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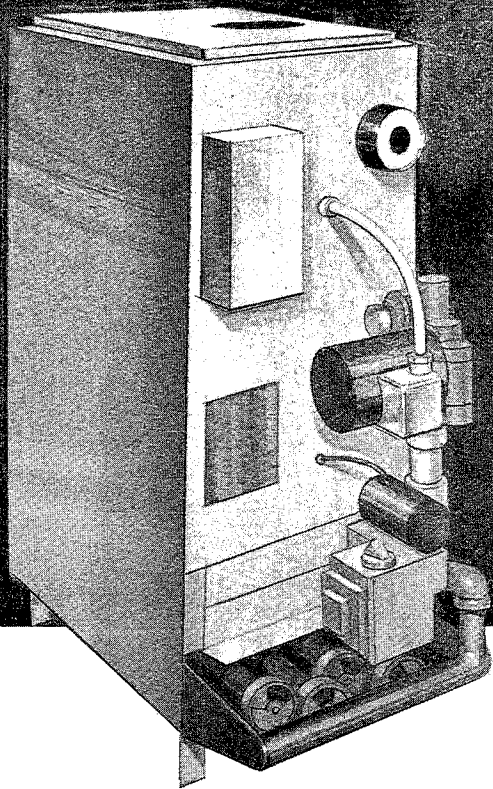
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Residential Indoor Gas-Fired Boilers

OWNER'S MANUAL



FOR YOUR SAFETY

If you smell gas:

1. Open windows.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately call your gas supplier.

FOR YOUR SAFETY

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

OPERATION MAINTENANCE SERVICE

Congratulations on your wise investment in a modern, quality, gas-fired indoor boiler. Your boiler has been designed and developed to provide safe, reliable, and economic operation when properly installed and maintained.

Your boiler is a major investment for your home; therefore, you will expect it to perform at its best. By reading this manual, you can learn how to operate it, do recommended routine maintenance, and what to do if a problem should arise. Your new gas boiler should perform at the efficiency level built into it if you will contribute a little of your time and attention.

NOTE TO INSTALLER: This manual should be left with boiler owner.

Special Instructions to Equipment Owner

NOTE: Retain this manual for future reference.

Your boiler must have air for combustion and ventilation. Do not enclose in an airtight room or enclosure.

WARNING DANGER: To minimize the possibility of serious personal injury, fire, damage to your boiler, or improper boiler operation, never violate the following safety rules:

1. Always keep the area around your boiler free of combustible materials, gasoline, and other flammable liquids and vapors.

2. Never cover, lean anything against, store trash, or stand on your boiler.

WARNING: Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other occurrences which may injure you or damage your property. Consult a qualified installer, service agency, or the gas supplier for information or assistance.

Your Comfort System

Your efficient new gas boiler not only represents the very latest in modern engineering development and design — it is a result of over 70 years of experience in the home comfort industry by the world's leading manufacturer of residential heating products.

The installation of your gas boiler was a major step toward total home comfort and it will assure your family of reliable comfort heat through the heating season. Additional steps toward a *total* home comfort system may have been, or can be taken. Ask your dealer for information about the options available that will contribute to your total home comfort or operating economy.

For your convenience, you or your installer should, or should have, recorded (printed) the following information that is applicable to your system.

Boiler Identification

MODEL NO. _____

PRODUCT NO. _____

SERIAL NO. _____

DATE INSTALLED _____

Dealer

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____

Operating Your Gas Boiler

The key to operating your comfort system is the *room thermostat*. A wide variety of thermostats can be used, but all have one main function — to automatically maintain the temperature in your home at a level required for your personal comfort. The thermostat maintains the indoor temperature by controlling the operation of the boiler. Dur-

ing the heating season whenever the air temperature around your thermostat drops below the thermostat temperature setting, the thermostat automatically starts your boiler.

All thermostats have a temperature control selector for selecting the desired indoor temperature.

Boiler Startup and Shutdown

Your boiler is equipped with one of the three following basic types of gas control systems:

1. The *automatic intermittent ignition system* that does not have a continuously burning pilot flame. This pilot is automatically lit by an electric sparking device each time your thermostat "calls for heat."

WARNING: Never attempt to manually light the pilot on a boiler that has an intermittent ignition system with a match or other source of flame.

2. The *manual ignition system* that has a continuously burning pilot flame. This pilot is manually ignited with a match and continues to burn.

3. The *self-generating system* has a continuously burning pilot flame. This pilot is manually ignited with a match and continues to burn. The powerpile thermocouple transforms the heat energy of the pilot flame into electrical energy that operates the controls. No external power is needed on this system to operate the controls.

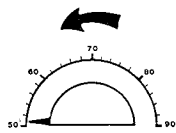
WARNING: Read and follow the lighting instructions on the boiler rating plate.

WARNING: If a suspected malfunction occurs with either type of gas control system, or if an intermittent ignition pilot does not light when it should, refer to the following shutdown procedures to turn off your system, then call your dealer as soon as possible.

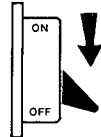
Shutting Down Your Boiler

You will be required to, or will want to, turn off your boiler system for one of two reasons: a suspected malfunction has occurred or the heating season has ended.

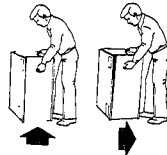
To shut down a boiler that has an automatic intermittent ignition system.



Step 1

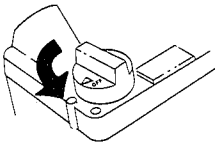


Step 2

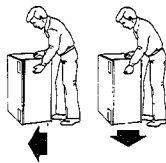


Step 3

- Step 1— Set your room thermostat to the lowest temperature setting.
 Step 2— Turn OFF the electrical power to your boiler.
 Step 3— Remove the control access door on your boiler (if applicable). See Figure 3.



Step 4



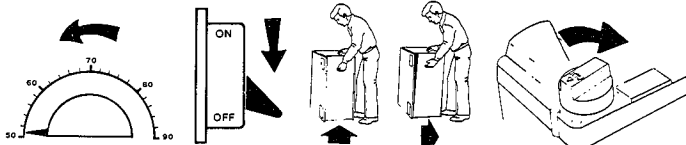
Step 5



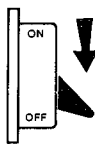
Step 6

- Step 4— Turn the control dial on the gas valve to the OFF position.
 Step 5— Replace the control access door (if applicable).
 Step 6— If the boiler is being shut down because of a malfunction, call your dealer as soon as possible.

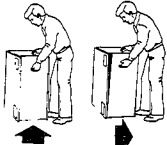
To shut down a boiler that has a manual ignition system with continuously burning pilot.



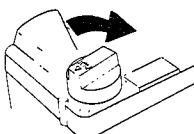
Step 1



Step 2

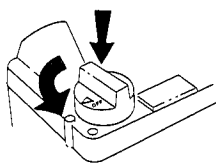


Step 3

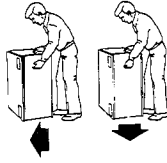


Step 4

- Step 1— Set your room thermostat to the lowest temperature setting.
 Step 2— Turn OFF the electrical supply to your boiler (if applicable).
 Step 3— Remove the boiler control access door (if applicable). See Figure 3.
 Step 4— To shut off the main burners but keep the pilot light burning, turn the control dial to the PILOT position.



Step 5



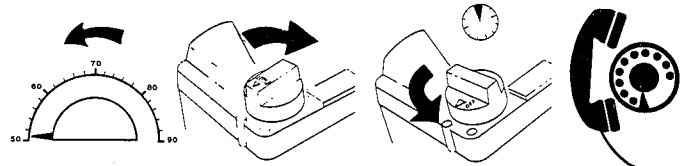
Step 6



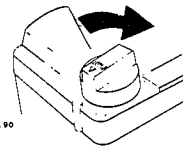
Step 7

- Step 5— To shut off the complete gas control system (pilot and main burners), depress the control dial on the gas valve and turn it to the OFF position.
 Step 6— Replace the control access door (if applicable).
 Step 7— If the boiler is being shut down because of a malfunction, call your dealer as soon as possible.

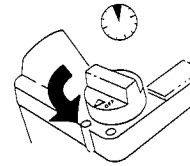
To shut down a boiler that has a self-generating system with continuously burning pilot.



Step 1



Step 2



Step 3



Step 4

- Step 1— Set your room thermostat to the lowest temperature setting.
 Step 2— To shut off the main burners but keep the pilot light burning, turn the control dial to the PILOT position only.
 Step 3— To shut off the complete gas control system (pilot and main burners), depress the control dial on the gas valve and turn it to the OFF position.
 Step 4— If the boiler is being shut down because of a malfunction, call your dealer as soon as possible.

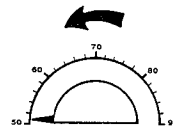
Starting Your Boiler

The general procedures for starting all gas-fired boilers are similar, however, there are some basic differences depending on whether your boiler has automatic or manual pilot ignition. Refer to whichever of the two starting procedures that follow which applies to your boiler.

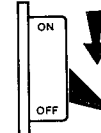
WARNING: Before attempting to start any boiler, familiarize yourself with all of the procedures that must be followed.

Starting a boiler that has an automatic intermittent ignition pilot.

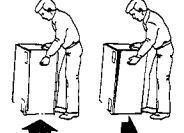
After you have familiarized yourself with the procedures that must be followed, and all of the applicable warnings and cautions that appear in the "Boiler Startup and Shutdown" section of this manual, proceed as follows to start your *automatic intermittent ignition boiler*.



Step 1

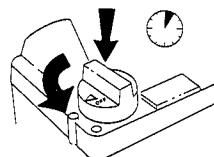


Step 2

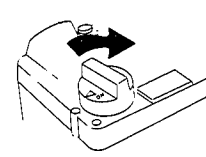


Step 3

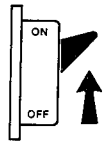
- Step 1— Set your room thermostat to the lowest temperature setting.
 Step 2— Turn OFF the electrical supply to your boiler.
 Step 3— Remove the boiler control access door (if applicable). See Figure 3



Step 4

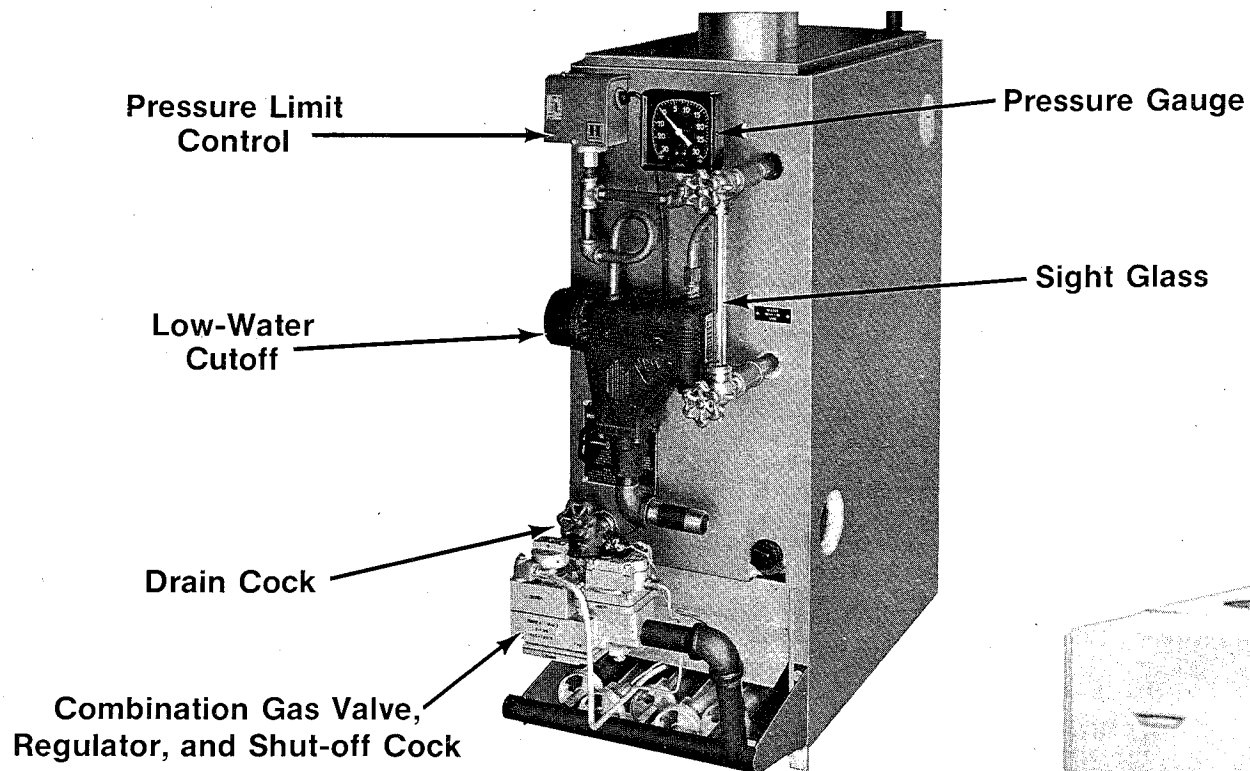


Step 5

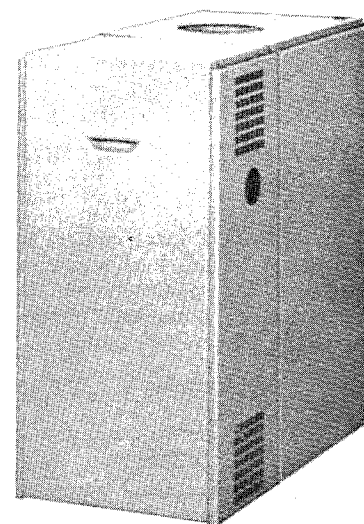


Step 6

- Step 4— Turn the control dial on the gas valve to the OFF position and wait 5 minutes.
 Step 5— After waiting 5 minutes, turn the control dial on the gas valve to the ON position.
 Step 6— Turn on the electrical supply to the boiler.



**Figure 1 - Model 234C & D
Gas-Fired Steam Boiler**



**Figure 3
Optional Control Enclosure**

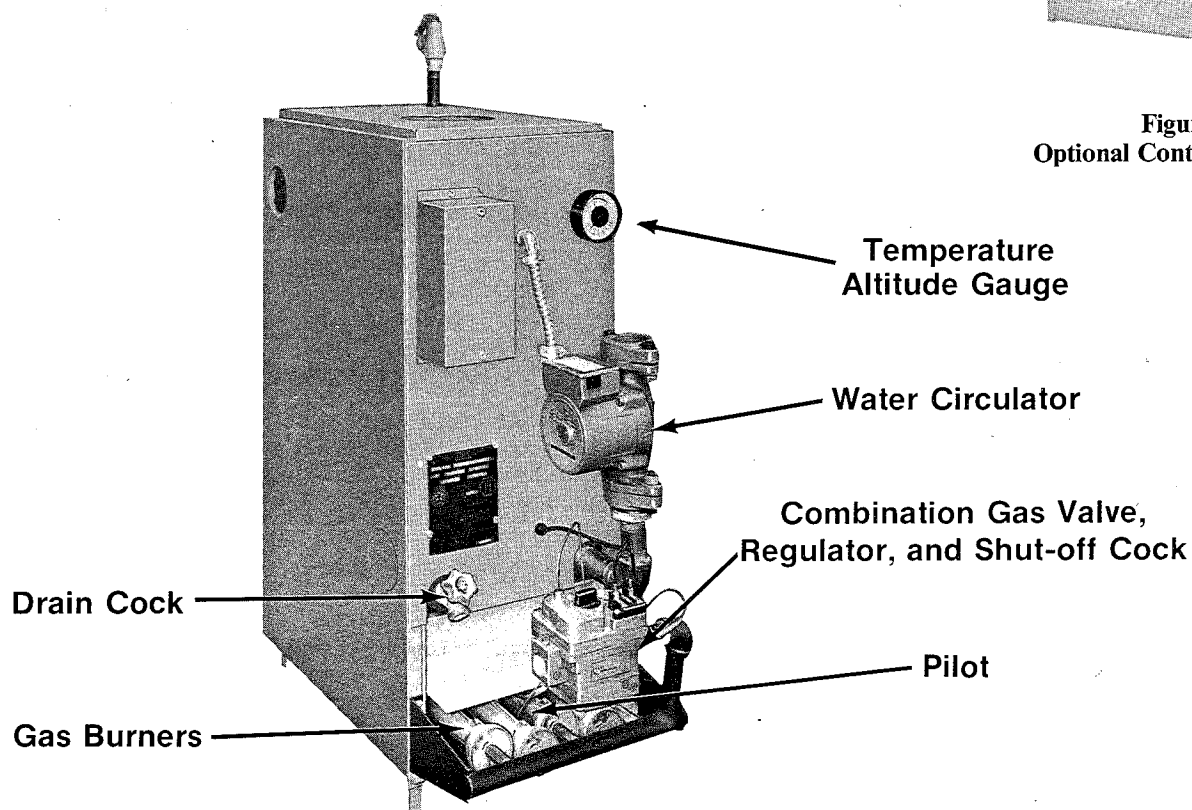
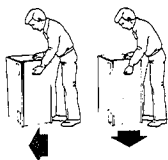
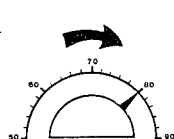


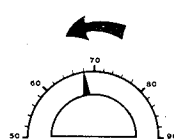
Figure 2 - Model 234C & D - Gas-Fired Water Boiler



Step 7



Step 8



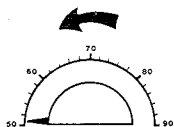
Step 9

- Step 7— Replace the control access door (if applicable).
- Step 8— Set the room thermostat temperature selector slightly above room temperature to start your boiler.
- Step 9— The pilot ignition system now begins sparking and the pilot flame lights. After a 40- to 70-second time-delay that takes place while the system is automatically verifying that a pilot flame has been established, the gas valve opens, permitting gas to flow to the main burners, and the pilot lights the burners. Now set the temperature selector on your room thermostat to your personal comfort setting.

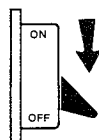
WARNING: If the pilot fails to light, or the main burners fail to light, shut down your boiler (See procedures in this section.) and call your dealer for service.

Starting a boiler that has a manual pilot ignition

After you have familiarized yourself with the procedures that must be followed, and all the applicable warnings and cautions that appear in the "Boiler Startup and Shutdown" section of this manual, proceed as follows to start your *manual-ignition-type boiler*.

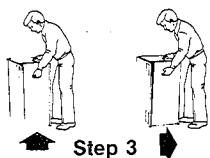


Step 1

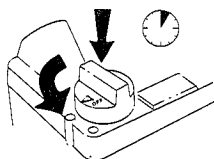


Step 2

- Step 1— Set your room thermostat to the lowest temperature setting.
- Step 2— Turn OFF the electrical supply to your boiler (if applicable).

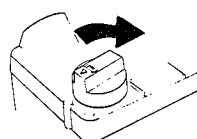


Step 3

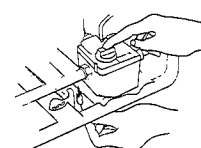


Step 4

- Step 3— Remove the boiler control access door (if applicable). See Figure 3.
- Step 4— Depress the control dial on the gas valve and turn the control dial to the OFF position. Wait 5 minutes.



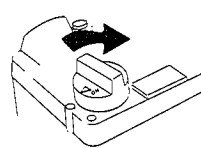
Step 5



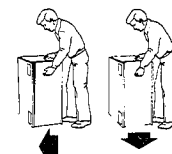
Step 6

- Step 5— After waiting 5 minutes, turn the control dial on the gas valve to PILOT position.
- Step 6— Place a lighted match or other suitable source of flame near the top of the pilot, depress the control dial on the gas valve, and hold it down. Pilot will light. Continue to hold dial down for at least 60 seconds. Release the control dial. The pilot will remain lit.

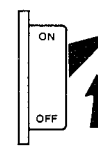
NOTE: If the pilot flame does not remain lit, repeat steps 1 through 5; however, hold control dial down for a longer period of time (at least 90 seconds). If the pilot flame does not remain lit after this second attempt, the thermocouple should be checked for a possible malfunction. Call your dealer for service.



Step 7

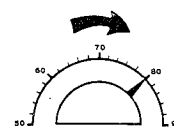


Step 8

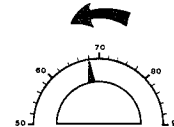


Step 9

- Step 7— After a pilot flame has been established, turn the control dial on the gas valve to the ON position.
- Step 8— Replace the boiler control access door (if applicable).
- Step 9— Restore power to your boiler (if applicable).



Step 10



Step 11

- Step 10— Set the room thermostat temperature selector slightly above room temperature to start your boiler.
- Step 11— Boiler main burners should light shortly after your room thermostat is set to "call for heat." Now set the temperature selector on your room thermostat to your personal comfort setting.

WARNING: If the main burners fail to light, shut down your boiler and call your dealer for service.

NOTE: To conserve energy when the heating season has ended, you should shut down your manually ignited pilot. Follow the procedures in "Shutting Down Your Boiler" at the beginning of this section.

Maintenance by Qualified Service Personnel

At least once every year, your boiler should be inspected by a trained and equipped service person. During this inspection, the qualified service person should at least:

1. Inspect, clean, and lubricate pump motor as required on a PW Boiler.
2. Inspect all flue product passages including the burners, pilot, heat exchanger draft hood, vent pipe, and vent damper (if installed).
3. Inspect all combustion and ventilation air passages and openings.
4. Inspect electrical wiring, connections, and components for loose connections.

5. Check gas pipes leading to, and inside of, your boiler for leaks.
6. Readjust the air/gas mixture if the burner flames are not bright blue.
7. Perform an operational checkout to determine whether your boiler is working properly, and if it requires adjustments.
8. Check all safety controls such as safety pilot, limit switch, pressure relief valve, etc. for proper operation.
9. Blow down low-water cutoff and check it for proper operation.

Maintenance and Care for the Equipment Owner

Before covering those things you may want to maintain yourself, please carefully consider the following:

WARNING: TURN OFF ELECTRICAL POWER SUPPLY TO YOUR BOILER BEFORE SERVICING OR TO PERFORM MAINTENANCE.

WARNING: When performing maintenance functions inside your boiler, be aware of sharp sheet metal parts and screws. **ALTHOUGH SPECIAL CARE HAS BEEN TAKEN TO REDUCE SHARP EDGES TO A MINIMUM, BE EXTREMELY CAREFUL WHEN HANDLING PARTS OR REACHING INTO THE UNIT.**

Combustion Area and Vent System

The combustion area and vent system should be visually inspected before each heating season. The normal accumulation of dirt, soot, and rust can result in loss of efficiency and improper performance if allowed to build up. Accumulations on the main burners can result in the burners firing out of normal time sequence which is characterized by an extra loud ignition that can be quite alarming.

CAUTION: If your boiler makes an especially loud noise when the main burners are ignited by the pilot, shut off your boiler and call your dealer.

Using a flashlight, proceed as follows to visually inspect the combustion area and vent system of your boiler.

1. Turn OFF the electrical supply to your boiler and remove the control access door (if applicable). Turn OFF gas on self-generating system.
2. Carefully inspect the control compartment main burners, and pilot areas for dirt, soot, or rust. Then, inspect the draft hood, flue connection area, and flue pipe for soot and rust.

CAUTION: If dirt, soot, or rust accumulations are found, call your dealer and if possible, do not operate your boiler.

3. Inspect the flue pipe for sag, holes, or disconnection.

WARNING: If holes are found in the flue pipe or if it has become disconnected, call your dealer before operating your boiler to prevent toxic fumes from escaping into your home.

4. Replace the control access door and restore electrical power to your boiler (if applicable).
5. Start your boiler and observe its operation. If possible, observe the burner flames to see if they are bright blue. If you observe a suspected malfunction, or that the burner flames are not bright blue, call your dealer.

NOTE: Burner flames that have a mixture of yellow, orange, or red flames together with the blue, are not burning gas efficiently. Your dealer will have to adjust the air/gas mixture and/or clean the burners.

Before Calling for Service

If your boiler does not appear to be performing properly, or does not operate at all, it may save you the cost of an unscheduled service call if you check a few things yourself before calling for service.

Boiler Fails to Operate

Sometimes a boiler will stop operating because an actual malfunction occurred; however, it is common for a boiler to appear to have stopped operating because an easily remedied situation has taken place.

If your boiler fails to operate, follow these step-by-step procedures, and proceed only to the next step if the boiler fails to start:

1. Check to be sure that your room thermostat temperature selector is set above room temperature.
2. Check to be sure that the electrical power supply to your boiler is ON.
3. Check to be sure that the manual shut-off valve in the gas supply pipe leading to your boiler is in the open position. The valve is open if the lever points in the same direction the pipe runs, and it is closed if the lever is at a right angle to the pipe. If the valve is closed, open it, and then follow the startup procedures on your boiler rating plate.

NOTE: Before proceeding, turn off the electrical power supply to your boiler and remove the control access door.

4. If you have a manually ignited continuous burning pilot, be sure that it is burning. If not, see the startup procedures in this manual. If it is burning, check the control dial on the gas valve. If the dial is in the PILOT position, turn it to the ON position, and follow the startup procedures in this manual.
5. If you have an intermittent ignition pilot, check the control dial on the gas valve to be sure that it is in the ON position. If not, follow the startup procedures in this manual.
6. If your boiler still fails to operate, call your dealer for service.

When Calling for Service

The product, model, and serial numbers for your boiler, together with the date installed, should have been, or should be, recorded in the space provided at the front of this manual. If the dealer knows exactly what you have, he may be able to offer some suggestions over the phone to remedy the problem. This could save you a needless expense and the dealer a needless visit.

NOTE: If you do not already have a dealer, refer to your telephone directory or yellow pages for the nearest dealer for your brand name boiler.

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