal/min.)	Burner	1 stage		PH-12M		PH-24M	
				Min.	Full	Min.	Full
	60°F rise	1.17		0.79		0.87	
	70°F rise	1.00		0.68		0.75	
	80°F rise	0.88		0.59		0.65	
	90°F rise	0.78		0.53	1.59	0.58	3.17
	100°F rise	0.70		0.48	1.43	0.52	2.85
Minimum working water supply pressure	P.S.I	Min.	4.3		2.1	2.4	
		Full			10.0	12.9	
Height x Width X Depth	Inch	29-5/8 x 10-1/4 x 9-7/8		35-3/4 x 13-3/4 x 11-3/4		40-3/4 x 18-3/4 x 14-7/8	
Net weight	LBS.	20		36		76	
Connection	Gas	1/2 NPT female		1/2 NPT female		3/4 NPT female	
	Water hot (cold)	1/2 NPT male		3/4 NPT male		3/4 NPT male	
Flue size	Inch	4 dia.		5 dia.		7 dia.	

Since we are constantly improving our products, all specifications are subject to change without notice.

NAME OF PARTS

OPENED FRONT VIEW



Model: PH-6

Model: PH-24M

INTRODUCTION

The location chosen for the water heater must take into consideration the following;

LOCAL INSTALLATION REGULATIONS:

This water heater must be installed in accordance with these instructions, local codes, utility company requirements, and / or in the absence of local codes, the latest edition of the American National Standard, National Fuel Gas Code. A copy can be purchased from either American Gas Association, 1515 Wilson Blvd., Arlington, VA 22209 as booklet Z223.1 or National Fire Prevention Association, Batterymarch Park, Quincy, MA 02269 as booklet NFPA No. 54.

LOCATION:

1. A gas fired water heater should not be installed in a space where liquids which give off flammable vapors are to be used or stored. Such liquids include gasoline, L.P. Gas (butane and propane), paint or adhesives and their thinners, solvents or removers. Because of natural air movement in a room or other enclosed space, flammable vapors can be carried some distance from where their liquids are being used or stored. The open flame of the water heater's pilot light or main burner can ignite these vapors causing an explosion or fire which may result in severe burns or death to those in range, as well as property damage.

For these reasons installation of a gas fired water heater in a garage is not desirable.

If a location in a garage is the only alternative, the gas fired water heater should be installed so that the open flame of the pilot and main burner are no less than 40 inches above the garage floor.

Raising the gas fired water heater will reduce BUT NOT eliminate the possibility of lighting the vapors of any flammable liquids which may be improperly stored or accidentally spilled.

2. The water heater should be installed as close as practical to the gas vent or chimney. Long hot water lines should be insulated to conserve water and energy.

The water heater and water lines should be protected from freezing temperatures. DO NOT install the water heater in bathrooms, bedrooms, any occupied rooms normally kept closed nor in outdoor unprotected areas.

3. The water heater shall be installed with the minimum clearances to combustible material of 6 inches at the sides, 2 inches at the rear and 16 inches above the top of draft hood outlet. For alcove installation, the water heater shall be installed above non-combustible flooring.

NOTE: A minimum of 24 inches clearance from front should be available for adequate inspection and servicing.

4. **CAUTION!** The water heater should not be located in an area where leakage of the water heater will result in damage to the area adjacent to it or to lower floors of the structure. When such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed below the water heater. The pan **MUST NOT** restrict combustion air flow.

NOTE: Auxiliary catch pan installation **MUST** conform to local codes.

5. COMBUSTION & VENTILATION AIR:

Proper operation of the water heater requires air for combustion and ventilation. If the water heater is installed in an unconfined space within a building of conventional frame, masonry or metal construction, infiltration air is normally adequate for proper combustion and ventilation.

The confined space should be provided with 2 permanent openings: one commencing within 12 inches of the top and one commencing within 12 inches of the bottom.

Each opening should have a total free area of not less than that as follows depending upon the type of installation.

(a) If all air for combustion comes from inside the buildings:

Each opening should have a minimum free area of 1 square inch per 1,000 Btu per hour of the total input rating of all gas utilization equipment in the confined space, but not less than 100 square inches.

(b) If all air for combustion comes from outdoors:

I. When directly communicating with the outdoors and communicating with the outdoors through vertical ducts, each opening should have a minimum free area of 1 square inch per 4,000 Btu per hour of total input rating of all equipment in the enclosure.

II. When communicating with the outdoors through horizontal ducts, each opening should have a minimum free area of 1 square inch per 2,000 Btu per hour of total input rating of all equipment in the enclosure.

III. When ducts are used, they should be of the same cross-sectional area as the free area of the openings to which they connect. The minimum dimension of rectangular air ducts should be not less than 3 inches.

NOTE: In calculating free area, consideration should be given to the blocking effect of louvers, grills or screens protecting openings.

Protective screening for the openings **MUST NOT** be smaller than 1/4 inch mesh to resist clogging by lint or debris.

Provisions for combustion and ventilation air must comply with referenced codes and standards.
See Regulation Section.

6. CORROSIVE ATMOSPHERE:

The water heater should not be installed near an air supply containing halogenated hydrocarbons. For example, the air in beauty shops, dry cleaning establishments, photo processing labs, and storage areas for liquid and powdered bleaches or swimpool chemicals often contain such hydrocarbons. The air there may be safe to breathe, but when it passes through a gas flame, corrosive elements are released that will shorten the life of any gas burning appliance. Propellants from common spray cans or gas leaks from refrigeration equipment are highly corrosive after passing through a flame.

7. PROHIBITED INSTALLATIONS:

WARNING!! DO NOT INSTALL THE WATER HEATER IN THE FOLLOWING LOCATIONS:

- a. In small, poorly ventilated rooms.
- b. In air-tight rooms with air-conditioning.
- c. Near vents for heating or cooling.
- d. In places where chemiacals are used.
- e. In bathrooms, bedrooms or any occupied rooms normally kept closed.
- f. In a location where water heater may be exposed to freezing temperatures.
- g. In a location where water heater is subject to vibration. (such as Carpet Cleaning, etc.)
- h. In Recreational Vehicles, Mobile Homes, Boats and other Watercrafts.
- i. As a part of any circulating systems (such as Home Heating, Spa or Pool Heating, Re-Circulation to the other Tank, etc.)
- j. In corrosive, dusty and greasy environments.

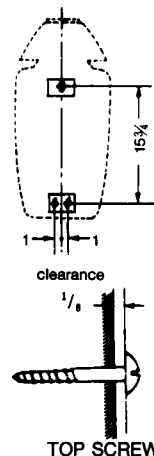
8. METHOD OF INSTALLATION:

A. For PH-6 series

The bracket attached on the water heater should be secured on a wooden post or wall by means of a total of 3 wood screws.

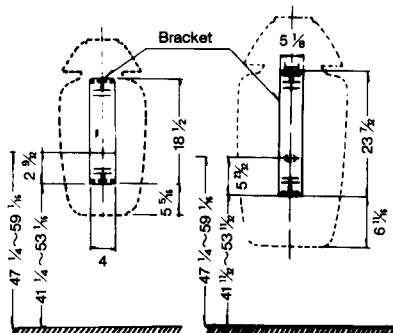
DO NOT use nails.

A top screw should be fixed with a clearance of 1/8 inch between wall and screw head where the water heater bracket is hung up. Water Heater should be secured with two bottom screws.



B. For PH-12M & 24M series

- a. The bracket may be secured to a wooden post or bar by means of a total of 6 wood screws. **DO NOT** use nails.
- b. When the bracket is to be mounted on a concrete wall or a rigid wooden post, it may be attached securely in position by use of a pair of dry pit 3/8 or coach screws (3/8) passed through the upper and the lower oval slot in the bracket.



NOTE: Any local ordinances and regulations relating to the installation of the water heater should be strictly observed.

NOTE: The water heater which will be used to supply potable water shall not be connected to any heating system or component(s) previously used with a nonpotable water heating appliance.

INSTALLATIONS

NOTE: INSTALLATIONS (PLUMBING, ETC.) SHOULD BE DONE ONLY BY A CERTIFIED AND/OR LICENSED PLUMBER. ALL MODELS SHALL BE INSTALLED INDOORS AT VERTICAL POSITION ON A WALL.

1. INSPECT SHIPMENT:

Inspect water heater for possible damage. Check the marking of the rating plate of the water heater to be certain the type of gas being furnished corresponds to that for which the water heater is equipped.

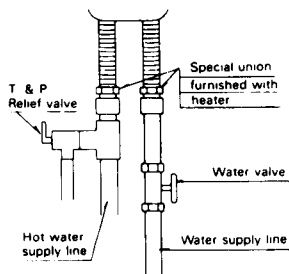
2. WATER SUPPLY CONNECTIONS:

- a. The water supply to the water heater should be such as to provide sufficient pressure to properly operate the water actuated control valve.

The minimum working water supply pressure is shown in the table. However, additional supply pressure is required above the minimum pressure to cover any pressure head loss or drop in hot water supply lines. Make sure that the total water pressure at the inlet is sufficient to operate water heater at full capacity.

Models	Min. water supply pressure
PH-6 series	4.3 P.S.I.
PH-12M series	2.1 P.S.I.
PH-24M series	2.4 P.S.I.

- b. Install a shutoff valve near the water inlet of the water heater for purpose of the servicing and draining.



- c. Connection between the water heater and places where hot water is used should be as short and direct as possible, and a uniform pipe size of sufficient diameter to carry the full capacity of hot water should be used.

- d. Be sure to connect the water inlet and the hot water outlet as shown on the water heater. If reversed, the water heater will not function.

NOTE: Make sure the water filter is in the water inlet connection as shown on page 14 & 15.

- e. When hot water flows through the supply line there is an inevitable heat loss, regardless of type of water heater. Thus, insulation or protection of hot water piping is encouraged.

NOTE: For PH-6 series, well water systems should be set at a range of 40-60 P.S.I.

NOTE: Some model may require to remove all restrictors from faucets & shower heads.

3. RELIEF VALVE:

A new combination pressure and temperature relief valve, complying with the Relief Valve Standard, ANSI Z21.22-1986, must be installed at the hot water outlet connection of the water heater at the time of installation. Local codes should govern the installation of the relief devices.

For safe operation of the water heater, be sure that:

- (I) No valve is placed between the relief valve and the water heater.
- (II) Discharge from the relief device is conducted to a suitable place for disposal when relief occurs.
- (III) No reducing coupling or other restrictions are installed in discharge line, and
- (IV) Discharge line is installed to allow complete drainage of the device and line.
- (V) The pressure rating of the relief valve must not exceed 150 P.S.I., the maximum working pressure of the water heater as marked on the rating plate.
- (VI) The BTUH rating of the relief valve must equal or exceed the BTUH input of the water heater as marked on its rating plate.
- (VII) The end of the discharge line should not be threaded or concealed and should be protected from freezing.

NOTE: Manual operation of pressure-temperature relief valves should be done at least once a year. Turn off the gas intake valve, open the hot water tap and then check the operation of safety relief valve. You should take precautions to avoid contact with hot water coming out of relief valve and to prevent water damage.

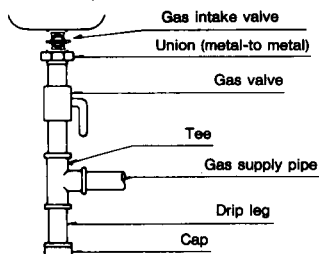
NOTE: If the temperature and pressure relief valve on the system discharges periodically, a problem exists and service to the water system is required.

CAUTIONS!! This water heater must only be used with the following water supply system conditions:

- a. With clean, potable water (drinkable and harmless to mankind) free of corrosive chemicals, sand, dirt, hair or other contaminants.
- b. With inlet water temperatures above 32°F, but not exceeding 90°F.
- c. In non-circulating systems.
- d. With the heat exchanger free of lime and scale deposits.

4. GAS SUPPLY CONNECTION:

- a. The gas supply lines should be gas-tight and of such size, and so installed, as to provide a supply of gas sufficient to meet the maximum demand of the water heater without undue loss of pressure.
- b. ANSI approved steel or wrought-iron pipe should be used for gas piping.
- c. A metal-to-metal type union and a shutoff valve should be installed between the water heater and the gas supply pipe. A pipe joint compound resistant to the action of liquified petroleum gas on the threaded joints must be used.
- d. The gas supply piping must include a drip leg in close proximity to the water heater.



- e. The maximum inlet gas pressure must not exceed the value specified on the rating plate on the water heater and that the minimum inlet gas pressure listed below is for the purposes of input adjustment.

Type of gas	Max. supply pressure
L.P.Gas	13" W.C.
NAT.Gas	10.5" W.C.

Models	Min. Supply Pressure	
	L.P.Gas	NAT.Gas
PH-6 series	10.0	3.9
PH-12M series	11.1	4.7
PH-24M series	11.0	4.7

- f. After the water heater is connected to the gas supply, all connections including water heater must be checked for leakage with soapy water, bubble solution or other acceptable means before placing the water heater in operation. DO NOT use Matches, Candles or other sources of Ignition for the purpose of leakage test.

- g. The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than ½ psig (3.5 kPa).

WARNING: Install the gas pressure regulators, in the gas supply line, which do not exceed the maximum supply pressure mentioned above. DO NOT use the gas pressure regulators, such as the industrial gas pressure regulators, as they are intended for use with medium and high pressure gas. If the gas supply pressure exceeds the maximum mentioned above, imperfect combustion may result and the life of the water heater may be shortened.

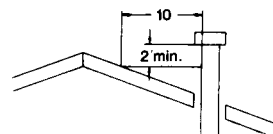
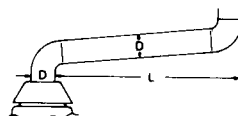
MOREOVER, EXCEEDING INDICATED MAXIMUM GAS PRESSURE MAY CAUSE SERIOUS DAMAGE TO THE WATER HEATER AS WELL AS PERSONAL INJURY. MAKE SURE TO INSTALL A PROPER GAS PRESSURE REGULATOR UNDER THE MAXIMUM SUPPLY PRESSURE MENTIONED ABOVE. IF PRESSURE IS LOW, GAS MAY BE INSUFFICIENT TO HEAT WATER.

5. VENTING:

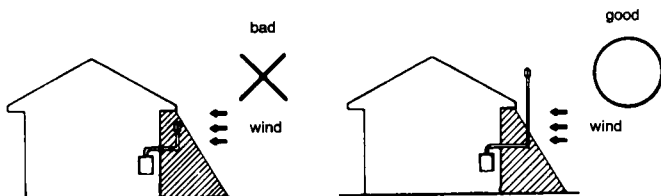
The water heater should be connected to a gas venting system constructed so as to adequately remove flue gases to the outside atmosphere.

- a. The vent connectors must be attached to the draft hood outlet to connect the water heater to the gas vent or chimney. The vent connectors must be the same size (diameter) as the draft hood outlet or larger, never smaller. For proper venting in certain installations a larger vent connector size may be needed. Consult Vent Tables in Appendix "G" of the National Fuel Gas Code (ANSI Z223. 1 or NFPA booklet 54).

Models	Flue size(D)
PH-6 series	4" dia
PH-12M series	5" dia
PH-24M series	7" dia



- b. The terminal of the flue pipe should be extended at least 2 feet above the highest point where it passes through a roof of a building and at least 2 feet higher than any portion of a building within a horizontal distance of 10 feet.
- c. Horizontal vent connectors must be pitched upward to the chimney at least 1/4" per foot of length.
- d. Single wall vent connectors must be at least 6" from adjacent unprotected combustible surfaces. Joint of vent connectors should be securely fastened by sheet metal screws or other approved method.
- e. The location of the pipe passing through a wall should be protected by noncombustible material to provide sufficient clearance from the pipe.
- f. All portions of the pipe should be adequately supported for the design and weight of the material employed.
- g. A cap or a roof assembly should have a venting not less than that of the pipe to which it is attached.
- h. DO NOT install the flue outlet in the wind pressure drift area as shown below.



A venting system should be designed and constructed so as to develop a positive flow adequate to remove flue gases to the outside atmosphere.

WARNING!! The manufacturer's warranty does not cover any damage or defect caused by installation, attachment or use of any type of energy saving or other unapproved devices into, onto or in conjunction with the water heater. The use of unauthorized energy saving devices may shorten the life of the water heater and may endanger life and property. The manufacturer disclaims any responsibility for such loss injury resulting from the use of such unauthorized devices.

— INSTALLATION CHECK LIST —

A. Water Heater Location

- ☐ Close to area of vent.
- ☐ Indoors and protected from freezing temperatures.
- ☐ Proper clearance from combustible surfaces observed.
- ☐ Sufficient fresh air supply for proper operation of water heater.
- ☐ Air supply free of corrosive elements and flammable vapors.
- ☐ Provisions made to protect area from water damage.
- ☐ Sufficient room to service heater.

B. Water Supply

- ☐ Water Filter is located in original position.
- ☐ Water passes through the water heater.
- ☐ Water heater and piping air vented.
- ☐ Water connections tight and free of leaks.

C. Relief Valve

- ☐ Temperature and Pressure Relief Valve properly installed and discharge line run to open drain.
- ☐ Discharge line protected from freezing.

D. Gas Supply

- ☐ Gas line equipped with shut-off valve, union and sediment trap/drip leg.
- ☐ Approved pipe joint compound used.
- ☐ Soap and water solution used to check all connections and fittings for possible gas leak.
- ☐ Gas Company inspected installation (if required).

E. Venting

- ☐ Vent connector(s) pitched upward to chimney (1/4" per foot of length minimum).
- ☐ Vent connector(s) securely fastened together with screws.
- ☐ Single wall vent connector(s) at least 6" from combustible material.

OPERATION

The appliance and its gas connection must be leak tested before placing the appliance in operation.

SAFETY PRECAUTIONS

1. Do not store or use gasoline or other flammable vapors and liquids, such as adhesives or paint thinner, in vicinity of this or any other appliance. If such flammables must be used, open doors and windows for ventilation, and all gas burning appliances in vicinity should be shut off, including their pilot lights, to avoid

vapors igniting.

- NOTE: Flammable vapors may be drawn by air currents from surrounding areas to the water heater.
2. Do not allow combustible materials such as newspaper, rags or mops to accumulate near water heater.

FOR YOUR SAFETY READ BEFORE LIGHTING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- A. This appliance has a pilot which must be lighted by hand.
When lighting the pilot, follow these instructions exactly.
- B. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

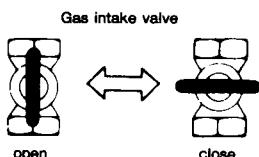
- If you cannot reach your gas supplier, call the fire department.

- C. Use only your hand to push in or turn the gas control knob.
Never use tools.
If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician.
Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

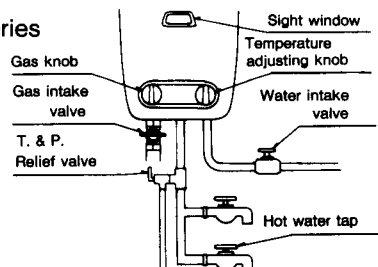
I. LIGHTING INSTRUCTIONS

STOP! READ THE SAFETY INFORMATION ABOVE.

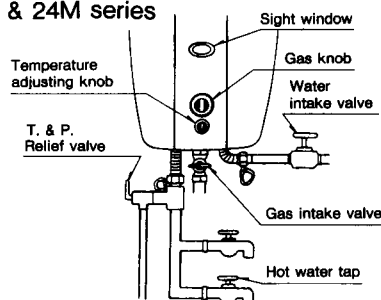
1. Turn the gas intake valve clockwise ↻ to "OFF" position.
2. Wait five (5) minutes to clear any gas. If you then smell gas, STOP!
Follow "B" in the safety information above on this page. If you don't smell gas, go to next step.
3. Fully open the water intake valve and hot water tap. Make certain that water passes through the water heater. When water begins to flow out of the hot water tap, turn off the hot water tap.
4. Open the gas intake valve.



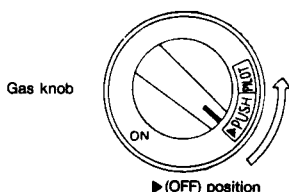
A. PH-6 series



B. PH-12M & 24M series



5. Turn the gas knob clockwise ↻ to "►" position.
And repeat (3).



6. Find the pilot burner through the sight window.

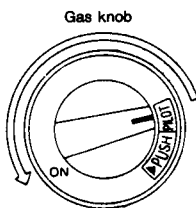


7. Push the gas knob in and hold at the "►" position, turn it counterclockwise ↺ till you hear a clicking sound, then the pilot should be lit.
8. Once the pilot is lit, hold the gas knob in for about 20 seconds, then release. Recheck to see if the pilot remains lit. If not, repeat steps (1) through (6).

If the pilot stays lit after the gas knob is released, the subsidiary pilot burner should be out. When the pilot remains lit, the safety device is operating and the safety valve is in opened position.

- If the gas knob does not pop up when released, stop and immediately call your service technician or gas supplier.
- If the pilot will not stay lit after several tries, turn the gas knob to "►" position and close the gas intake valve and call your service technician or gas supplier.

9. Turn the gas knob counterclockwise ↺ to "ON" position.



NOTE: Should over heating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.

WARNING!! DO NOT LIGHT PILOT WHEN ANY HOT WATER TAP IS OPEN.

II. TO GET HOT WATER

Turn on the hot water tap.

This automatically allows the gas to the main burner where it is lighted by the pilot. Hot water will flow out instantaneously.

III. TO SHUT OFF THE HOT WATER

Turning off the hot water tap will automatically shut off the main burner, leaving only the pilot lit.

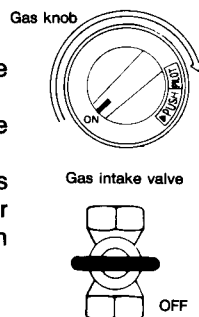
With pilot on, the main burner will reignite whenever hot water tap is turned on.

IV. WHEN THE HEATER IS NOT IN USE FOR A PERIOD OF TIME

Turn the gas knob clockwise ↻ to the "►" position.

Turn off the gas at the intake valve to insure safety.

For your protection, it is important that the water heater be drained even overnight in cold weather. See "PROPER DRAINING".



V. WATER TEMPERATURE ADJUSTMENT

Water temperature is adjustable by

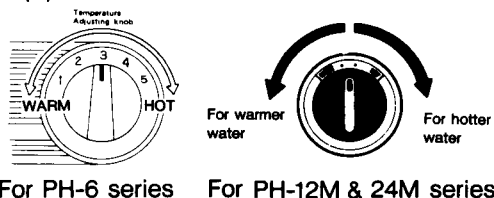
- (A) For highest temperature:
Turn the temperature adjusting knob clockwise to the "HOT" position.

- (B) To decrease temperature:
Turn the temperature adjusting knob counterclockwise from the "HOT" position to desired position.

Note: For PH-6 series, water temperature is adjustable by the volume of water which passes through the water heater.

(A) decrease the water flow.

(B) increase the water flow.



VI. AUTOMATIC OUTPUT CONTROL (For PH-12M & 24M Series)

Just open the tap, and adjust the volume of hot water by the tap.

Automatic Output Control will vary the gas flame according to the required volume of hot water, even if a small volume is required, it controls gas flame without extinction.

NOTE: By setting unit at the "HOT" position during winter time and at the "WARM" position during summer time, hot water of stable temperature will be supplied (about 140°F).

VII. HOT WATER TEMPERATURE AND HOT WATER OUTPUT

The difference between heated and unheated water temperature is referred to as "Temperature-Rise".

For example, when 70°F inlet water is heated to 170°F at the outlet, the temperature-rise is 100°F.

The capacity of a water heater is not determined merely from the temperature of the outlet hot water.

Find the temperature-rise by measuring the temperature of heated and unheated water. At the same time, measure the volume of the outlet hot water supplied in one minute.

Compare the temperature-rise and the volume of hot water with the relevant figures listed in the specification table.

NOTE: If you are measuring the above hot water outlet temperature at a hot water tap which is away from the water heater, please consider some decrease in temperature.

VIII. TEMPERATURE LIMITING DEVICE

This water heater is equipped with an automatic gas shut-off device of the manual reset type which is actuated by high water temperature.

The device automatically shuts off the gas to the main burner and the pilot burner when the stable outlet water temperature exceeds 194°F.

If the device is operated, you can manually reset it when outlet water temperature becomes below 160°F or after a 5 minute complete shut-off period in accordance with lighting procedure described on page 9 and 10.

IX. EXPOSURE OF WATER HEATER IN COLD WEATHER

Where water heater may be exposed to freezing conditions even for short periods of time, be sure to drain all water from unit and extinguish the pilot flame. Exposure to freezing conditions can occur from down draft of venting system or from installation in area exposed to cold air.

SERIOUS DAMAGE TO WATER HEATER AND INJURY TO PERSON CAN OCCUR IF WATER HEATER IS NOT DRAINED AND PILOT FLAME IS NOT EXTINGUISHED. SEE PROCEDURE FOR PROPER DRAINING.

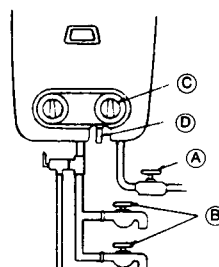
X. PROPER DRAINING

1. Turn off the gas at the intake valve.
2. Turn off the main water intake valve (A). If a non-freezing valve is utilized, turn it off and leave valve (A) open.
3. Open all the hot water taps (B).
4. Turn the temperature adjusting knob (C) to the "WARM" position.
5. Remove the drain plugs (D) to drain all water from water heater.
Make sure water is completely drained, and the drain plugs should be remain out until the water heater is used again.
6. Before next use, make sure to replace the drain plugs (D). Then supply water until water comes out from the hot water taps (B), and follow lighting procedure.

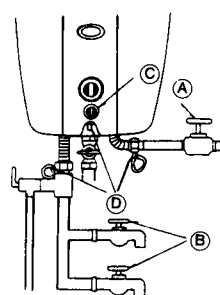
NOTE: In cold weather, because of various reasons such as down drafts in the venting system, installation in unheated areas, or other unexpected conditions, the water heater can be exposed to freezing temperatures. In all such circumstances, the water heater should be completely drained after each use whenever it is not in use while the heat exchanger is still hot and the pilot flame should be extinguished.

FAILURE TO DO SO MAY CAUSE DAMAGE TO GAS CONTROL VALVES AND OTHER SENSITIVE COMPONENTS AND CAUSE SEVERE DAMAGE TO WATER HEATER AS WELL AS INJURY TO PERSON.

A.
For PH-6 series



B.
For PH-12M & 24M series



Note: Other measures can be employed for PH-12M & 24M series to minimize the risk of freezing. See page 16.

Note: PH-12M & 24M series have Crush Washers. When the Crush Washers work against freezing, water leakage should normally occur between the water control body and the water control case. Then, the Crush Washers should be replaced.

MAINTENANCE

Properly maintained, your water heater will provide years of dependable trouble free service. It is suggested that a regular routine maintenance program be established and followed by the user. It is further recommended that a periodic inspection of the burners, relief valve and venting system should be made by service personnel qualified in gas appliance repair.

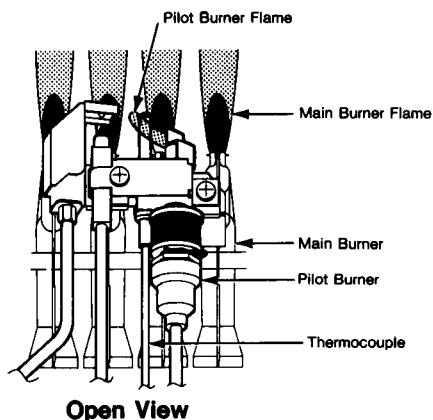
1. Check venting systems at least once a year in accordance with the installation instructions for venting on page 4, 5, 7 & 8.
*Make sure that clearance and protection against combustible construction is sufficient and that no obstructions exist in the venting system.

2. Visually inspect the main burner flame and the pilot burner flame at least once a year through the sight window on the front jacket of the water heater.

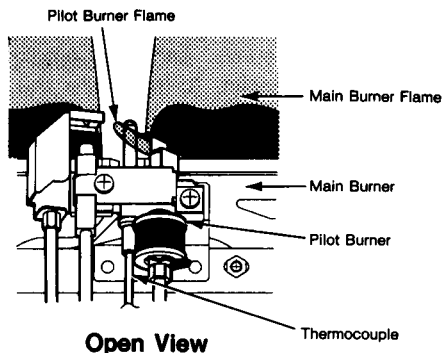
NOTE: No extreme yellow flame exists.

The pilot burner flame should concentrate on the upper third of the tip of the thermocouple as indicated in the following illusts.

A. For PH-6 series



B. For PH-12M series (For PH-24M series, refer to this illust.)



3. Keep appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.
4. Do not obstruct the flow of combustion and ventilation air. Keep draft hood opening area and air ways free for ventilation and combustion.

● HOW TO REMOVE THE MAIN BURNER AND THE GAS PRESSURE REGULATOR

A. For PH-6 series

1. To remove the main burner assembly.

Before removing main burner, be sure to shut off gas supply at the gas intake valve.

Step 1. Unscrew two union nuts of pilot burner tubing and subsidiary pilot burner tubing.

Step 2. Unscrew a screw fixing the bracket to the main burner.

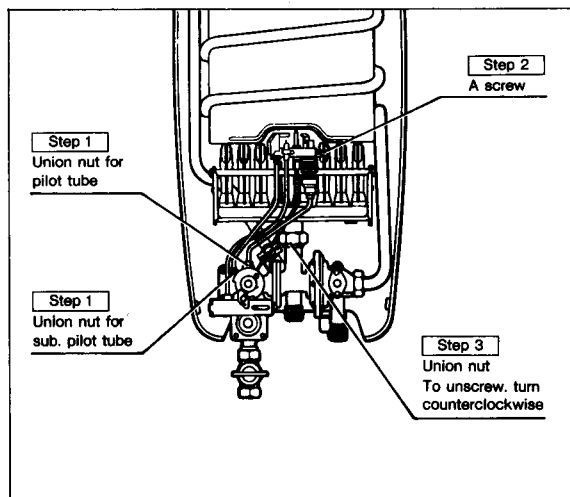
Step 3. Unscrew a union nut fixing main burner to top of control.

To loose the nut, push it forward.

Step 4. Take main burner out of water heater.

After replacing main burner, make sure there is no gas leakage out of connections by testing with bubble solution.

If necessary, clean the burners with vacuum cleaner.

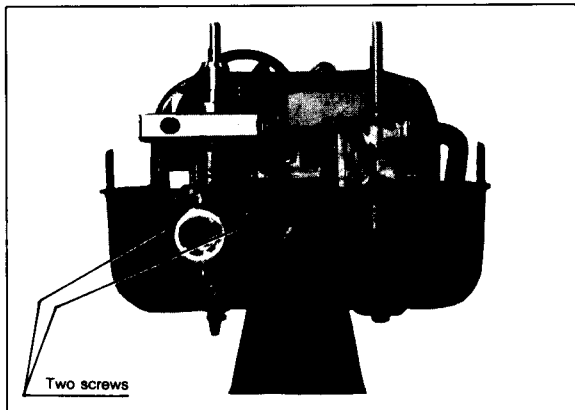


2. To remove gas pressure regulator.

Before removing the regulator, be sure to shut off gas supply upstream of the line.

Unscrew two screws fixing gas pressure regulator.

After replacing disassembled parts, be sure there is no gas leakage out of connections by testing with bubble solution.



● HOW TO REMOVE THE MAIN BURNER AND THE GAS PRESSURE REGULATOR

B. For PH-12M & 24M series

1. To remove the main burner assembly:

Before removing main burner, be sure to shut off gas supply at the gas intake valve.

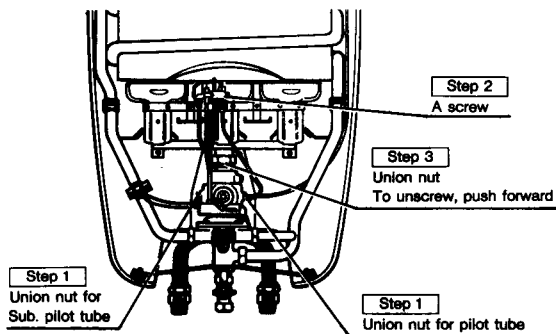
- Step 1. Unscrew two union nuts of pilot burner tubing and subsidiary pilot burner tubing.
- Step 2. Unscrew screw fixing the pilot bracket to the main burner.
- Step 3. Unscrew union nut fixing main burner to top of control.
To loose the nut, push it forward.
- Step 4. Take main burner out of water heater.

Note: For PH-24M

Unscrew two screws holding main burner assembly to back jacket.

After replacing main burner, make sure there is no gas leakage out of connections by testing with bubble solutions.

If necessary, clean the burners with vacuum cleaner.

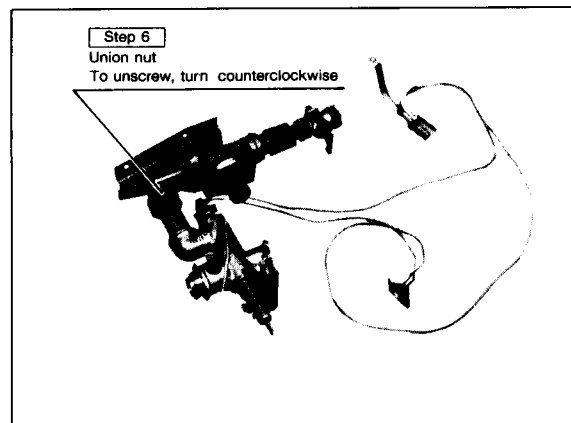
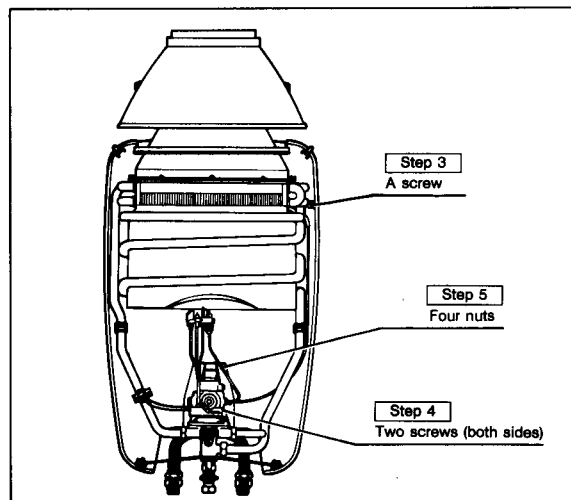


2. To remove gas pressure regulator:

Before removing the regulator, be sure to shut off gas supply upstream of the line.

- Step 1. Remove the main burner in accordance with the procedure described in item 1.
- Step 2. Unscrew two screws fixing temperature limiting device to joint pipe.
- Step 3. Unscrew screw fixing over heat limiting device to back jacket.
- Step 4. Unscrew two screws fixing gas portion of control to water portion thereof.
- Step 5. Unscrew four nuts fixing regulator to back jacket.
- Step 6. Take regulator with gas portion of control out of water heater.
- Step 7. Unscrew union nut fixing regulator to gas portion of control to remove regulator alone.

After replacing disassembled parts, be sure there is no gas leakage out of connections by testing with bubble solution.



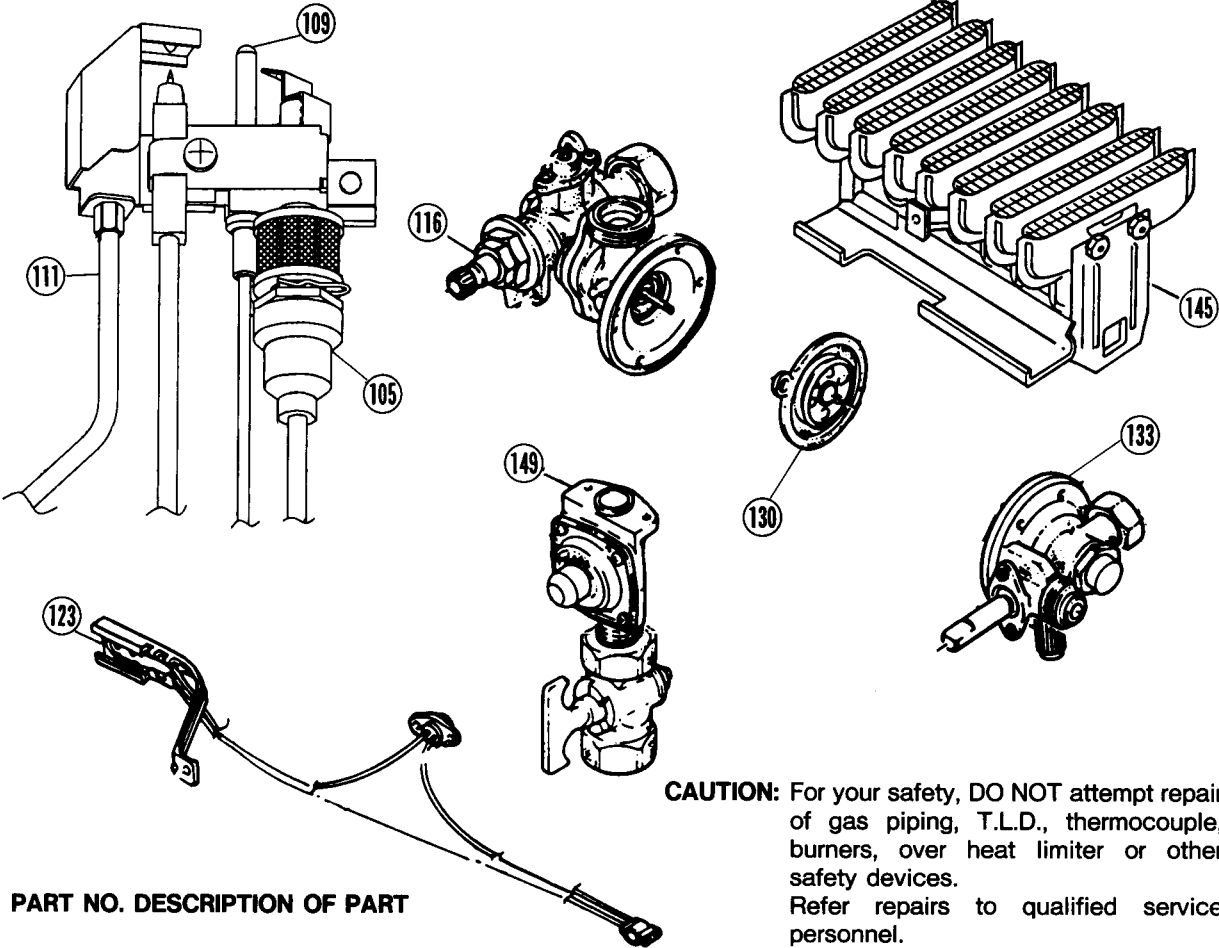
PARTS LIST FOR PH-6DN/DP

The parts list below includes the most commonly required components.

NOTE: All orders for repair parts must include the following informations:

- 1. Model No. & Type of Gas
- 2. Serial No.
- 3. Parts number(s) (if not illustrated, indicate)

Address parts orders to your distributor or dealer (whom you purchase the unit).

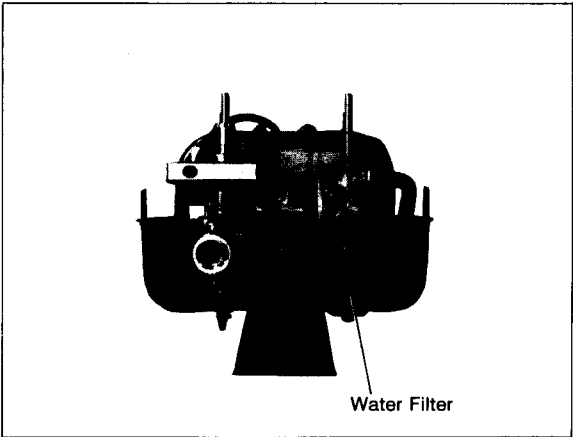


CAUTION: For your safety, DO NOT attempt repair of gas piping, T.L.D., thermocouple, burners, over heat limiter or other safety devices. Refer repairs to qualified service personnel.

PART NO. DESCRIPTION OF PART

- 105 Pilot Burner Assembly
- 109 Thermocouple
- 111 Sub. Pilot Burner Assembly
- 116 Gas Control Valve Assembly
- 123 Over Heat Limiter with TLD
- 130 Diaphragm
- 133 Water Control Body Assembly
- 145 Main Burner Assembly
- 149 Gas Pressure Regulator Assembly

WARNING!! DO NOT USE THE WATER HEATER WITHOUT FILTER IN THE WATER INLET CONNECTION. SERIOUS DAMAGE TO THE WATER HEATER AND INJURY TO PERSON CAN OCCUR IF THE WATER FILTER IS REMOVED AND USED.



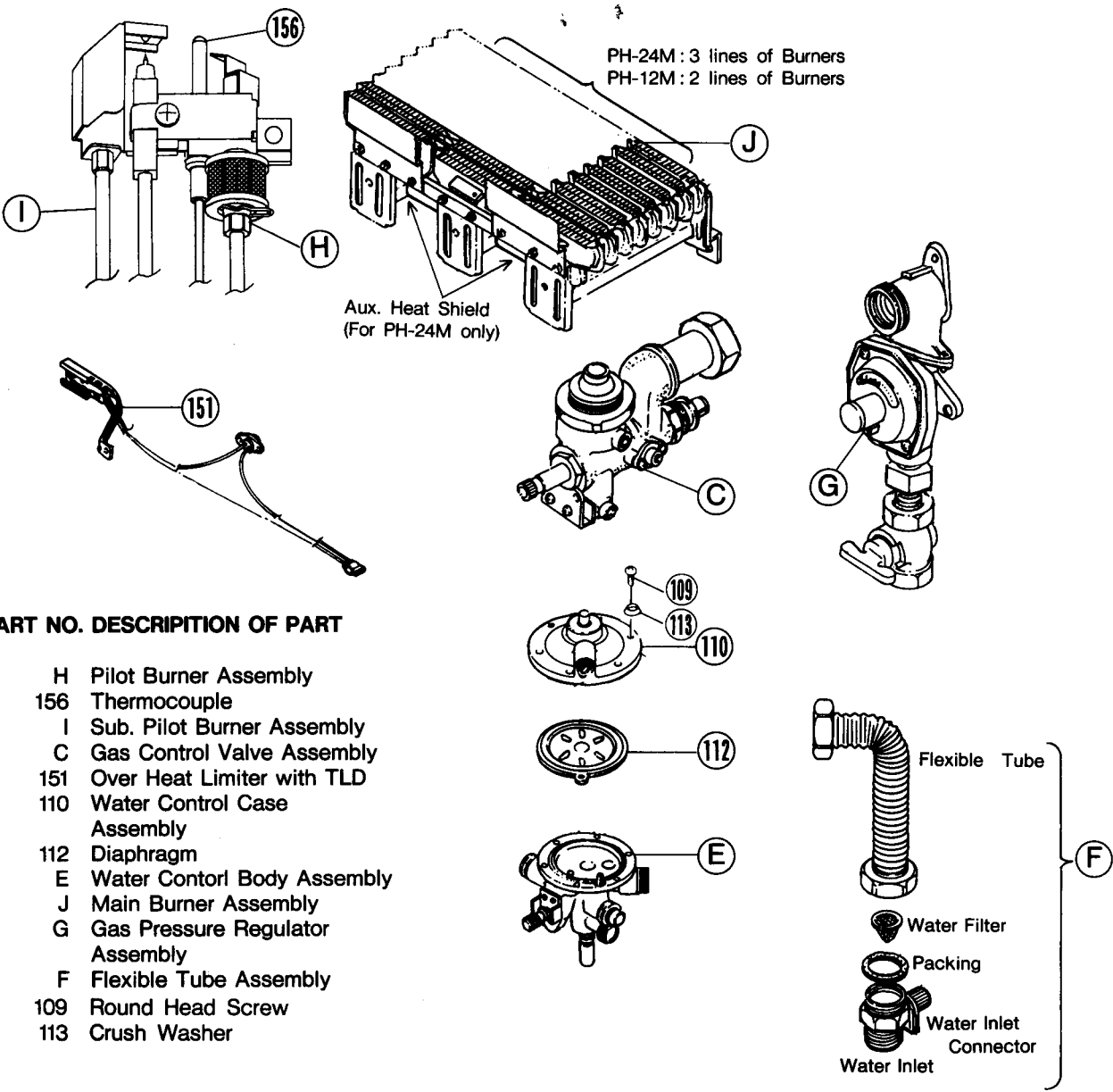
PARTS LIST FOR PH-24M-DN/DP (FOR PH-12M series, refer to this parts list.)

The parts list below includes the most commonly required components.

NOTE: All orders for repair parts must include the following information:

- 1. Model No. & Type of Gas
- 2. Serial No.
- 3. Parts number(s) (if not illustrated, indicate)

Address parts orders to your distributor or dealer (whom you purchase the unit).



PART NO. DESCRIPTION OF PART

- H Pilot Burner Assembly
- 156 Thermocouple
- I Sub. Pilot Burner Assembly
- C Gas Control Valve Assembly
- 151 Over Heat Limiter with TLD
- 110 Water Control Case Assembly
- 112 Diaphragm
- E Water Control Body Assembly
- J Main Burner Assembly
- G Gas Pressure Regulator Assembly
- F Flexible Tube Assembly
- 109 Round Head Screw
- 113 Crush Washer

WARNING!! DO NOT USE THE WATER HEATER WITHOUT WATER FILTER BETWEEN FLEXIBLE TUBE AND WATER INLET CONNECTOR. SERIOUS DAMAGE TO THE WATER HEATER AND INJURY TO PERSON CAN OCCUR IF THE WATER FILTER REMOVED AND USED.

CAUTION: For your safety, DO NOT attempt repair of gas piping, T.L.D., thermocouple, burners, over heat limiter or other safety devices. Refer repairs to qualified service personnel.

TROUBLE SHOOTING

PROBLEM	PROBABLE CAUSE	MEASURES
1. Pilot fails to light WITHOUT spark.	(1) Spark gap too wide. (2) Spark leak. (3) Electrode is dirty.	Adjust gap to 9/64-11/64 inch. Pull the lead line away from place of spark leak. Clean electrode.
2. Pilot fails to light WITH spark.	(1) Insufficient purging of air in pipes. (2) Pilot orifice is clogged.	Push the gas knob in at ► position long enough to exhaust. Call your serviceman.
3. Pilot lights then goes out.	Gas knob is not being pushed in long enough.	Push gas knob in depressed position for 20 seconds at pilot position.
4. Pilot flame goes out easily.	Pilot orifice is clogged.	Call your serviceman.
5. Pilot stays lit but main burner does not ignite.	Insufficient water pressure.	With city water supply use larger pipes or eliminate resistances in piping. If using pump, increase the pump pressure.
6. Main burner stays on even when hot water is off.	Defective gas valve.	Turn off the gas intake valve immediately and call your serviceman.
7. Soot comes out of the main burner.	(1) Dust or soot deposit on the heat exchanger is a result of poor exhaust. (2) Improper combustion is a result of excess gas input.	Call your serviceman. Reduce gas input to proper rate. Call your serviceman.
8. Water is not hot, even when the heater is set at High temperature.	(1) Insufficient gas input. (2) Gas bottle is almost empty (L.P.Gas) (3) Excessive water flow rate.	Increase gas input to proper rate. Call your serviceman. Get a new bottle. Dirt deposit in water control device. Call your serviceman.
9. Water is too hot, even if set at Warm temperature.	(1) Inlet water is too warm and/or water volume is low. (2) Excess gas input.	Inlet water temperature is too hot. Reduce gas input to proper rate. Call your serviceman.

FOR PROTECTION AGAINST FREEZING OF YOUR PALOMA GAS WATER HEATER

For Model PH-12M & 24M series

FAILURE TO DRAIN THE WATER HEATER CAN RESULT IN DAMAGE TO THE WATER HEATER'S GAS CONTROL VALVES AND OTHER SENSITIVE COMPONENTS AND CAN POSSIBLY RESULT IN A STEAM EXPLOSION.

To minimize the risk of freezing of the water heater where constant draining is not possible. The following measure can and should be taken.

Installation of PALOMA FREEZE PROTECTION KIT for the water control body assembly.

The Paloma Freeze Protection Kit is easy to install on Paloma Gas Water Heaters and is designed to prevent freezing of the water control body assembly by directly applying heat to the water control body assembly. Paloma Freeze Protection Kit is available from Paloma Industries, Inc. and all Paloma distributors and dealers.

Heating Tapes for water supply pipings may be purchased where electrical and plumbing supplies are also available and may be used to heat the water control body assembly.

Paloma Industries, Inc.
31111 Agoura Road,
Westlake Village, CA 91361