

**WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.**

- 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.

**NOTE TO INSTALLER:**

This manual must be left with the equipment user.

## **Model BS1, BS2, BW1, BW2 and BW3 Gas-Fired Water and Steam Boilers**

**USER'S INFORMATION  
MANUAL FOR THE  
OPERATION AND  
MAINTENANCE OF  
YOUR NEW  
GAS-FIRED BOILER**

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# **Gas-Fired Water and Steam Boilers**

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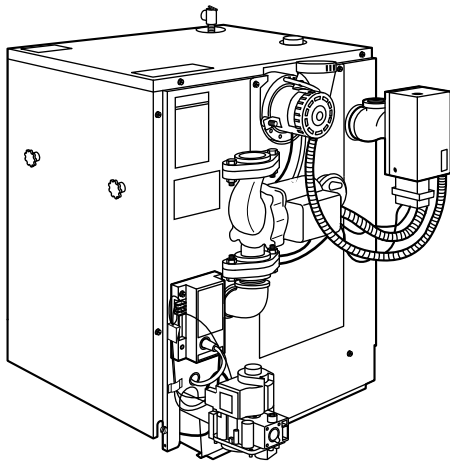
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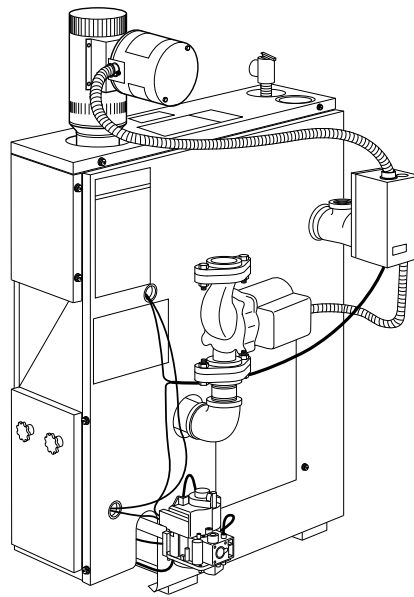
Congratulations! Your new gas-fired indoor boiler is an excellent choice and sound investment in home heating comfort. Your modern boiler represents the latest in engineering development and is the culmination of many years of experience from one of the most reputable manufacturers of residential hydronic heating systems.

Not only is your new boiler one of the most energy-efficient heating systems you can buy today, it is also one of the safest and most dependable. With only minimal care, your new boiler will continue to deliver money-saving home comfort and enjoyment for many years to come. Spend just a few minutes with this manual to learn the operation of your new boiler and the small amount of maintenance it takes to help keep it operating at peak efficiency.



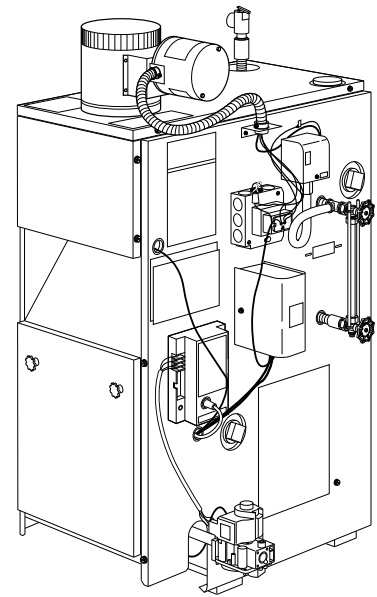
**MODEL BW3  
INDUCED-COMBUSTION  
WATER BOILER**

1



**MODEL BW1 AND BW2  
WATER BOILERS**

2



**MODEL BS1 AND BS2  
STEAM BOILERS**

3

## BOILER IDENTIFICATION

For your convenience, record the product and serial numbers of your new boiler on the form below. Should you ever require service, you will have ready access to the information needed by the service representative.

Product No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Date Installed \_\_\_\_\_

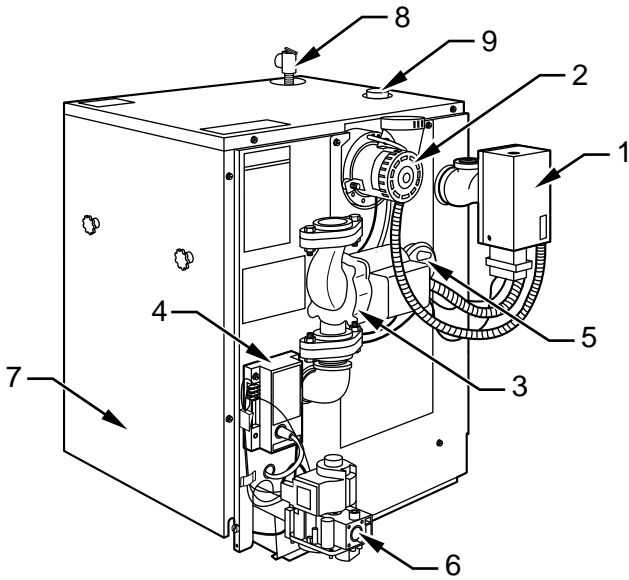
Dealer Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

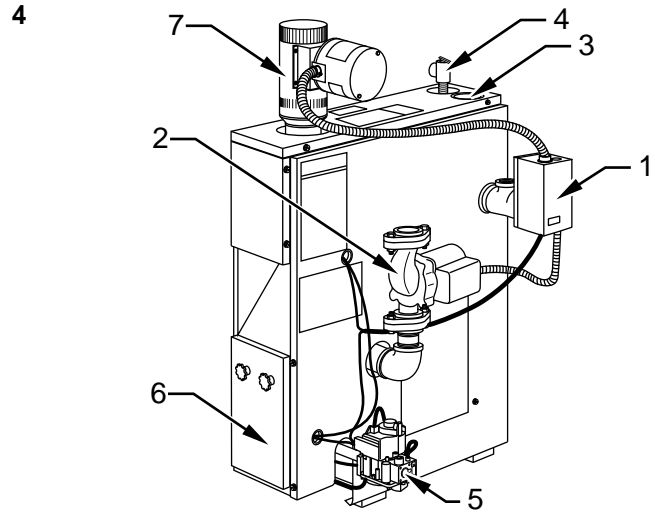
Telephone \_\_\_\_\_



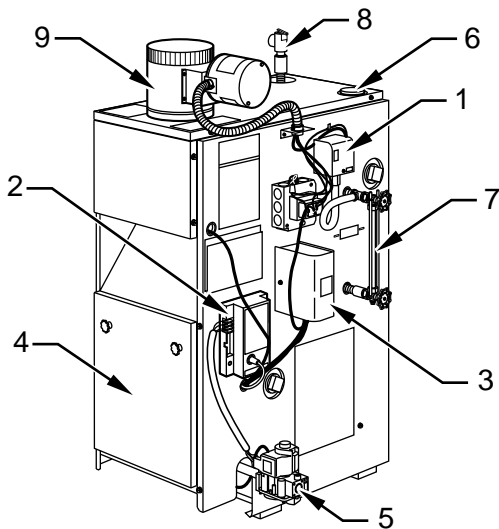
- 1 Controls—limit, transformer, and relay
- 2 Inducer blower
- 3 Water circulator
- 4 Spark generator (IID system only)
- 5 Pressure switch
- 6 Combination gas valve, regulator, and shut-off cock
- 7 Burners and pilot (inside access door)
- 8 Relief valve
- 9 Gage

**MODEL BW3  
INDUCED-COMBUSTION WATER BOILER**

- 1 Controls—limit, transformer, and relay
- 2 Water circulator
- 3 Gage
- 4 Relief valve
- 5 Combination gas valve, regulator, and shut-off cock
- 6 Burners and pilot (inside access door)
- 7 Vent damper



**MODEL BW1 AND BW2  
WATER BOILERS**



**MODEL BS12 AND BS2  
STEAM BOILERS**

- 1 Pressure limit control
- 2 Spark generator (IID system only)
- 3 Low water cutoff
- 4 Burners and pilot (inside access door)
- 5 Combination gas valve, regulator, and shut-off cock
- 6 Gage
- 7 Sight glass
- 8 Relief valve
- 9 Vent damper

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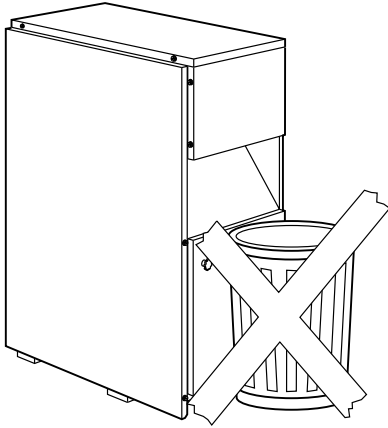
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## IMPORTANT FACTS ABOUT YOUR NEW BOILER

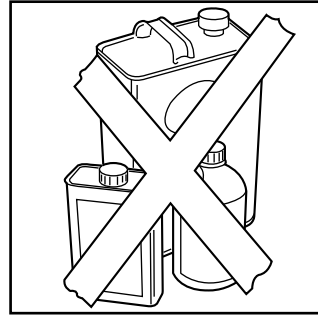
Your boiler must have air for combustion and ventilation. Do not enclose in an airtight room or enclosure.

To minimize the possibility of serious personal injury, fire, damage to your boiler, or improper operation, **carefully follow these safety rules:**

1. Keep the area around your boiler free of combustible materials, gasoline, and other flammable liquids and vapors. (Fig 8)



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2. Do not cover the boiler, store trash or debris near it, or in any way block the flow of fresh air to the unit. (Fig 7)
3. A boiler installed in an insulated space must be kept free and clear of insulating material. Examine the boiler area when installing or adding more insulation. Some materials may be combustible.
4. Combustion air must be clean and uncontaminated with chlorine or fluorine (halogenated hydrocarbons). These compounds are present in many products around the home such as water softener salts, laundry bleaches, detergents, adhesives, paints, varnishes, paint strippers, waxes, and plastics.

Make sure the combustion air for your boiler does not contain any of these compounds. Keep containers tightly closed. During remodeling or construction, be sure the air around your boiler is fresh and uncontaminated. If these compounds are burned in your boiler, the sections and metal vent system may deteriorate.

5. Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electric 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.
6. 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.

## STARTING YOUR BOILER

Your boiler is equipped with 1 of the 2 following types of gas control systems:

1. **The manual ignition system** has a continuously burning pilot flame. This pilot is manually ignited with a match and continues to burn.
2. **The automatic intermittent system** does not have a continuously burning pilot flame. This pilot is automatically lit by an electric sparking device each time the thermostat “calls for heat.”

### Follow these important safeguards:

1. 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. Read and follow the lighting instructions on the rating plate (located on the right side of the boiler), especially the item that reads as follows:  
Wait 5 minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow “B” in the safety information located on the boiler access door. If you don’t smell gas, go to the next step.
3. If a suspected malfunction occurs with your gas control system, such as the pilot does not light when it should, refer to the shutdown procedures in the next section to turn off your system, then call your dealer as soon as possible.

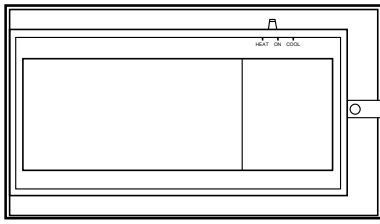
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**⚠ WARNING: Should overheating occur, or the gas valve fail to shut off the gas supply, turn off the manual gas valve to the boiler BEFORE turning off the electrical supply.**

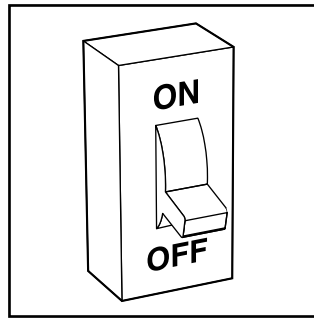
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## MANUAL PILOT IGNITION

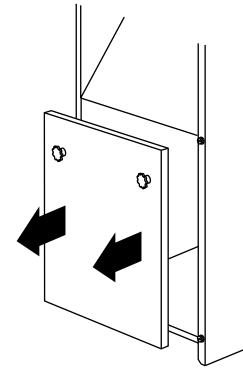
1. Set room thermostat to the lowest temperature setting. (Fig 9)
2. Turn the electrical supply to the boiler to OFF. (Fig 10)
3. Remove burner access door. (Fig 11)



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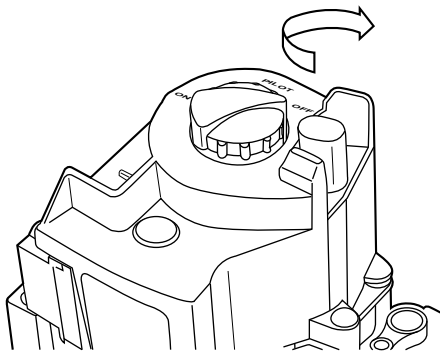


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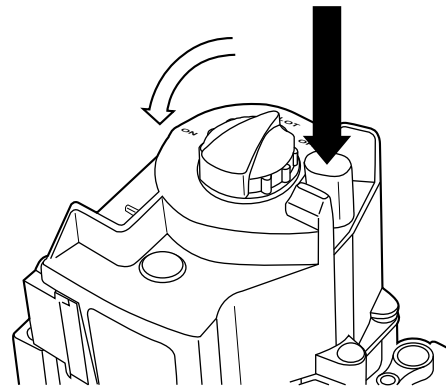


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4. Depress the control dial on the gas valve and turn the control dial to the OFF position. Wait 5 minutes. (Fig 12)



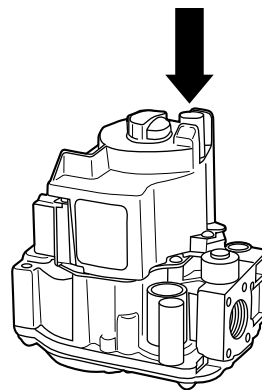
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5. After 5 minutes, turn the control dial on the gas valve to the PILOT position. (Fig 13)

6. Place a lighted match or other suitable source of flame near the top of the pilot, depress and hold down the push button on the gas valve. The pilot will light. Continue to hold control dial down for at least 60 sec. Release the control dial. The pilot will remain lit. (Fig 14)



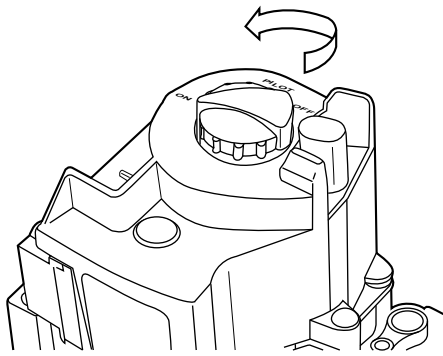
14

**NOTE:** If the pilot flame does not remain lit, repeat steps 1 through 5; however, hold the push button down for a longer period of time (at least 90 sec). 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.

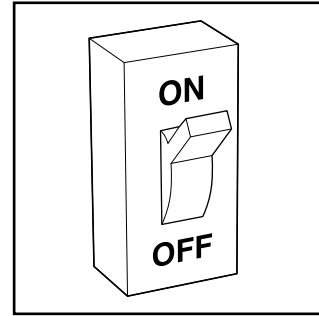
7. After a pilot flame has been established, turn the control dial on the gas valve to the ON position. (Fig 15)

8. Replace burner access door.

9. Restore power to the boiler. (Fig 16)



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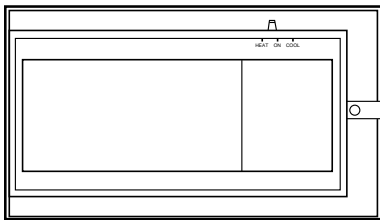
10. Set the room thermostat temperature selector slightly above room temperature to start your boiler.
11. Boiler main burners should light shortly after your room thermostat is set to “call for heat.” Now set the temperature selector on your room thermostat to your personal comfort setting.

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

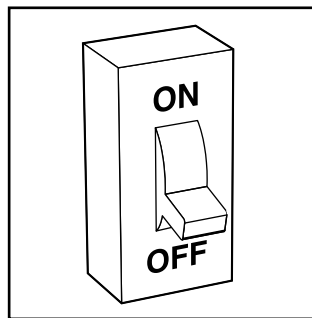
**NOTE:** To conserve energy when the heating season has ended, you should shut down your manually ignited pilot. Follow the procedures in “Shutting Down Your Boiler” in the next section.

### AUTOMATIC INTERMITTENT IGNITION

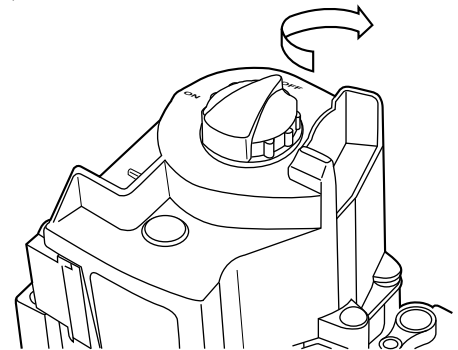
1. Set your room thermostat to the lowest temperature setting. (Fig 17)
2. Turn the electrical supply to the boiler to OFF. (Fig 18)
3. Turn the control dial on the gas valve to the OFF position and wait 5 minutes. (Fig 19)



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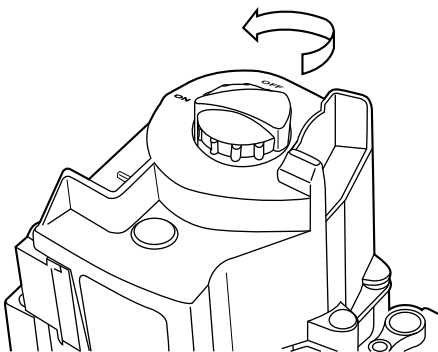


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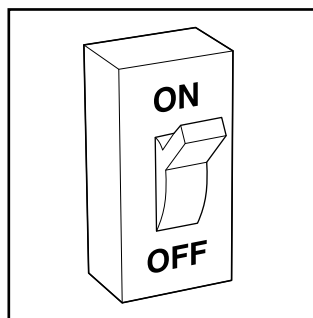


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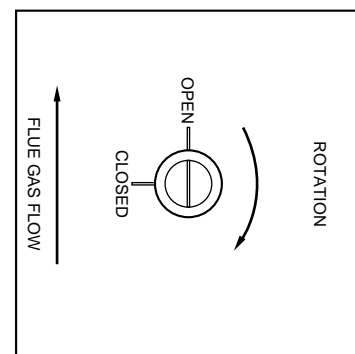
4. After waiting 5 minutes, turn the control dial on the gas valve to the ON position. (Fig 20)
5. Turn the electrical supply to the boiler to ON. (Fig 21)
6. Set the room thermostat temperature selector slightly above room temperature to start your boiler.
7. If your boiler is equipped with an automatic vent damper, observe that the damper is now in the open position. (See Fig. 22.)



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DAMPER OPEN

22

**IF THE DAMPER IS NOT OPEN,** shut down your boiler and call your dealer for service.

8. The pilot ignition system now begins sparking and the pilot flame lights. After the few seconds that it takes for the system to automatically verify that a pilot flame has been established, the gas valve opens, permitting gas to flow to the main burners, and the pilot lights the burner. Set the temperature selector on your room thermostat to your personal comfort setting.

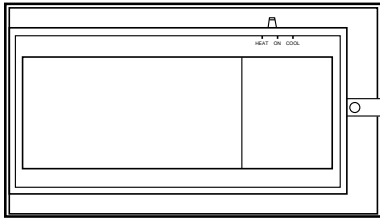
If the pilot fails to light, or the main burners fail to light, shut down your boiler and call your dealer for service.

## SHUTTING DOWN YOUR BOILER

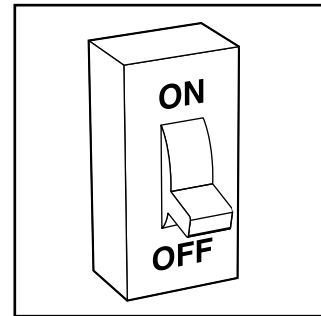
Once the heating season has ended, or should you ever suspect a malfunction in your boiler, you will want to turn the boiler off. The following procedures must be followed:

### MANUAL IGNITION

1. Set your room thermostat to the lowest temperature setting. (Fig 23)
2. Turn the electrical supply to the boiler to OFF. (Fig 24)

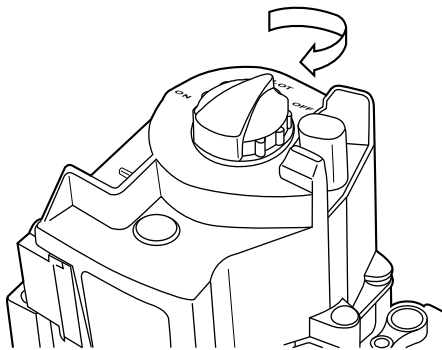


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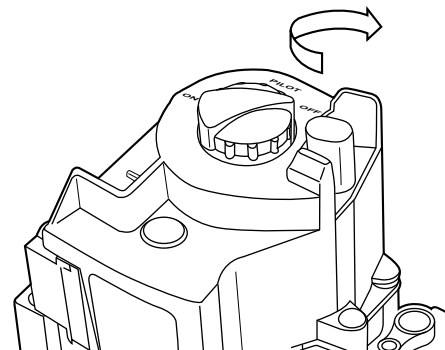


24

3. To shut off the main burners but keep the pilot light burning, turn the control dial to the PILOT position. (Fig 25)
4. 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. (Fig 26)



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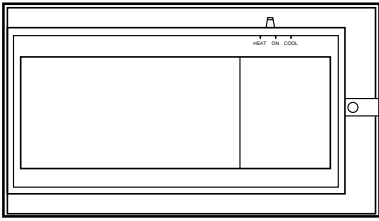


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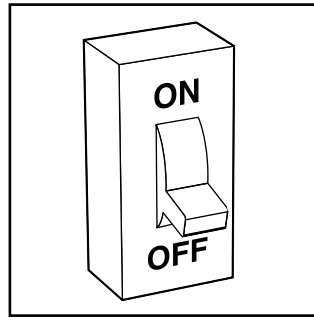
5. If the boiler is being shut down because of a malfunction, call your dealer as soon as possible.

### AUTOMATIC INTERMITTENT IGNITION

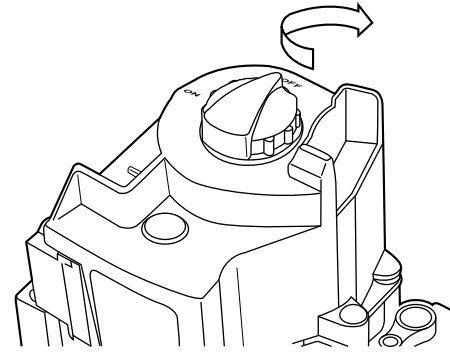
1. Set your room thermostat to the lowest temperature setting. (Fig 27)
2. Turn the electrical supply to the boiler to OFF. (Fig 28)
3. Turn the control dial on the gas valve to the OFF position. (Fig 29)



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4. If the boiler is being shut down because of a malfunction, call your dealer as soon as possible.

## PERFORMING ROUTINE MAINTENANCE

With only routine maintenance and care, you can rely on your new boiler to operate economically and reliably for many years. Some of the maintenance you may want to do yourself. However, before performing any service on your boiler, please carefully consider the following:

1. Turn off electrical power supply to your boiler before removing access door to service or perform maintenance.
2. Although special care has been taken to reduce sharp edges to a minimum, be extremely careful when handling parts or reaching into boiler.

## COMBUSTION AREA AND VENT SYSTEM

Visually inspect the combustion area and vent system before each heating season. When dirt, soot, scale, or rust builds up, your boiler can lose efficiency and perform improperly. Accumulations on the main burners can result in the burners firing out of normal sequence. This delayed ignition will create an alarmingly loud sound.

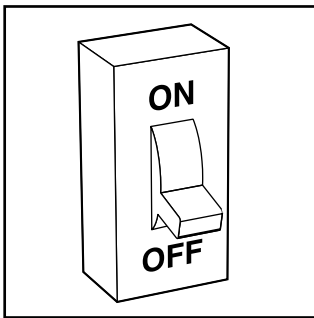
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**⚠ CAUTION: If your boiler makes an especially loud noise when the main burners light, shut down your boiler and call your dealer.**

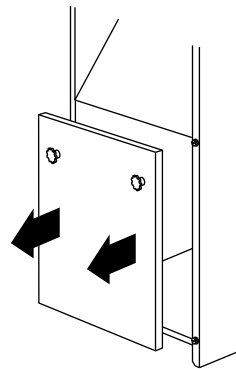
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To inspect the combustion area and vent system, you will need a flashlight. Then, referring to Fig. 30, 31, 32, 33, and 34, proceed as follows:

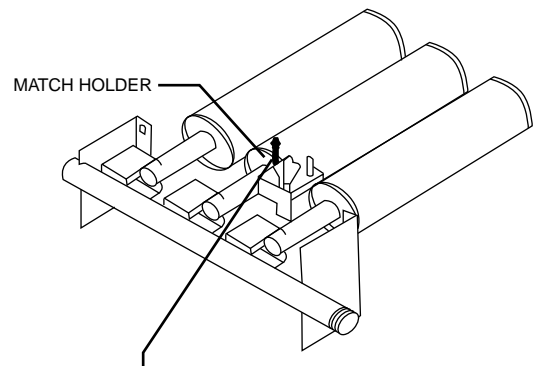
1. Turn the electrical supply to the boiler to OFF, and remove burner access door.



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2. Carefully inspect the main burners and pilot for dirt, soot, or rust. Then, inspect the draft hood, flue connection area, and flue pipe for soot and rust.

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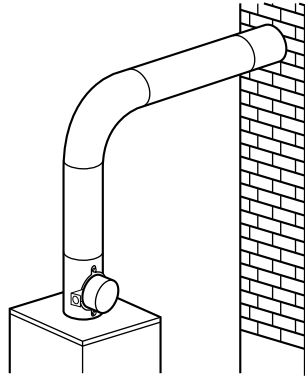
**⚠ CAUTION: If dirt, rust, soot, or scale accumulations are found, call your dealer. DO NOT OPERATE YOUR BOILER.**

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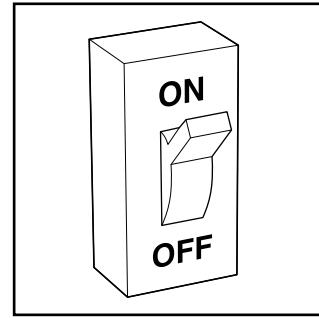
3. Inspect the flue pipe for sags, holes, or disconnections.



**⚠ WARNING: If holes are found in the vent pipe or if pipe has become disconnected, toxic fumes can escape into your home. DO NOT OPERATE YOUR BOILER. Call your dealer for service.**



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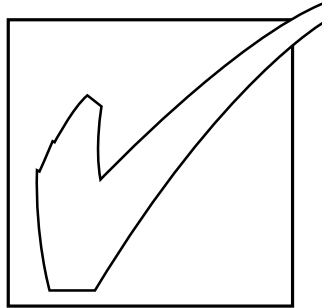
34

4. Turn the electrical supply to the boiler to ON.
5. Start your boiler and observe its operation. Watch the burner flames to see if they are bright blue.
6. Replace burner access door.

If you observe a suspected malfunction, or that the burner flames are not bright blue, call your dealer.

## A CHECKUP CHECKLIST

Your boiler represents an important investment in your family's comfort and your home's value. To keep it in tip-top shape and prevent future problems, have a trained service specialist give your boiler a professional checkup at least once each year. The following checklist can be used as a guideline to proper service:



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- Inspect all flue product passages including the burners, pilot, passages between the sections, draft hood, vent pipe, and vent damper (if installed).
- Inspect all combustion and ventilation air passages and openings.
- Inspect electrical wiring, connections, and components for loose connections.
- Check gas pipes leading to and inside your boiler for leaks.
- Readjust the air/gas mixture if the burner flames are not bright blue.
- Perform an operational checkout to determine whether your boiler is working properly, and if it requires adjustments.
- Check all safety controls such as safety pilot, limit switch, pressure relief valve, etc. for proper operation.

If your boiler is not operating or not performing properly, you may save the expense of a service call by checking a few things yourself before calling for service.

## BEFORE YOU REQUEST A SERVICE CALL

### IF BOILER FAILS TO OPERATE:

Follow this checklist step by step, advancing to the next one only if boiler fails to operate.

- Check thermostat for proper temperature setting.
- Is electrical power supply to boiler on?
- Is manual shut-off valve in gas supply pipe in open position? (Follow start-up procedures if you open gas line.)

**NOTE:** Turn the electrical power to OFF and remove access doors before continuing with the checklist.

- If you have a manually ignited continuously burning pilot, be sure that it is burning. If not, see the start-up procedures in this manual.
- Control dial on gas valve in ON position? (Follow start-up procedures if you must reset dial to ON.)

If your boiler still fails to operate, call your service representative.

For your convenience, record the model and serial numbers of your new boiler on the form on page 2. Should you ever require service, you will have ready access to the information needed by the service representative.



