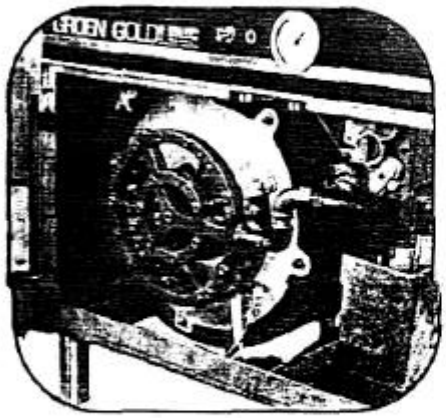
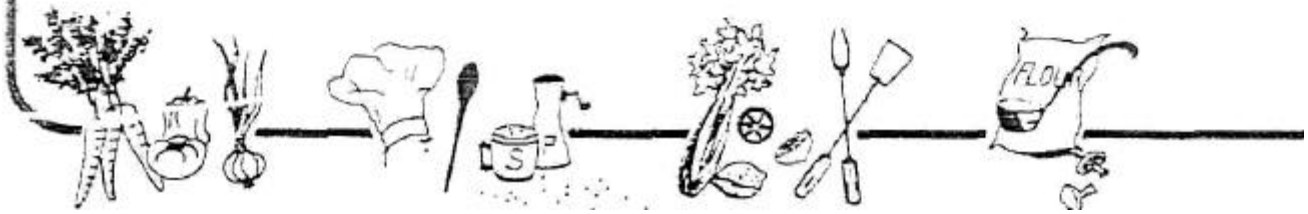
OPERATOR MANUAL

OM-NGB

Models: NGB/2, NGB/2/E, NGB, NGB/E Steam Generators

Gas heated
200,000 BTU/hr firing rate
120,000 BTU/hr into product
3.6 effective boiler horsepower





THIS MANUAL MUST BE RETAINED FOR FUTURE REFERENCE

FOR YOUR SAFETY

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 LOCAL 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.

GROEN

MADE IN USA

IMPORTANT — READ FIRST — IMPORTANT

Congratulations on your purchase of the highly efficient Groen gas heated steam generator: This unit has been carefully designed and handcrafted in, our own machine shop, then meticulously inspected and pretested to ensure that you receive the best possible product. Given reasonable care and periodic maintenance, this generator will provide years of faithful service.

PLEASE READ THIS MANUAL CAREFULLY AND THOROUGHLY BEFORE INSTALLING OR OPERATING THE GENERATOR. Keep. it on hand for future reference.

It is recommended that you establish a timetable for periodic maintenance as outlined in this manual. Space has been provided in the Maintenance and Service Log. Keep it up to date and on file with the warranty information contained in this manual.

A warranty registration card will be attached to the unit. Fill in this card and mail it to Groen Record the model number, serial number and installation date of your unit at the top of the Maintenance and Service Log in the back of this manual. File this information for future reference.

CONDITIONS AND TERMS OF LIMITED THREE YEAR WARRANTY

The warranty on this unit does **not** extend to:

1. Installation and start up.
2. Simple adjustments, such as tightening fittings and electrical connections.
3. Malfunction as a result of improper maintenance.
4. Repairs made by anyone other than qualified service personnel as recommended by Groen.
5. Damage caused in shipment or damage as a result of improper use.
6. Normal maintenance as outlined in operator manual.
7. Damage as a result of excessive moisture in components. DO NOT SPRAY EQUIPMENT WITH WATER OR STEAM.
8. Damage caused by tampering with, removal of. or change of preset controls or safety device.
9. Malfunction as a result of sediment and/or lime in the valves or scale build-up in the boiler.

NOTE: MINIMUM WATER QUALITY STANDARDS MUST BE MET TO INSURE PROPER OPERATION. WATER SOFTENING IS RECOMMENDED IF YOUR WATER QUALITY DOES NOT MEET THE FOLLOWING STANDARDS:

(1) Total dissolved solids (TDS) content should not exceed 30 parts per million.

(2) Water pH should be 7.0 or higher.

CAUTION: USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR THEIR AUTHORIZED DISTRIBUTOR VOIDS ALL WARRANTIES. SERVICE PERFORMED BY OTHER THAN FACTORY AUTHORIZED PERSONNEL WILL VOID ALL WARRANTIES.

If you have any questions about warranty coverage, operating procedures, or maintenance, contact your area Groen representative or an authorized Groen service agency.

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Equipment Description

The Groen NGB and NGB/E steam generators are designed to generate Low pressure steam tor use in GOLDLINE cabinet mounted steamers and steam jacketed kettles.

The generator is housed in a stainless steel cabinet on top of which can be mounted various combinations of steamers and kettles requiring a steam supply. It is small enough to fit in a 24 inch wide cabinet.

The NGB and NGB/E feature an easily accessible control box, which may be pulled out through the cabinet door for servicing. (See Troubleshooting section of this manual.)

The generator itself is constructed or *1/*4 inch-boiler plate according to ASME code (all welds are hydrostatically tested) and is equipped with all required instruments, fittings, and controls.

Heat transfer fins inside the combustion chamber add to the high efficiency of this unit. The NGB and NGB/E are both rated as 60% efficient or better, with a firing rate of 200,000 BTU/hr using propane or natural gas. The energy output is 120,000 BTU/hr and effective boiler horsepower is 3.6.

The two models are distinguished by different ignition systems. to ignite the burners. Model NGB utilizes a standing pilot but Model NGB/E employs a Corborundum glow coil.

Installation

WARNING: INSTALLATION OF THE STEAM GENERATOR MUST BE DONE BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING. IMPROPER INSTALLATION CAN CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT. ANY MECHANICAL, ELECTRICAL, OR GAS TYPE CHANGE MUST BE APPROVED BY THE GROEN DIVISION FOOD SERVICE ENGINEERING DEPARTMENT.

The unit should be installed in a ventilated room for efficient performance. All items which may obstruct or restrict the flow of air for combustion and ventilation must be removed. The area directly around the appliance must be cleared of all combustible materials.

1. Installation on both combustible and noncombustible floors is allowed, with a minimum clearance to combustible construction of six (6) inches at the rear and six (6) inches at each side.
2. Installation of the Gas Steam Generator under a ventilating hood is required. Installation of the ventilating hood should comply with local codes and/or ANSI/NFPA-96 Latest Edition. Also, the Gas Steam Generator should be electrically interlocked to shut off the gas supply and prevent the operation or the unit if the exhaust fan is not operating or if the fire suppression system is activated. Failure to follow these instructions can cause bodily injury and/or property damage.
3. Level the unit by adjusting the legs. and check for levelness with a spirit level on top of the cabinet.
4. Complete the piping to the gas service main using *1/*2 inch NPT pipe or approved equivalent. Connection to the gas valve is at the right front corner of the generator.
5. Provide 115 VAC, 60 HZ, 1 PH, 15 AMP electrical service. Observe local codes and/or The National Electrical Code in accordance with ANSI/NFPA 70 — latest edition. AN ELECTRICAL GROUND IS REQUIRED. The electrical schematic is located on the inside of the cabinet door.
6. Installation must conform with the American National Standard Z223.1 — latest edition and the National Fuel Gas Code. The unit should be installed in an adequately ventilated room with a provision for adequate air supply to the unit. The best ventilation will utilize a vent hood and exhaust fan. DO NOT obstruct the flue or vent duct after installation.
7. Adequate space for proper servicing and operation is required. DO NOT block any air intake spacing to the combustion chamber or obstruct the air flow.
8. After the steam generator has been connected to the gas supply, all gas line joints must be checked for leaks. **NO FLAME SHOULD BE USED WHEN CHECKING FOR LEAKS. A** thick soap solution or other suitable leak detector should be employed.
9. The appliance and its individual shutoff valve must be **disconnected** from the gas supply piping system during any pressure testing of the system at test pressures **in excess of** 1/2 psig (3.48 kPa). The appliance must be **isolated** from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures **equal to or less than** 1/2 psig (3.48 kPa).

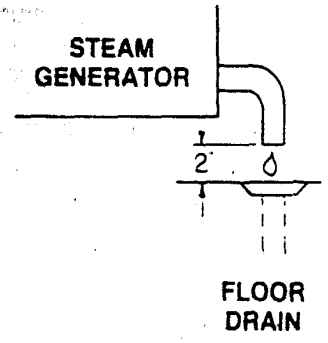
10. **Cold** water must be supplied with 1/2 inch N.P.T. ,connections to the Y-strainer located at the left rear corner of the generator. It is recommended that a check valve be placed in this line before the Y-strainer to prevent back flow. Pressure of the water supply **must** be regulated at 20 to 30 PSI and should be maintained at 25 to 30 PSI. To prevent malfunction or damage caused by water pressures above 30 PSI, install a pressure reducing valve on the water supply line.
11. This steam generator has both an automatic drain and a manual drain at the rear of the unit. Connect the 1/2 automatic drain pipe and the 3/4 manual drain pipe to a 1 1/2 IPS (or larger) pipe header. Then extend the header to a nearby floor drain. GROEN recommends that the header have 2 or less elbows and a length of no more than 6 feet. A 2" IPS header is recommended for a drain line with more than 2 elbows or a length greater than 6 feet.

The header drain must have a gravity flow and vent freely to the atmosphere. The drain tine must not be directly connected to any building drain. Keep a vertical air gap of at least 2" between the generator drain and the building drain, unless local codes have a different requirement.

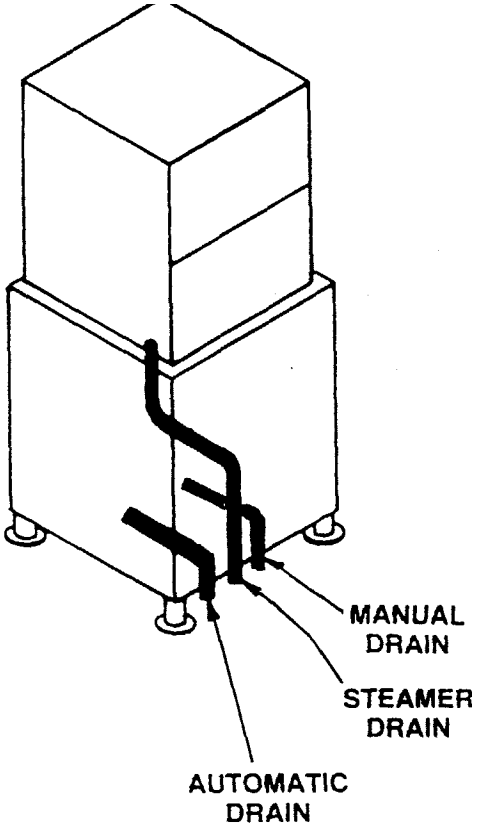
CAUTION: DO NOT LOCATE THE GENERATOR CABINET DIRECTLY OVER A FLOOR DRAIN OR FLOOR SINK. HUMIDITY OR WATER FROM A DRAIN WILL DAMAGE ELECTRICAL PARTS OF THE GENERATOR.

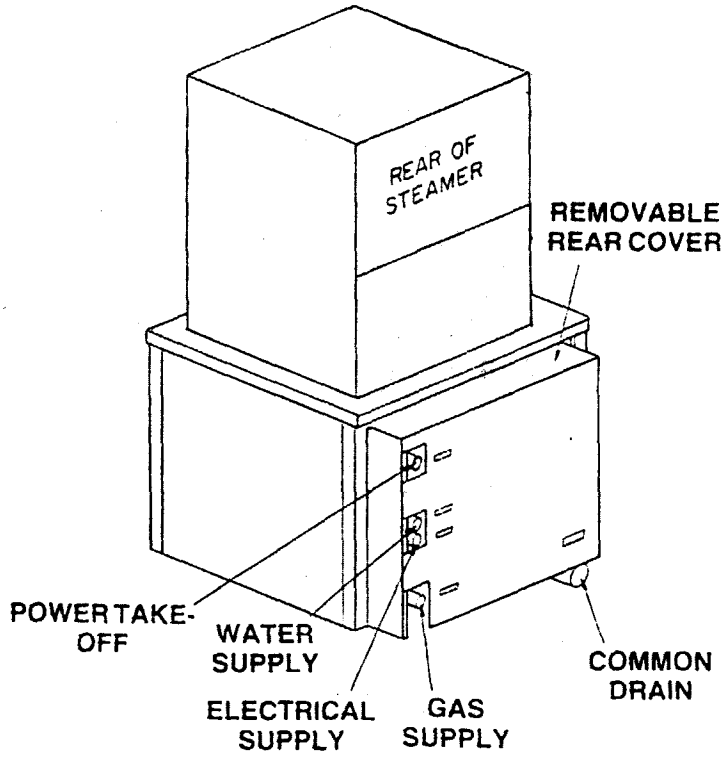
The generator drains discharge **steam** and **hot condensate,** so these hot discharges must be directed away from the generator cabinet. GROEN recommends that the floor drain be located to the rear of the cabinet. .

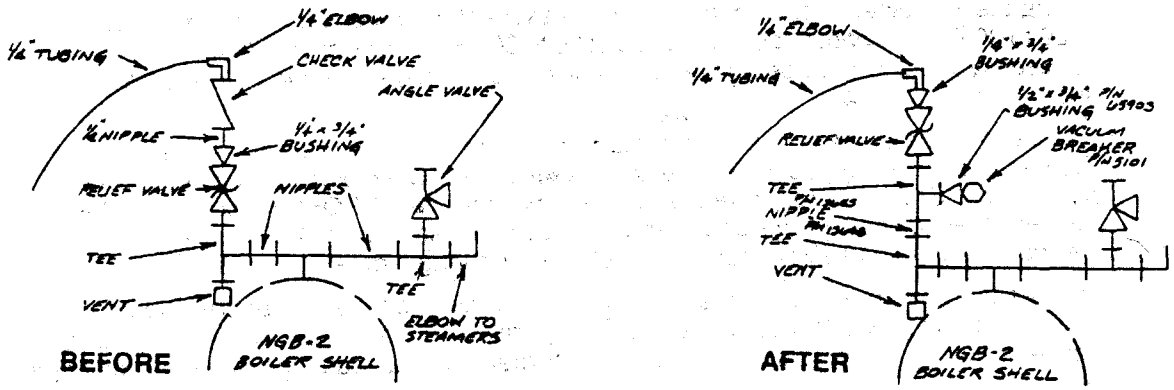
For instructions on installation of the steam drain, see the separate steamer manual.



<u>For units made before August 8,1991:</u>
<u>For units made after August 7,1991:</u>







Instructions:

1. Remove check valve and discard it.
2. Place 3/4'"tee between relief valve and existing tee.
3. Screw reducing brushing and vacuum breaker into tee.
4. Screw *1/4* elbow into reducing bushing on relief valve.

Initial Start-Up

Now that the steam generator has been installed, the unit should be tested to ensure that it is operating correctly.

For units made before August 8,1991:

1. Remove all literature and packing materials from the interior and exterior of the unit.

2. If no steam connections have been made, attach a hose to the steam outlet at the top of the steam generator and pipe to a drain.

3. Open the main gas valve.

4. Before you fill the unit with water:
a. For **NGB:** Turn the knob on the gas valve to "PILOT", then push the knob in and hold it while lighting the pilot burner. Continue to hold the knob in for 60 seconds, allowing the thermocouple to heat up (this keeps the gas valve open).
b. For **NGB/E:** Turn the knob on the gas valve to the "ON" position.
c. For **NGB/2:** Turn the knob on the gas valve to "PILOT", then push the knob in and hold it while lighting the pilot burner. Continue to hold the knob in for 60 seconds, allowing the thermocouple to heat up, so it will keep the gas valve open.
d. For **NGB/2/E:** Turn the knob on the gas valve to the "ON" position.

5. For **NGB** or **NGB/E:**
Push the "ON/OFF" switch on the cabinet front panel to the "ON" position. The unit will automatically fill with water. When the water level in the gauge glass reaches the full mark, wait 30 seconds, then push the "ON/OFF" switch to "RESET". The burner will then light. For **NGB/2** or NGB/2/E:
Push the "ON/OFF" switch on the cabinet front panel to the ON position. The red light in the switch will come on, and the unit will automatically fill with water. When the water level in the gauge glass reaches the full mark, the green "READY" light will come on. Push the "START" switch. The amber light in the switch will come on. and the burner will light.

6. If connections to a steamer or a kettle have been made, check for steam by:
a. Turning on the steamer and checking for steam inside the cavity.
b. Filling the kettle with water, turning it on. and making sure that the water heats up.
If a hose connection (step "2" above) has been made, check for steam at the end of the hose.
In all cases, steam should be detected within 20 minutes.

7. To shut down the unit push the "ON/OFF" switch to the OFF position. The generator will drain automatically after it has cooled to 170°.

For units made after August 7,1991:

1. Remove all literature and **packing,** materials from the interior and exterior of the unit.
2. Open the main gas valve.
3. Before you fill the unit with water:
   a. For **NGB/2** Turn the knob on the gas valve to "PILOT", then push the knob in and hold it while lighting the pilot burner. Continue to hold the knob in for 60 seconds, allowing the thermocouple to heat up so it will keep the gas valve open.
   b. For NGB/2/E: Turn the knob on the gas valve to the "ON" position.
4. Push the "ON/OFF" switch on the cabinet front panel to the "ON" position. The red light in the switch will come on, and the unit will automatically fill with water. When the water level in the gauge glass reaches the full mark, the green "READY" light will come on. Push the "START" switch. The amber light in the switch will come on, and the burner will light.
5. Check for steam at the drain (lower right corner as viewed from the rear). If connections to a steamer or a kettle have been made, check for steam by:
   a. Turning on the steamer and checking for steam inside the cavity.
   b. Filling the kettle with water, turning it on, and making sure that the water heats up.
   In all cases, steam should be detected within 20 minutes.
6. To shut down the unit, push the "ON/OFF" switch to the OFF position. The generator wiil drain automatically after it has cooled to 170°.

If the generator functions as described above, the unit is ready for use. If it does not. contact your Groen Authorized Service Agent.

Operation

A. Controls

The operating controls for NGB and NGB/E are:

1. The "ON/OFF" switch on the cabinet front panel. This control is used to call for electrical power to the unit by pushing the switch to the "ON"; to light the unit by turning it to "RESET":to restart the unit in the event that a low water condtion cuts off power to the gas valve (by turning to "RESET" again): and, finally, to turn the unit off by turning the switch to "OFF".
2. The control knob on the gas valve. This control on the NGB is used in the "PILOT" position. when you are lighting the pilot burner. Turning the knob to the "ON" position allows gas to flow through the valve to the burner, and turning the knob to "OFF" cuts off the gas flow.

The operating control for NGB/2 and NGB/2/E are:

1. The "ON/OFF" switch on the cabinet front panel. This control is used to call for electrical power to the unit, by pushing the switch to the ON position, and to shut down the unit, by pushing the switch to the OFF position.
2. The "START" switch beside the "ON/OFF" switch. This control is used by briefly pushing the switch to the "START" position. Using this switch lights the burner and also restarts the unit, if an electric power failure or low water condition has cut off power to the gas valve.
3. The control knob on the gas valve. This control is used in the "PILOT" position (NGB/2 only), when you are lighting the pilot burner. For either the NGB/2 or the NGB/2/E, turning the knob to the "ON" position allows gas to flow through the valve to the burner. Turning the knob to "OFF" shuts off the gas flow.

Operation (cont'd)

B. Operating Procedure

1. For Model NGB with standing pilot:
   a. To light the pilot, turn the knob on the gas valve to "PILOT" and push it in. Hold the knob in while lighting the pilot and for 50 seconds after the pilot is lit. Then turn the knob to "ON" and the unit is ready to light. Do not attempt to light the main burners directly with a flame.
   b. Push the "ON/OFF" switch to the "ON" position. The unit will automatically fill with water. Wait 30 seconds after the water level reaches the full mark on the gauge glass. then push the "ON/OFF" switch to "RESET". The unit will light.
   c. If the pilot requires relighting, first turn the unit off and wait 5 minutes. Then follow the instructions in step "a." above.
2. For Model NGB/E with Carborundum ignition coil:
   a. The manual control knob on the gas valve must be in the "ON" position.
   b. Push the "ON/OFF" switch to the "ON" position. The unit will automatically fill with water. Wait 30 seconds after the water level reaches the full mark on the gauge glass, then push the "ON/OFF" switch to "RESET". The unit will light.
3. For Model **NGB/2** with standing pilot:
   a. To light the pilot, turn the knob on the gas valve to "PILOT", then push the knob in and hold it while lighting the pilot burner. Continue to hold the knob in for 60 seconds after the pilot is lit. Then turn the knob to "ON". Do **not** try to light the main burners directly with a flame.
   b. Push the "ON/OFF" switch on the cabinet front panel to the ON position. The red light in the switch will come on, and the unit will automatically fill with water. When the water level in the gauge glass reaches the full mark. the green "READY" light will come on. Push the "START" switch. The amber light in the switch will come on. and the burner will light.
   c. If the pilot goes out, first turn the unit off and wait 5 minutes, before you try to relight the pilot. Then follow the operating instructions, beginning with step "a" above.
4. For Model **NGB/2/E** with electronic ignition:
   a. Turn the knob on the gas valve to "ON".
   b. Push the "ON/OFF" switch on the cabinet front panel to the ON position. The red light in the switch will come on, and the unit will automatically fill with water. When the water level in the gauge glass reaches the full mark, the green "READY" light will come on. Push the "START" switch. The amber light in the switch will come on, and the burner will light.
5. To shut down any model:
   a. Push the "ON/OFF" switch to the OFF position. When the generator has partially cooled, the unit will drain automatically.
   b. To shut down the unit completely, also turn the knob on the gas valve to the "OFF" position.
6. For any model:
   a. If electric power failure or low water condition has stopped operation, wait at least 5 minutes, then follow the operating procedure for your unit to restart it.
   b. If generator pressure rises too far (over 14 PSI), the safety pressure switch will shut off power to the controls. In this case, after waiting at least 5 minutes, restart the unit by following the operating procedure for your unit, beginning with step "a".

If the pressure rises too high more than once, call your Groen Authorized Service Agency

Sequence of Operation

A. For Model NGB or NGB/2

Pushing the power switch to the "ON" position will cause the water feed valve to open, filling the generator unit until the level probe senses the proper water level. The feed valve will then close. At this time, momentarily pushing the power switch to the "RESET" position Will open the gas valve. Gas flowing from the main burner will be ignited by the standing pilot flame.

For units made before August 8,1991:

The gas valve will open at a gas pressure of 0.5 inch W.C. Within 15 seconds the pressure should reach 3.5 inches W.C. for natural gas or 10.0 inches W.C. for propane.

For units made after August 7,1991:

The valve will open at a gas pressure of 0.9 inch W.C. for natural gas or 2.5 inches W.C. for propane. Within 15 seconds the pressure should reach 3.5 inches W.C. for natural gas or 10.0 inches W.C. for propane.

The air vent is open at this point and will remain open until the temperature in the generator reaches 200°F. As evaporation occurs in the generator and the water breaks from the probe, the water feed valve will open and the 20 second time delay will activate. If the water level fails to rise to the probe before the time delay times out, the gas control valve will close and the controls will nave to be reset manually. In normal operation, the water level will rise to the probe within the time delay period, and there will be no interruption in heating.

When pressure in the generator reaches 10 PSI, the operating pressure switch will cause the gas valve to close. If residual heat makes the pressure rise to 12 PSI, the mid-range pressure switch will open both the condenser water valve and the blow-down valve to decrease the pressure rapidly. As steam pressure decreases below 10 1/2 PSI. the mid-range switch will cause the condenser and blow-down valves to close. When the pressure falls to 9 PSI, the operating pressure switch will open the gas valve, and heating will resume. After this heating and cooling cycle has been repeated once or twice, the generator will operate between 9 and 11 PSI, if no steam is being drawn from it.

If steam pressure reaches 14 PSI. the high limit pressure switch will open and lock out the controls. When this happens, the pilot lamp will go out. An open high limit switch must be reset manually to start the unit again. Should the pressure exceed 15 PSI at any time. the safety valve will open and relieve excess pressure.

When the power switch is turned to the "OFF" position, the gas valve will close and the drain valve will open. draining the unit completely.

B. For Model NGB/E or NGB/2/E

The sequence of events is the same as for Model NGB, with the following exceptions.

Pushing the power switch to the "RESET" position will activate the Carborundum ignition coil. The coil will heat to a glowing temperature and cause the gas valve to open within approximately 12 to 20 seconds. Gas flowing from the burner will be ignited by the coil. When the flame sensor detects a flame, the coil will] deactivate. If the sensor ceases to sense a flame, the gas control valve will close and shut off the main burner. Then the coil will be energized again and will relight the burner.

During normal operation, when steam pressure falls to 9 PSI, the operating pressure switch will activate the coil and initiate the ignition sequence.

Water Conditioning

It is absolutely essential that the water supplied to the Groen Steam-Generator *be* of such a character that it will not form scale at an unacceptable rate. The Groen generator was engineered to minimize scale formation, but scale formation depends on the hardness of the water and the hours of operation. In a few areas of the United States. the water supply is sufficiently free of minerals to avoid scale formation. Most water supplies carry heavy loads or minerals, which will form scale in the generator and reduce its steam output. Your local water utility can provide a statement on the scale forming qualities of the water supply.

Water supplied to the steam generator should contain not more than 30 parts per million tote U. dissolved solids (TDS) and should have a pH of 7.0 or higher. ,

Please follow these simple precautions:

(1) Do not rely on "water treaters" commonly sold as scale preventers and scale removers. THEY DO NOT WORK. The only proven way to avoid scale build-up is to feed in water practically free of scale-forming minerals.
(2) If your water supply carries scale forming minerals, as most water supplies do. run the feed water through a properly maintained softener. Exchangeable softener cartridges or a regeneratable softener can be used. In either case. establish a regular program of exchanging the cartridges or regenerating the softener. Installing a water meter on the inlet line between the softener and the steam generator will give an accurate check of water consumption and a way of determining when to change the cartridge or regenerate the softener. By using a softener and operating within the softener's capacity to exchange minerals, the user will obtain a longer generator life, high steam capacity, and minimum generator maintenance.
(3) If you notice a slowing of steam production, examine the interior of the generator for scale, and remove any scale deposits. (See the general cleaning instructions.) Hard scale can be removed with acids like sulfamic or inhibited muriatic, but such treatment is dangerous and should be done only by an expert familiar with the hazards. Vinegar will dissolve most scales. but the process requires a long time and frequent changes of the vinegar solution.

References

AMERICAN NATIONAL STANDARDS:

Z223.1-1984 National Fuel Gas Code

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

NFPA.54 Installation of Gas Appliances & Gas Piping

NFPA.70 The National Electric Code

NFPA96 Ventilating Hoods

Maintenance & Cleaning

The steam generator is designed to require minimum maintenance, but certain parts may need replacement after prolonged use. After installation; no user adjustment should be necessary. If a service need arises, only authorized personnel should perform the work.

WARNING: USE ONLY GROEN SUPPLIED PARTS. SUBSTITUTION OF UNAUTHORIZED PARTS OR GENERIC PARTS CAN CAUSE BODILY INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT.

WARNING: ELECTRIC POWER SHOULD ALWAYS BE SHUT OFF BEFORE ANY WORK IS DONE ON INTERNAL COMPONENTS.

A. PERIODIC INSPECTION

It is recommended that service personnel check the unit at least once a year. This periodic maintenance should include inspecting electrical wires and connections, cleaning the inside of the control console, and possible adjustment of the pilot light or ignition coil.

A Maintenance and Service Log is provided with the warranty information. Each time maintenance is performed on your Groen equipment, enter the date on which the work was done, what was done, and who did it. File the log with the warranty.

In addition to this yearly inspection, the following items should be checked weekly to ensure minimum equipment downtime and to help guarantee efficient operation:

1. The pressure gauge should be in working order.
2. Water level in the steam generator should be between the lines on the level gauge glass.
3. The strainers in the drain and feed lines should be cleared.
4. Check the burner gas jet primary air inlets. They should be free from dirt and lint
5. The pilot light flame should be blue and envelop approximately 1/2 inch of the flame sensor tip (NGB only).
6. Check the drain for blockage. During operation there should be a continuous flow of water.

At least twice a month, check the safety valve to make sure that it works freely. When the gauge pressure is about 5 PSI, lift the valve lever enough to vent steam, then quickly let it snap back into place.

WARNING: DO NOT EXPOSE YOURSELF TO THE ESCAPING STEAM. A SEVERE BURN CAN RESULT ON EXPOSED SKIN.

B. COMPONENT REPLACEMENT

The NGB and NGB/E steam generators are easy to service because of the accessibility of control components and simplicity of design. An examination of the circuit diagram shows that. in most instances, a faulty component can be isolated with a jumper wire.

Before replacing any part. COMPLETELY SHUT OFF THE GAS AND , ELECTRIC POWER SUPPLIES. Allow 5 minutes for unburned gas to vent. When replacement involves breaking a gas pipe connection, check the new connection for leaks with a thick soap solution or other appropriate leak detector. DO NOT USE A FLAME TO TEST FOR LEAKS.

All internal wiring is marked as shown on the circuit schematic drawing. Be sure new components are wired in the same manner as the old components.

Maintenance (cont'd)

C. GENERAL CLEANING INSTRUCTIONS

The steam generator will automatically drain completely .every .fine it is turned "OFF". This must be done every day to minimize build-up of scale inside the boiler.

In addition to daily draining, once a month the following routine should be followed:

WARNING: BEFORE YOU BEGIN TO CLEAN THE UNIT, UNPLUG THE POWER SUPPLY CORD, OR DISCONNECT THE ELECTRIC POWER SUPPLY AT THE CIRCUIT BREAKER OR FUSE BOX.

1. Turn the generator completely off, following the instructions on page 6.
2. Allow the generator to cool down.
3. Eliminate any remaining steam pressure by lifting the handle of the pressure relief valve.
4. Remove the brass plug from the front of the generator.
5. Open the manual drain valve.
6. Wash out the inside of the boiler with a water hose. The rinse water, along with the accumulated solids, will wash down the drain.
7. Close the manual drain valve.
8. Replace the brass plug. Use pipe joint compound or Teflon tape on the threads to ensure a tight seal, and tighten the brass plug securely.

CAUTION: AVOID DAMAGE TO ELECTRICAL COMPONENTS—DO NOT USE WATER OR STEAM HOSE ON EXTERIOR OF UNIT.

As an alternative to the routine above, you may make the following steps

1. Turn the generator off and allow it to cool
2. Push the "ON/OFF" switch to "ON", so water will flow into the generator.
3. Open the manual drain valve and allow the unit to flush itself out for approximately 15 minutes.
4. Close the manual drain valve.
5. Turn the unit "OFF".

Troubleshooting

The steam generator is designed to operate smoothly and efficiently if properly maintained. However, in the event of a problem, the following list of checks maybe employed. If an item on the list is followed by an asterisk (*);. the work should be done only by a. qualified service representative.

CAUTION: USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR THEIR AUTHORIZED DISTRIBUTOR VOIDS ALL WARRANTIES, AND CAN CAUSE BODILY INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT. SERVICE PERFORMED BY OTHER THAN FACTORY AUTHORIZED PERSONNEL WILL VOID ALL WARRANTIES.

NOTE: A wiring diagram is furnished on the inside of the cabinet door. The wiring of controls may be checked against this diagram.

A. All models

SYMPTOM	WHAT TO CHECK
Water does not enter generator.	a. That main water supply valve is open and water is being supplied to the building. b. Water switch to confirm it is on. c. That electric power is on. Check main circuit breaker or fuse and power supply to the building. d. Strainer for build-up of solids. e. For a defective water level control board (by checking continuity) or for a loose connection (Ref. 22).' f. For defective water feed solenoid valve. Check coil for continuity, and replace, if defective (Ref. 36).* g. Wiring for continuity." h. For a defect in the ON/OFF switch (Ref. 3).' i. Water level sensing probe for defect or sea's accumulation. Clean or replace. if necessary (Ref. 6 or 38).*
Generator overfills with water.	a. Levelness of unit, by placing a spirit level on top of the cabinet. b. Water supply pressure may be too high. Adjust to 25 PSI. c. Water level control. Clean and adjust, if necessary (Ref. 6 or 38).' d. That water feed solenoid valve closes. Clean valve seat and strainer, if necessary (Ref. 5 or 38).* e. Water level control probe for a short (Ref. 6 or 38)'
Generator underfills with water.	a. Levelness of unit. by placing a spirit level on top of the cabinet.

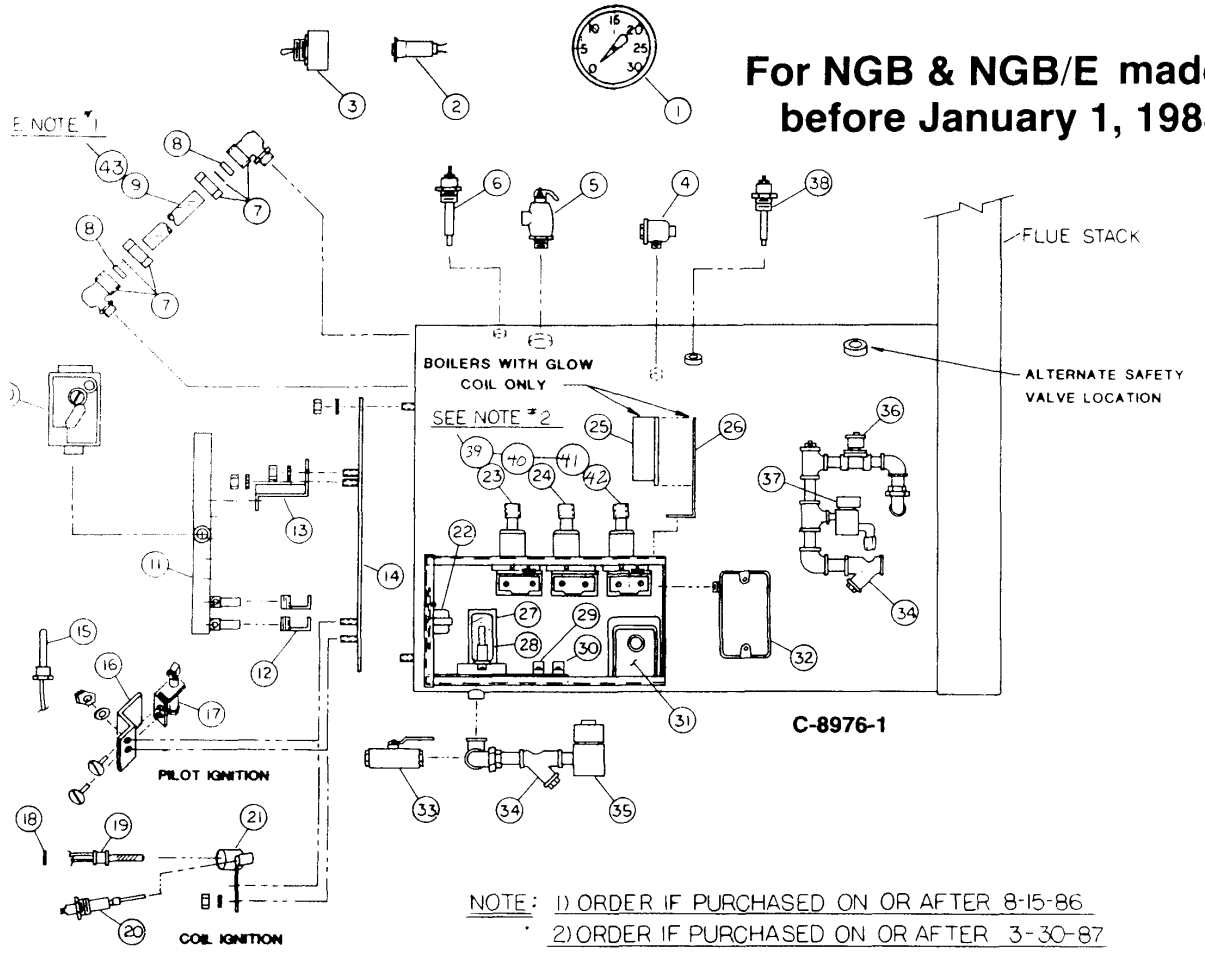
SYMPTOM.		WHAT TO CHECK
Water enters generator very slowly.	a.	Strainer screen on water feed Solenoid valve, and clean or replace, if necessary (Ref. 6 or 38).*
	b.	Seat of feed valve for dirt or lime accumulation. Clean necessary (Ref.'6 or 38*
	c.	Pressure of water supply. Adjust to 25-30 PSI, if necessary-*
Indicator light does not come on when generator is reset manually.	a.	Water level. If it is low, wait for generator to till.
	b.	For defective indicator light (Ref. 2). *
Main burner will not light.	a.	That main gas supply cock is open (handle is parallel to gas pipe) and that gas is being supplied to the building.
	b.	Position of gas valve knob. See the "Operation" section of this manual.
	c.	Electric power supply. Check main circuit breaker or fuse and confirm that power is being supplied to the building.
	d.	That there is water in the generator. If not, see "Symptoms: Water does not enter generator."
	e.	Voltage at gas valve. If not correct, inspect wiring.*
	f.	Pressure switch. If set too low. reset. If continuity check reveals a defect replace. (Ref. 23).*
	g.	Gas valve and replace if defective. (Ref. 10).*
Generator fails to build up pressure when water level is proper.	a.	Position of gas valve knob. See "Operation" section or this manual.
	b.	Pressure gauge. Shut down generator and relieve all pressure. If gauge does not return to zero, replace it. (Ref. 1).'
	c.	Air vent. and replace if defective (Ref. 4).*
	d.	For insufficient flames or inadequate gas supply. Adjust gas flow. (Ref, 10)*
Water level in gauge glass jumps up and down,	a.	Valve in sight gauge assembly. Make sure it is open.
Generator fails to cut off after reaching operating pressure.	a.	Pressure gauge. Shut down generator and relieve all pressure. If the gauge does not return to zero. replace it. (Ref. 1)'
	b.	Pressure switch. If set too high, adjust. If defective, replace. (Ref 23).*
	c.	That gas valve cuts off gas supply when demands of pressure switch have been met. If not, replace gas valve. (Per. 10).*

SYMPTOM	WHAT TO CHECK
Safety valve pops.	a Confirm, that pressure gauge reads correctly. (1) If pressure goes over 15 PSI, adjust or replace pressure switches. (Ref. 23.24). * (2) If pressure stays under 14 1/2 PSI: (a) Clean safety valve. (b) Replace safety valve with valve stamped "HV". (Ref. 5).* b. If pressure gauge reads incorrectly, replace it (Ref. 1).*
Generator builds up pressure, shuts down. and fails to come on again.	a. High limit switch. If set too low, adjust and reset. If defective, replace. (Ref. 23 HI).* b. Operating pressure switch. If set too high, adjust. If defective, replace. (Ref. 23 OP)* c. Water level. If low, see "Symptoms" above: "Water does not enter generator" and "Water enters generator very slowly."
Generator cuts out after 10 to 15 minutes of operation.	a. Water level. If low, see "Symptoms" above: "Water does not enter generator" and "Water enters generator very slowly." b. Time delay relay. If defective, replace, (Ref. 28).- c. Connections for time delay relay.'
Air vent leaks.	a. Clean or replace vent. (Ref. 4).'
Cold water condenser does not function.	a. Water supply, to confirm that it is on and the pressure is 25 to 30 PSI.' b. Condenser water feed valve. Check solenoid coil for continuity, and replace if defective. (Ref. 37).* c. Y-strainer. Clean. if necessary.
Generator operates erratically.	a. Water pressure. So ensure it is 25 to 30 PSI.' b. For defective or clogged valves.* c. Wiring connections."
Generator will not drain.	a. Drain valve and hose for clogging. Clean Y-strainer and valve. (Ref. 35).' b. For defective drain valve.* c Wiring connections to drain valve."
B. Model NGB Only Pilot will not light.	a. That the main gas supply cock is on (handle parallel with gas pipe) and that gas is being supplied to the building. b. Position of gas valve knob. See "Operation" section in this manual. c. Pilot gas line and orifice for obstructions (Ref. f7.)' d. Pilot gas adjustment, and readjust, if necessary. (Ref. 17.).* e. For loose or broken wires* f. Thermocouple. (Ref. 15).*

SYMPTOM	WHAT TO CHECK
Pilot light does not stay lighted.	a. Lighting procedure. See the "Operation" section of this manual. b. For defective switching across either the water level control or the pressure switches by testing for continuity. Replace defective units. (Ref. 22 or 23, 24).* c. For defective gas valve and replace if necessary (Ref. 10).* d. Pilot gas adjustment and readjust, if necessary (Ref. 17).*
Generator builds up pressure, shuts down, and fails to come on again.	a. Pilot light. If out. see "Operation" section of this manual.
Main burners will not light.	a. Pilot light. If it is out, see the '"Operation" section of this manual. b. Gas valve. Replace, if defective (Ref. 10).*
C. Model NGB/Eonly Glow coil does not heat.	a. That electric power is being supplied to the unit. b. For 115V input to the control module (Ref. 31)* c. For a 24 V supply at the transformer (Ref. 31).' d. For 24 V between pins "2" and "4" of the control module (Ref. 25).' e. Voltage of supply to the igniter by removing the igniter plug from the receptacle of the control module and reading voltage across the pins of the igniter receptacle (Ref. 25).* If 115 V is not present, replace the control module. (Ref. 25).* f. Voltage across the terminals of the main gas valve solenoid. If 24 VAC is present. replace the gas valve assembly. If not, replace the control module. (Ref. 10 and 25)*
Burner does not come on. but the glow coil heats.	a. Voltage across the terminals of the gas valve solenoid. If 24 VAC is present, replace the gas valve assembly. If not, replace the control module. (Ref. 10 and 25).* b. Ground connections of module terminal. "12" (green wire) for firm attachment (Ref. 25)* c. Flame sensing probe and wire "11" (blue) for a short to ground. If necessary, correct the short or replace the probe (Ref. 20).* d. For a short to ground at the 24 V source. If the transformer is shorted, remove the short and replace the control module. (Ref. 31 and 25).* e. After the transformer has been replaced, check the flame sensing function. If flame sensing is not working. reverse the leads of either the 115 V or 24 V side of the control transformer (Ref. 20 and 31).*

Parts List

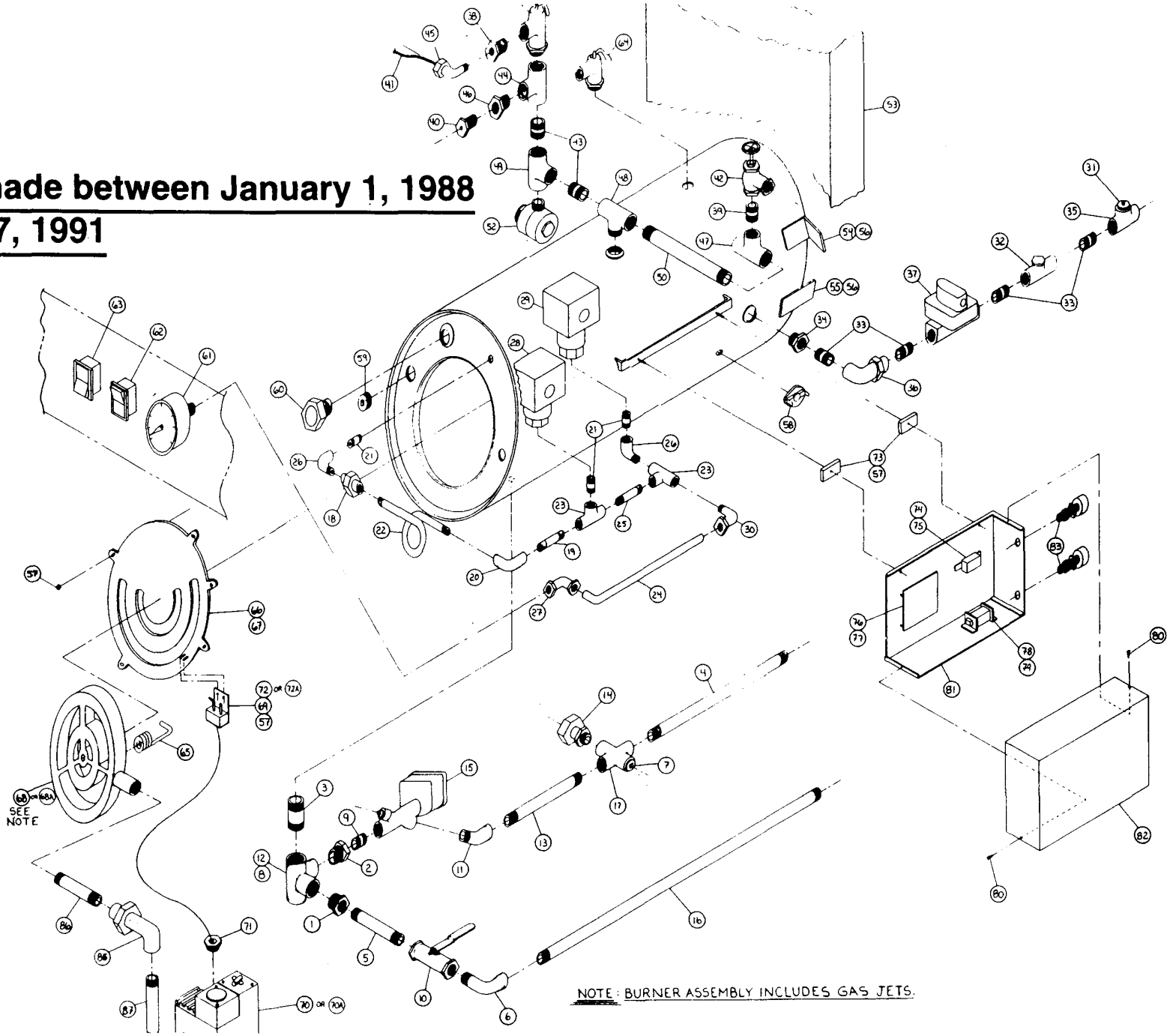
To order parts, contact your authorized Groen Service Agency. Supply the model designation, part description, part number, quantity, and where applicable, voltage and phase or type of gas.



ITEM NO.	PART NO.	DESCRIPTION
1	59407	PRESSURE GUAGE
2	2986	PILOT LAMP
3	26753	3 POSITION SWITCH
4	84098	VENT, THERMOSTATIC
5	8639	SAFETY VALVE 15#
6	14356	ELECTRODE WATER LEVEL (ser.* 119939 & under)
7	54196	FITTINGS, SIGHT GLASS
8	8917	GASKET SIGHT GLASS
9	59899	GLASS TUBE
10	49274	VALVE GAS NAT. PILOT IGNITION
	50727	VALVE GAS NAT. COIL IGNITION
	50838	VALVE GAS PROPANE PILOT IGNITION
	50835	VALVE GAS PROPANE COIL IGNITION
11	47267	BURNER ASSY. NAT. GAS
	50491	BURNER ASSY. PROPANE GAS
12	56965	FLAME HOLDER
13	50490	BRACKET BURNER MOUNTING
14	49277	BURNER BAFFLE
15	64164	THERMOCOUPLE
16	54203	BRACKET PILOT ESSEX VALVE
	83059	BRACKET PILOT HONEYWELL VALVE
17	64162	PILOT NAT. GAS
	64163	PILOT PROPANE GAS
18	49863	RING RETAINING

ITEM NO.	PART NO.	DESCRIPTION
19	54285	COIL IGNITOR
20	64170	PROBE SENSING
21	54284	BRACKET, COIL IGNITOR
22	5958	BOARD, WATER LEVEL CONTROL
23	3860	CONTROL STEAM PRESSURE
24	3861	CONTROL STEAM PRESSURE
25	76519	CARBORUNDUM CONTROL
26	50728	BRACKET, CARBORUNDUM CONTROL
27	3442	RELAY, CONTROL
28	49980	RELAY, DELAY
29	54281	TERMINAL BLOCK 18 TABS
30	51716	TERMINAL BLOCK 12 TABS
31	3331	TRANSFORMER
32	5289	BOX, OUTLET
33	9883	BALL VALVE 3/4"
34	4181	STRAINER 1/2-
35	76637	SOLENOID VALVE 1/2"
36	11043	SOLENOID VALVE 1/2"
37	3460	SOLENOID VALVE 1/4"
38	60168	ELECTRODE WATER LEVEL *(ser.#* 119940 & up)
39	76502	CONTROL STEAM PRESSURE
40	74966	CONTROL STEAM PRESSURE
41	74967	CONTROL STEAM PRESSURE
42	76539	GROMMET, PRESSURE SWITCH
43	71534	SIGHT GLASS BULLSEYE

For NGB/2 made between January 1, 1988 and August 7, 1991



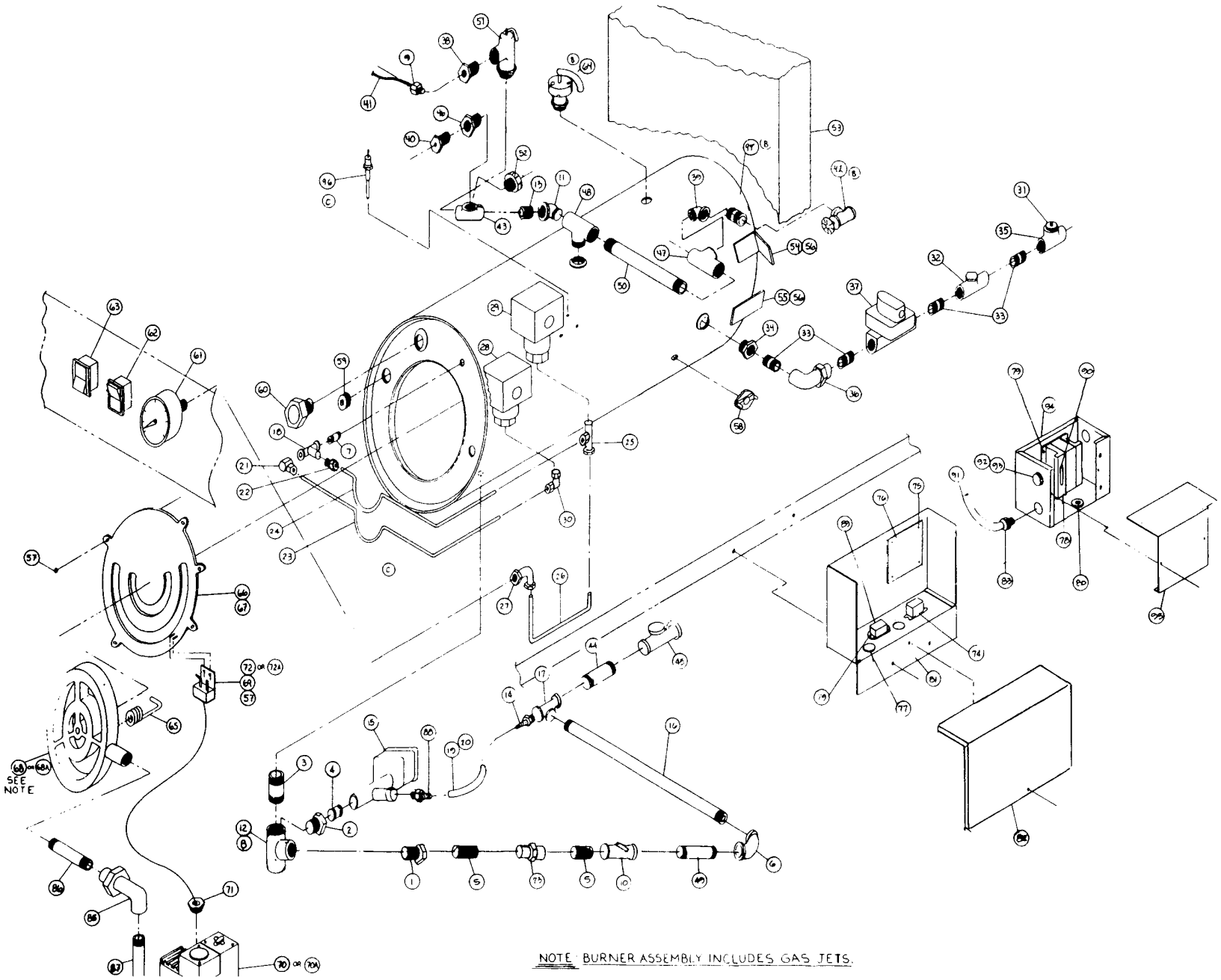
Parts List

To order parts, contact your authorized Groen Service Agency. Supply the model designation, part description, part number, quantity, and where applicable, voltage and phase or type of gas.

ITEM NO.	PART NO.	DESCRIPTION
1	000624	BUSHING REDUCING HEX. 1" x 3/4" NPT
2	002647	BUSHING REDUCING 1 /2" x 1" NPT
3	005539	NIPPLE 1" NPT x 2" LONG
4	005600	NIPPLE 1/2" NPT x 12" LONG
5	008229	NIPPLE 3/4" NPT x 4" LONG
6	008347	ELBOW 90° STREET 3/4" NPT
7	008506	PLUG PIPE SQ. HD. 1/2- NPT
8	008507	PLUG PIPE SQ.HD.1" NPT
9	008877	NIPPLE 1 /2" NPT x CLOSE
10	009883	VALVE BALL 3/4" NPT S.S.
11	012791	ELBOW 45° STREET 1 /2" NPT
12	026254	TEE 1" NPT SIDE OUTLET STEAMER
13	026452	NIPPLE 1/2" NPTx6-1/2" LONG
14	049429	CONNECTOR MALE 1 /2" NPT x 1/4 TUBE COM.
15	074594	VALVE OLENOID 1 /2" NPTF
16	077905	NIPPLE 3/4" NPT x 25" LONG
17	077974	TEE SIDE OUTLET 1/2" NPT
18	005126	UNION 1/4'NPT
19	005675	NIPPLE 1*1V* NPT x 2" LONG
20	005682	ELBOW 90° 1/4" NPT
21	008337	NIPPLE 1/4" NPT X 1-1/2" LONG
22	012747	SYPHON PRESS. GA. TBE 1/4" NPT
23	013207	TEE 1/4" NPT
24	026514	TUBE 3/8" O.D.x 11" LONG
25	041508	NIPPLE 1*1V* NPT x 3" LONG
26	051766	ELBOW 90° STREET 1*1V* NPT
27	057218	ELBOW 90° 1*1V* FPT x 3/8" TUBE COMP.
28	.074595	PRESS SWITCH 1/4-NPT 9-1/2 PSI
29	077980	PRESS SWITCH 1/4" NPT 14-1/2 PSI
30	078623	ELBOW 90° 1*1V* MPT x 3/8" TUBE COMP.
31	002665	PLUG PIPE SQ. HD. 3/8" NPT
32	004187	VALVE SWING CHECK 1/2" NPT
33	012762	NIPPLE 1 /2" NPT x CLOSE
34	013197	BUSHING REDUCING 3/4' x 1/2" NPT
35	040765	TEE REDUCING 1/2x1/2x3/8" NPT
36	061468	ELBOW 90° UNION 1/2" NPT
37	077975	VALVE SOLENOID WATER FEED
38	003458	BUSHING REDUCING 3/4" x 1 /4" NPT
39	004306	NIPPLE 1/2" NPTXCLOSE
40	005101	VACUUM BREAKER 1/2" NPT
41	007378	TUBING 1*1V* O.D. x 28" LONG
42	012849	VALVE ANGLE 1/2" NPT
43	013648	NIPPLE 3/4" NPT x CLOSE
44	013655	TEE 3/4" NPT
45	049296	ELBOW 1/4 MPT x 1/4 TUBE

ITEM NO.	PART NO.	DESCRIPTION
46	065903	BUSHING REDUCING 3/4" x ½ NPT
47	070691	TEE3/4"x1/2"x1/2"NPT
48	074573	TEE 3/4" x 3/4" FPT x 3/4" MPT
49	077976	TEE 3/4" x 3/8" x 3/4" NPT
50	077977	NIPPLE 3/4" NPT x 7" LONG
51	078617	RELIEF VALVE 3/4" 12 PSI
52	084098	VENT-AIR 3/8" NPT
53	074849	FLUE STACK
54	074850	BRACKET TOP FLUE STACK
55	074851	BRACKET SIDE FLUE STACK
56	005445	NUT-HEX 1/4—20
57	008072	NUT-HEX 1/4"-20
58	077985	SNAP-ACTION THERMOSTAT
59	071915	PLUG PIPE 1" NPT
60	071534	SIGHT GLASS
61	078000	PRESSURE GAUGE
62	077984	SWITCH ON/OFF
63	077983	SWITCH MOMENTARY
64	008639	SAFETY VALVE 15 PSI
65	056965	FLAME HOLDER
66	049277B	BAFFLE BURNER
67	050490	BRACKET BURNER SUPPORT
68	047267	BURNER ASSY. W/JETS NATURAL
68A	050491	BURNER ASSY. W/JETS PROPANE
69	054203	BRACKET PILOT MTG.
70	077973	VALVE GAS 1 /2" x 1 /2" NATURAL
70A	082908	VALVE GAS 1/2"x 1/2" PROPANE
71	076423	THERMOCOUPLE 36" LONG
72	076421	PILOT BURNER NATURAL GAS
72A	076422	PILOT BURNER PROPANE GAS
73	078618	INSULATION BLOCK
74	074842	RELAY SPDT
75	009697	SCREW ROUND HD. #*6-32* x 3/8" LG.
76	074840	BOARD ELECTRICAL COMPONENTS
77	011045	SCREW ROUND HD. #*6-32* x 1/2" LG.
78	074839	TRANSFORMER 120/208/240 VAC 50/60 Hz
79	011033	SCREW ROUND HD. #8-32 x 3/8" LG.
80.	059931	SCREW THUMB #8-32 x 3/8" LONG
81	074596	BOX ELECTRICAL COMPONENTS
82	074597	COVER-BOX ELECTRICAL
83	009197	CORD GRIP 1 /2" NPT 5/16--3/8"
84	004185	ELBOW 90° STREET 1 /2" NPT
85	005495	ELBOW 90° UNION 1 /2" NPT
86	008227	NIPPLE 1/2"NPTx3-1/2"LONG
87	008569	NIPPLE 1/2-NPTx4-1/2"LONG

For NGB/2 & NGB/2/E Made after August 7, 1991



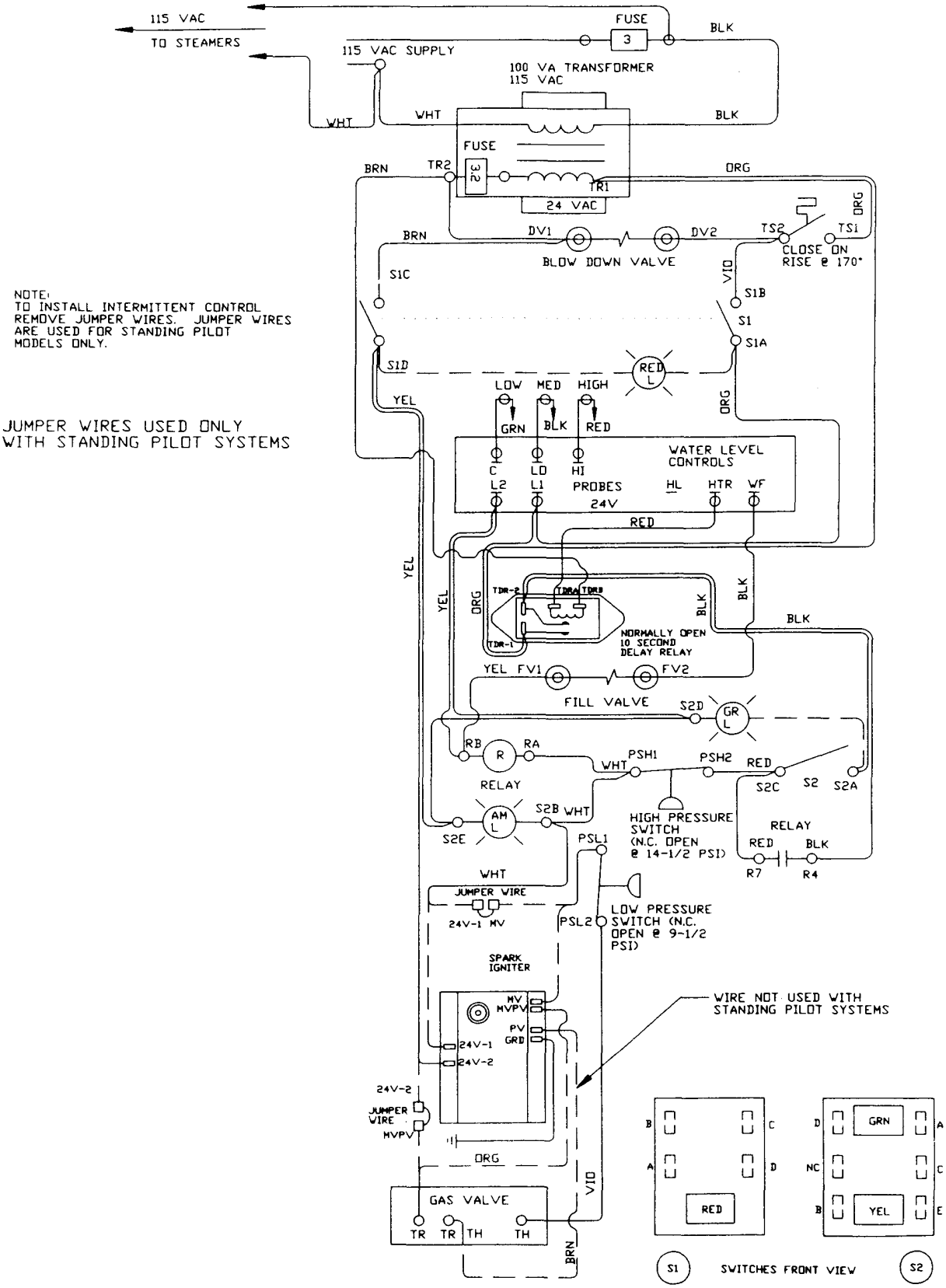
NOTE BURNER ASSEMBLY INCLUDES GAS JETS.

Parts List

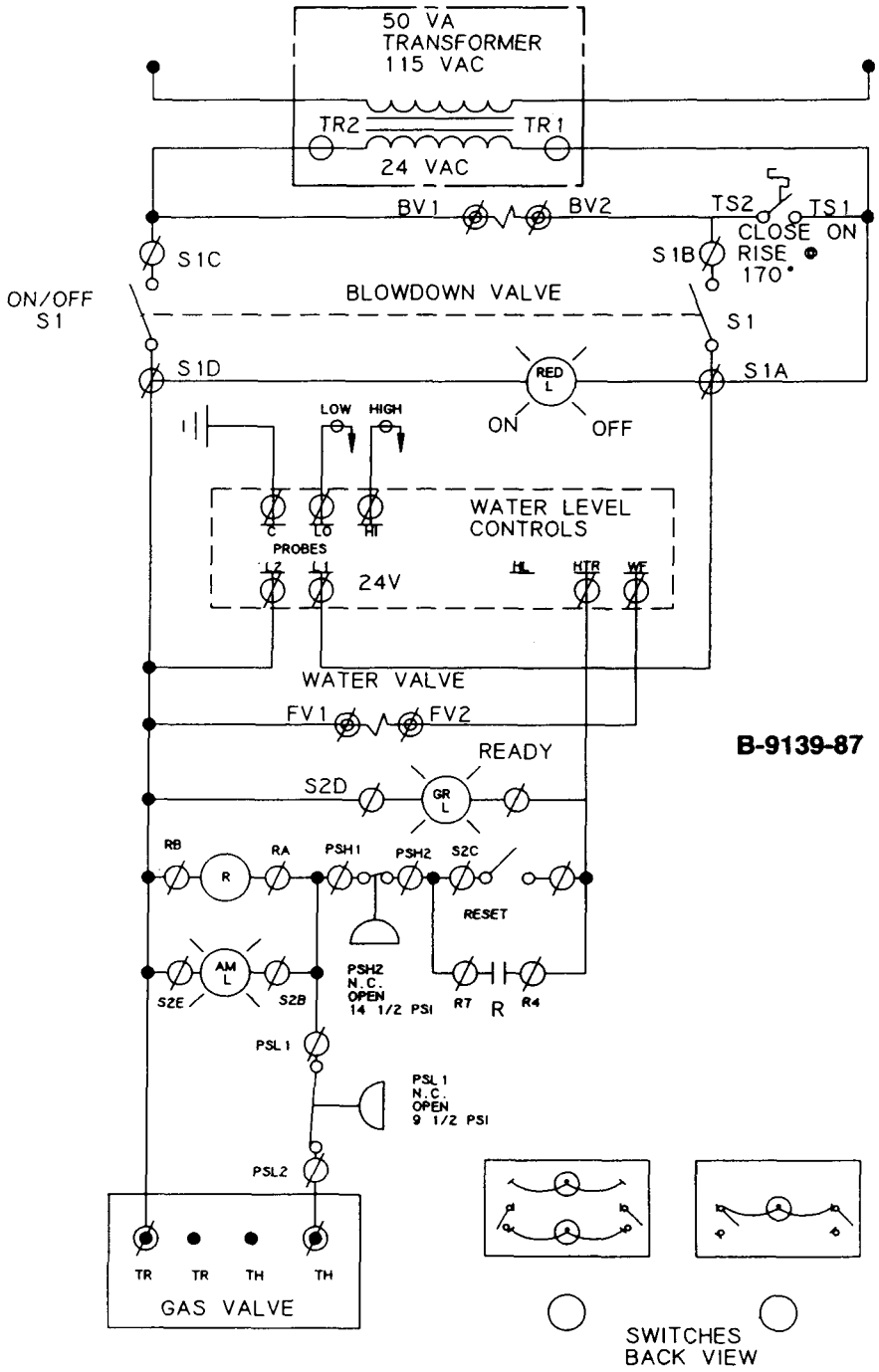
To order parts, contact your authorized Groen Service Agency. Supply the model designation, part description, part number, quantity, and, where applicable, voltage and phase.

ITEM NO.	PART NO.	DESCRIPTION
1	000624	BUSHING REDUCING HEX 1" X 3/4" NPT.
2	002647	BUSHING REDUCING'/2" X 1" NPT.
3	005517	NIPPLE 1/8" NPT CLOSE
4	005553	NIPPLE 1/2" NPT X 3" LONG
5	010231	NIPPLE 3/4" NPT X1'/2 LONG
6	008124	ELBOW 90° 3/4 NPT
7	013202	NIPPLE BRASS 3/8 NPT X CLOSE
8	071915	PLUG PIPE SQ.HD. 1"NPT
9	064515	FITTING COMPRESSON — TUBING
10	009883	VALVE BALL 3/4" NPT SS
11	086884	ELBOW 45° STREETS NPT
12	026254	TEE 1" NPT SIDE OUTLET STEAMER
13	013648	NIPPLE 3/4 NPT X CLOSE
14	086893	HOSE CONNECTORS NPT 3/4 I. D. HOSE
15	074594	VALVE SOLENOID 1/2" NPTF
16	086897	NIPPLE 3/4" NPT X 153/4 LONG
17	086898	"Y" 45° 3/4 NPT
18	072242	TEE REDUCING BRASS 3/8 X 3/8 X 1/4
19	010873	HOSE CLAMP
20	086900	HOSE RUBBER RADIATOR ¾ I,D.
21	057217	FITTING 90° ELBOW COMP. 3/8 NPT MALE X 3/8 TUBE COMP.
22	091941	FITTING STRAIGHT COMP. 1/4 NPT MALE X 3/8 TUBE COMP.
23	*090694*	SIPHON PRESSURE SWITCH
24	090695	SIPHON PRESSURE SWITCH
25	090692	FITTING MALE RUN TEE % NPT MALE X 3/8 TUBE COMP X 3/8 TUBE COMP.
26	090693	TUBE PRESSURE GAUGE 3/8 COPPER
27	057218	ELBOW 90° 1/4" FPT X 3/8″ TUBE COMP.
28	074595	PRESS. SWITCH 1/4" NPT 9 1/2 PSI
29	077980	PRESS. SWITCH 1/4" NPT 14-1/2 PSI
30	091940	FITTING 90 DEG. COMP. 1/4 NPT MALE X % TUBE COMP.
31	002665	PLUG PIPE SO. HD. 3/8" NPT
32	004187	VALVE SWING CHECK 1/2" NPT
33	012762	NIPPLE 1/2" NPT X CLOSE
34	013197	BUSHING REDUCING 3/4" X 1/2" NPT
35	040765	TEE REDUCING 1/2 X 1/2 X 3/8"
36	061468	ELBOW 90° UNION 1/2 NPT
37	084787	VALVE SOLENOID WATER FEED
38	086887	BUSHING REDUCING 3/4" X 1/4" NPT
39	086889	ELBOW 1/2 NPT 90° STREET
40	005101	VACUUM BREAKER 1/2" NPT
41	007378	TUBING 1/4" O.D. X 30" LONG
42	012849	VALVE ANGLESNPT
43	086886	TEE SIDE OUTLETS NPT
44	008133	NIPPLE 3/4 NPT X 5" LONG
45	086896	REDUCING TEE 3/4 X 1 X 1 NPT
46	086885	BUSHING REDUCING 3/4" X 1/2" NPT
47	070691	TEE 3/4" X 1/2" X 1/2" NPT
48	074573	TEE 3/4" X 3/4" FPT X 3/4" MPT
49	008239	NIPPLE 3/4" NPT X 3" LONG
50	077977	NIPPLE 3/4" NPT X 7" LONG
51	078617	RELIEF VALVE 3/4" .12 PSI
52	084098	VENT- AIR 3/8 NPT
53	074849	FLUE STACK
54	074850	BRACKET TOP FLUE STACK
55	074851	BRACKET SIDE FLUE STACK
56	005445	NUT-HEX 1/4"-20
57	008072	NUT-HEX 1/4"-20
58	077985	SNAP-ACTION THERMOSTAT
59	071915	PLUG PIPE 1" NPT
60	071534	SIGHT GLASS
61	078000	PRESSURE GAUGE
62	077984	SWITCH ON/OFF
63	077983	SWITCH MOMENTARY
64	090662	SAFETY VALVE 15 PSI
65	056965	FLAME HOLDER
66	049277B	BAFFLE BURNER
67	050490	BRACKET BURNER SUPPORT
68	047267	BURNER ASSY. W/JETS NATURAL
	050491	BURNER ASSY. W/JETS PROPANE
69	054203	BRACKET PILOT MTG.
70	077973	VALVE GAS 1/2" X 1/2" NATURAL
	082908	VALVE GAS 1/2" X 1/2" PROPANE
71	076423	THERMOCOUPLE 36" LONG
72	076421	PILOT BURNER NATURAL GAS
	076422	PILOT BURNER PROPANE GAS
73	005516	UNION 3/4 NPT.
74	074842	RELAYSPDT
75	009697	SCREW ROUND HD. #6-32 X 3/8 LG.
76	074840	BOARD ELECTRICAL COMPONENTS
77	088240	BUTTON PLUG.
78	086892	TRANSFORMER 120/208/240 VAC 50/60 HZ
79	009696	SCREW ROUND HD. #8-32 X'/2"LG.
80	088239	GROMMET STRAIN RELIEF
81	088250	BOX ELECTRICAL COMPONENTS
82	088251	COVER-BOX ELECTRICAL
83	001696	CORD GRIP 45°
84	004185	ELBOW 90° STREET 1/2" NPT
85	005495	ELBOW 90° UNION 1/2" NPT
86	008227	NIPPLE 1/2" NPT X 3-1/2"LONG
87	008569	NIPPLE 1/2" NPT X 4-1/2" LONG
88	086894	HOSE CONNECTOR 1/2 NPT X 3/4 I.D
89	086843	RELAY TIME DELAY
90	084762	FUSE 3.2 AMP
91	045750	SEALTITE 3/8"
92	002944	FUSE HOLDER
93	002945	FUSE 3 AMP SC TYPE
94	086890	BOX ENCLOSURE TRANSFOMER
95	086891	COVER BOX ENCLOSE
96	076526	WATER LEVEL PROBE
97	072230	NIPPLE 1/2 NPT X 1 -1/2 LG. BRASS

For NGB/2 & NGB/2/E Made After August 7, 1991



Electrical Schematics
For NGB/2 made between January 1,1988 and August 7, 1991



B-9139-87

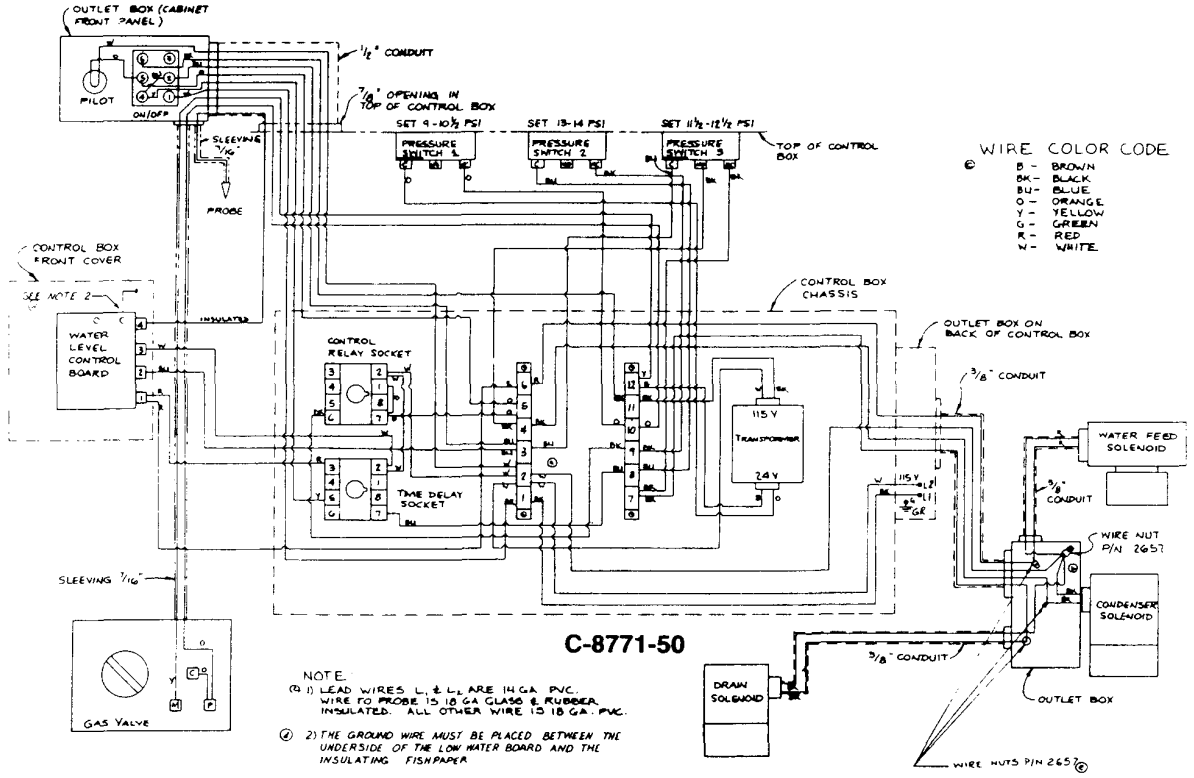
THIS DWG SUPERSEDES
DWG B-9139-87 DATED 7/15/87

SYMBOL	FUNCTION
PSL1	OPERATING PRESSURE CONTROL
PSL2	HIGH LIMIT PRESSURE CONTROL

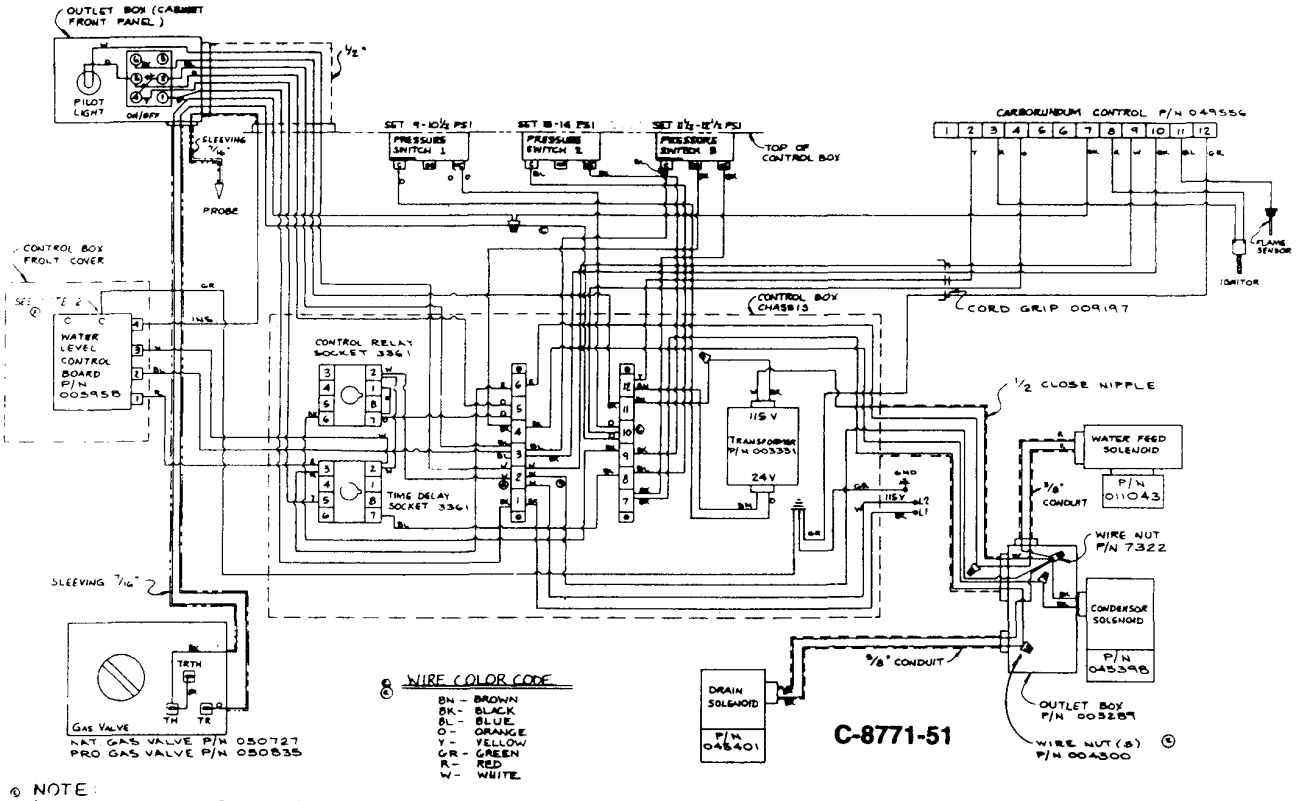
NOTES

1. ∅ DENOTES TERMINAL
2. REFER TO DWG D-9834-38 WIRE HARNESS

Electrical Schematics
For NGB & NGB/E made before January 1,1988

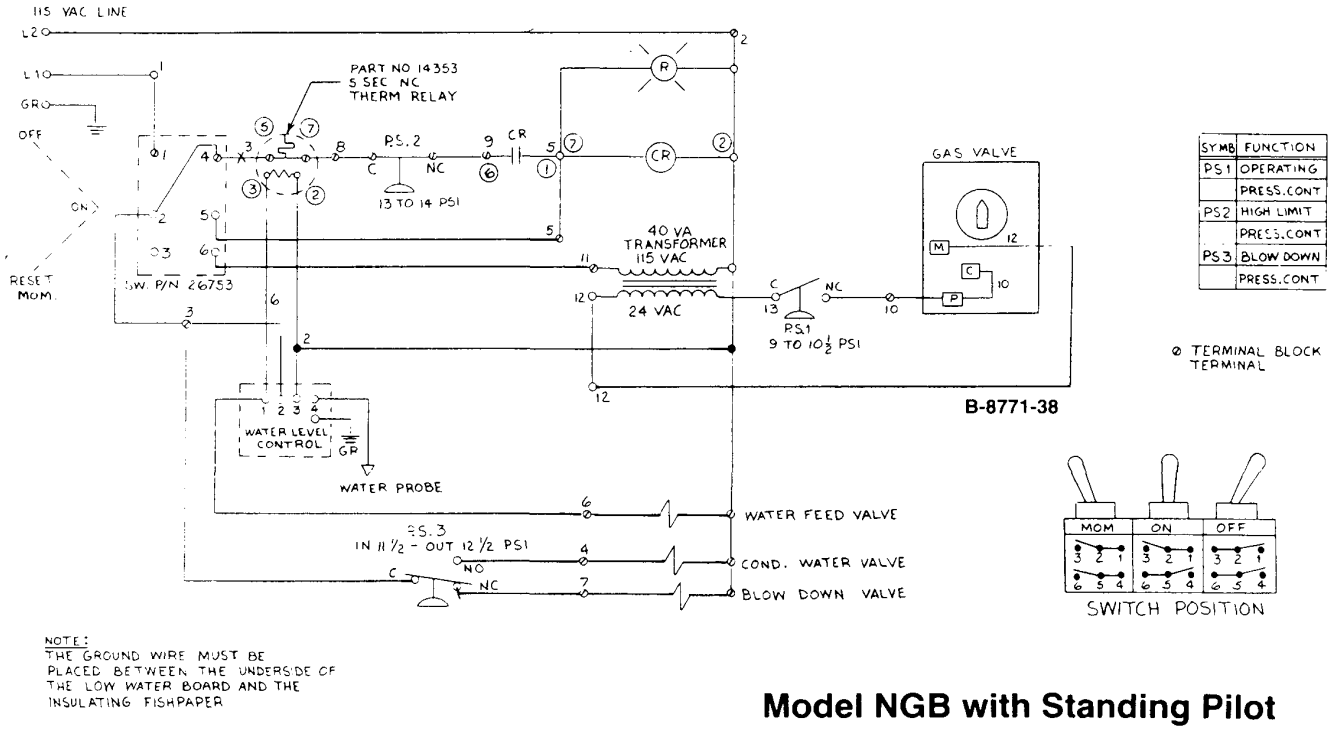


Model NGB with Standing Pilot



Model NGB/E with Ignition Coil

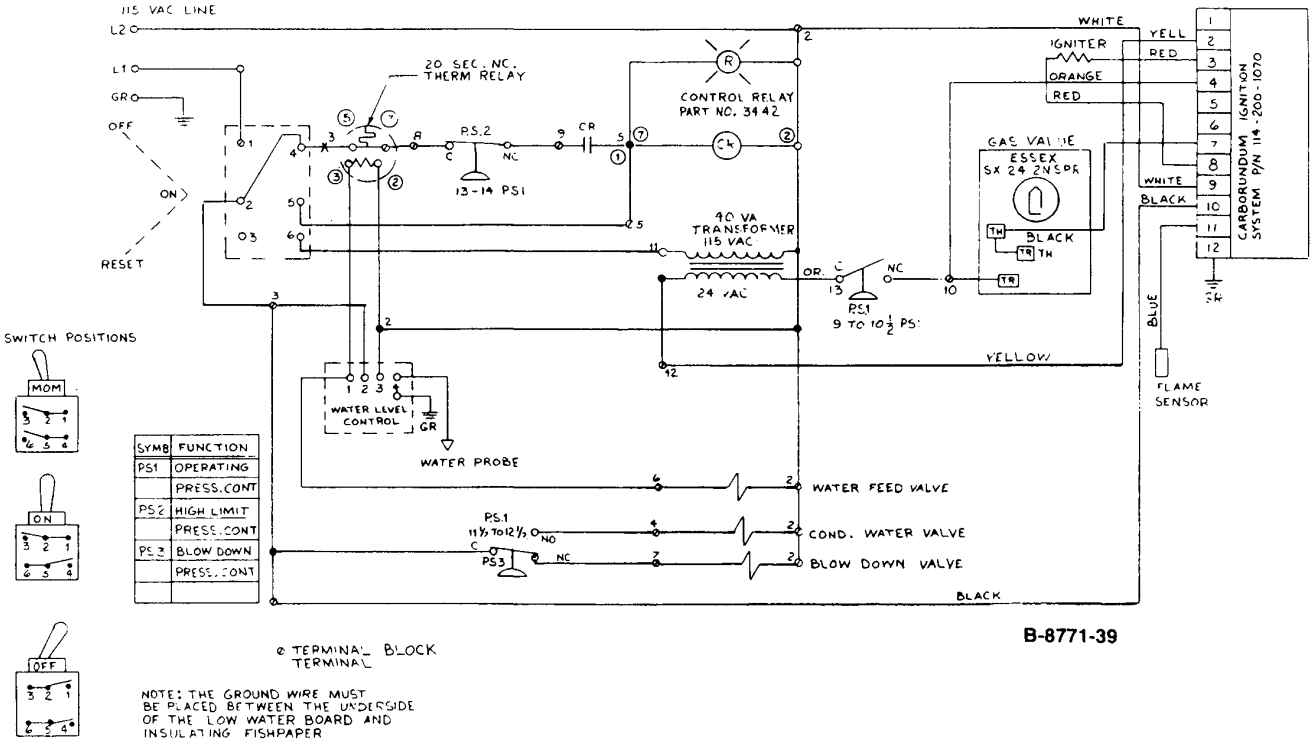
Wiring Ladder Diagrams



B-8771-38

NOTE:
THE GROUND WIRE MUST BE PLACED BETWEEN THE UNDERSIDE OF THE LOW WATER BOARD AND THE INSULATING FISHPAPER

Model NGB with Standing Pilot



B-8771-39

NOTE: THE GROUND WIRE MUST BE PLACED BETWEEN THE UNDERSIDE OF THE LOW WATER BOARD AND INSULATING FISHPAPER

Model NGB/E with Ignition Coil