

OPERATOR MANUAL

Part Number 121034

OM-HH

DOMESTIC

MODEL: HH/4 & HH/4/E
Steam Jacketed Kettles

Self-Contained
Natural Gas heated
Floor mounted
Stationary



THIS MANUAL MUST BE RETAINED FOR FUTURE REFERENCE. READ, UNDERSTAND AND FOLLOW THE INSTRUCTIONS AND WARNINGS CONTAINED IN THIS MANUAL.

WARNING

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

POST IN A PROMINENT LOCATION

INSTRUCTIONS TO BE FOLLOWED IN THE EVENT USER SMELLS GAS. THIS INFORMATION SHALL BE OBTAINED BY CONSULTING YOUR LOCAL GAS SUPPLIER. AS A MINIMUM, TURN OFF THE GAS AND CALL YOUR GAS COMPANY AND YOUR AUTHORIZED SERVICE AGENT. EVACUATE ALL PERSONNEL FROM THE AREA.

WARNING

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.



IMPORTANT — READ FIRST — IMPORTANT

- WARNING** INSTALLATION OF THE UNIT MUST BE DONE BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING. IMPROPER INSTALLATION CAN CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT. UNIT MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- CAUTION** TO AVOID DAMAGING PARTS OF THE BURNER SYSTEM UNDERNEATH THE KETTLE, LIFT THE UNIT ONLY BY THE RING BENEATH THE OUTER PORTION OF THE BODY.
- WARNING** DO NOT ATTACH THE UNIT TO A TYPE “B” VENT. FAILURE COULD RESULT IN FIRE OR PROPERTY DAMAGE.
- WARNING** DO NOT CONNECT ANY PIPING TO THE SAFETY VALVE. THE VALVE MUST BE FREE TO VENT STEAM AS NEEDED. ELBOW, ATTACHED TO THE SAFETY VALVE, SHOULD POINT DOWN TOWARD THE FLOOR. IMPROPER INSTALLATION WILL VOID THE WARRANTY!
- DANGER** ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND THE UNIT COULD RESULT IN ELECTROCUTION AND DEATH.
- CAUTION** BE SURE ALL OPERATORS READ, UNDERSTAND AND FOLLOW THE OPERATING INSTRUCTIONS, CAUTIONS AND SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL.
- CAUTION** DO NOT OVERFILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS A MINIMUM OF 2-3” (5-8 CM) BELOW THE KETTLE BODY RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING PRODUCT AND SAFE TRANSFER.
- CAUTION** KEEP FLOORS IN FRONT OF KETTLE WORK AREA CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY TO AVOID DANGER OF SLIPS OR FALLS.
- WARNING** KEEP WATER AND SOLUTIONS OUT OF CONTROLS AND BURNERS. NEVER SPRAY OR HOSE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC.
- CAUTION** MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. PRECAUTIONS SHOULD BE TAKEN TO WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ THE WARNINGS AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER TO BE USED.
- Important** Do not mix the parts of different tangent draw-off valve assemblies during washing. The parts are not interchangeable.
- NOTICE** NEVER leave a sanitizer in contact with stainless steel surfaces LONGER THAN 10 minutes. Longer contact can cause corrosion.
- WARNING** FAILURE TO PERIODICALLY CHECK SAFETY VALVE OPERATION COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.
- WARNING** WHEN TESTING, AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.
- WARNING** TO AVOID INJURY, READ AND FOLLOW ALL PRECAUTIONS STATED ON THE LABEL OF THE WATER TREATMENT COMPOUND.
- WARNING** BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY AND CLOSE THE MAIN GAS COCK. ALLOW FIVE MINUTES FOR UNBURNED GAS TO VENT.
- CAUTION** USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR THEIR AUTHORIZED DISTRIBUTOR CAN CAUSE INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.
- Important** Service performed by other than factory authorized personnel will void all warranties.
- WARNING** KEEP AREA AROUND KETTLE FREE AND CLEAR OF COMBUSTIBLE MATERIALS. FAILURE TO DO SO COULD RESULT IN FIRE AND PROPERTY DAMAGE.

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References

KLENZADE SALES CENTER ECOLAB. Inc.
 370 Wabasha
 St. Paul, Minnesota 55102
 800/352-5326 or 612/293-2233

NATIONAL FIRE PROTECTION ASSOCIATION
 60 Battery March Park
 Quincy, Massachusetts 02269

NFPA/70 - The National Electrical Code

ECONOMICS LABORATORY, INC.
 St. Paul, Minnesota 55102

NATIONAL SANITATION FOUNDATION
 3475 Plymouth Rd.
 Ann Arbor, Michigan 48106

UNDERWRITERS LABORATORIES, INC.
 333 Pfingsten Road
 Northbrook, Illinois 60062

ZEP MANUFACTURING CO.
 1310-T Seaboard Industrial Blvd.
 Atlanta, Georgia 30318

Equipment Description

Groen Models HH/4 and HH/4E steam kettles are stainless steel, floor mounted 40 gallon kettles with a self-contained steam source heated by gas. A closed steam jacket covers the lower **b** of the kettle. Heat from gas flames boils water in the jacket to produce steam under pressure. To ignite the flames, Model HH/4 has a continuously burning pilot flame, called the standing pilot, and Model HH/4E has electronic spark ignition.

The kettles are of the stationary (nontilting) type. Liquids can be removed from the kettle through the tangent draw-off valve (a "product faucet") at the front of the kettle.

All exposed surfaces are stainless steel. An insulated canopy protects the kettle body, and a housing encloses all the controls. A one piece dome cover is hinged to the kettle.

Three tubular legs support the unit. Bullet feet on the legs can be adjusted to level the kettle.

Controls used by the operator include the ON/OFF switch, which controls electric power for the unit, and the thermostat, which sets the cooking temperature.

Instruments are provided to show what is happening inside the unit:

- *Water gauge glass*: shows the level of water within the steam jacket
- *Pressure/vacuum gauge*: shows the steam pressure and if there is air in the jacket
- *Indicator lamp*: Lights when the kettle is being heated

Automatic controls within the unit:

- *Gas Pressure Regulator*: Adjusts gas pressure up to 14" W.C.

- *Pressure Limit Switch*: Turns the main burner off when steam in the jacket reaches its highest operating pressure.
- *Low-water cutoff*: Turns off the burner if water level in the jacket gets too low for safe operation.
- *Safety valve*: Releases steam if jacket pressure gets too high

The 40 gallon kettle body is welded into one piece and furnished with a rim reinforced by a rectangular bar. The unit is ASME shop inspected and registered with the National Board for working pressures up to 30 PSI.

The standard 2 inch tangent draw-off has a removable strainer with ¼ inch holes which keep pieces of product that are too large from going down into the draw-off.

The jacket is filled at the factory with water containing rust inhibitors. The kettle can operate at steam pressures up to 30 PSI, which provide kettle temperatures of 150 to approximately 270°F (56 to 132°C). This temperature range allows the operator to use the kettle for warming, simmering, boiling, or braising.

Optional equipment for the HH/4 kettles includes:

- Three inch draw-off valve
- C" perforated or solid disc strainer
- Basket inserts (TRI-BC)
- Water fill faucets
- Automatic water filler
- Kettle brush kit
- 316 stainless steel liner



KETTLE CHARACTERISTICS

Model	HH/4	HH/4/E
Ignition	Pilot	Spark
Capacity, gallons (liters)	40 (150)	40 (150)
Rim Height, inches (mm)	38 (960)	38 (960)
Depth, inches (mm)	22 (560)	22 (560)
Diameter, inches (mm)	26 (660)	26 (660)
Overall front-to back, inches (mm)	40½ (1030)	40½ (1030)
Firing Rate, BTU/hour	129,000	129,000
Energy into product, BTU/hour	82,500	82,500

Inspection & Unpacking

The unit will arrive in a heavy shipping carton and will be banded to a skid. Immediately upon receipt, inspect the carton carefully for exterior damage.

CAUTION
SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT. TAKE CARE TO AVOID PERSONAL INJURY OR DAMAGE TO THE UNIT BY STAPLES LEFT IN THE WALLS OF THE CARTON.

Carefully cut any restraining straps around the carton and detach the sides of the box from the skid. Pull the carton up off the unit.

Thoroughly inspect for concealed damage. Report any shipping damage or incorrect shipments to the delivery agent. Write down the model number, serial number, and installation date, and retain this information for future reference.

Space for these entries is provided at the top of the Service Log at the back of this manual. Keep the manual available for operators to use.

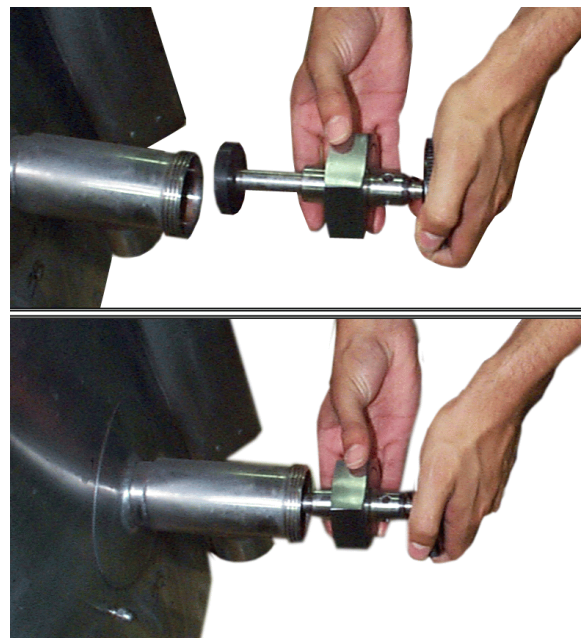
CAUTION
THIS UNIT IS VERY HEAVY. INSTALLER SHOULD OBTAIN HELP AS NEEDED TO LIFT THIS WEIGHT SAFELY.

When installation is to begin, carefully cut any straps which hold the unit on the skid. Lift the unit straight up off the skid. Examine packing materials to be sure that loose parts are not discarded with the materials.

The tangent draw-off valve is usually shipped unassembled. Once the kettle is unpacked, it is easily attached, as shown below. The large nut which attaches the valve to the kettle should only be **hand tightened**.



The kettle will be banded to a skid, inside a heavy carton.



Assemble and attach the tangent draw-off valve after the kettle is unpacked.

Installation

A. Installation

The unit should be installed in a ventilated room for efficient performance. Items which obstruct or restrict the flow of air for combustion and ventilation must be removed. The area around the appliance must be free of combustible materials.

WARNING
THE KETTLE MUST BE INSTALLED BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY. IMPROPER INSTALLATION CAN RESULT IN INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.

1. Installation requires connection with gas and electrical services. See items 8 to 14 for details.
2. To protect the unit from damage, leave it on the shipping pallet until installation. When installation is to begin, cut the straps holding the kettle, and hoist it straight up off the skid.

NOTICE: To avoid damaging parts of the burner system underneath the kettle, **LIFT THE UNIT ONLY BY THE RING beneath the outer edge of the body.**

3. Install the unit with a minimum clearance to combustible and non-combustible construction of six inches at the sides and six inches between the draft diverter and the wall. Also leave enough room for cleaning, maintenance, and service.
4. The draft diverter (flue) shipped with the kettle is the correct height and shape for maximum performance. Slide the diverter onto the flue collar at the back of the kettle and secure it with the two sheet metal screws provided.. Do **not** change the diverter in any way.

Any mechanical, electrical, or gas type change must be approved by the Groen Food Service Engineering Department.

WARNING
DO NOT ATTACH THE UNIT TO A TYPE "B" VENT. FAILURE COULD RESULT IN A FIRE AND/OR PROPERTY DAMAGE.

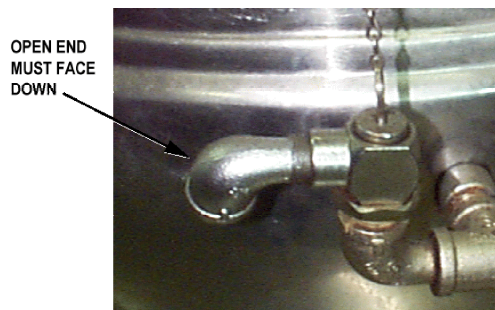
Install the unit under a ventilation hood, or vent the flue directly to a masonry chimney. Put a hood at least several inches above the upper end of the draft diverter (flue). Do **not**

rest hood supports on the diverter. The ventilating hood should comply with local codes and/or ANSI/NFPA-96 Latest Edition. Local codes may also require that the kettle be electrically interlocked to shut off the gas supply and prevent operation if the exhaust fan is not operating or if the fire suppression system is activated.

5. Level the unit by turning the bullet feet.
6. Confirm that the jacket water level is between the marks on the gauge glass. If the water is low, follow the instructions in "Jacket Filling" in the "Maintenance" Section of this manual. Do **not** connect the unit to a water supply.

CAUTION
DO NOT CONNECT ANY PIPING TO THE SAFETY VALVE. IT MUST BE FREE TO VENT STEAM AS NEEDED. ELBOW SHOULD POINT DOWN TOWARD FLOOR. IMPROPER INSTALLATION WILL VOID WARRANTY!

7. The open end of the elbow at the safety valve outlet must be directed down. If it is not, turn the elbow to the correct position.



WARNING
ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND UNIT COULD RESULT IN ELECTROCUTION AND DEATH.

8. Provide 115 VAC, 60 HZ, 1 PH, 15 AMP electrical service. Use ½ inch waterproof conduit and waterproof connections. Observe local codes and/or The National Electrical Code in accordance with ANSI/NFPA 70 - latest edition. **An electrical ground is**

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required. The electrical schematic is on the inside of the service panel and in this manual.

9. Internal gas lines were cleaned and closed off with a gas valve before the unit was shipped. Free external gas lines of lint, dirt, metal chips, sealant, grease, oil, or other contaminants before connecting them to the kettle.
10. Connect the kettle gas valve to the gas service main with $\frac{3}{4}$ inch IPS line or an approved equivalent.
11. Installation must conform with local codes and with the National Fuel Gas Code, ANSI Z 223.1-1988 (or latest edition). Install the unit in an adequately ventilated room and ensure an adequate air supply. The best ventilation will use a vent hood and exhaust fan with no direct connection between the vent duct and the flue. **Do NOT obstruct the flue or vent duct after installation.**
12. Adequate space for proper service and operation is required. Do **NOT** block any air intake spacings to the combustion chamber or obstruct the air flow by piling or stacking anything near the kettle.
13. After the kettle has been connected to the gas supply, check each gas line joint for leaks. **DO NOT USE A FLAME TO CHECK FOR LEAKS.** A thick soap solution or other leak detector should be employed.
14. The appliance and its individual shutoff valve must be **disconnected** from the gas supply piping system during any pressure testing at test pressures **in excess of** $\frac{1}{2}$ PSI (3.48 kPa). The unit must be **isolated** from the gas supply piping system by closing its manual shutoff valve during any pressure testing of the gas piping system at pressures **equal to or less than** $\frac{1}{2}$ PSI (3.48 kPa).
15. Check the following points to confirm that your HH kettle has been installed properly.
 - a. Sufficient room between the kettle and nearby objects for cleaning and service.
 - b. Minimum clearance of six inches from the kettle's sides and draft diverter.
 - c. Unit vented to a hood or chimney.
 - d. Kettle is level.
 - e. Correct amount of water in the jacket.

- f. Safety valve outlet is pointed down.
- g. Connected with a waterproof, 115 volt, 15 amp supply of electric power and grounded in accordance with electrical codes.
- h. Natural gas lines cleaned before connection.
- i. Gas connected with $\frac{3}{4}$ inch pipe.
- j. Gas line joints checked for leaks.
- k. No obstruction to air supply or venting

B. Initial Start-Up.

After installation, the installer should test the kettle to ensure that it is operating correctly.

1. Remove all literature and packing materials from the inside and outside of the unit. Clean out any material that might clog or damage the tangent draw-off valve.
2. Close the draw-off valve, and put water into the kettle to a depth of about six inches. Test draw-off operation by opening it all the way, then closing it before all the water runs out.
3. Make sure the supplies of gas and electric power are on.
4. Following "To Start Kettle" instructions on Page nine of this manual, begin heating the water at the highest thermostat setting. The heating indicator light should come on as soon as you turn up the thermostat dial, and heating should continue until the water boils.
5. To turn off the unit, follow "To Turn Off Kettle" instructions on page 10.

If the kettle functions as described, it is ready for use. If it does not, contact your area Groen Authorized Service Representative.

IMPORTANT:
BE SURE ALL OPERATORS READ, UNDERSTAND AND FOLLOW THE OPERATING INSTRUCTIONS, CAUTIONS AND SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL.

WARNING
AVOID ALL DIRECT CONTACT WITH HOT SURFACES. DIRECT SKIN CONTACT COULD RESULT IN SEVERE BURNS.

AVOID ALL DIRECT CONTACT WITH HOT FOOD OR WATER IN THE KETTLE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

Operation

A. Controls

Operator controls for the HH/4 kettle are:

1. Main gas valve, which controls the supply of gas from the main to the unit.
2. ON/OFF (toggle) switch. This switch controls electrical power to the control circuits.
3. Thermostat dial, which turns the thermostat on or off and sets the operating temperature of the kettle.
4. Reset button, used in lighting the pilot burner (on standing pilot model only).

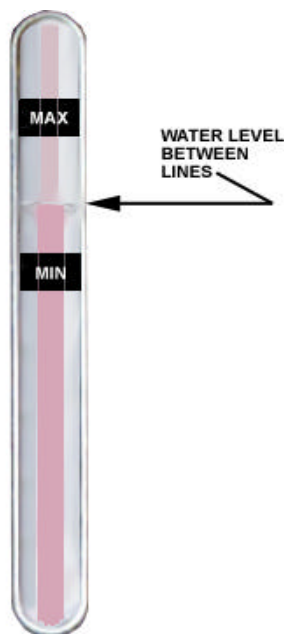
Refer to the photograph in the "Equipment Description" section of this manual for the location of controls and other features.

B. Operating Procedure

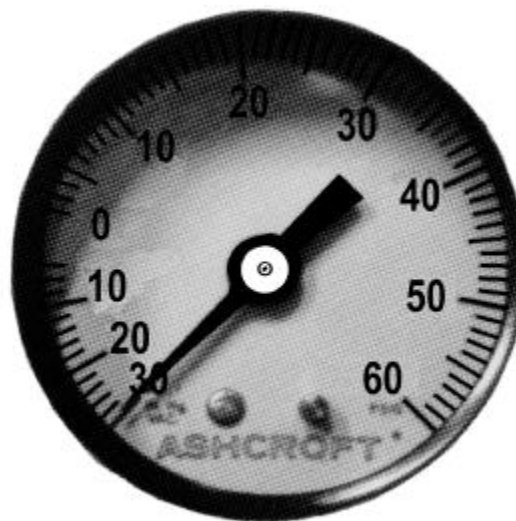
WARNING
KEEP KETTLE AREA FREE AND CLEAR OF ALL COMBUSTIBLE MATERIALS.

1. To Start Kettle

- a. CHECK THE WATER LEVEL IN THE JACKET EVERY DAY. The level must be between the lines on the gauge glass. If the level is low, see "Jacket Filling" on Page 13.
- b. While the kettle is cold, check the pressure gauge. If the gauge does not



show 20 or more inches of vacuum (that is, a reading of 20 to 30 below 0), see "Jacket Vacuum" on Page 13 of this manual.



Make sure the kettle shows at least 20 inches of vacuum when cold.

- c. Make sure the strainer is covering the draw-off outlet at the bottom of the kettle.
- d. Set both the toggle (ON/OFF) switch and the thermostat dial to "OFF".
- e. If the unit has just been turned off, allow 5 minutes for unburned gas to clear, before you turn the kettle on again.
- f. Turn the gas valve ON (handle lined up with gas pipe), if it is not already on.
- g. If you are using Model HH/4E with electronic spark ignition, or if you are using a Model HH/4 unit with the pilot burner already lit, all you have to do to start heating the kettle is:
 - (1) Press the ON/OFF switch to "ON."

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- (2) Turn the thermostat dial to the desired setting.
- h. If the HH/4 pilot is not lit:
 - (1) Locate the red reset button on the automatic gas control valve inside the control housing. (See photo, Page 5).
 - (2) Hold a flame to the pilot burner and press down on the reset button to start the flow of gas. Continue to hold the button in for about 60 seconds after the pilot burner is lit.
 - (3) Release the button. The pilot should stay lit.
 - (4) Press the On/Off switch in the "ON" position.
 - (5) Turn the thermostat to the desired setting.
- 2. To Turn Off the Kettle**
 - a. Turn the thermostat dial to "OFF."
 - b. Press the ON/OFF switch "OFF."
 - c. Before servicing the unit, or if it will not be used for a week or more, continue by:
 - (1) Turning the main gas valve OFF (at right angles to the gas pipe).
 - (2) Turning off the unit's electrical power at the circuit breaker or fuse box.
- 3. If Electric Power Fails:**
 - a. Do not try to operate the kettle. The main burner can not be lit until the power is restored.
 - b. When the power returns, follow the procedure in "To Start Kettle," above.
- 4. To Relight Kettle**

Follow the steps described in "To Start Kettle" above.
- 5. To Transfer Product or Empty Kettle:**
 - a. The kettle is emptied by means of its draw-off valve, by ladling product out, or using the optional TRI-BC Cooking Basket Set.



WARNING
OPEN THE KETTLE LID CAREFULLY TO AVOID STEAM. DIRECT CONTACT WITH STEAM COULD CAUSE BURNS.

CAUTION
DO NOT OVERFILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS 2-3" (5-8 cm) BELOW THE KETTLE BODY RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING PRODUCT AND SAFE TRANSFER.

CAUTION
KEEP FLOORS IN FRONT OF THE KETTLE WORK AREA CLEAN AND DRY. IF SPILLS OCCUR, CLEAN AT ONCE TO AVOID SLIPS OR FALLS.

- b. Use of Optional Basket Insert

The optional kettle basket insert set helps cook water-boiled products such as eggs, potatoes, vegetables, shell fish, pasta or rice. The nylon mesh liner must be used for products smaller than the basket mesh, (1/4" (6 mm). This includes rice and small pasta shapes.

- c. Tips For Optional Basket Use.

- (1) Allow for displacement of the three baskets and product. This may mean only filling the kettle half way. Test baskets and product displacement with cold water and the kettle OFF.

CAUTION
DO NOT OVERFILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS AT LEAST 2-3" (5-8 cm) BELOW THE KETTLE RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING AND SAFE PRODUCT TRANSFER.

- (2) Load baskets on level, stable work surface.
- (3) Lift loaded baskets with both hands. Get help if the basket is too heavy.



WARNING
AVOID DIRECT CONTACT WITH HOT FOOD
OR WATER IN THE KETTLE. DIRECT
CONTACT COULD CAUSE SEVERE BURNS.

- (4) Slowly lower product into kettle and securely hook the basket to the “Y” frame.
- (5) When removing baskets with cooked product, lift straight up, ensuring baskets

clear the kettle rim. Wear protective oven mitts and protective apron

- (6) Allow hot water to fully drain from product, before moving basket away from the kettle. If baskets are too heavy, get help. Remove product immediately from basket into another container, being sure to avoid contact with hot product and hot basket.
- (7) Place baskets with food on a stable, flat surface, or inside a solid steamer or bake pan, to catch any remaining hot water draining from product.

Sequence of Operation

The following “action-reaction” outline will help the user understand how the equipment works.

A. Model HH/4 with Standing Pilot Ignition

Pressing the reset button overrides the automatic control and opens the pilot burner valve, allowing gas from the supply line into the pilot. Lighting and sustaining the pilot flame for 60 seconds heats the thermocouple to operating temperature, so that it can supply electric current at 20 to 25 millivolts. Current from the thermocouple powers a coil that holds the pilot burner valve open. If the pilot flame goes out and the thermocouple cools, the valve closes and prevents gas flow into the unit.

Once the pilot burner valve opens, gas is available at the main burner valve, which is normally closed. Pushing the toggle switch to “ON” provides 120 Volt electric power to the thermostat. When the operator turns the thermostat dial to a setting, the switch closes and allows power to the heating indicator light and a coil at the main burner valve. The coil opens the main burner valve. Gas then flows to the main burner where it is ignited by the pilot flame.

B. Model HH/4/E with Electronic Spark Ignition

Pressing the toggle switch “ON”, supplies electric power to the thermostat. Turning the dial to an operating setting closes the thermostat switch and energizes the gas control. Simultaneously, an arc is established at the spark gap, and the pilot burner automatic valve is opened. When the spark ignites gas flowing from the pilot burner, a pilot flame probe detects the flame. The probe sends a signal to shut the spark off and close the circuit. This provides power for the indicator light and the main automatic valve. Gas from the main burner is ignited by the pilot flame. If a pilot flame is not sensed within 30 seconds, a timer shuts down the whole operation.

C. All Units

As main burner heat raises steam temperature to the set temperature, the thermostat switch opens. This cuts power to the main burner valve, which closes and turns off the burner. When jacket steam cools below the set point, the thermostat switch closes and begins another cycle. This repeats to maintain the kettle at the desired temperature.

The thermostat controls heating by alternately calling for flames at main burner full capacity or signaling the control to shut the burner off. Because the control works in this “all or nothing” way, the kettle heats as fast as it can until it reaches a set temperature. Turning the thermostat higher only makes heating continue longer. It will not make the unit heat any faster.

Safety features operate as follows:

1. Pressure limit switch: If pressure in the jacket exceeds 27 PSI, the switch opens and breaks the circuit at the main gas valve. The valve closes and remains closed until pressure drops to 22 PSI. The switch then closes, energizes the gas valve coil, and permits operation to resume.
2. Low-water cutoff: As long as water touches the cutoff electrode in the jacket, operation of the kettle can continue. If the water level falls below the end of the electrode, a control circuit breaks, and the main gas valve closes. Jacket water must be restored to a safe operating level, before the kettle can be heated again.
3. Safety valve: If steam pressure in the jacket reaches 30 PSI, the valve will open and relieve the excess pressure.

Maintenance

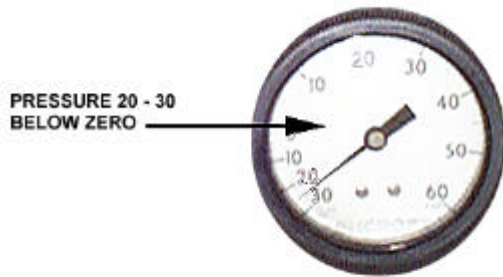
NOTICE: Contact Groen or an authorized Groen representative when repairs are required.

1. Periodic Maintenance

A Maintenance & Service Log is provided at the back of this manual with the warranty information. Each time maintenance is performed on your Groen kettle, enter the date on which the work was done, what was done, and who did it. Keep this manual on file and available for operators to use.

Periodic inspection will minimize equipment down time and increase the efficiency of operation. The following points should be checked:

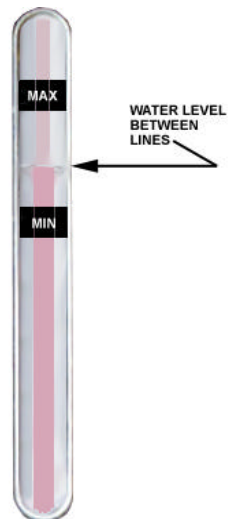
- a. Check the pressure/vacuum gauge



The pressure gauge should show a vacuum of 20 to 30 inches when the kettle is cold.

every day. The gauge should show a vacuum of 20 to 30 inches, when the kettle is cold. If it does not, see "Jacket Vacuum" below.

- b. Also check the jacket water level every day. It should be between the marks on the gauge glass. If the level is low, see "Jacket Filling and Water Treatment" on page 13.



- c. Test the safety valve at least twice each month. Test the valve with the kettle operating at five psi, by pulling up the test valve chain for at least 5 seconds. Then release the lever and let the valve snap shut. If the valve does not activate, or there is no evidence of discharge,

or the valve leaks, stop using the kettle and contact a qualified Groen service representative.



WARNING
WHEN TESTING, AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

- d. Keep the primary air shutter of the burner gas jets free of dust and lint.



Test the safety valve at least twice monthly.

- e. The pilot flame should be blue, and should envelop about ½ inch of the flame sensor tip.
- f. Maintain electrical wire and connections in good condition.
- g. Keep the inside of the control console clean and dry.
- h. Keep the burner ports clean.
- i. Keep the burner shield and adjacent parts clean.

2. Jacket Vacuum

When the kettle is cold, a positive pressure/vacuum gauge reading or a reading near zero indicates that there is air in the jacket. Air in the jacket slows kettle heating.

To remove air:

- Start the unit. (Be sure there is water or product in the kettle when heating).
- Make sure that the elbow of the safety valve outlet is turned so that escaping steam is directed toward the floor.
- When the pressure/vacuum gauge reaches a positive pressure reading of five PSI, release the air and steam by pulling up or out on the safety valve lever or ring for about 1 second. Repeat this step, then let the pull ring or valve lever snap back into the closed position.

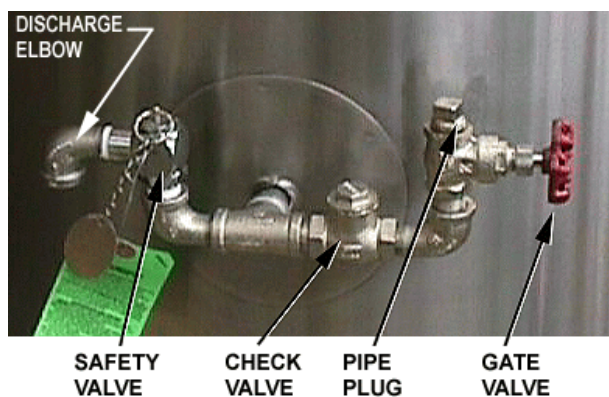


WARNING
STAY AWAY FROM THE STEAM THAT IS BLOWING OUT OF THE SAFETY VALVE. THE STEAM CAN CAUSE A SEVERE BURN.

3. Jacket Filling and Water Treatment

The jacket was charged at the factory with the proper amount of treated water. You may need to restore this water because it was lost as steam during venting or by draining.

- If you are replacing water lost as steam, use distilled water. If you are replacing treated water that ran out of the jacket, prepare more treated water as directed in step 4, "Water Treatment Procedure."
Do not use tap water.



- Allow the kettle to cool. Remove the pipe plug from the jacket fill assembly.
- Open the gate valve and pour in the distilled or treated water.
- Hold the safety valve open to allow air to escape from the jacket while you pour in the water. Continue to pour until the water level rises to a point between the marks on the gauge glass.
- Any air introduced into the jacket during filling must be removed to obtain efficient heating. See "Jacket Vacuum" above.

4. Water Treatment Procedure

- Obtain water treatment compound and a pH test kit from your Groen Authorized Service Parts Distributor.

WARNING
TO AVOID INJURY, READ AND FOLLOW ALL PRECAUTIONS STATED ON THE LABEL OF THE WATER TREATMENT COMPOUND.

- Fill a mixing container with the measured amount of water required. (5¼ Gallons [20 liters]). Distilled water is preferred.
 - Hang a strip of pH test paper on the rim of the container, with about 1 inch of the strip below the surface of the water.
 - Measure the water treatment compound (One way to do this is to add the compound from a measuring cup.)
 - Stir the water continuously, while you slowly add water treatment compound, until the water reaches a pH between 10.5 and 11.5. Judge the pH by frequently comparing the test strip color with the color chart provided in the pH test kit.
- (6) Record the exact amounts of water and treatment compound used. These amounts may be used again, if the same water sources and compound are used in the future. However, it is best to check the pH each time treated water is prepared.

Cleaning

1. Suggested Tools:

- a. Cleaner, such as Klenzade HC-10 or HC-32 from ECOLAB, Inc.
- b. Kettle brushes in good condition (and a bottle brush, for the draw-off).
- c. Sanitizer such as Klenzade XY-12.
- d. Film remover such as Klenzade LC-30.

2. Precautions

Before cleaning, shut off the kettle by turning the thermostat dial to "OFF," and shut off all electric power to the unit at a remote switch, such as the circuit breaker.

WARNING
KEEP WATER AND CLEANING SOLUTIONS AWAY FROM CONTROLS AND ELECTRICAL EQUIPMENT. NEVER SPRAY THE SUPPORT HOUSING OR ELECTRICAL CONNECTIONS.



CAUTION
MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES, AND CLOTHING. TAKE PRECAUTIONS. WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD, AND PROTECTIVE CLOTHING. READ THE WARNINGS AND FOLLOW THE CLEANER LABEL DIRECTIONS CAREFULLY

3. Procedure

- a. Clean food-contact surfaces as soon as possible after use. If the unit is in continuous use, thoroughly clean and sanitize the interior and exterior at least once every 12 hours.
- b. Scrape and flush out food residues. Be careful not to scratch the kettle with metal implements. Close the draw-off valve.
- c. Prepare a hot solution of the detergent/cleaning compound as instructed by the supplier. Clean the unit thoroughly. A cloth moistened with cleaning solution can be used to clean controls, housings, and electrical conduits.



Use only a sponge, cloth or plastic brush to clean the kettle.



Scrapers or steel wool can harm the kettle surface.

- d. Rinse the kettle thoroughly with hot water, then drain completely.
- e. Disassemble the tangent draw-off valve. Clean the draw-off port and each valve part with a brush.

CAUTION
DO NOT MIX PARTS OF DIFFERENT DRAW-OFF VALVES DURING WASHING. THEY ARE NOT ALWAYS INTERCHANGEABLE.

- f. Rinse the kettle and draw-off valve parts thoroughly with clean hot water, then drain completely.
- g. As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing.

- h. To remove stuck materials, use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool with the cleaning solution. To reduce effort required in washing, let the detergent solution sit in the kettle and soak into the residue. Do NOT use abrasive materials or metal tools that might scratch the surface. Scratches make the surface harder to clean and provide places for bacteria to grow.

Do NOT use steel wool, which may leave particles in the surface and cause eventual corrosion and pitting.

- i. The outside of the unit may be polished with a stainless steel cleaner such as “Zepper” from Zep Manufacturing Co.
- j. When equipment needs to be sanitized, use a solution equivalent to one that supplies 200 parts per million available chlorine. Obtain advice on sanitizing agents from your supplier of sanitizing products. Following the supplier’s instructions, apply the agent after the unit has been cleaned and drained. Rinse off the sanitizer thoroughly.

CAUTION
NEVER LEAVE A CHLORINE SANITIZER IN CONTACT WITH STAINLESS STEEL SURFACES LONGER THAN 30 MINUTES. LONGER CONTACT CAN CAUSE STAINING AND CORROSION.

- k. It is recommended that each piece of equipment be sanitized just before use.
- l. If there is difficulty removing mineral deposits or a film left by hard water or food residues, clean the kettle thoroughly and then use a deliming agent, like Groen Delimer/Descaler (Part Number [114800](#)) or Lime-A-Way® from Ecolab, in accordance with the manufacturer’s directions. Rinse and drain the unit before further use.
- m. If cleaning problems persist, contact your cleaning product representative for assistance. The supplier has a trained technical staff with laboratory facilities to serve you.

Troubleshooting

Your Groen kettle is designed to operate smoothly and efficiently if properly maintained. However, the following is a list of checks to make in the event of a problem. Wiring diagrams are furnished inside the service panel and in this manual. **If an item on the list is followed by Y, the work should be done by a qualified service representative.**

USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.

A. All Models

SYMPTOM	WHO	WHAT TO CHECK
Pilot burner and/or burner will not light or goes out after working for a while.	User	<small>Y indicates items which must be performed by an authorized technician.</small> a. Is main gas valve open (handle in line with gas pipe)? b. Is the toggle switch ON. c. Is the thermostat dial is at the correct setting. d. Lighting procedure. See “Operation” Section of this manual. e. Jacket water level. If low, see “Jacket Filling” in the “Preventive Maintenance” section of this manual. f. Is electric power turned on at the circuit breaker or fuse box, and is power being supplied to your building. g. Gas supply to your building.
Pilot burner and/or burner will not light or goes out after working for a while.	Auth Service Rep Only	h. Thermostat operation.Y i. Gas pressure at the automatic valve.Y
Kettle continues heating after it reaches the desired temperature.	User	a. That the thermostat dial is at the correct setting.

SYMPTOM	WHO	WHAT TO CHECK <small>Y indicates items which must be performed by an authorized technician.</small>
	Auth Service Rep Only	b. Thermostat calibration.Y c. Thermostat operation.Y d. Seat of the main automatic gas valve for dirt.Y e. Solenoid plunger of the automatic valve for sticking.*Y
Kettle stops heating before it reaches the desired temperature.	User	a. Thermostat dial setting. b. Is the ON/OFF switch ON? c. Air in jacket - pressure/vacuum gauge (20 to 30 below zero when the kettle is cold?)
	Auth Service Rep Only	d. Thermostat calibration. Y e. Thermostat. Thermostat should click when the dial is rotated above and below a setting.Y f. Pressure limit switch.Y
Kettle heats slowly	User	a. Air in jacket - pressure/vacuum gauge (20 to 30 below zero when the kettle is cold?)
	Auth Service Rep Only	b. Gas pressure at the automatic gas valve. Y
Safety valve pops.	User	a. Air in jacket - pressure/vacuum gauge (20 to 30 below zero when the kettle is cold?) b. Whether kettle was being heated while empty.
	Auth Service Rep Only	c. Pressure limit switch. Y d. Thermostat. Thermostat should click when the dial is rotated above and below a setting. Y e. Safety valve. If valve pops below 29 PSI, replace.Y

B. Model HH/4 with Standing Pilot Ignition (Refer to the electrical schematic)

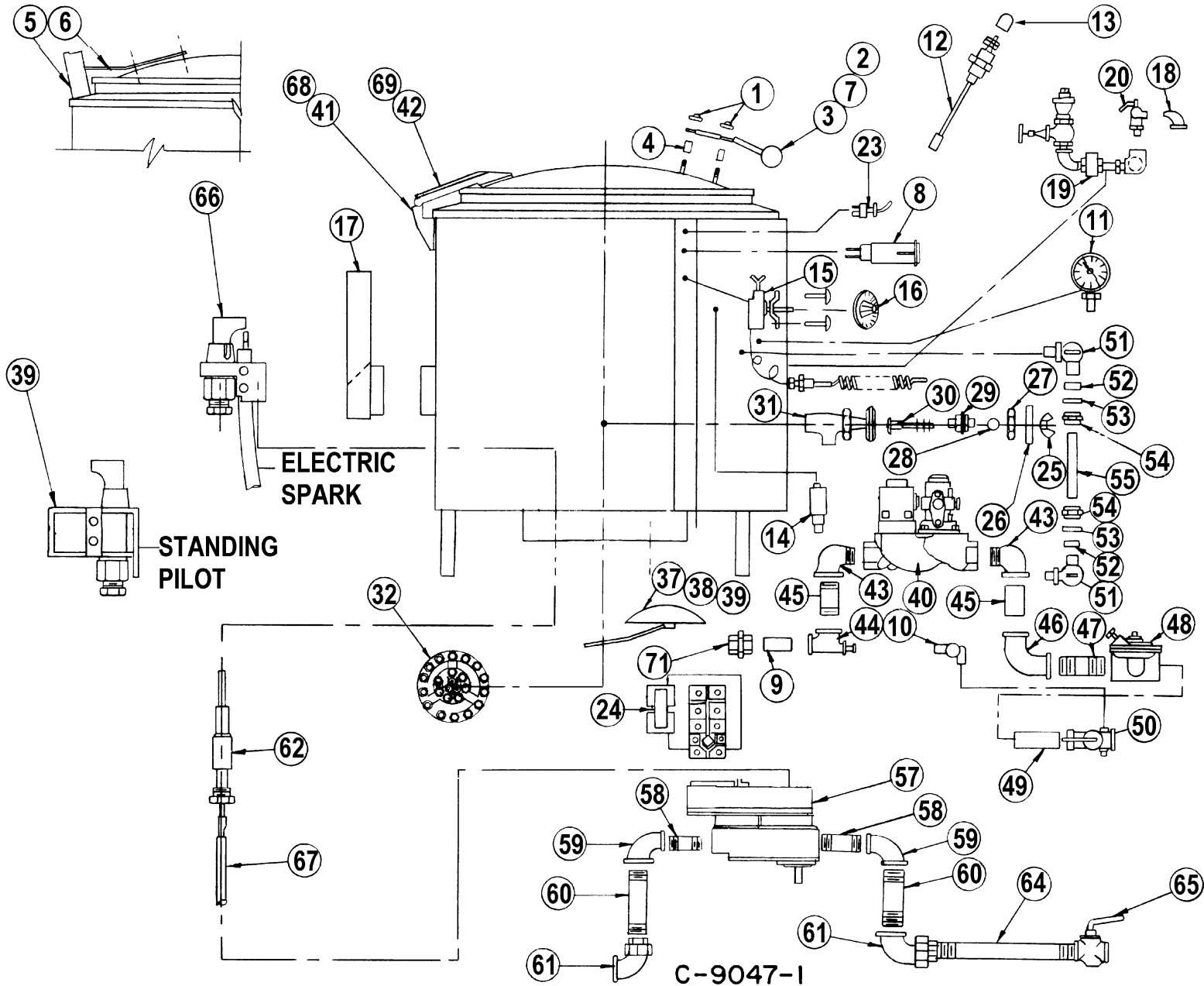
Pilot burner will not light	User	a. Procedure. (See "Operation" section of this manual).
	Auth Service Rep Only	b. Pilot tubing and orifice for clogging.Y c. That pilot gas supply line is purged of air.Y d. Gas pressure at the automatic valve.Y
Pilot flame goes out when reset button is released.	User	a. Procedure. (See "Operation" section of this manual).
	Auth Service Rep Only	b. That electrical connections in the controls, including ground connections are clean and secure.Y
Main burner will not light, and previously lit pilot burner is out.	Auth Service Rep Only	a. Pilot tubing and orifice for clogging.Y b. That electrical connections in the controls, including ground connections are clean and secure.Y c. Gas pressure at the automatic valve.Y
Main burner will not light, but pilot burner is lit	Auth Service Rep Only	a. That electrical connections in the controls, including ground connections are clean and secure.Y b. That pressure limit switch is closed.Y c. Low water cut-off for continuity, and the cutoff transformer for proper input and output voltages.Y d. That the low-water cutoff electrode is clean.* e. That the pilot flame surrounds approximately ½ inch of the tip of the thermocouple.Y — If not, check for: (1) Clogging of the pilot burner.Y (2) Air currents deflecting the pilot flame.Y (3) Low gas pressure at the automatic valve.Y f. That the thermocouple generates at least 17 mV at the Basotrol valve terminal.Y g. For a defective automatic gas valve.Y

C. Model HH/4 with Electronic Ignition (Refer to the electrical schematic)

System does not produce a spark	Auth Service Rep Only	<ul style="list-style-type: none"> a. Thermostat: close the contacts if they are open Y b. AC voltage between terminals "2" and "GR." If it is not 24 Volt, replace the transformer Y c. That the jumper is securely connected between terminals "5" & "GR." d. That the high tension cable is firmly attached and in good condition. If cracked or brittle, replace the pilot.Y e. Pilot electric ceramic for crack or break.Y f. Pilot spark gap. Regap, if it is not 7/64 inch.Y g. Replace the electronic portion of the G770 system.Y
Spark is present but the pilot will not light.	Auth Service Rep Only	<ul style="list-style-type: none"> a. That the pilot valve is connected to terminals "1" and "GR." (Some models are grounded internally).Y b. For 24 VAC at terminals "1" and "GR." If 24V is not present, replace the ignition control.Y b. That pressure meets manufacturer specifications.Y c. For gas at the pilot. If it is not flowing: <ul style="list-style-type: none"> (1) Check pilot gas line for kinks or obstructions.Y (2) Clean orifice, if necessary.Y (3) Replace the pilot valve.Y d. That the pilot spark gap is 7/64 inch and located in the pilot gas stream. If not, adjust or replace the pilot.Y e. For drafts. Shield the pilot burner, if necessary.Y
Pilot lights, but main burner will not come on and spark does not stay on.	Auth Service Rep Only	<ul style="list-style-type: none"> a. For 24 V between terminals "3" and "GR". If voltage is not correct, replace the ignition control.Y b. That the gas pressure meets the control manufacturer's specifications.Y c. Electrical connections of the main valve to terminals "3" and "GR", to assure that they are securely attached. If they are, replace the main valve."Y
Pilot lights, but main burner will not come on, the spark stays on.	Auth Service Rep Only	<ul style="list-style-type: none"> a. That sensor cable and high voltage cable are separated from one another and not wrapped around a pipe or accessory.Y b. Sensor cable, to make certain that there are secure attachments to terminal "4" and the sensor.Y c. Sensor ceramic for cracks.Y d. That cable is not grounded out. If it is, correct the ground.Y e. That the sensor or its connector is not grounded out.Y f. Sensor cable for continuity and condition of insulation.Y g. Disconnect main valve lead from terminal "3," and sensor cable from terminal "4." Observing correct polarity, connect a DC micro ammeter between the sensor cable terminal and terminal "4." Check that the current is 0.15 microamp or greater with only the pilot operating. If it is, replace the ignition control.Y h. For proper gas pressure.Y i. Clean pilot assembly, if necessary.Y j. Tighten all mechanical and electrical connections.Y k. Pilot application, and correct to increase sensor probe current, by: <ul style="list-style-type: none"> (1) Increasing or decreasing pilot orifice size.Y (2) Shielding the pilot from drafts.Y l. Replace sensor or orifice.Y m. Replace ignition control.Y

Parts List

To order parts, contact your Groen Certified Service Agency. Supply the model designation, part description, part number, quantity, and, where applicable, voltage and phase.

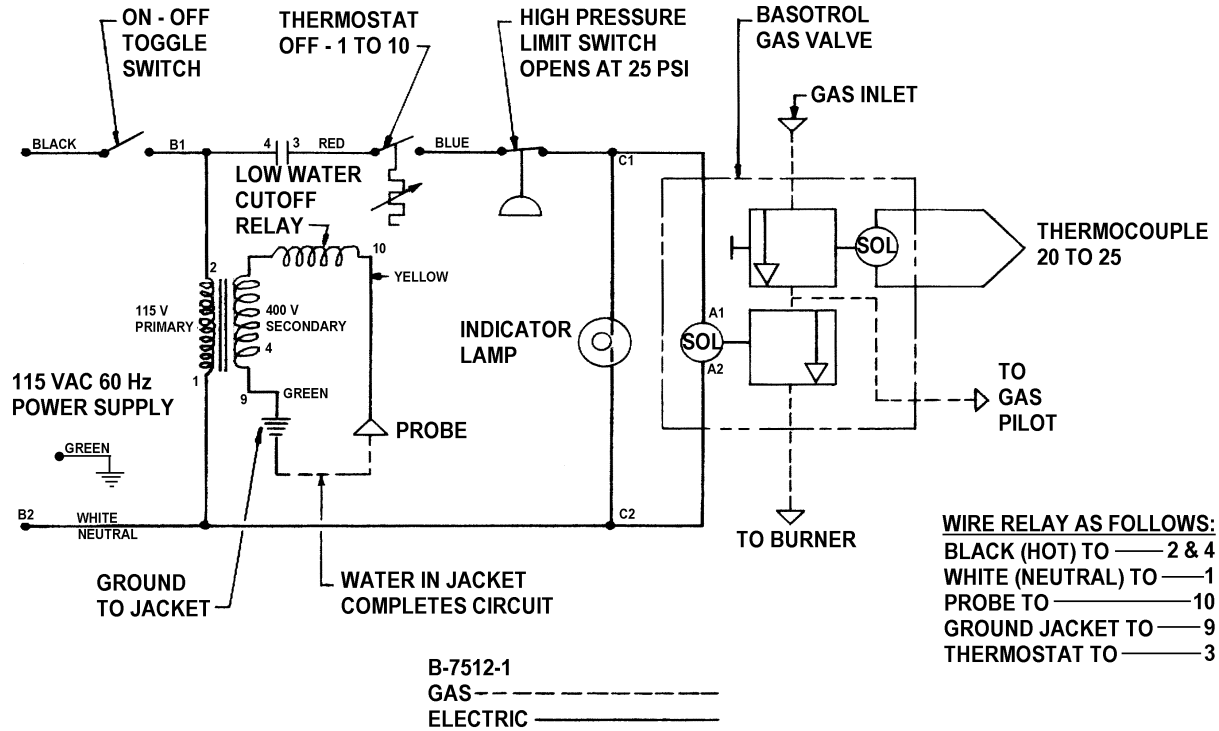


Parts List

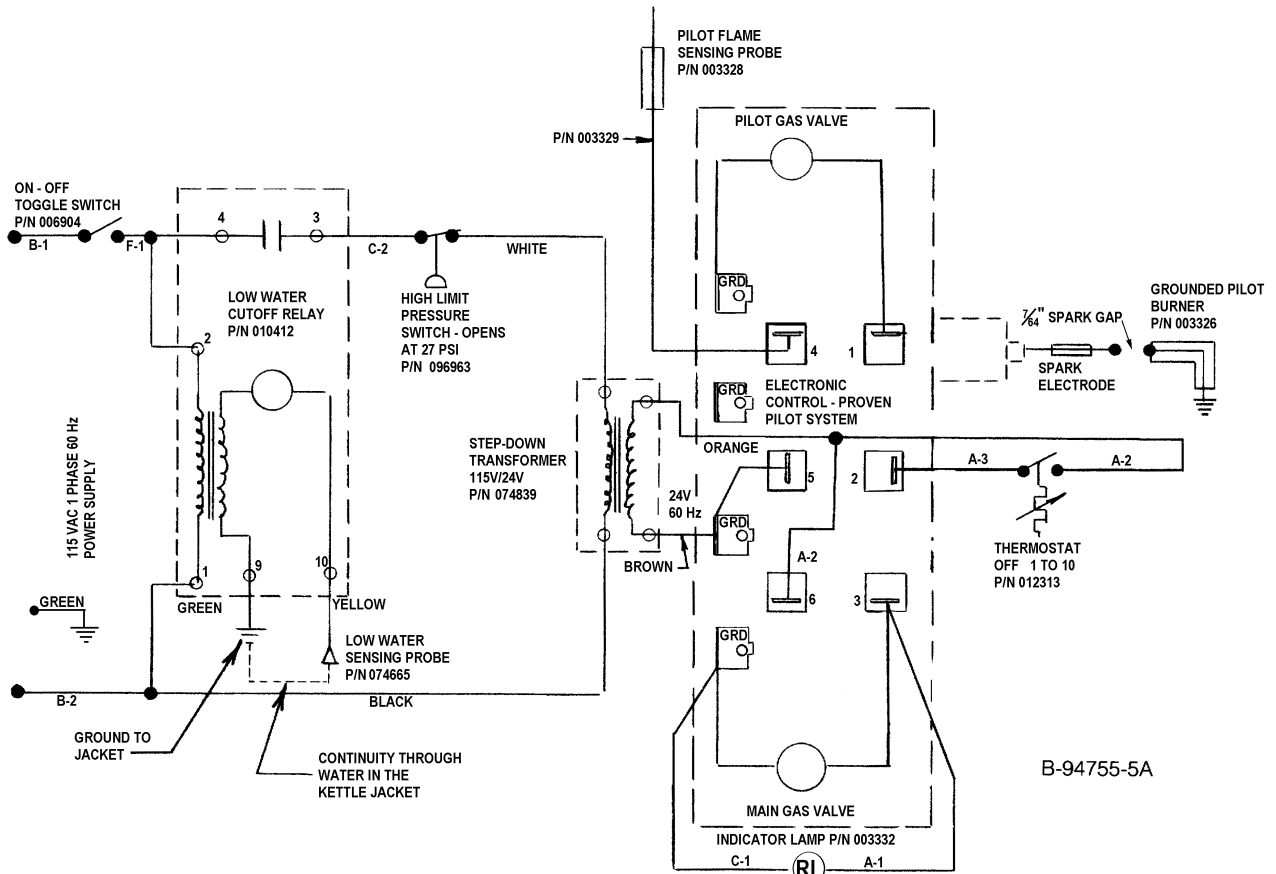
Key	Description	Part No.	Key	Description	Part No.
1	¼"-20 Cap Nut	005471	37	Removable Strainer C" holes for optional 1½" Draw-Off	009040
2	Handle Assy (includes items 3 & 4)	047714		Removable Strainer C" holes for standard 2" Draw-Off	013785
3	Knob	012691	38	Strainer w/o holes for 1½" Draw-Off	009057
4	Spacer	002378		Strainer w/o holes for 2" Draw-Off	013783
5	Hinge Bar	061012	39	Gas Pilot Burner	002457
6	Cover Hinge Bracket	013485	40	¾" Gas Valve (built after 11/88)	097001
7	Tolerance Ring	012692		¾" Gas Valve (built before 12/88)	002487
8	Indicator Light Assembly	002986	41	Hinge Cover LH (Prior to 5/10/84)	002293
9	¾" IPS x 4½" Nipple	005560	42	Half Hinge LH (Prior to 5/10/84)	012878
10	¼" IPS Gas Valve	002485	43	¾" IPS St. EI	009347
11	Pressure Gauge	099156	44	¾" x ¼" x ¾" Reducing Tee	008716
12	Warrick Electrode	074665	45	¾" IPS x 3½" Long Nipple	008716
13	Rubber Boot	010390	46	¾" 90 Degree EI	008124
14	Pressure Limit Control	096963	47	¾" x 3" Long IPS Nipple	008239
15	Thermostat	012313	48	Gas Pressure Regulator	101570a
16	Thermostat Knob	012314	49	¾" x 2½" Long Nipple	005559
17	Flue Assy Box, HH Kettles	004951	50	¾" Gas Valve	002484
18	¾" IPS 90° EI (Built before 8/1/92)	010668	51	½" Gauge Glass Connector	004071
	¾" IPS 90° EI (Built after 8/1/92)	096905	52	Rubber Gauge Glass Gasket	008917
19	Water Fill Assy (Built before 8/1/92)	013541	53	Washer w/Assy #4071	N/A
	Water Fill Assy (Built after 8/1/92)	097010	54	Hex Nut w/Assy #4071	N/A
20	Safety Valve (Built before 8/1/92)	004010	55	Water Gauge Glass	008742
	Safety Valve (Built after 8/1/92)	097009	56	Not Used	N/A
21	Not Used	N/A	57	Gas Valve (Prior to 6/89)	N/A
22	Not Used	N/A		Gas Valve (Built after 5/89)	079803
23	Toggle Switch	006904	58	Close Nipple ½" IPS	008877
24	Warrick Relay (115 Volt)	010412	59	Reducing EI ¾" x ½" x 90 Degrees	008751
25	Wing Nut #10-24	009028	60	Nipple ¾" IPS x 4" Long	005523
26	Valve Handle	009029	61	Union Elbow ¾" IPS x 4" Long	005493
27	Sanitary Hex Nut #1314	008911	62	Sensing Probe w/Kanthol	003328
28	Rubber "O" Ring	009034	63	Not Used	N/A
29	Valve Bonnet	009024	64	Nipple ¾" IPS x 4" Long	005523
30	Valve Stem	009027	65	¾" IPS Gas Valve	008172
31	Optional 1½" Draw-Off Valve	009000	66	Pilot Burner and Electrode	003750
32	Burner with Jets	004825	67	Sensing Probe Lead	003329
33	Slotted Cap for Item 32 (not shown)	004826	68	Half Hinge RH (prior to 5/10/84)	012877
34	Not Used	N/A	69	Hinge Cover RH (prior to 5/10/84)	002292
35	Not Used	N/A	70	Not Used	N/A
36	Removable Strainer ¼" holes for optional 1½" Draw-Off	009007	71	Union ¾" IPS	005516
	Removable Strainer ¼" holes for standard 2" Draw-Off	009044			

NOTE: HH/4 and HH/4/E use natural gas only.

Wiring Diagrams

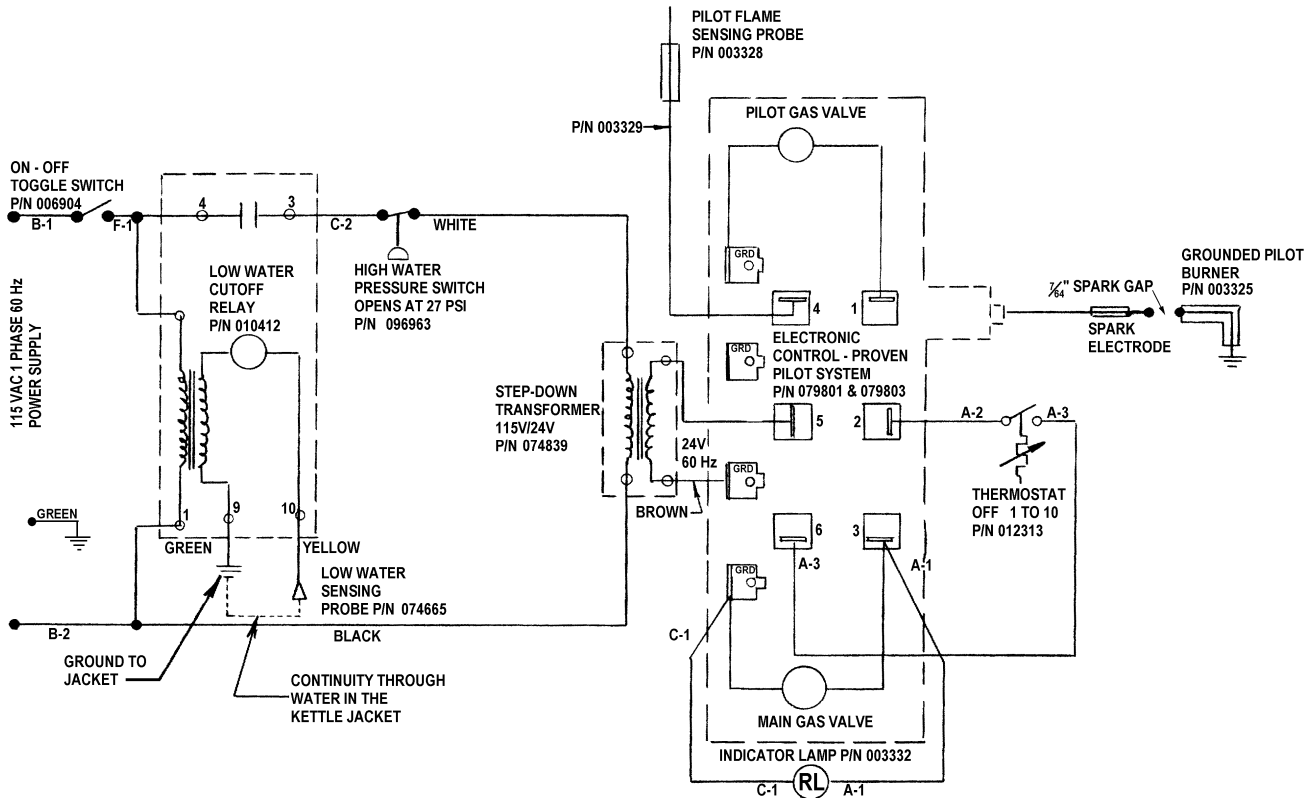


HH/4 Standing Pilot Ignition

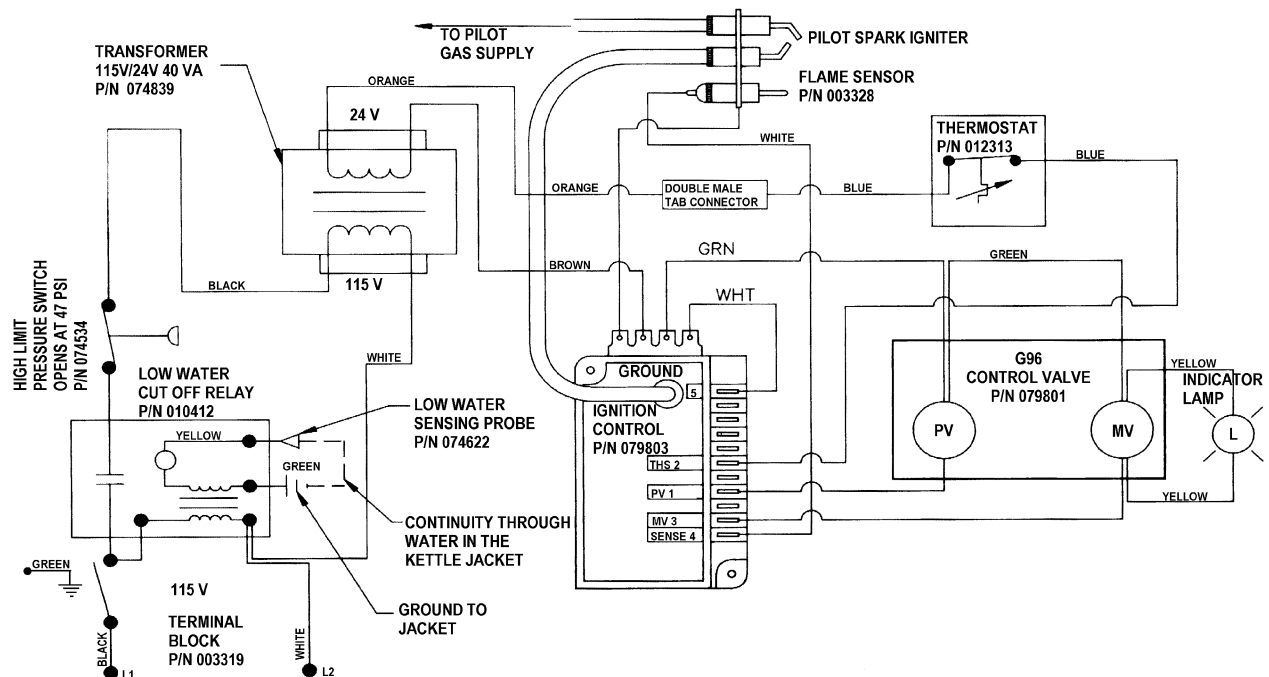


HH/4E Spark Ignition, Type QHL-1

Electrical Schematics



HH/4E Spark Ignition, Type CCG



HH/4E Spark Ignition, Type G96

Limited Warranty To Commercial Purchasers *

(Domestic U.S., Hawaii &
Canadian Sales Only)

Groen Foodservice Equipment ("Groen Equipment") has been skillfully manufactured, carefully inspected and packaged to meet rigid standards of excellence. Groen warrants its Equipment to be free from defects in material and workmanship for (12) twelve months with the following conditions and subject to the following limitations.

- I. This parts and labor warranty is limited to Groen Equipment sold to the original commercial purchaser/users (but not original equipment manufacturers), at its original place of installation in the continental United States, Hawaii and Canada.
- II. Damage during shipment is to be reported to the carrier, is not covered under this warranty, and is the sole responsibility of purchaser/user.
- III. Groen, or an authorized service representative, will repair or replace, at Groen's sole election, any Groen Equipment, including but not limited to, drawoff valves, safety valves, gas and electric components, found to be defective during the warranty period. As to warranty service in the territory described above, Groen will absorb labor and portal to portal transportation costs (time & mileage) for the first twelve (12) months from date of installation or fifteen (15) months from date of shipment from Groen.
- IV. This warranty does not cover boiler maintenance, calibration, periodic adjustments as specified in operating instructions or manuals, and consumable parts such as scraper blades, gaskets, packing, etc., or labor costs incurred for removal of adjacent equipment or objects to gain access to Groen Equipment. This warranty does not cover defects caused by improper installation, abuse, careless operation, or improper maintenance of equipment. This warranty does not cover damage caused by poor water quality or improper boiler maintenance.
- V. **THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EACH OF WHICH IS HEREBY EXPRESSLY DISCLAIMED. THE REMEDIES DESCRIBED ABOVE ARE EXCLUSIVE AND IN NO EVENT SHALL GROEN BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR THE BREACH OR DELAY IN PERFORMANCE OF THIS WARRANTY.**
- VI. Groen Equipment is for commercial use only. If sold as a component of another (O.E.M.) manufacturer's equipment, or if used as a consumer product, such Equipment is sold AS IS and without any warranty.

*** (Covers All Foodservice Equipment Ordered After October 1, 1995)**



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FAX 601 373-9587

OM-HH (Revised 10/98)
Part Number 121034