

OPERATOR MANUAL & SERVICE MANUAL

IMPORTANT INFORMATION, KEEP FOR OPERATOR

This manual provides information for:

HY-12GF(CE) & HY-24GF(CE) **HYPERSTEAM™** **ATMOSPHERIC CONVECTION** **STEAMER INTERNATIONAL**

- Self-Contained
- Gas Heated



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

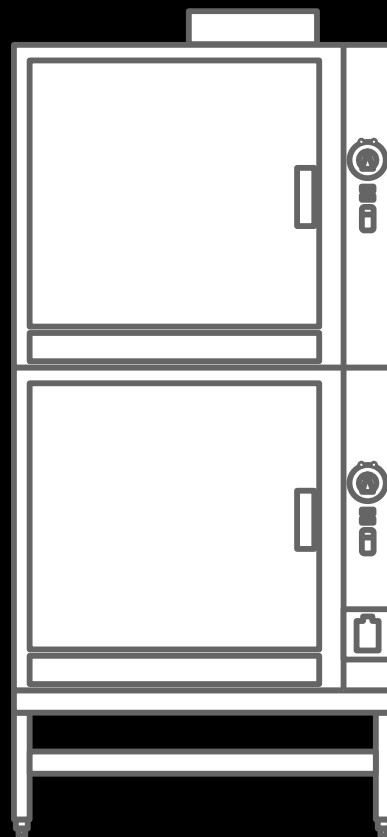
NOTIFY CARRIER OF DAMAGE AT ONCE

It is the responsibility of the consignee to inspect the container upon receipt of same and to determine the possibility of any damage, including concealed damage. Unified Brands suggests that if you are suspicious of damage to make a notation on the delivery receipt. It will be the responsibility of the consignee to file a claim with the carrier. We recommend that you do so at once.

Manufacture Service/Questions 888-994-7636.

PART NUMBER 132465, REV. C (1/09)

G GROEN®



UNIFIED BRANDS
FOODSERVICE EQUIPMENT SOLUTIONS
A **DOVER** COMPANY

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IMPORTANT — READ FIRST — IMPORTANT

IT IS MOST IMPORTANT THAT THESE INSTRUCTIONS AND THE OPERATOR AND SERVICE MANUALS BE CONSULTED BEFORE INSTALLING AND COMMISSIONING THE APPLIANCE. FAILURE TO COMPLY WITH SPECIFIED PROCEDURES MAY RESULT IN DAMAGE OR THE NEED FOR A SERVICE CALL.

THESE APPLIANCES HAVE BEEN CE MARKED ON THE BASIS OF COMPLIANCE WITH THE GAS APPLIANCE DIRECTIVE, EMC AND LOW VOLTAGE DIRECTIVE FOR THE COUNTRIES, GAS TYPES AND PRESSURES AS STATED ON THE DATA PLATE.

THESE APPLIANCES MUST BE INSTALLED BY A COMPETENT PERSON IN CONFORMITY WITH THE INSTALLATION AND SERVICING INSTRUCTIONS AND NATIONAL REGULATIONS IN FORCE AT THE TIME. PARTICULAR ATTENTION MUST BE PAID TO THE FOLLOWING:

- I. E. E. REGULATIONS FOR ELECTRICAL INSTALLATIONS
- ELECTRICITY AT WORK REGULATIONS
- GAS SAFETY (INSTALLATION AND USE) REGULATIONS
- HEALTH AND SAFETY AT WORK ACT
- LOCAL AND NATIONAL BUILDING REGULATIONS
- FIRE PRECAUTIONS ACT

DETAILED RECOMMENDATIONS ARE CONTAINED IN INSTITUTE OF GAS ENGINEERS PUBLISHED DOCUMENTS: IGE/UP/1, IGE/UP/2, BS6173 AND BE5440.

FURTHERMORE, IS A NEED ARISES TO CONVERT THE APPLIANCE FOR USE WITH ANOTHER GAS, A COMPETENT PERSON MUST BE CONSULTED. THOSE PARTS WHICH HAVE BEEN PROTECTED BY THE MANUFACTURER MUST NOT BE ADJUSTED BY THE USER.

USERS SHOULD BE CONVERSANT WITH THE APPROPRIATE PROVISIONS OF THE FIRE PRECAUTIONS ACT AND THE REQUIREMENTS OF THE GAS SAFETY REGULATIONS. IN PARTICULAR THEY SHOULD BE AWARE OF THE NEED FOR REGULAR SERVICING BY A COMPETENT PERSON TO ENSURE THE CONTINUED SAFE AND EFFICIENT PERFORMANCE OF THE APPLIANCE.

WARNING: TO PREVENT SHOCKS, ALL APPLIANCES GAS OR ELECTRIC, MUST BE EARTHED.

UPON COMPLETION OF THE INSTALLATION, THE OWNERS MANUAL SHOULD BE HANDED TO THE USERS AND THE INSTALLER SHOULD INSTRUCT THE RESPONSIBLE PERSON(S) IN THE CORRECT OPERATION AND MAINTENANCE OF THE APPLIANCE.

THIS EQUIPMENT IS ONLY FOR PROFESSIONAL USE, AND SHALL BE OPERATED BY QUALIFIED PERSONS. IT IS THE RESPONSIBILITY OF THE SUPERVISOR OR EQUIVALENT TO ENSURE THAT USERS WEAR SUITABLE PROTECTIVE CLOTHING AND TO DRAW ATTENTION TO THE FACT THAT, SOME PARTS WILL, BY NECESSITY, BECOME VERY HOT AND WILL CAUSE BURNS IF TOUCHED ACCIDENTALLY.

WARNING: BEFORE REMOVING ANY PARTITION OR PANEL, ALWAYS TURN OFF THE ELECTRIC POWER AND ALLOW THE FAN TO STOP ROTATING. BEFORE WORKING ON ANY ELECTRICAL COMPONENT, DISCONNECT THE POWER SOURCE FROM THE UNIT.

NOTE: IT IS IMPORTANT THAT THE END-USER ROUTINELY EXAMINE THE FLUE OUTLET ON A REGULAR BASIS. DEBRIS COVERING THE FLUE OUTLET CAN CAUSE A POTENTIALLY HAZARDOUS CONDITION. REMOVE ANY FOREIGN MATERIAL BEFORE USING THIS PIECE OF EQUIPMENT.

WARNINGS AND CAUTIONS PROVIDED IN THE BASIC OPERATOR AND SERVICE MANUALS (OM-HY-6G AND GROEN HYPERSTEAM SERVICE MANUAL) MUST BE COMPLIED WITH.

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1. Installation, Assembly and Commissioning

CAUTION

IT IS MOST IMPORTANT THAT THESE INSTRUCTIONS AND THE OPERATOR AND SERVICE MANUALS BE CONSULTED BEFORE INSTALLING AND COMMISSIONING THE APPLIANCE. FAILURE TO COMPLY WITH SPECIFIED PROCEDURES MAY RESULT IN DAMAGE OR THE NEED FOR A SERVICE CALL.

These appliances have been CE marked on the basis of compliance with the gas appliance directive, EMC and low voltage directive for the countries, gas types and pressures as stated on the data plate.

These appliances must be installed by a competent person in conformity with the installation and servicing instructions and national regulations in force at the time. Particular attention must be paid to the following:

- I. E. E. Regulations For Electrical Installations
- Electricity at Work Regulations
- Gas Safety (Installation And Use) Regulations
- Health And Safety at Work Act
- Local And National Building Regulations
- Fire Precautions Act

Detailed recommendations are contained in Institute of Gas Engineers published documents: IGE/UP/1, IGE/UP/2, BS6173 and BE5440. Furthermore, is a need arises to convert the appliance for use with another gas, a competent person must be consulted. Those parts which have been protected by the manufacturer must not be adjusted by the user.

Users should be conversant with provisions of the Fire Precautions Act and requirements of Gas Safety Regulations. In particular they should be aware of the need for regular servicing by a competent person to ensure safe and efficient performance of the appliance.

WARNING
TO PREVENT SHOCKS, ALL APPLIANCES GAS OR ELECTRIC, MUST BE EARTHED.

Upon completion of the installation, the owners manual should be handed to the users and the installer should instruct the responsible person(s) in the correct operation and maintenance of the appliance.

This equipment is only for professional use, and shall be operated by qualified persons. It is the responsibility of the supervisor or equivalent to ensure that users wear suitable protective clothing and to draw attention to the fact that, some parts will, by necessity, become very hot and will cause burns if touched accidentally.

1.1 General

Unpack the appliance and place it on a firm, level floor. Adjust and fix the feet.

1.1.1 Model Number and Dimensions

MODEL	WIDTH mm (in.)	DEPTH mm (in.)	HEIGHT mm (in.)	WEIGHT Kg (lbs)
HY-12GF	815 (32.06)	1025 (40.4)	1590 (62.6)	256 (565)
HY-24GF	815 (32.06)	1025 (40.4)	1853 (73.37)	512 (1130)

1.1.2 Siting and Clearances

CAUTION

DO NOT INSTALL THIS UNIT SO RIGHT SIDE VENTS ARE BLOCKED OR WITHIN 300 mm OF A HEAT SOURCE SUCH AS BRAISING PAN, DEEP FRYER, CHAR BROILER OR KETTLE.

LEVEL THE UNIT FRONT TO BACK OR PITCH IT SLIGHTLY TO THE REAR TO AVOID DRAINAGE PROBLEMS.

The HY-12GF(CE) steamer is suitable for installation in combustible and noncombustible locations. Minimum installation clearances are:

Right Side	300 mm (12 inches)
Left Side	0 mm (0 inches)
Rear of Flue	150 mm (6 inches)

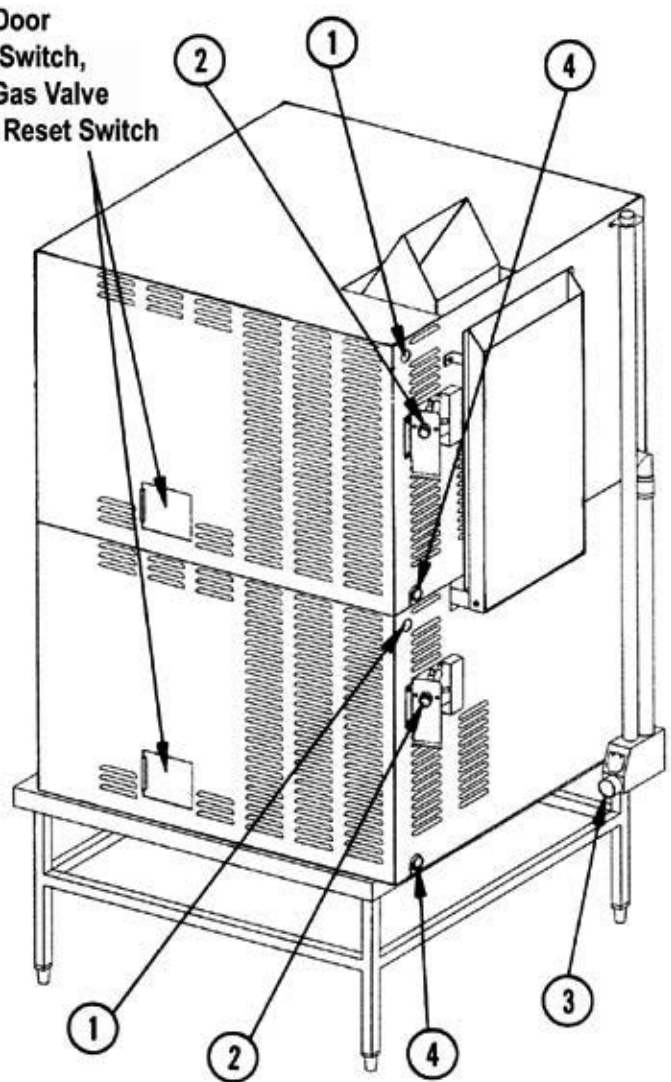
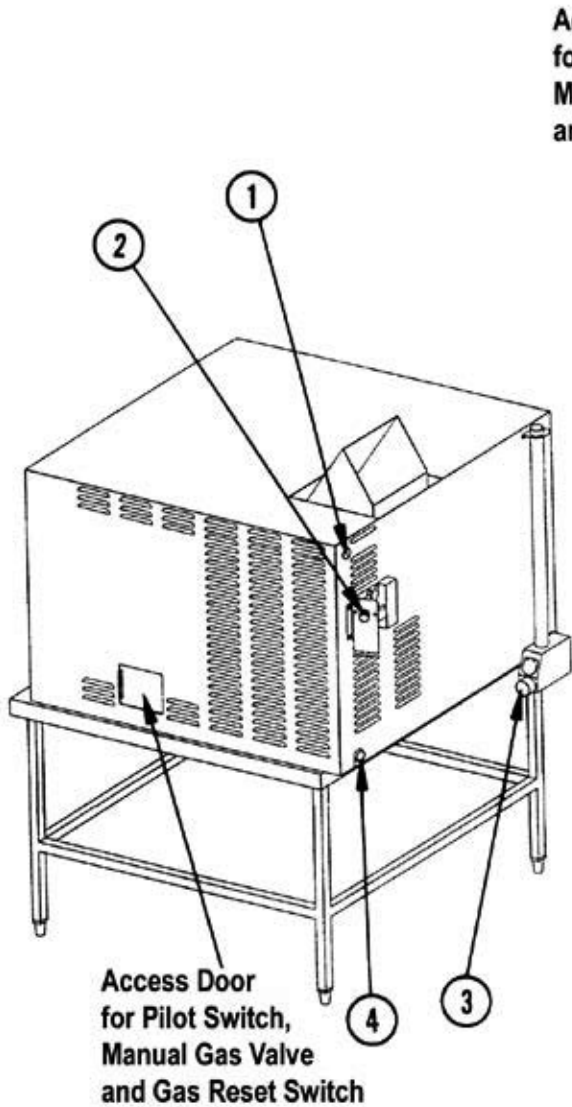
The steamer requires 600 mm (24 inches) clearance on the right side for service.

Allow minimum vertical clearance of 750 mm (30 inches) between the top edge of the flue outlet and any overlying surface.

1.1.3 Ventilation

CAUTION

THE APPLIANCE FLUE DISCHARGES VERTICALLY FROM THE TOP OF THE UNIT. IT MUST NOT BE DIRECTLY CONNECTED TO ANY FLUE, MECHANICAL EXTRACTION SYSTEM, OR DUCTS LEADING TO OUTSIDE THE BUILDING. THE UNIT IS BEST DISCHARGED UNDER AN OPEN CANOPY WHICH CONNECTS WITH A VENTILATING SYSTEM.



- 1. ELECTRICAL 13mm CONDUIT FITTING
- 2. COLD WATER SUPPLY 3/4" BSPT

- 3. DRAIN CONNECTION 50mm DIAMETER HOSE
- 4. GAS CONNECTION 3/4" BSPT

For multiple installations the requirements for individual appliances should be added together. (See table, page 5). Installation must comply with local and/or national regulations and a competent installer must be employed. Recommendations for ventilation for catering appliances are given in BS 5440:2, and are shown in the table at right.

1.2 Electrical Supply Connection

The unit is designed for connection to fixed wiring. A suitably rated isolating switch with contact separation of at least 3 mm on both poles must be fitted to the installation. Wiring must be executed in accordance with the regulations listed in this manual.

Equipment	Required Ventilation Rate	
	m ³ /min	ft ³ /m
Units Type Range	17	600
Pastry Oven	17	600
Fryer	26	900
Grill	17	600
Steak Grill	26	900
Boiling Pan	17	600
Steamer	17	600
Sterilizing Sink	14	500
Bains Marie	11	400
Tea/Coffee Machine	8.5 - 14	300 - 500

Cable entry is at the top rear right side of the appliance for model HY-12GF(CE). There are two cable entries on model HY-24GF(CE), at the rear right side of each cavity. Access is gained as described in the Operator and Service Manuals for this appliance.

Provide 230 Volt, 50 Hz, Single Phase, 15 Ampere service. Maximum load is 2½ Amps. The electrical schematic is located in the service compartment and in this manual.



**WARNING
THIS APPLIANCE MUST BE EARTHED.**

1.3 Gas Supply Connection

Incoming service must be of sufficient size to supply full rate without excessive pressure drop. A gas meter is connected to the service pipe by the Gas Supplier. Any existing meter should be checked out by the Gas Supplier to ensure that it has adequate capacity to provide the required rate of gas to the steamer, in addition to any other installed equipment.

GAS INPUT RATE BTU/HR AND KW		
	Natural Gas	Propane Gas
HY-12GF	150130 BTU/hr 44 KW	150130 BTU/hr 44 KW
HY-24GF	2 x 150130 BTU/hr 2 x 44 KW	2 x 150130 BTU/hr 2 x 44 KW

Installation pipe work must be fitted in accordance with IGE/UP/2.

The appliance governor is suitable for both natural and propane gas without conversion. The governor is incorporated in the gas control valve, which is inside the control cabinet.

Connection to the gas supply can be completed with ¾" BSPT pipe. Although the immediate connection to the appliance is ¾" BSPT, gas supply piping must be large enough to provide 160,000 BTU/hour. Minimum supply pressure is 20 mBar for natural gas, or 37 mBar for propane gas.

An isolating cock must be located close to the appliance to allow shut down in an emergency, or for servicing. The installation must be tested for gas soundness and purged as specified in IGE/UP/1. For the part of the integral gas supply downstream

from the gas valve, leak detection spray or some solution may be used with the burners lit.

1.3.1 Gas Pressure Adjustment

Gas pressure has been set at the factory but should be checked by connecting a manometer to the pressure tap on the burner manifold. The adjusted gas pressures are shown in the table below.

Model	Natural Gas		Propane Gas	
	mBar	WCI	mBar	WCI
HY-12GF(CE)	7.75	3.1	25	10
HY-24GF(CE)	7.75	3.1	25	10

If necessary, the gas pressure may be readjusted as described in Section 3..

1.3.2 Injector Diameters

	Natural Gas		Propane Gas	
	Injector Dia. (mm)	No. of Injectors	Injector Dia. (mm)	No. of Injectors
HY-12GF(CE) Main Burner (high fire)	1.18	30	0.70	30
HY-24GF(CE) Main Burner (high fire)	1.18	30 x 2	0.70	30 x 2
HY-12GF(CE) Igniter Burner (low fire)	0.64	1	0.41	1
HY-24GF(CE) Igniter Burner (low fire)	0.64	1 x 2	0.41	1 x 2
HY-12GF(CE) Pilot Burner	0.60	1	0.36	1
HY-24GF(CE) Pilot Burner	0.6	1 x 2	0.36	1 x 2

1.3.3 Burner Air Adjustment

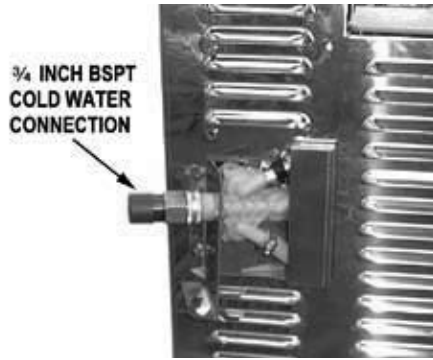
The unit is equipped with fixed aeration type burners which have no provision for air inlet adjustment.

1.4 Water Supply Connection

Water entry is at the rear right side of the appliance. There are two water entries on the HY-24GF(CE).

The steamer is fitted for a ¾ inch BSPT cold water connection. The water supply must be provided at a

rate of not less than 7.6 liters (two gallons) per minute. Pressure must be 2.0 to 4.0 Bar (30 to 60 PSI) maximum.



Water quality minimums require totally dissolved solids (T.D.S.) of 30 parts per million maximum, and a water pH of 7.0 or greater. If the available water supply fails to meet these requirements, water treatment equipment must be provided to ensure steamer reliability and operating life.

Install a WRAS approved double-check valve or an equally effective backflow preventive device in the incoming cold water line at the point of connection(s) to the steamer and in compliance with all local plumbing codes. This installation must be per WRAS-IRN R160 Schedule 2-15(1). For units with the dual water connection option, a double-check valve shall be installed on each water line.

1.5 Drain Connection

The unit must be leveled front to back or pitched slightly to the rear (one to two degrees) by adjustment of the bullet feet on the cabinet base. All units are shipped from the factory with a drain box and vent pipe.

The drain box and vent pipe provide the necessary air gap when properly installed. The illustrations at right shows proper installation of drain lines.

Leave a air gap to any building drain. Do NOT create any water traps in the drain line. A trap could cause pressure to build up in the cavity during steaming and cause the door gasket to leak.

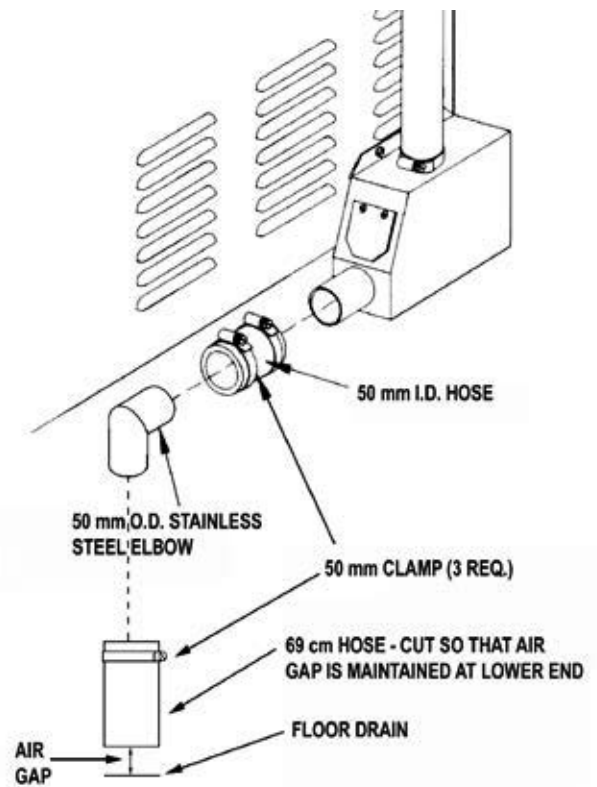
WARNING
VARIATION FROM THESE INSTRUCTIONS CAN CREATE A HAZARD.

DO NOT USE PLASTIC PIPING — DRAIN MUST WITHSTAND VERY HOT WATER.

1.6 Initial Start-Up

After the HY-12GF(CE) Steamer has been installed, test it to be sure that it is operating correctly.

1. Remove all literature and packing materials from the interior and exterior of the unit.
2. Make sure the water supply line is open.
3. Make sure the gas supply line is open and that the gas shut-off valve in the unit is in the OPEN



Drain Connection with Drain Box

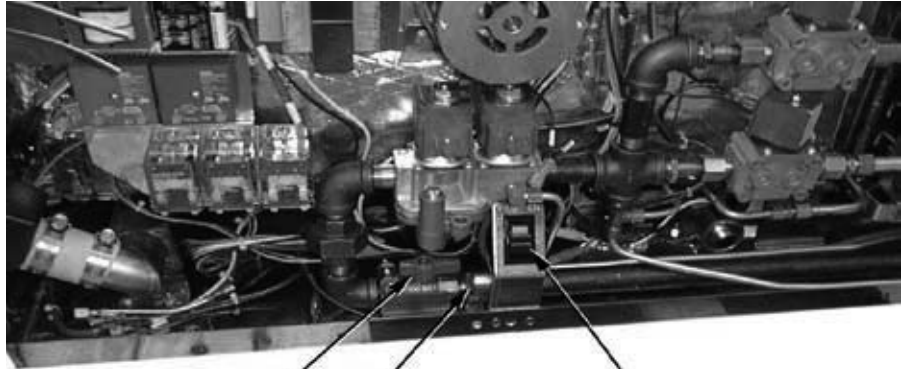
position. This valve is located behind an access panel on the right side of the unit

4. Turn on electrical service to the unit. The unit will not operate without electrical power. Do not try to operate the unit during a power failure.
5. The steamer will not operate until the pilot burner has been ignited. To light the pilot burner, activate the pilot switch next to the main gas valve. (See photo below). When the ignition sequence is successful a green light on the electrical panel will glow.



GAS VALVE

6. The “trial for ignition” period is roughly 90 seconds. If the pilot burner does not light within 90 seconds, the system automatically stops gas flow to the pilot burner and lights the Lockout neon on the front control panel. If this happens, turn off the pilot switch, push the Gas Reset switch, and repeat the trial for ignition. During the first start-up, the pilot may require several trials for ignition to bleed air from the piping. Subsequent start-ups should only need about five seconds to achieve pilot ignition. **NOTE:** See *Automatic Pilot Operation at the end of this section.*



MAIN GAS VALVE

HIGH TEMPERATURE RESET SWITCH

PILOT SWITCH

7. Once the pilot flame has been established (the green light on the electrical panel is on), press the “ON” switch for the desired steamer cavity. The steam generator will fill with water. **NOTE:** *The door MUST be closed for the main (high) heater to work.*
8. When the steam generator has filled with water, the main and low burners will automatically light. The READY light should come on within 10 minutes, to show that the water has reached its standby temperature. When the READY light is on, the operator may take any of the following steps:
- Set the timer to the desired time for timed steaming.



WARNING
WHEN YOU OPEN THE DOOR, STAY AWAY FROM STEAM COMING OUT OF THE UNIT. THE STEAM CAN CAUSE BURNS.

- Turn the timer knob to the manual ON position for continuous steam.
 - Let the unit wait at standby temperature. The steam generator is equipped with a high-limit thermostat which will trip if the liquid level probe fails.
9. If this happens, the High Temperature neon on the front control panel will glow and trip a reset switch. The Reset Switch must be pressed to re-start steam generation. This switch is located next to the pilot switch (towards the rear of the unit) and can be reached through the access

door on the right side of the unit.

10. To shut down the unit, turn the ON switch to the OFF position. The steam generator will automatically drain. You may also switch OFF the pilot switch to conserve energy
11. If your steamer works as described, it is functioning correctly and is ready for use.

Automatic Pilot Operation

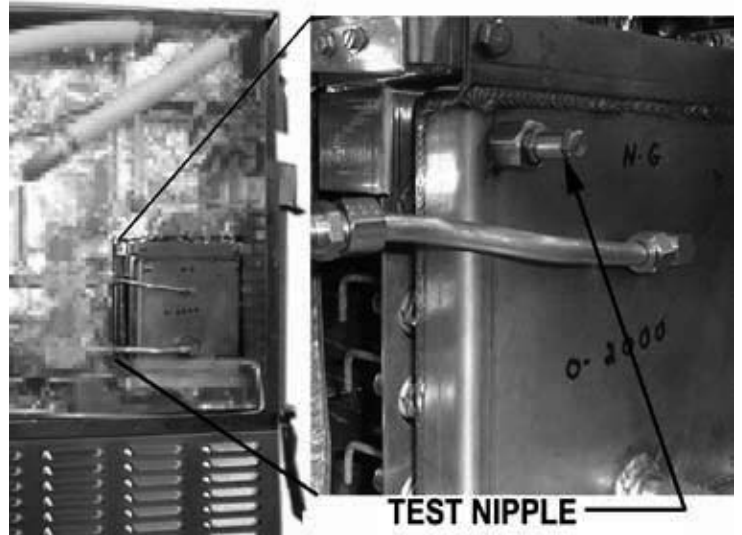
Once the pilot burner has been lit, it essentially functions as a standing pilot. When the pilot switch is on, if the pilot is accidentally extinguished (by a very strong gust of wind or the like), it will re-ignite automatically. The unit will shut off completely for a few seconds while the pilot is re-ignited. The unit will then come back on and resume operation in the mode and at the (running) timer value existing just prior to shutdown. The pilot switch may be turned off during “off hours” to conserve energy.

If the pilot burner ever fails to re-ignite automatically within 90 seconds, after the unit has been running, the Gas Lockout neon on the front control panel will light. Wait five minutes and push the Gas Reset switch to reignite the pilot. Should ignition problems persist, contact your authorized Groen Service Agency.

1.7 Setting the Gas Pressure

- During commissioning, a gas pressure check is essential. Connect a suitable pressure gauge to the gas manifold to perform this test. The pressure gauge should be connected to the test nipple (See photograph at right).

2. Turn the main gas and electricity supply on.
3. Light the burners as described in Paragraph 1.6 above.
4. Manifold gas pressure should be as noted in Section 1.3.1 of the manual. If adjustment is necessary, follow steps below.
5. Remove the governor cap screw on the gas control valve to gain access to the screw inside the turret. (See photograph).
6. The governor is suitable for both natural and propane gas.
7. Turn the screw inside the turret clockwise to increase the pressure, anti-clockwise to reduce it. Check the burner pressure again after 15 minutes operation, and adjust if necessary.
8. Disconnect the pressure gauge from the test point. Reseal the test point and test for gas soundness.
9. Replace governor cap screw, and replace control box panel and lid.

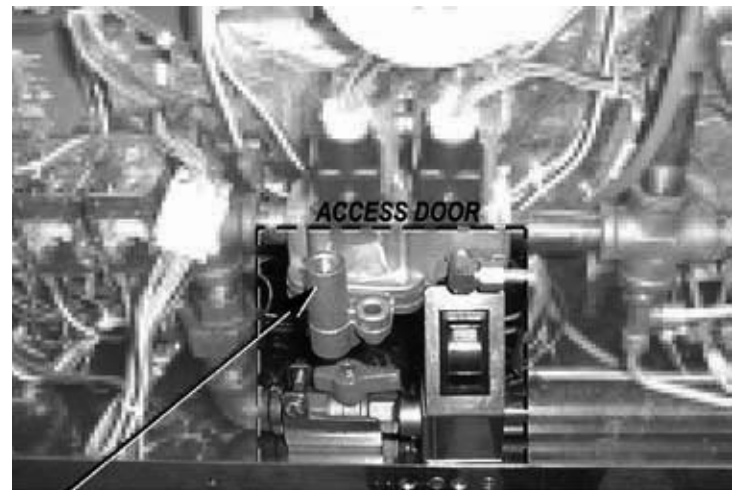


To test pressure, attach a pressure gauge to the test nipple on the gas manifold.

NOTE: For operation at high altitudes (1000 meters and above) consult the Groen Food Service Engineering Department.

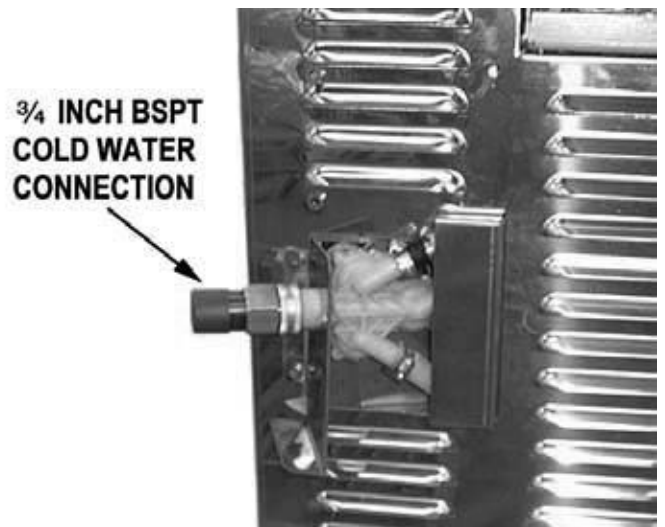
1.8 Instructions to User

IMPORTANT: After installing and commissioning the appliance, the User's Instructions should be handed to the user or purchaser. Ensure that the instructions for lighting, turning off, correct use and cleaning are properly understood. Emphasize the location of the main gas isolating valve and demonstrate the emergency shut down procedure.



GAS PRESSURE ADJUSTMENT CAP & TURRET

Adjust Gas Pressure by Turning the Screw inside the Gas Pressure Adjustment Turret.



2. Servicing and Conversion

CAUTION

BEFORE ATTEMPTING ANY SERVICING, ENSURE THAT THE ISOLATING COCK IS TURNED OFF AND CANNOT BE INADVERTENTLY TURNED ON. CHECK THAT THE ELECTRICITY SUPPLY IS DISCONNECTED.

AFTER ANY MAINTENANCE TASK CHECK THE APPLIANCE TO ENSURE THAT IT PERFORMS CORRECTLY AND CARRY OUT ANY NEEDED ADJUSTMENTS AS DETAILED IN SECTION 1.

AFTER CARRYING OUT ANY SERVICING OR EXCHANGE OF GAS CARRYING COMPONENTS ALWAYS CHECK FOR GAS SOUNDNESS.

Conversion

To change from natural gas to propane gas or *vice versa*, change the following:

- Burner injectors (high fire orifices)
- Rimner Tube Injector (low fire orifice)
- Pilot orifice
- Pressure setting
- Data Plate

The governor spring does not need to be changed — only the pressure setting.

After Servicing

1. Test for gas soundness as specified in IGE/UP1 as appropriate after any gas connection has been disturbed.
2. Check for correct operation (see Commissioning of Appliance)

2.1 Assembly/Disassembly Procedures

GENERAL INFORMATION

The procedures which follow are based on having full access to the steamer on all four sides. If the steamer is installed between other appliances and there is not enough room on the sides for access, it must be puled out from its position. Exercise care when moving the steamer to avoid stress or pull on electrical, water and gas connections.

2.1.1 Right Side Panel (Louvered) — Removal P/N 123196

1. With a flat blade screwdriver, remove the two 10-32 screws on the lower edge of the panel. The panel is retained to the steamer by an interlocking guide track on the top edge and three spring-like clips at the rear edge.
2. Once the screws are removed, SLIDE the panel toward the front of the appliance with a lifting

motion. Do not attempt to pry the panel. Once the panel is clear of the rear clips, it may be lifted off of the top rack.

ASSEMBLY TIP: When replacing the panel, press the rear edge inward so that all three clips are retained by the back flange. Make sure that the holes in the panel align with the two tapped holes in the steamer so that replacing the screws will be easy and will not damage the threads.

2.1.2 Left Side Cover — Removal Left P/N 123197

Under normal conditions, the left side cover should never have to be removed, since there are no operational or replacement parts to be accessed. The single exception occurs when the door has been reversed so that the handle is on the left and the Door Interlock Switch requires replacement. The door switches for both door positions are installed at the factory, so there is no need to have access to them if the door is to be reversed.

1. If the left side cover is to be removed because of a faulty door switch, remove the right side panel first. Using a 7mm nut driver and the flat blade screwdriver, remove the retaining clip and the two screws on the lower edge of the left side cover. The assembly may then be slid forward. Once clear of the retaining clip, it may be lifted off.

ASSEMBLY TIP: When replacing the left cover assembly, be sure that the retaining clip is replaced and screwed down tightly.

2.1.3 Water Inlet Valve — Three Way P/N 090827

1. Turn off power and water supply to the steamer.
2. Remove the water supply hose connection on the rear of the steamer.
3. Remove the right side panel, as described in Paragraph 2.1.1, above.

4. Remove the screws holding the water inlet valve bracket, and pull the bracket with the valve a few cm away from the body of the appliance.
5. The water inlet valve branches to three individual solenoid-activated valves within its housing. These are connected with the following three sets of wires:

Steam Generator Fill Yellow & Orange
 Steam Generator Clean Violet & Gray
 Condensate Spray Green & Blue
6. Using a 7 mm nut driver, loosen the hose clamps on the inlet valve.
7. Slide the hose clamps down the hose until needed for reassembly. Loosen and remove the hoses from the valve with a gentle rocking motion.
8. Remove the bracket from the valve and lower the valve WITH THE WIRES STILL ATTACHED.
9. Carefully unplug the connectors one at a time and attach to the new valve.
10. To install a new valve, reverse the procedures. First install the six wires (three sets) as listed in item 5, above. Make certain that the valve is NOT installed upside down.
11. Attach the valve to its bracket with the two screws and return it to its position.
12. Re-attach the hoses to the valve. Slide the hoses all the way so that the end of the hose is flush against the face of the valve.

IMPORTANT: Be sure the correct hose is connected to the corresponding outlet.

13. Slide the clamps back into position around the end of the hoses and tighten the clamps.

CAUTION
DO NOT OVER-TIGHTEN THE CLAMPS. OVER-TIGHTENING CAN DAMAGE THE VALVE.

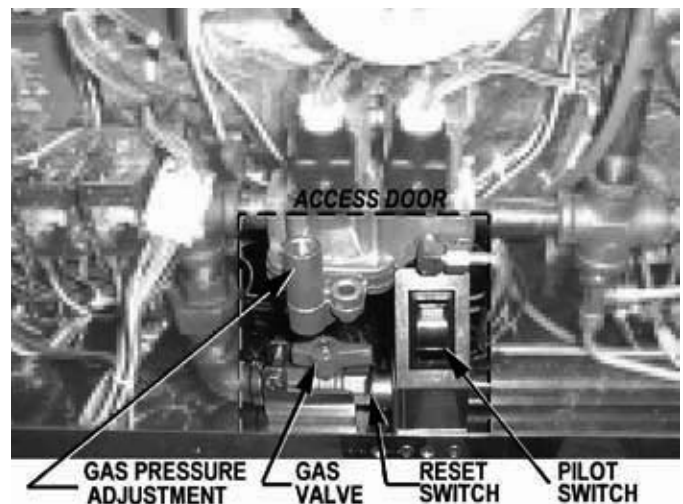
2.1.4 Adjustable Legs
 P/N 042505

1. Each leg is provided with a screw-type support post. These may be extended or retracted by turning them with a wrench or Channel Lock. Be sure that all four legs are in tight contact with the floor for proper steamer support.

2. If damaged, the posts may be replaced by tapping out the threaded fitting (on the opposite side of the leg) which is friction-held in each leg. The stainless steel leg and threaded fitting are a single assembly.

2.1.5 Main Gas Valve and Gas Pressure Adjustment P/N 122158

1. Disconnect power to the steamer.
2. Remove the right side panel, as described in Paragraph 2.1.1, above.
3. Turn the manual gas valve to the closed position. Disconnect the wire to the solenoids.
4. Note the color and position of the two connectors for assembly.
5. Remove all aluminum tubing from the piping assembly using an open-ended wrench. Be careful not to move the aluminum tubing excessively, or to bend it.
6. With a pipe wrench or Channel Lock, open the pipe union on the left side of the main gas valve and the right side near the solenoid valves. Remove the assembly.
7. From both sides of the main gas valve, using a Channel Lock, turn to remove the nipples. Support the valve with a vise or Channel



Lock/pipe wrench.

To Assemble:

8. Screw in and tighten the nipples into both sides of the main gas valve using approved gas pipe sealant.

9. Using a pipe wrench or Channel Lock attach the union and tighten.
10. Attach all aluminum tubing and tighten with an open-ended wrench.
11. Plug in the two connectors to the main gas valve:

2.1.6 Gas Solenoid Valve

P/N 122120

The gas solenoid valves must be removed as an assembly along with the regulators, using the following procedures:

1. Turn off the gas supply and power to the steamer.
2. Disconnect wires from the main gas (Step 4, Paragraph 2.1.5) and from the gas solenoid valves.
3. From the front of the steamer, using a Channel Lock wrench, loosen and disconnect the pipe union which connects the assembly to the main gas valve.
4. From the left side (or back) of the steamer, use an open-ended wrench to loosen and disconnect the compression fittings which connect the 9.5 mm aluminum tubing, from the inner and outer manifolds.
5. From the left side (or back) of the steamer, use an open ended wrench to loosen and disconnect the compression fittings which connect the 9.5 mm aluminum tubing, from the inner and outer manifolds.
6. The entire assembly of both regulators and the

gas solenoid valves for the upper and lower steam generators may be removed as an integrated unit.

7. Remove the failed gas solenoid valve.

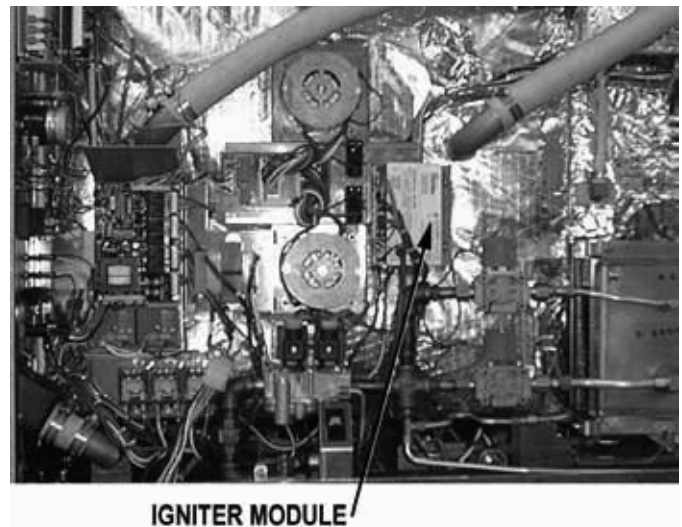
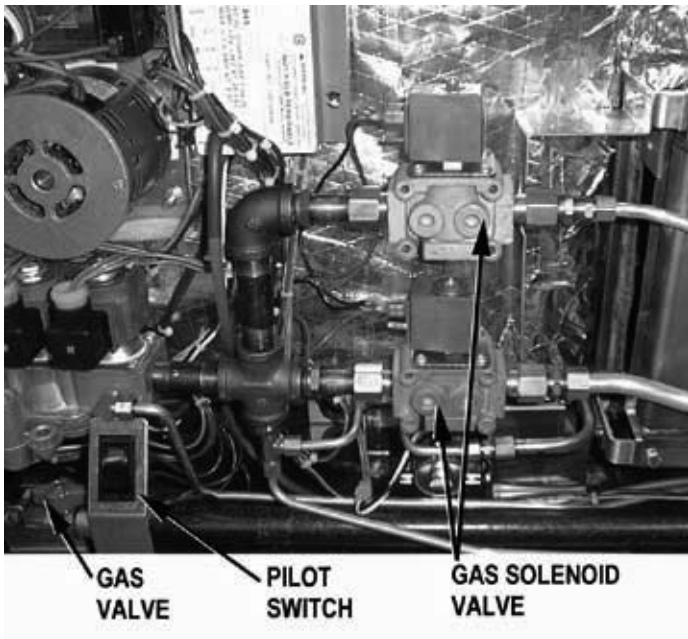
To Reinstall:

8. Clean pipe threads and apply compound to all joints being connected.
9. Install the new gas solenoid valve.
10. Slide the assembly into the steamer and align the tee fitting with the pipe union. Align the gas valves with their respective aluminum tubing.
11. Connect the pipe union using a Channel Lock wrench.
12. Using an open-ended wrench, connect the 9.5 mm aluminum tubing to the inner and lower steam generator manifold.
13. Using an open-ended wrench, connect the 12.7 mm aluminum tubing from the inner and outer steam generator manifolds.
14. Reconnect the wires to the correct valve.

2.1.7 Igniter Module

P/N 154059

1. Shut off power and gas to the steamer.
2. Remove the cover to the electrical compartment.



3. The igniter module is located next to the motor.
4. Note or tag the wires for reinstallation before unplugging. Carefully disconnect the seven push terminals from the igniter module. be careful not to pull the terminal by the wire. Use needle nose pliers to grip onto the terminal itself.
5. Use a nut driver (preferably with a magnetic tip) to remove the two 6-32 screws.
6. Remove the igniter module.

To Install:

7. Position the new igniter against the back wall or mounting bracket of the electrical compartment. Place a hex head screw in the nut driver and start each of the two screws.
8. When all screws are in place, tighten them one at a time.
9. Plug in each of the six terminals. Double check to ensure that they are correct.

2.1.8 Pilot Switch (SW3) Removal
P/N 087951

1. Shut off the power supply. Disconnect the four color coded wires from the switch assembly. Remove the two retaining screws which attach the switch bracket to the lower frame rail of the steamer.
2. The switch snaps into the bracket where it is retained by plastic tabs on the top and bottom. To remove the switch from the bracket, press in on both tabs at the same time and slide the switch out of the bracket hole.

To replace the switch

3. Insert the new switch into the bracket hole until its tabs clear the hole and snap into position.
4. Reattach the wires to the switch.
5. Replace the switch bracket with two screws.

2.1.9 Pilot Burner Replacement/Current Check/Adjustment - Pilot Flame Sensor Replacement

P/N 102258 (Natural) P/N 106610 (Propane)
P/N 003328 Flame Sensor

1. Turn off the main gas and power supply.
2. Remove the front cover.
3. Remove the right side panel as described in Paragraph 2.1.1.
4. Turn the manual gas valve to the OFF position. Place pilot switch SW3 in the OFF position.
5. Disconnect the pilot line from the pilot burner.
6. Disconnect the "spark" lead from the pilot burner.
7. Remove the flame sensor from the flame sensor bracket.
8. Remove the pilot burner.

Installation:

9. Connect the pilot line to the pilot burner.
10. Connect the "spark" lead to the pilot burner. Be sure to route the lead around the outside of the gas lines.
11. Replace the flame sensor on the flame sensor bracket.
12. Apply anti-seize lubricant to mounting head screw threads. Install the pilot burner and flame sensor assembly, and tighten the screws.

NOTE: *Route the "spark" lead and flame sensor wire away from the manifold to prevent improper operation.*

13. Turn manual gas valve to the ON position.
14. Connect unit to the branch circuit and turn on the main gas supply.
15. Place pilot switch SW3 in the ON position. Check for gas soundness.

Pilot Flame Current Check



WARNING
WHEN STEAMER POWER IS TURNED ON, THERE IS HIGH VOLTAGE PRESENT IN THE ELECTRICAL COMPONENTS COMPARTMENT. BE SURE THAT STEAMER IS DISCONNECTED FROM BRANCH CIRCUIT BEFORE PERFORMING ANY REPAIRS.

1. Turn off steamer power.
2. Disconnect the ground (green) wire from the igniter module.
3. Connect a DC micrometer between the igniter ground terminal and the disconnected green wire.

WARNING
DO NOT ATTEMPT TO LIGHT THE PILOT BURNER WITH A FLAME.

4. Ignite the pilot. The micrometer should read 3 microamps minimum.
 - If current reading is correct, replace the igniter module (see 2. 1. 7).
 - * If current reading is below 3 microamps, continually check the Flame Rectification Circuit (large orange wire, spark electrode, pilot burner hood, and ground connections). If necessary, tighten ground connections and/or replace defective component(s).
5. Check for moisture around the pilot burner, and for corrosion on the electrode and the pilot burner hood. If necessary, remove moisture with a dry, clean cloth. If hood and/or electrode are excessively corroded, replace pilot burner assembly.

2.1.10 Steam Generator Probes (High and Low Water) P/N 070178

NOTE: *There are two probes for each steam generator.*

1. Shut off power to the steamer.
2. With an 8 mm nut driver LOOSEN, but do not remove the nuts holding the wire(s) on the probe terminal(s).

3. The wires are connected to wire fork terminals. These will "snap" on and off the terminal post. Unsnap them by gently pulling on the terminal.
4. Using a 21mm open ended wrench, turn the probe counter-clockwise to remove. Clean or replace water level probes.

To Install:

5. Apply high temperature pipe compound to the probe and screw it in by hand. Using a 21mm open ended wrench, tighten the probe into the fitting.
6. Replace the wire(s) to the probes by snapping the fork terminals around the terminal post. Using an 8 mm nut driver, tighten the terminal nut.

NOTE: *If two probes are to be replaced, either replace them one at a time or note the color of the wires attached to the probes. Do not mix them up.*

2.1.11 Water Level Control Board

P/N 106258

1. Shut off electrical power to the steamer.
2. Remove the side panel screws and slide panel away from steamer.
3. Remove two kee nuts and star washers securing main control board mounting bracket. Lay main control board to the side.
4. Unplug the three terminals on the side of the water level control board: "C", "Low" and "High". Note wire colors and terminal positions.
5. Remove four nuts holding the board to the steamer frame and remove board.
6. Unplug the multi-conductor plug on the opposite side of the board.

To Install:

7. Plug in the multi-conductor plug on the bottom of the board. Make sure the plug is firmly and properly seated.
8. Place the water level control board over the mounting studs and fasten with four nuts.
9. Plug in the three terminals on the side of the board, making sure to plug the **low** wire into the

low terminal, the **high** wire into the **high** terminal and the "C" into the "C" terminal.

10. Install two star washers and keps to secure main control board mounting bracket.
11. Install the side cover and fasten with screws.

2.1.12 Steam Generator Gas Jet Manifold

P/N 106224

1. Shut-off power and gas to the steamer.
2. Remove the right side panel.
3. Turn manual gas valve to the closed position.
4. Remove the three aluminum tubes connected to the manifold. Disconnect the tubes using an open ended wrench.
5. Remove the two screws from the pilot mounting bracket. Remove pilot from the gas manifold.
6. Using a nutrunner or socket wrench remove the two top and two bottom bolts which hold the manifold to the steam generator manifold mounting bracket.
7. Remove the burner manifold from the appliance.
8. Remove the flame retention springs and injectors as required.

To Reassemble:

9. Replace the injectors and retention springs. Ensure a suitable gas sealant is used on the threads of the injectors to ensure a gas tight seal.
10. Fit the burner manifold to the steam generator manifold mounting bracket.
11. Reinstall and tighten the aluminum tubes to the burner manifold.

NOTE: *Ensure all gas connections are sound before continuing.*

2.1.13 Steam Generator Drain Valve

P/N 071234

1. Turn off power and allow steamer to drain completely. Remove back cover panel and loosen clamps or spring.

2. Using a 7mm nut driver or spring clamp pliers, disconnect both ends of the drain hose from the spray box and the steam generator.
3. Unplug and disconnect the valve electrical wires. Remove the 10-32 keps holding the valve to the plate. Remove the valve from the threaded studs. Then remove silicone hose from the valve.
4. Inspect the silicone hose for any damage or lime buildup. Clean or replace hose if required.
5. Attach new drain valve to valve bracket if bracket applicable. Pull silicone hose through drain valve and loosely install hose clamps over both ends of the hose. Be sure that the silicone hose is properly aligned and does not have any kinks, bends or twists in it.
6. Position the valve over the valve mounting threaded studs, and connect both ends of the hose to drain box or drain tube and steam generator.
7. Position the clamps so that the worm screw may be easily tightened. Using a 7mm nut driver, tighten both hose clamps. Be careful not to over-tighten clamps since they could cut the hose. If using spring clamps, use pliers to position them.
8. Install and tighten the valve mounting 10-32 cap nuts.
9. Plug electrical leads into wiring harness.

Test: Operate the steamer and allow steam generator to fill. Check for leaks and observe if the drain valve fully closes. Turn off the steamer and make sure that the drain valve opens and the steam generator drains. Install back cover.

2.1.14 Drain Box Spray Nozzle

P/N 106445

Disassemble

1. Turn off power to the steamer. Turn off the water supply to the steamer. Remove the water supply hose connection on the rear of the steamer.
2. Remove the two screws on the right side of the water inlet panel. Pull the water inlet valve mounting plate away from the steamer and slide it free.
3. Loosen the hose clamp nearest the end of the black hose. Pull the hose off from valve nipple.

4. Cut the hose down to the spray nozzle (about ½ inch) and remove the nozzle.

2.1.15 Water Inlet Valve Coil

If a solenoid coil in the water inlet valve is defective, replace the valve as described in 2.1.3 above.

2.1.16 Steam Generator

Insulated: P/N 106583

Steam Generator Assembly: P/N 106217

1. Shut off the power, water and gas supplies to the steamer.
2. Remove the right and left side panels. Remove the two screws on each side and slide the panels away from steamer.
3. Turn the manual gas shut-off valve to its closed position.
4. Remove the steam outlet hose from the steam generator. Use a nut driver to loosen the hose clamp on the hose. Slide it down the hose for later use. Remove the hose from the steam generator. Repeat this step for the other steam hose and for the cleaning hose.
5. Unplug the ignition cable from the igniter porcelain (similar to a spark plug).
6. Please refer to the following paragraphs for additional removal procedures: 2.1.1, 2.1.5, 2.1.12, 2.1.2, 2.1.9 and 2.1.13.
7. Remove flame runner tube. Remove the two screws at the manifold and disconnect the nut opposite the orifice.
8. Remove its two screws and remove the radiation shield.
9. Remove vertical gas flue (if HY-24GF) from the steam generator by removing the two screws which hold its mounting bracket to the rear panel. Remove the two screws securing the vertical flue to the horizontal flue.
10. To remove each flue, lift the vertical flue enough to clear lip on the horizontal flue.
11. Remove the drain vent pipe. Remove one screw at the top of the vent pipe and lift the pipe out.
12. Remove the drain box mounting screw on the back panel. Loosen the hose clamp screw which is inside the frame on the left side. Pull drain box out of the steamer and remove the back panel.

13. Disconnect the wires from the "side" of the steam generator which are attached to the 'high heat' thermostat.
14. With an open ended wrench, disconnect the high and low water level probes from the steam generator. Clean or replace the probes as needed.
15. Disconnect the steam generator water inlet hose by loosening its compression fitting with an open-ended wrench.
16. Remove the terminal block which is mounted inside back panel.
17. The steam generator is covered with an insulation blanket. Carefully remove this blanket without tearing it so that it can be reused.
18. Remove two bolts holding steam generator braces to base.
19. The steam generator(s) may now be removed. Steam generators should be removed from the rear of the steamer. This is easier and avoids damage to adjacent components. Two people are needed to remove the steam generator.
20. Once the steam generator is removed from the table frame and replaced with a new steam generator, remove the high and low water level probes, water fill brass fittings, elbow and hose fitting, high heat thermostat, safety valve and clean out plug from the old steam generator. Clean out the brass piping assembly vent cap and install them on the new steam generator.

To Install a Steam Generator:

21. Carefully wrap the thermal blanket around the steam generator. Make sure it fits snugly, with no air spaces between the blanket and the generator. Fasten seams with aluminum duct tape.
22. Slide the steam generator into position from the back of the table frame.
23. From the back of the steam generator, fasten the steam generator into place on the table frame using the two bolts and a socket wrench (with an extension). An open-ended wrench may be also used.
24. To install parts and components, reverse the removal procedures described above.

25. Connect the steam hose by easing the end of the hose onto the seam generator fitting. Make sure the hose engages the fitting all the way. Slide the hose clamp down the hose and position it so that the clamp is no more than 6mm from the end of the hose. Using a nut driver, tighten the hose clamp. Do not over tighten, as it may cut the hose! Follow this procedure for the other steam hose and the cleaning hose.
26. Install the back panel.
27. Fasten the igniter spark cable to the pilot light porcelain heat sensor.
28. Install the aluminum tubing from the high and low heat gas manifold to the respective solenoid valves using open ended wrenches. Install the flame runner tube using an open ended wrench.

2.1.17 High Limit Thermostat P/N 096892

1. As viewed from the front of the steamer, the high limit thermostat is located on the right side of the outer steam generator and the left side of the inner steam generator.
2. Shut off power to the steamer.
3. Allow water to drain from steam generator(s).
4. To remove the thermostat, first unplug the two wire plugs which lead to the thermostat.
5. Holding the insulation foil with your hand, use a 22mm open ended wrench to remove the thermostat from the steam generator.

To Install:

6. Apply pipe thread compound to the thermostat and screw it into the steam generator.
7. Using a 22mm open ended wrench, tighten the thermostat and replace the two wire terminals.

To Check:

8. Operate steamer and observe if there are any leaks coming from the new thermostat.

2.1.18 Steam Generator Probes (High and Low Water) P/N 070178

NOTE: *There are two probes for each steam generator.*

1. Shut off power to the steamer.

2. With an 8mm nut driver LOOSEN, but do not remove the nuts holding the wire(s) in the probe terminal(s).
3. The wires are connected to wire fork terminals which "snap" on and off the terminal post. Un-snap them by gently pulling on the terminal.
4. Using a 33mm open ended wrench, turn the probe anti-clockwise to remove. Clean or replace water level probes.

To Install:

5. Apply high temperature pipe compound to the probe and screw it in by hand. Using a 33mm open ended wrench, tighten the probe into the fitting.
6. Replace the probe wire(s) by snapping the fork terminals around the terminal post. Using an 8mm nut driver, tighten the terminal nut.

NOTE: *If two probes are to be replaced, either replace them one at a time or note the color of the wires attached to each probe. Do not mix them up.*

2.1.19 Control Voltage Transformer P/N 106234

1. Turn off power to the steamer.
2. Using a 6mm nut driver, remove four 8-32 screws holding transformer to electrical box.
3. Slide transformer to front of box.
4. Using a flat blade screwdriver, loosen the four terminals on the transformer.
5. Remove the two black and white wires and the two orange and brown wires.
6. Remove transformer from electrical box.

To Install:

7. Position transformer on electrical box floor. Attach wires as above.
8. Slide the transformer to the back of the electrical box so that transformer holes line up with the holes in the box
9. Using a 6mm nut driver (magnetic), install the four 8-32 screws securely, to hold the transformer in place.

NOTE: *The following components and subassemblies are to be found in the upper portion of the steamer*

2.1.20 Timer Assembly

P/N 100983

Timer Fastener Nut

P/N 101145

1. Remove knob from the timer. Under the knob is a hexagonal nut which holds time mechanism to the steamer's front panel. Note that there is a FLAT side on the time shaft and that this flat is facing upward.
2. From the left side, unplug the five terminals/ wires (violet, gray, black, tan and white.) from the time mechanism and unplug the two black timer motor leads.
3. With a 26mm open ended wrench, remove the hex nut holding the timer in place. The timer may then be removed from the front panel.
4. **Notice:** Right below the timer shaft, the timer has a small plastic anti-rotation tab molded into its case. There is a corresponding hole punched in the steamer's sheet metal panel. This hole may be seen only when the timer is removed.

To Install:

5. Fit the timer in place, ensuring that it is set so that the anti-rotation tab on the timer fits into the punched hole in the front panel, and that the flat on the time shaft is again facing up. This means that when the knob is installed, the pointer will be exactly between the two indicators.
6. Once the timer is properly positioned, tighten the hex nut so that it does not slip or rotate.
7. Plug the terminal wires in place (see Paragraph 2, above), and connect the two black wires from the motor leads.

2.1.21 Control Board

P/N 119801

1. Turn off electrical power to the steamer.
2. Remove the protective control panel cover.
3. Unplug the connectors from the rear of the board.
4. Unplug and remove connectors which are jumper plugs and NOT connected to the wiring

harness. These will be required for the installation of the new board.

5. The circuit board is held in position by five plastic retainer clips.
6. To remove, squeeze the flared tabs on the clips one by one to release the clips from the hole in the circuit board. Be careful to hold the board so that it does not drop. Do not squeeze the clips too tight, since this could damage the clips.

To Install:

7. Position the board against the five clips and press each corner in one by one until tabs on each clip clear the holes in the circuit board.
8. Insert jacks in the same connector locations as those from which removed. Press firmly to be sure the jack is fully seated on the board.
9. Install the protective control panel cover.

2.1.22 Fan

P/N 106354

IMPORTANT: *Make sure it has come to a complete stop before working on the fan.*

1. To remove the fan from either cavity, open the door and remove the pan support wire rack in front of the fan.
2. With a 3mm Allen wrench, loosen the set screw holding the fan to the motor shaft.
3. Grasp the fan, and with a slight rocking motion pull it off from the motor shaft.

To Install:

4. Note that the motor shaft has a flat surface. Position the fan hub on the motor shaft so that the 3mm Allen set screw is opposite the flat portion of the motor shaft.
5. Slide the fan onto the motor shaft far enough so that the motor shaft is at the end of the fan hub.
6. With a 3mm Allen wrench, tighten the set screw onto the fan.

NOTICE: Advise customers to clean the fan blades periodically of deposited food grade grease coming from the foods being cooked. The deposit of such grease over time could cause the fan to vibrate.

2.1.23 Fan Motor Assembly

P/N 096740

Motor Insulator

P/N094135

Motor Shaft Seal

P/N 096868

Oil Slinger Washer

P/N 096831

1. Shut off electrical power to the steamer.
2. From inside the cavity, remove fan using a 3mm Allen wrench.
3. Using an 11mm nut driver/socket, remove the four ¼-20 kee nuts which hold the motor. Note that one of the nuts secures the motor ground strap to the steamer.
4. Pull the printed circuit mounting plate forward to clear the lower two threaded studs securing the motor.
5. Remove the motor mounting plate to which the motor is attached.

To Install a New Motor:

6. Make sure the motor insulation board (P/N 094135) is installed on the four threaded studs to the new cavity wall.
7. Apply *Never-Seez* on both sides of the steamer seal and the inside hold. Refer to the Fan Motor Assembly Diagram.
8. Insert the steamer motor seal in the cutout of the insulator board.
9. To prepare motor for mounting, slide the oil slinger washer onto the shaft about 12mm down the shaft.

IMPORTANT: This washer has two surfaces: a rubber surface and a resin surface. Make sure the resin surface is facing the motor.

10. Install the plate seal holder onto the motor shaft. Carefully slide the plate seal holder down the motor shaft until it engages the slinger washer. Continue moving the plate seal holder down the motor shaft until the plate comes to rest on the raised bosses of the motor casting.
11. Using this technique, the rubber side of the oil slinger washer should be in contact with the plate holder. There should be a space of approximately 2mm between the resin face of the washer and the motor.
12. Using four hex/slotted 6-32 screws, screw on the motor mounting plate. Be sure each screw

passes through corresponding holes in the plate seal holder.

13. The entire assembly may now be positioned on the four threaded stud bolts which protrude from the cavity wall. Fasten the assembly with the ¼-20 kee nuts using an 11mm nut driver. Make sure that the green ground strap is fastened by one of the kee nuts securing the motor.

2.1.24 Motor Starting Capacitor

P/N 106270

1. Turn off the electrical power.
2. Remove the right side panel. Remove two screws and slide the panel away from the steamer.
3. Unplug the two terminal wires from the capacitor.
4. Remove the screw which secures the capacitor to the steamer wall.

To Install New Capacitor:

5. Install capacitor and make sure it is seated properly. Secure capacitor to the steamer wall with a screw.
6. Connect the two terminal wires to the capacitor. **IMPORTANT:** Be sure to use the correct valve capacitor (4 µF at 330Volts).

2.1.25 Steam Generator Ready Thermostat

P/N 099947

This thermostat is attached to the cavity steam port using two 6-32 screws.

1. Turn off power to the steamer.
2. Unplug the two wires from the thermostat from the wiring harness.
3. Using a flat blade screwdriver, remove the two 6-32 screws which hold the thermostat to the steam port.
4. To install a new thermostat, use a small amount of heat sink compound (1 drop), applied to bottom of thermostat. Seat the thermostat on the steam port and fasten with the two screws (as described above).
5. Plug the thermostat into the wiring harness.

2.1.26 Steam Port, Front

P/N 106594

Steam Port, Rear

P/N 106512

Steam Port, Front Gasket

P/N 099250

Steam Port, Rear Gasket

P/N 106341

1. Shut off power to the steamer.
2. Remove the 134 mm steam hose by loosening the clamp around the hose and sliding it away from the steam port. Loosen the hose and remove it from steam port.
3. With a flat blade screwdriver, remove the two 6-32 screws holding the thermostat to the port.
4. With a sharp knife, or small scissors, cut the aluminum foil insulation blanket to gain access to the nuts which hold the port to the steamer.
5. Fold up aluminum foil insulation blanket to expose the two 1/4-20 keps nuts which hold the steam port to the threaded studs on the cavity wall.
6. With an 11mm nut driver, remove the two keps nuts.
7. Remove the steam port from the threaded studs.

To Install:

8. Put a small bead of silicone sealant in and around the groove in the steam port to seal any possible leaks, or use gasket P/N 099250.
9. Install the steam port on threaded studs. Secure with two keps nuts.
10. Fold down the aluminum foil insulation blanket to its original position and repair cuts with aluminum duct tape.
11. Reinstall the thermostat as described above.
12. Reinstall the steam hose to the steam port. Slide the hose clamp up into position (not more than 12mm from the end of hose) and tighten. *Do not over tighten the clamp as it may cut the hose.*

2.1.27 Cavity Steam Hose Assemblies

P/N 106578

P/N 106579

1. Shut off power to the steamer.

2. Remove the cavity side and lower side back panels of the table.
3. In upper portion of the steamer, using an 8mm nut driver, loosen the hose clamp where the hose is attached to the steam port. Turn and pull the hose to remove it from the hose nipple.
4. In the lower section of the steamer, using an 8mm nut driver, loosen the hose clamp where it is connected to the steam generator. Turn and pull the hose to remove it from the hose nipple.
5. The hose may be removed. Be careful that the hose clamps do not fall off and get lost.

IMPORTANT: *Make sure that the two short lengths of hose are connected to the angled metal steam tube and connected so that there are no kinks in the hose.*

To Install:

6. Slide the two clamps onto the hose. Set the hose adjacent to the steam port and the steam generator.
7. Slide the hose onto the hose nipple on the steam port, and onto the steam generator nipple at the other end. Make sure the hose is on all the way, so that the end of the hose is against the face of the nipples.
8. Slide the hose clamps down so that they are about 3 mm from the end of the hose (at both ends). Using an 8 mm nut driver, tighten the hose clamps.

NOTE: *Do not over-tighten the hoses since the clamps could cut the hoses.*

2.1.28 Door Removal/Installation/Alignment

P/N 106365

1. To remove the door, turn off the steamer power and allow the steamer to cool. Then remove the door while supporting its weight, and remove the hinge.
2. Place the door on a flat, clean table or similar support, with the gasket facing up. Be careful not to scratch door surface.
3. Inspect the door gasket for signs of cuts or other defects which might impair its function. Replace if necessary.

To Install:

- To install the door, apply Never-Seez lubricant to the hinge pin. Align the door with the hinge and insert hinge pin, or apply Loctite 242 to the door-to-hinge bolts. Then install the door and mounting bolts. Do NOT tighten mounting bolts at this time.

To Align:

- Place a piece of masking tape over the door pin (bullet) hole in the door.
- Close the door until the door pin just penetrates the masking tape. Make sure the door pin contacts only the door latch spring.
- If door pin does not strike the center of the masking tape of spring hole in the U-channel. loosen the hinge-to-oven bolts and align the door to the door pin. Tighten the hinge-to-oven mounting bolts.
- You should be able to pull a dollar bill or comparable piece of paper smoothly between the gasket and oven cavity with the door closed. To adjust the hinge side, loosen the door-to-hinge bolts and align the door gasket with the oven cavity. Tighten the door-to-hinge mounting bolts. To adjust the bullet-side, refer to Paragraph 2.1.34.
- Operate oven in Steam mode and check for leaks.

2.1.29 Door Switch
P/N 096857

- From the right side of the steamer with panel removed, unplug the door switch from the cable harness.
- For normal door opening, the switch is held in place by two small 4-40 screws. With a slotted screwdriver, remove these screws to remove the switch.
- To install the switch use the 4-40 screws and a screw driver which has a screwstarter feature.
- If the door has been reversed and the switch must be removed and replaced, refer to top and left side cover removal in Paragraph 2.1.2, and then remove the switch as described above.

2.1.30 Door Reversing Procedures

- Turn off steamer power and allow steamer to cool.

- To remove door, support the door while removing hinge-to-steamer bolts.
- Place door with hinge on a flat, clean table (or similar support), with the gasket facing up. *Be careful not to scratch the door surface.*
- Note and record the distance between the jam nut and end-of-door locking pin (bullet). This information will be needed during bullet installation in Step 6.
- Loosen jam nut with a 13mm wrench, and remove the door locking pin and jam nut.
- Coat locking pin threads with Never-Seez high temperature (1000°C) anti-seize and lubricating compound. Install door locking pin and jam nut directly across the steamer cavity from the other bullet location. Install these two items so that jam-nut-to-end-of-bullet distance is the same as that measured in Step 4.
- Remove the two ¼-20 truss head screws from above and below the old bullet location and install them above and below the new bullet location.
- Remove the screws and U-channel from the door. Take the magnet and block assembly from its present location and place it at the opposite end of the door channel, with magnet facing outward from the door.

2.1.31 Door Gasket
P/N 106209

- Turn off steamer and allow to cool.
- Remove the door using one of the following two methods:
 - Support door weight and remove hinge pin
Or,
 - Support weight of the door and remove the two door-to-hinge bolts.
- Place the door on a flat, clean, smooth table or similar support. *Be careful not to scratch the door.*
- Position door on workbench so that its front is lying flat, with the le hanging over the edge of the bench.
- Remove four 8-32 truss head screws and remove the inner door panel.
- Remove and discard door gasket.

7. Clean back of the inner door panel. Be sure that the old sealant is completely removed.

To Install:

8. Install a high temperature silicone sealant, such as GE RTV 159 Red Sealant on the four spacers.
9. Install new door gasket around inner panel as shown in the illustration. *Be sure the inner door panel flange is fully inserted into the door gasket groove.*
10. Apply a high temperature silicone sealant, such as GE RTV 159 or equivalent, to the four door spacers.
11. Apply Loctite 242 to inner door panel mounting screws.
12. Install inner door panel and door gasket on the door spacers, and tighten mounting screws.
13. Align door with hinge and insert hinge pin OR apply Loctite 242 to the door-to-hinge bolts and install the door and mounting bolts. Do NOT tighten mounting bolts at this time.
14. Align the door to the steamer and tighten bolts.

2.1.32 Door Handle

P/N 070123

Door Cam

P/N 074252

Magnet and Block Assembly

P/N 069762

U-Channel Assembly

P/N 106364

Screws

P/N 005608

Outer Door Panel

P/N 106211

Inner Door Panel

P/N 106210

Door Insulation Board

P/N 106216

15. Turn off steamer and allow to cool.
16. Remove the two 8-32 truss head screws and the U-Channel from door.
17. Remove the two 8-32 truss head screws, door handle, and cam.
18. Apply Never-Seez high temperature (1000°F) anti-seize and lubricating compound to the door cam and Loctite 242 screw threads.

19. Assemble the door cam to the handle with screws.

20. Door handle must be in DOWN position. Hold U-Channel door spring open with a screw driver or similar tool, and install the U-channel. Do NOT install the screws at this time.

21. Check operation of the cam and door spring. Push up on the door handle and check to determine if the spring opens. If spring does not open, the cam and spring are not correctly aligned. This problem must be corrected.

22. Apply Loctite 242 to screws, then install screws.

2.1.33 Door Spring

P/N 078911

1. Turn off power and allow steamer to cool.
2. With flat screwdriver, remove the two 8-32 truss head screws on U-channel and remove the U channel from door.
3. Carefully remove the retaining ring from one end of spring support pin, then remove the pin by moving the pin to the left and to the right.
4. With a 10mm nutdriver, remove the 10-32 kep nut, lift square plate, then remove the spring.

To Install:

5. Apply a high temperature (1000°C) anti-seize, lubricating compound (Never Seez) on the bottom of the U-channel surface that contacts with the spring.
6. Install the spring onto brass roller, then place the square plate over the spring.
7. Apply Loctite 242 to the keps nut and install keps nut.
8. Install spring support pin, then push the retaining ring onto the pin using a screwdriver.
9. Hold door spring open with a screwdriver or similar tool, hold door handle in the down position and install the U-channel, top end first. Lower the channel into position. Check that the spring opens when door handle is pushed up.
10. Apply Loctite 242 to the U-channel mounting screws, then install the screws.
11. Replace the two 8-32 truss head screws in the U-channel, applying Loctite 242 to secure

2.1.34 Door Locking Pin - P/N 078914
Door Pin Lock Nut - P/N 003823

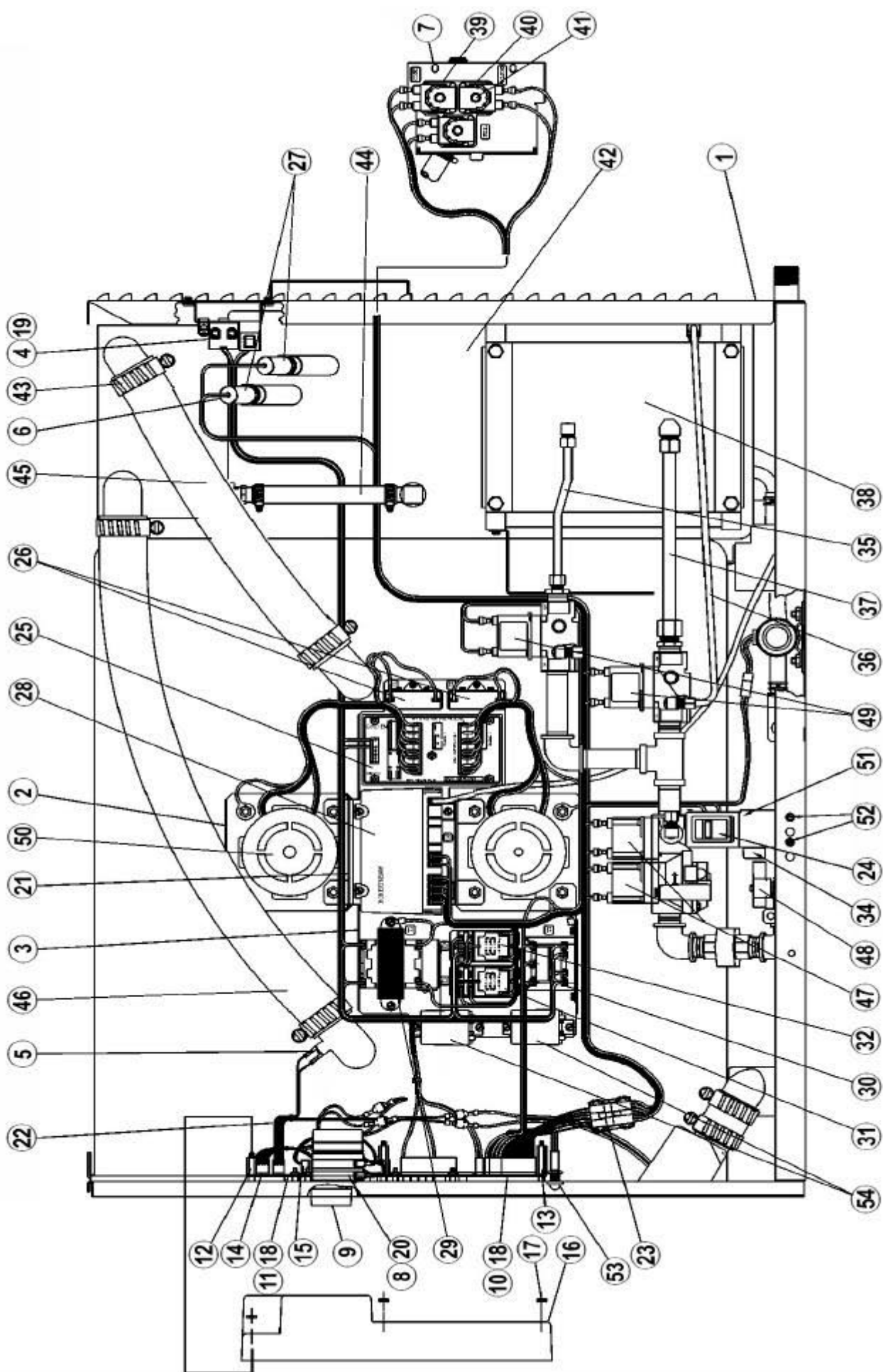
1. Turn off power and allow steamer to cool.
2. Record the distance between the lock nut and the end of the (bullet shaped) locking pin. This information will be needed for installation.
3. Loosen the lock nut using a ½ inch box wrench. Remove the lock nut and door pin.

To Install:

4. Coat bullet threads with Never-Seez high temp (1000°C) anti-seize and lubricating compound.
5. Install locking pin and lock nut. The lock nut to end-of-pin distance should be the same as measured in Step 2.
6. The pin should be set to retain the closed door firmly.
7. Frictional force is adjusted by turning the door pin in or out, accordingly.
8. Adjust pressure so that a banknote or similar piece of paper, when grasped by the thumb and forefinger, may be pulled out with a slight effort.
9. Remove screws. Remove handle from cam.
10. Apply Never-Seez high temperature (1000°C) anti-seize and lubricating compound to the cam, and Loctite 242 to the screw threads.
11. Turn handle and cam 180-degrees from original positions and install on the door with screws. Be sure handle and cam move smoothly.
12. Be sure the door handle is DOWN. Turn U-channel 180-degrees from its original position. Hold the door spring in the U-channel open with a screwdriver, and install the U-channel.
13. Check the cam operation. Push up on the door handle and see if the spring opens. If it does not, the cam and spring are NOT correctly aligned and the problem must be corrected.
14. Apply a light amount of Loctite 242 to the screws, then install them.
15. Apply Loctite 242 to the hinge-to-steamer bolts. Install the door and hinge mounting bolts. Do NOT tighten mounting bolts at this time.
16. Align the door to steamer. Refer to 2.1.28.

17. **IMPORTANT:** When door is reversed, the alternate door switch (installed at the time of manufacture) must be connected to the circuit.
18. From the right side access of the upper part of steamer, disconnect the two door switch leads.
19. Wires for the alternate door switch are between the upper and lower cavities. Connect the two wires from the switch to the wiring harness.
20. Close steamer and operate five minutes. Then check for leaks. If there are no leaks, the steamer is ready for operation. If there are leaks around the door, recheck door alignment, and if necessary, door gasket installation.

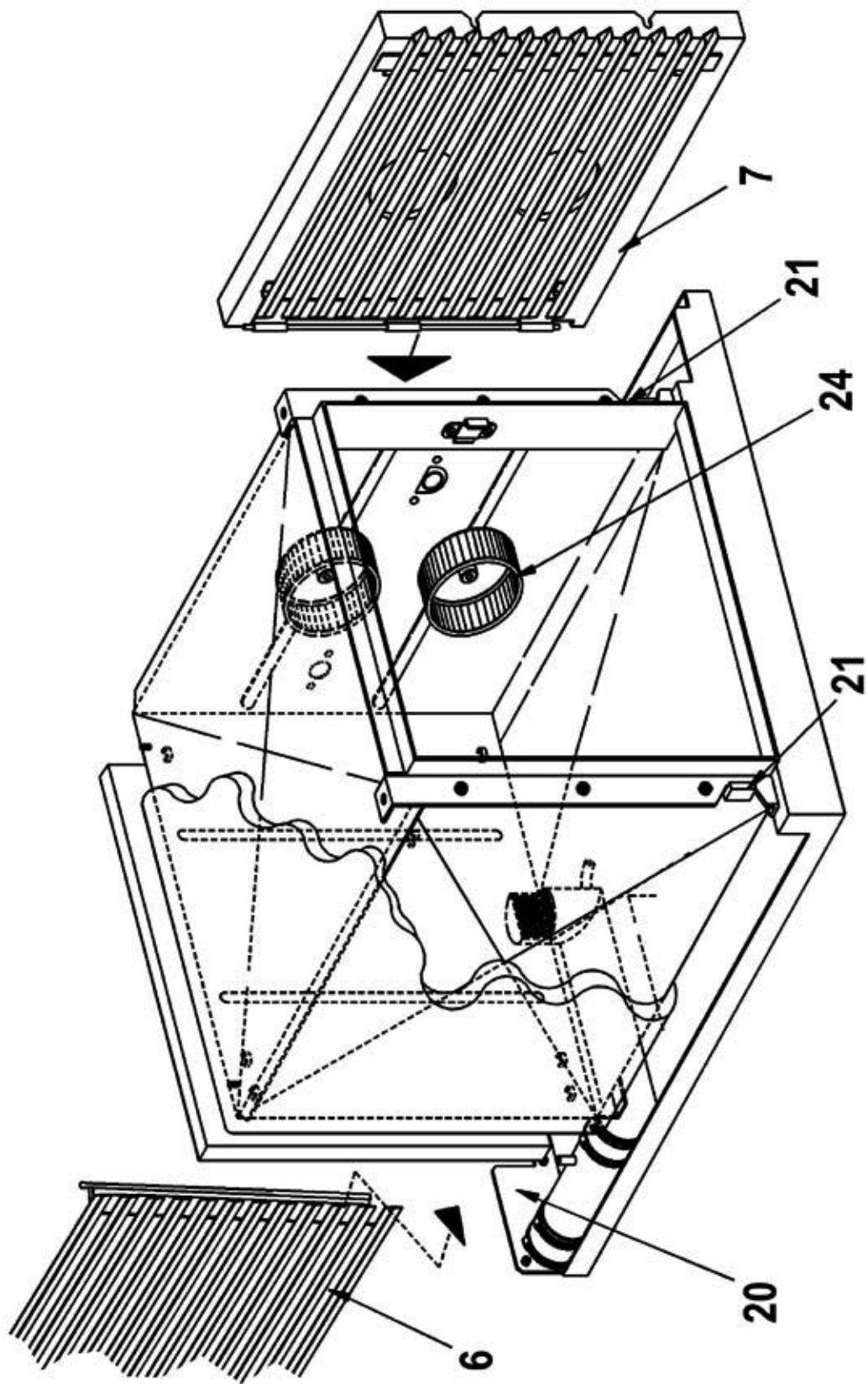
2.2 Parts Identification



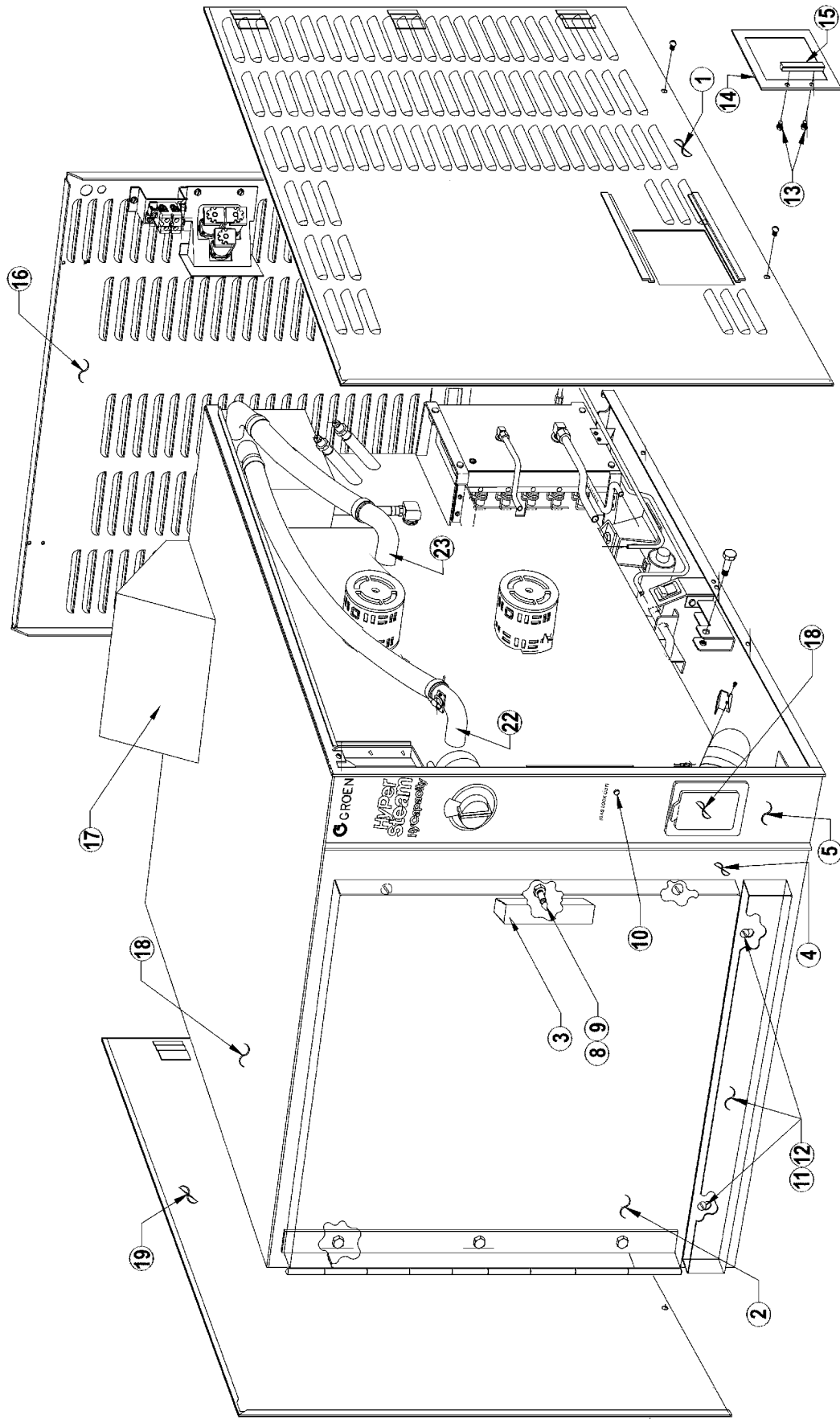
2.2 Parts Identification

Key	Description	Part No.	Key	Description	Part No.	Key	Description	Part No.
1	Platform Assembly	125818	20	Nut, Rotary shaft seal	101145	38	Manifold Assembly	125856
2	Motor Assembly	096740	21	Drip Shield, Motor	119844	39	Clamp, Double Wire	127662
3	Electronic Control Assembly	132453	22	Harness, Ready/Door Switch	119878	40	Clamp, Hose	093482
4	Line Connection Assembly	119873	23	Harness, Control Board Extension	125788	41	Reducer, Water Flow	106445
5	Universal Thermostat	099947	24	Switch, Rocker, Pilot	087951	42	Boiler Assembly	106217
6	Plastisol Boot	101143	25	Circuit Board Assembly	119875	43	Clamp, Constant Pressure	126011
7	Valve, Water Inlet 2 way, triple	090827	26	Capacitor, 4.0 μ F	106270	44	Hose, Steam Inlet 1/2" dia 5-3/8 I.	106581
8	Timer, Steamer, 50 Hz	100983	27	Probe, Water	070178	45	Hose, Steam Inlet 1-1/2 I.D. x 13"	106578
9	Knob, Timer	123100	28	Ignition Module	154059	46	Hose, Steam Inlet 1-1/2 I.D. x 22" I.	106579
10	Steamer Control PC Board Assy	119801	29	Transformer, 75 Amp, 24 VAC	106234	47	Gas Valve, Natural Gas	098443
11	Light & Timer PC Board Assy	119817	30	Transformer, 20 VAC	119815	47	Gas Valve, Propane Gas	098444
12	Standoff Hex, 6-32 x 3/4	119826	31	Relay, 12 VDC Coil	119813	48	Valve, Gas, Manual 1/2" NPT	098458
13	Standoff Hex, 6-32 x 1-1/4	119827	32	Relay, 24 VDC Coil	119814	49	Valve, Gas, 25V	106627
14	Harness, Timer Motor	123120	33	Panel Overlay, Mylar (not shown)	123131	50	Motor, Fan	096740
15	Jumper, Control Bd. To Display Bd.	123122	34	Reset Switch, Pushbutton	122003	51	Bracket, High Limit	123448
16	Cover, Control Panel	128800	35	Tube, Manifold 5/16" O.D.	106457	52	Screw, Flat Head	069722
17	Nut, Keps, 6-32	071289	36	Tube, Low Fire	106458	53	Light, Indicator	122122
18	Nut, lock, nylon insert 6-32	119855	37	Tube, Manifold 1/2" O.D.	106456	54	Relay	074842
19	Screw, slotted, hex 8-32 x 1/4	074242						

2.2 Parts Identification



2.2 Parts Identification



2.2 Parts Identification

Key	Description	Part No.	Key	Description	Part No.	Key	Description	Part No.
1	Cover, Right Side	123196	10	Gas Lockout Neon	122122	19	Left Side Panel	123197
2	Door Assembly, Complete	106365	11	Tray, Drip	106294	20	Drain Box	106385
3	Door Handle	070123	12	Screw Shoulder - Drip Tray	070467	21	Door Switch	096857
4	Door Gasket	106209	13	Screw, Hex Slot	069777	22	Steam Port, Front	106244
5	Mylar Overlay	123131	14	Door, Gas Valve Access	106434	23	Steam Port, Rear	106512
6	Left Pan Rack	106309	15	Door, Handle	087903	22a	Steam Port Gasket, Front	009920
7	Blower Cover/Rack	106384	16	Back Panel	125847	23a	Steam Port Gasket, Rear	106341
8	Door Locking Pin	078914	17	Flue Cover	106482	24	Fan	106354
9	Door Pin Lock Nut	003823	18	Funnel Assembly	106624			

Section 3 — Troubleshooting

3.1 Basic Operation (See Block Diagram)

3.1.1 Pilot Burner Ignition and Start-Up

The pilot switch is located in the lower section, behind the front panel. When it is placed in the ON position, the following take place:

- 1) The control boards and pilot ignition circuits are powered up.
- 2) The gas solenoid valve opens for pilot burner for the steam generator(s).
- 3) The pilot burner ignites. Electrical feedback to the control board confirms that the pilot burner is lit.
- 4) The Green neon on the switch actuator illuminates, showing that the gas pilot burner is lit.

3.1.2 Cooking Food

To use the steamer, press the ON/OFF touch pad for the cavity being used. Water enters the steam generator to the "fill" point.

With the cavity door closed, the low heat and high heat gas valves then open, heating the water to a boil.

When the cavity is heated to 85°C (185°F) the READY neon comes on. The unit switches to low power, reducing the steam, but maintaining the boil. The READY neon shows that cooking can start.

When food is to be cooked in either or both of the cavities, slide in the pans and close the door.

Rotate the timer control knob around the dial to the desired time from 1 to 60 minutes, or place it in the "ON" position. In the timed position, a red neon on the panel will come on when cooking time is completed and a "beeper" will sound. In the manual position, a green neon on the right side of the dial will be on to show that the steamer is operating continuously.

When the timer is set in a timed position (1 to 60 minutes) or in the "ON" position, the motor and fan in the cavity start, steam enters the cavity and the steam is distributed throughout the cavity.

When the timed cooking period is done, a beeper sounds and the red neon will stay on until the time knob is turned to the 12 o'clock position.

If the door is opened during cooking, the door interlock switch causes power to the convection motor to be stopped, and the high heat gas solenoid valve to open.

This instantly reduces heat in the steam generator and the steam entering the cavity, and stops the timer.

3.1.3 Water Level Control and Entry Into Steam Generator

The HIGH WATER probe determines if there is a full and proper level of water in the steam generator. If the water level drops, this probe is uncovered and the resulting "open circuit" is detected by the CONTROL BOARD. If this level is low for more than about five seconds, the CONTROL BOARD will cause the WATER SUPPLY solenoid valve for that steam generator to turn on. This permits water to enter the steam generator.

Water will continue to enter the steam generator until its level is high enough for electrical contact with the HIGH WATER probe. This shows that the steam generator is full and the WATER SUPPLY solenoid valve then turns off. This stops water flow to the steam generator.

When the HIGH WATER probe is uncovered there is a three to five second delay before the water supply solenoid opens. This is to allow for the changing levels in the bubbling action of boiling water in the steam generator. When the probe is uncovered for more than five seconds, the water valve solenoid is activated.

3.1.4 Low Water Level Detection

The LOW WATER PROBE detects a low levels of water in the steam generator. Because operation with less than the required amount of water could present a dangerous situation, the action of this probe is immediate.

When the LOW WATER probe is uncovered for more than three to five seconds (contact is broken between the probe and water), that steamer portion shuts down.

A high temperature thermostat monitors the temperature in each steam generator. It is set at 115°C (240°F) and will shut down the steamer if there is little or no water, or the steam generator starts to overheat. The steamer can be re-started after the Reset switch is pressed.

3.1.5 Draining Water From The Steam Generator

Steam coming from the cavities or water drained from the generator(s) passes through a water spray in the drain box to cool the steam before it leaves the steamer. This spray is controlled by a water solenoid valve.

A solenoid drain valve is connected to each steam generator. This valve is normally open to allow water to drain out from the steam generator. When the power switch for the cavity is flipped to the ON position, the steam generator drain valve closes. The steam g1

generator starts to fill up until the water level reaches the HIGH WATER probe.

When the Cavity Power Switch is turned OFF, the solenoid valve opens, draining the steam generator. The water fill valve and spray condenser valve are then de-energized, and burner gas valves are de-energized.

3.1.6 Lime Build-up In The Generator and on Probes

If the HIGH WATER probe is encrusted with lime build-up, there can be no electrical contact between the probe and the incoming water. The result is that water will continue to enter the steam generator and rise above the probe detection level.

The water level control board will monitor the time that the water solenoid valve is open. It will permit the valve to remain open for three minutes, which is more than enough time to fill the steam generator. This period of time will also result in the steam generator overflowing. When this happens, the water will enter the steamer cavity and be discharged through the cavity drain hose.

After three minutes, the water valve will shut off, the steam generator will drain for one minute, the drain valve will close and the Cleaning indicator neon will come on.

Turning the cavity power switch to the OFF position will drain the steam generator. When the switch is turned back (after five seconds) to the ON position, it will reset all circuits and the steam generator will refill with the same results.

When the Cleaning indicator neon lights, the timer control becomes inoperative and the high and low heat solenoid gas valve will not open — until the lime deposits are cleaned and the circuit is reset.

3.2 Diagnostics

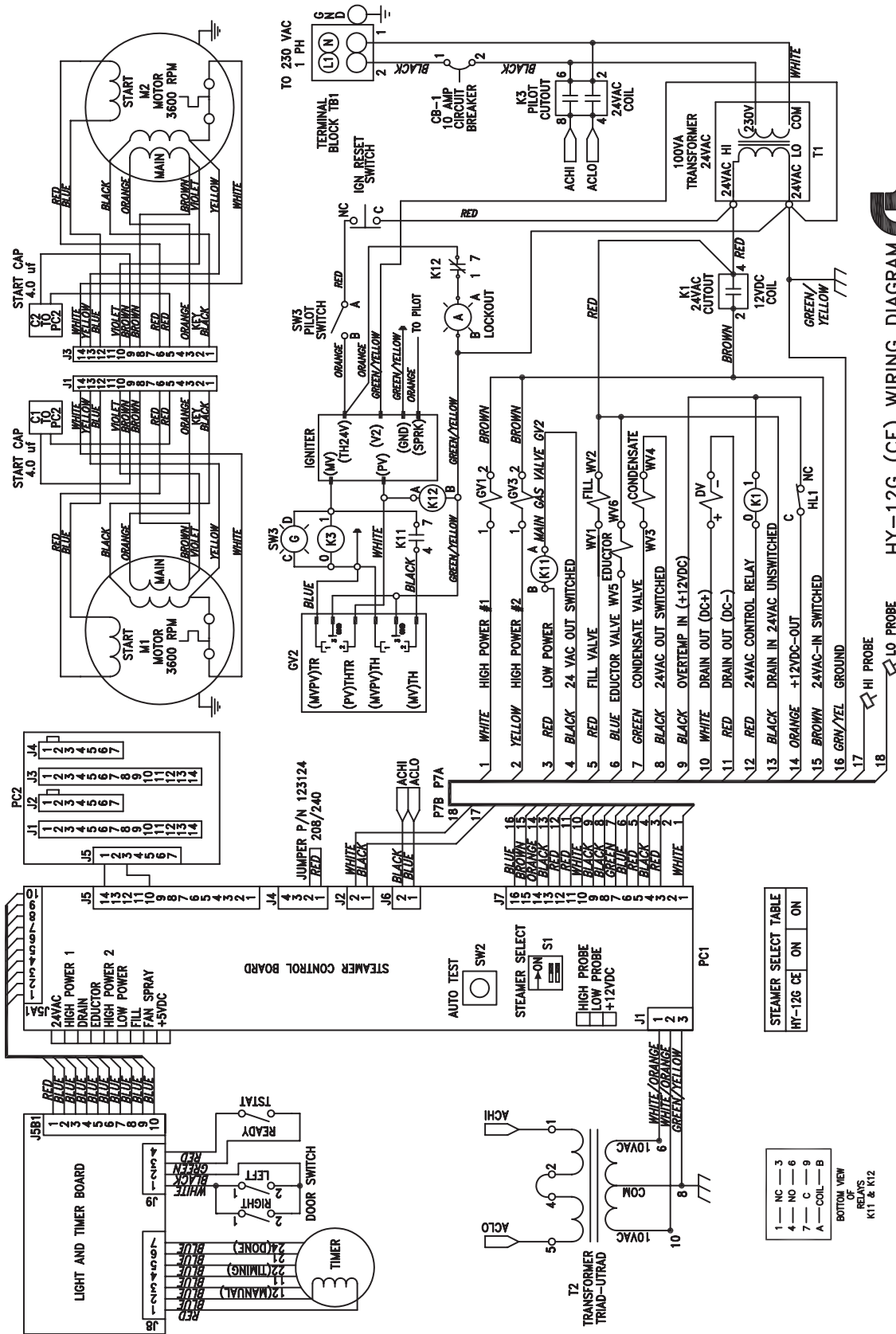
HyPerSteam Steamers are simple to maintain when the basic operation, block diagram, truth table, schematics and troubleshooting charts are used in systematic fault isolation. Within the control circuitry are relays and electronic devices which support this effort.

In order to aid in the servicing of the steamer, Light Emitting Diode (LED) indicators are located on the right side of the unit in an electrical compartment behind the right side panel.

When used with the following truth table these LED indicators show proper operation of steamer components and system functions. In this section LED indicator illumination patterns which show the following are provided:

- a. Proper operation of steamer cavities and control circuitry
- b. Possible problem areas to be investigated as indicated by certain LEDs not being lit

Electrical Schematic



HY-12G (CE) WIRING DIAGRAM
P/N 144148 REV D

LO PROBE
HI PROBE

STEAMER SELECT TABLE
HY-12G CE ON ON

1	NC	3
4	NO	6
7	C	9
A	COIL	B

BOTTOM VIEW OF RELAYS K11 & K12

3.3 Troubleshooting Chart

SYMPTOM	WHAT TO CHECK
Pilot will not light.	<ul style="list-style-type: none"> c. Are electrical connections made with a ground? d. Is gas supply connection made? e. Is pilot ignition switch activated? f. Is gas valve turned on? g. Is spark ignition cable connected to module, pilot ? h. Are building, fuses or circuit breakers all right? i. Are there drafts that could blow out the pilot? j. Is the amber Gas Lockout neon lit? If yes, press Reset switch.
Steam generator does not fill with water.	<ul style="list-style-type: none"> a. Is ON switch depressed? b. Is electric supply connected? c. Is water supply connected? d. Check for low water pressure (less than 30 PSI) e. Is screen or filter clogged where water line connects with steamer? f. Has steam generator been de-limed? g. Is the "High Tem" neon on front panel lit? If yes, press "Reset" switch next to Pilot Switch.
Pilot will light, but main burners will not.	<ul style="list-style-type: none"> a. Is ON switch depressed? b. Is electric supply connected? c. Are steamer doors opened? d. Is steam generator limed up?
Pilot lights, but no front panel lamp comes on.	Call your Groen authorized service agency.
Red light comes on after four minutes. (Refer to cleaning section).	<ul style="list-style-type: none"> a. Is water supply connected ? b. Is water supply hose kinked? c. Has unit been delimed? d. Is water screen or filter clogged?
Excessive steam escaping from rear of unit.	<ul style="list-style-type: none"> a. Is water spray hose kinked or obstructed? b. Is water spray solenoid connected?
Steam generator does not fill with water.	<ul style="list-style-type: none"> a. Is ON switch depressed? b. Is electric supply connected? c. Is water supply connected? d. Check for low water pressure (less than 30 PSI) e. Is screen or filter clogged where water line connects with steamer? f. Has steam generator been de-limed?
Pilot will light, but main burners will not light.	<ul style="list-style-type: none"> a. Is ON switch depressed?? b. Is electric supply connected? c. Are steamer doors opened? d. Is steam generator limed up?

3.4 Troubleshooting Procedures

3.4.1 Problem: Unit Will Not Turn On

PROBABLE CAUSES	CORRECTIVE ACTION
Steamer disconnected from power source.	Make sure disconnect device is turned on. If necessary, reset circuit breaker or if fuse has blown, ask customer to make arrangements to replace the fuse. Check for cause of blown fuse (example: shorted heating element.)
Improper input power connection(s)	Refer to schematic and wiring diagrams and check for correct power connection. If needed, notify the customer that an electrician is required to correct the problem.
Defective TR1 Transformer	Check transformer voltage on primary and secondary sides. Turn off power and check continuity with wires disconnected. Check for continuity to ground on all primary and secondary terminals with wires disconnected.
Control circuit breaker trips	Refer to schematic diagram and perform continuity check for electrical short circuits.
Control circuit breaker continues to trip	
Gas supply turned off	Turn on gas supply.
Pilot burner not ignited	<p>Perform the following "trial ignition, and look and listen for spark:</p> <p>Attempt to ignite the pilot burner. If this burner does not ignite within 90 seconds after the switch is turned on, the gas reset switch will lock out. Wait at least five minutes before attempting to reactivate the pilot and gas reset switches. Repeat the trial for ignition. The pilot may require several trials for ignition to bleed air from the gas piping. After the initial installation, subsequent startups should require only about two to five seconds to get pilot ignition.</p> <p>Check 24VAC supply at igniter module terminals MV-PV and PV.</p> <p>If 24VAC measured. Turn off steamer power/gas supply.</p> <ul style="list-style-type: none"> • Check pilot burner orifice for blockage. Clean and repair if necessary. • Perform trial ignition. • Replace main gas valve MGV1. <p style="text-align: center;">WARNING</p> <p>BE SURE STEAMER IS DISCONNECTED FROM POWER BRANCH CIRCUIT BEFORE PERFORMING ANY REPAIR WORK. MAKE SURE GAS IS SHUT OFF BEFORE REPLACING VALVE.</p> <p>24 VAC not measured. Turn off steamer power. Check for 24VAC at 24V-1 and 24V-2.</p> <p style="text-align: center;">WARNING</p> <p>WHEN STEAMER POWER IS TURNED ON, THERE IS HIGH VOLTAGE PRESENT IN THE ELECTRICAL COMPARTMENT.</p>

3.4.1 Problem: Unit Will Not Turn On — Continued

PROBABLE CAUSES	CORRECTIVE ACTION
No spark observed	<p>Turn on steamer power. Refer to schematic diagram and check for 24 VAC at igniter module terminals 24V-3 and 24V-2. If 24 VAC measured, turn off steamer power and:</p> <ul style="list-style-type: none"> • Check large orange wire from igniter module to pilot burner for continuity, and for insulation breaks. Replace wire if necessary. • Check spark electrode and pilot burner hood. • Check spark gap. Clean and regap if necessary. • Check if pilot burner is wet. Dry pilot burner if necessary. • Replace igniter module. <p>If 24 VAC not measured. Turn off steamer power, check for correct wiring and disconnect steamer from branch circuit.</p> <ul style="list-style-type: none"> • Place pilot switch SW3 in the ON position. Check switch continuity. Replace switch if meter indicates an open circuit. • Continuity check SW3-to-igniter module wiring. Replace defective wire.
Pilot burner ignited. Main valve will not open	<p>No 24 VAC between 24V-1 and 24V-2. Check the strength of the flame sensor. Insert an ammeter between the module and ground. A minimum of 3 microamps is required.</p> <ul style="list-style-type: none"> • Clean pilot burner and sensor. • Check wire for continuity. • Replace module. <p>24 VAC between 24V-1 and 24V-2</p> <ul style="list-style-type: none"> •• Replace gas valve.

3.4.2 Problem: Upper or Lower Cavity Will Not Turn On

Amber indicator on power switch is NOT on	<p>Place switch in ON position and check switch illuminated (older models)continuity with meter. If switch indicates OPEN in the ON position, replace switch.</p> <p>If switch Indicates continuity but the amber lamp is not on, replace switch.</p>
Defective steam generator high limit thermostat	<p>This device should be closed and will open only when steam generator temperature is in excess of 113°C. Check thermostat continuity with meter. If thermostat indicates OPEN, replace the thermostat.</p>

3.4.3 Problem: Steamer Cavity Turns Off During Operation

Steamer input power interrupted	<p>Check for cause of power failure. After power is restored, restart the steamer.</p>
High limit steam generator thermostat tripped	<p>Check if red neon is lit. If lit, press reset switch located next to pilot switch. If this thermostat trips repeatedly, investigate the cause and correct it prior to usage.</p>

3.4.3 Problem: Steamer Cavity Turns Off During Operation — Continued

PROBABLE CAUSES	CORRECTIVE ACTION
Defective high limit steam generator thermostat	Check for defective steam generator high limit thermostat. It should be closed and will open only when temperature exceeds 113°C. Check thermostat continuity with meter. If thermostat is OPEN, steam generator is less than 113°C., replace the thermostat.
Fuses blown	Check fuses F2 and F3 and replace as required
Water level probe shorted	Measure AC volts from probe to ground. An open probe will read 9-13 VAC. A shorted probe (sensing water) will read 0.1-8 VAC. If shorted clean the probe.
Transformer TR1 could be defective	Turn on unit power and check supply voltage. Then check for 24 VAC at transformer TR1 secondary terminals with wires disconnected. If 24 VAC is not present, replace TR1.
	WARNING DO NOT ATTEMPT TO LIGHT THE PILOT BURNER WITH A FLAME.
Pilot burner flame goes out	Check for proper pilot flame height. Check for defective main gas valve. Check for air flow that blows out pilot.
Gas supply turned off or interrupted	Close gas supply line and check for cause of gas supply loss. Have problem corrected.
Air in gas supply line or blockage	Check supply line. Clear or clean as required.
	WARNING DO NOT ATTEMPT TO LIGHT THE PILOT BURNER WITH A FLAME.
Pilot burner not ignited.	Perform the following "trial ignition," and look and listen for spark: Attempt to ignite the pilot burner. If this burner does not ignite within 90 seconds after the pilot switch is turned on, turn off the pilot switch. Wait at least five minutes before attempting to reactivate the pilot switch. Repeat the trial for ignition. The pilot may require several trials for ignition to bleed air from the gas piping. After the initial attempt, subsequent startups should require only about two to five seconds to achieve pilot ignition Spark observed. Turn on oven power. Refer to schematic diagram and check for 24VAC at igniter module terminals MV-PV and PV.

3.4.4 Problem: Steamer Cavity Does Not Achieve "Ready" Status

Low power supply - lower than 10 percent	Check voltage. Have customer call power company.
Steam generator overfills	See Problem 3.1.5

3.4.4 Problem: Steamer Cavity Does Not Achieve “Ready” Status — Continued

PROBABLE CAUSES	CORRECTIVE ACTION
Drain valve open (normally open valve)	Check / replace drain valve. Check for 20 VDC minimum at drain valve connector and that TR1 output is 22 VAC minimum.
Improper drain valve operation.	Check/replace water level board.
Steam generator ready thermostat malfunction	Test thermostat for shorted or open condition. Replace thermostat. Thermostat opens on temperature rise
Door open	Close door. Make sure door is secured by latch. Check door adjustment.
Door switch malfunction	Check door switch connectors to wiring harness. Check switch for continuity using magnet. Check position of magnet in door.
Low gas pressure supply	Check gas supply.
Gas manifold burners do not ignite	Check/replace low/high fire gas solenoids. Check connections and solenoid operation

3.4.5 Problem: Boiler Overfills

Water level probe circuit	Probe encrusted with lime. Clean probes. Check connections to probes for open circuit.
Water inlet valve not closing (Valve is normally closed)	Check inlet valve for debris in diaphragm which would keep valve open. Replace if necessary.
Water board not grounded properly	Perform continuity check and restore ground to water level control board.
Water board	Replace water level control board.

3.4.6 Problem: Water Leaks

Leaks around water inlet valve	Check/tighten hose clamps. Defective gasket in hose connection. Replace gasket.
Cracked water inlet valve housing	Replace water inlet valve
Leaks around heating elements and steam generator inlet fittings	Replace gasket, tighten fittings. Check for loose nuts.
Leaks at drain box	Check/tighten hose clamps
Leaks at drain box overflow	Check/clear blockage in drain

3.4.7 Problem: Improper Condensate Spray Operation

No condensate spray - Steam coming out vent	Check for defective spray water valve. Replace as required.
Too much condensate spray	Excessive water coming out of drain. Check incoming water line pressure. Correct pressure if necessary. Defective or missing spray nozzle or orifice.
Continuous condensate spray	Solenoid stuck in open position. Check solenoid. Door switch stuck in closed position. Check switch.

3.4.8 Problem: Fan Motor Does Not Operate

PROBABLE CAUSES	CORRECTIVE ACTION
Door may be open	Close steamer door
Steamer not ready	Check steam generator ready thermostat for open circuit. Refer to previous problems.
Timer in off position	Check timer position
Door switch may be open circuit	Test door switch with meter, with door closed. Check magnet position in door. Check that switch is plugged into harness - especially if door was reversed. If switch remains open, replace switch.
Door magnet missing or in wrong position	Check for proper position of magnet in door.
Motor connector loose	Check connector on circuit board
Motor voltage plug missing or incorrect position	Check circuit board for plug connection.
Motor mounting plate distorted	Inspect bracket to make sure there are no distortions which would prevent motor from turning freely.
Motor operational problem	Check motor seals for wear or misalignment, Check motor windings continuity.
Motor thermal protective switch open	Disconnect steamer from branch circuit and let motor cool. Disconnect wires from motor harness and check continuity between thermal switch terminals. Replace motor if reading between white and yellow wires is open.
Fan Motor relay contacts and coils	Check motor relay contacts K3 or K6 to make sure they are closed when relay K3 or K6 is energized. Replace control board if necessary.

3.4.9 Problem: Fan Motor Vibrates Excessively

WARNING BE SURE OVEN IS DISCONNECTED FROM BRANCH CIRCUIT POWER BEFORE PERFORMING ANY SERVICE WORK.	
Food on fan blades	Clean fan blades
Fan damaged	Replace fan
Loose mounting hardware	Tighten motor mounting hardware
Loose or missing motor housing nuts	Tighten and/or install missing nuts.
Motor bearings bad	Replace motor.

3.4.10 Problem: Indicator Lights Malfunctioning

No electricity to steamer when ON switch pressed	Check electrical supply connections.. Check building fuses or circuit breakers.
Clean light comes on after four minutes.	Check water supply hose for kinks and that it is connected. Clean water screen/filter on inlet valve. De-lime the steamer.

3.4.11 Problem: Steam Generator Does Not Operate Properly

Steam Generator not filling.	Turn unit ON. Connect electrical supply.
No steam	Connect water supply. Check for low water pressure. De-lime the steamer. Close steamer door(s).
Excessive steam escaping from rear of unit	Straighten, unclog hose. Check spray solenoid and nozzle.

4. Equipment Description

Your Groen HY-12GF(CE) HyCapacity HyPerSteam is designed to give years of service. It consists of a stainless steel cavity (cooking chamber) which is served by an electrically-heated atmospheric steam generator. The HY-24GF(CE) has two cavities and two generators. Two powerful blowers circulate the steam in each cavity to increase heating efficiency.

A dual position pan rack on the left side of the cavity can be quickly changed to allow for the use of either 12" x 20" steamer pans, or 18" x 26" bake pans. The following table lists pan capacities:

Pan Size/Type	Number of Pans	
	HY-12GF(CE)	HY-24GF(CE)
12 x 20 x 2½" (steamer)	12	24
12 x 20 x 4" (steamer)	8	16
13 x 18" (half-size bake)	24	48
18 x 26" (bake)	12	24

A stainless steel cabinet encases the cavity, steam generator and a control compartment which houses electrical components.

Access to the control compartment is gained by removing the right side louvered panel. Door hinges are reversible so that the door may be opened to the left or right. Operating controls are on the front panel.

The drain system for each cavity includes a spray condenser, which helps keep steam from coming out of the unit drain.



Water Conditioning

It is essential to supply the steam generator with water that will not form scale. Even though the steam generator is engineered to minimize scale formation, scale development depends on the hardness of your water and the number of hours the equipment operates.

In some areas of the country, water is low enough in minerals to avoid scale formation. But most water supplies are full of minerals which form scale. It is this scale which could lead to an early component failure.

Your water utility can tell you about the minerals in your water. The water going to the steam generator should have between 20 and 40 parts per million (ppm) total dissolved solids (TDS) and should have a pH (acidity rating) of 7.0 or higher.

Please follow these simple precautions:

5. **Do not rely on unproven water treatments** which are sold as scale prevention or scale removers. **They don't always work.** The best way to prevent scale is to supply the purest possible water (10 - 20 ppm TDS).
6. If your water contains scale-forming minerals, as most water does, use a well-maintained water softener. Whether an exchangeable softener cartridge or a regenerating system is chosen, a regular maintenance program is essential.

7. Installing a water meter between the softener and the steamer will provide an accurate gauge of water use, and will help determine when to exchange cartridges or regenerate the softener. Using a water softener will provide longer generator life, higher steam capacity, and reduce maintenance requirements.
8. If you notice a slowdown in steam production, check the unit for scale build-up. Heavy scale reduces the unit's ability to boil water, and can even cause heating elements in the steam generator to overheat and burn out.

Groen Steamers are also available with an option for two separate water intakes — one for the steam generator (soft water), the other for the spray condenser (untreated water). The steam generator only uses 14 to 31% of a steamer's water feed. Since softener systems are typically sized by total GPH (gallons per hour), the second intake could reduce treatment requirements by up to 80%, resulting in significant savings.

On the HY-12GF/24GF, the twin water connections are on the rear of the unit, with the treated water intake beneath that for untreated water.

Start-Up

After the HY-12GF(CE) Steamer has been installed, test it to be sure that it is operating correctly.

1. Remove all literature and packing materials from the interior and exterior of the unit.
2. Make sure the water supply line is open.
3. Make sure the gas supply line is open and that the gas shut-off valve in the unit is in the OPEN position. This valve is located behind an access panel on the right side of the unit.
4. Turn on electrical service to the unit. The unit will **not** operate without electrical power. Do not try to operate the unit during a power failure.
5. The steamer will not operate until the pilot burner has been ignited. To light the pilot, activate the pilot switch located next to the main gas valve. When the pilot ignition sequence has been successful, a green light will glow.
6. The “trial for ignition” period is roughly 90 seconds. If the pilot burner does not light within 90 seconds of pilot switch activation, the ignition system automatically stops gas flow to the pilot burner and the gas lockout neon will be lit. Wait five minutes, then press the Gas Reset Switch to start. During the first start-up, the pilot may require several trials for ignition to bleed air from the piping. Subsequent start-ups should only need about five seconds to achieve pilot ignition.

NOTE: See Automatic Pilot Operation at the end of this section.

7. Once the pilot burner flame has been established (the green light on the switch is on), press the ON switch for the desired steamer cavity. The steam generator will fill with water.

NOTE: The door **MUST** be closed for the main (high) heater to work.

8. When the steam generator has filled, the main and low burners will automatically light. The READY light should come on within 10 minutes, to show that the water has reached its standby temperature. When the READY light is on, the operator may choose to take any one of the following steps:

- a. Set the timer to the desired time for timed steaming.

- b. Turn the timer knob to the manual ON position for continuous steam.
- c. Let the unit wait at standby temperature.



WARNING
WHEN YOU OPEN THE DOOR, STAY AWAY FROM STEAM COMING OUT OF THE UNIT. THE STEAM CAN CAUSE BURNS.

9. To shut down the unit, turn the ON switch to the off position. The steam generator will automatically drain. You may also switch off the pilot switch to conserve energy.
10. If your steamer works as described, it is functioning correctly and is ready for use.

Automatic Pilot Operation

Once the pilot burner has been lit, it essentially functions as a standing pilot. When the pilot switch is on, if the pilot is accidentally extinguished (by a very strong gust of wind or the like), it will re-ignite automatically. The unit will shut off completely for a few seconds while the pilot is re-ignited. The unit will then come back on and resume operation in the mode and at the (running) timer value existing just prior to shutdown. The pilot switch may be turned off during “off hours” to conserve energy.

If the pilot burner ever fails to re-ignite automatically within 90 seconds, after the unit has been running, the Gas Lockout neon on the front control panel will light. Wait five minutes and press the Gas Reset switch to reignite the pilot. Should ignition problems persist, contact your authorized Groen Service Agency.

NOTE: For operation at high altitudes (2000 feet and above) consult the Groen Food Service Engineering Department.

Operation

WARNING
ALL POTENTIAL USERS OF THE EQUIPMENT SHOULD BE TRAINED IN SAFE AND CORRECT OPERATING PROCEDURES.

NO ATTEMPT SHOULD BE MADE TO OPERATE THIS EQUIPMENT DURING A POWER FAILURE.

NOTE: Before the steamer can be operated as described in this section, the pilot burner flame must be established. For details see the Initial Start-Up section and the Automatic Operation of Pilot, above.

A. Controls (See Illustration)

Operator controls are on the front right of the unit.

The control panel on **new models** has the following touch pads and indicator lights:

- The ON/OFF touch pad gets the HyPerSteam ready for use, or shuts it off.
- The READY indicator light shows that the steam generator is at standby temperature and the cavity is hot enough to begin steaming.
- The CLEANING indicator light is lit when the unit is operating in the cleaning mode.
- The SERVICE indicator light shows when the water level probes have stopped working, and need to be cleaned (normally an indication of lime deposits).

When one probe is not working, the SERVICE light flashes briefly every few seconds. If both probes fail, the light flashes continuously and the beeper will sound.

- The HI TEMP indicator light comes on when the steam generator is too hot.

The unit will automatically shut off, and cannot be turned on again until the steam generator cools and the HI TEMP indicator light goes out.

- The TIMING indicator light stays on when the timer is running.
- The CLEAN touch pad is used to start the automatic 30 minute cleaning cycle.

B. Operating Procedure

1. Press the ON switch/pad for the steamer. The steam generator will fill, and heat until the READY light comes on. (About 10 minutes.)
2. Load food into pans in uniform layers. Pans should be filled to about the same levels, and should be even on top.
3. Open the door and slide the pans onto the supports. If you will only be steaming one pan, put it in the middle position.

4. Close the door. With the READY indicator lit, take one of the following steps:

- If you want to steam the food for a certain length of time, set the timer for that period. The timer will automatically run the steamer for the set time and then turn it off. A red light will come on and a beeper will sound. Steam production stops.
- If you want to steam continuously, turn the timer to the manual ON position. A green light will come on. The unit will continue steaming until you stop it by turning the timer to OFF. When steaming continuously **YOU MUST CONTROL STEAMING TIME.**



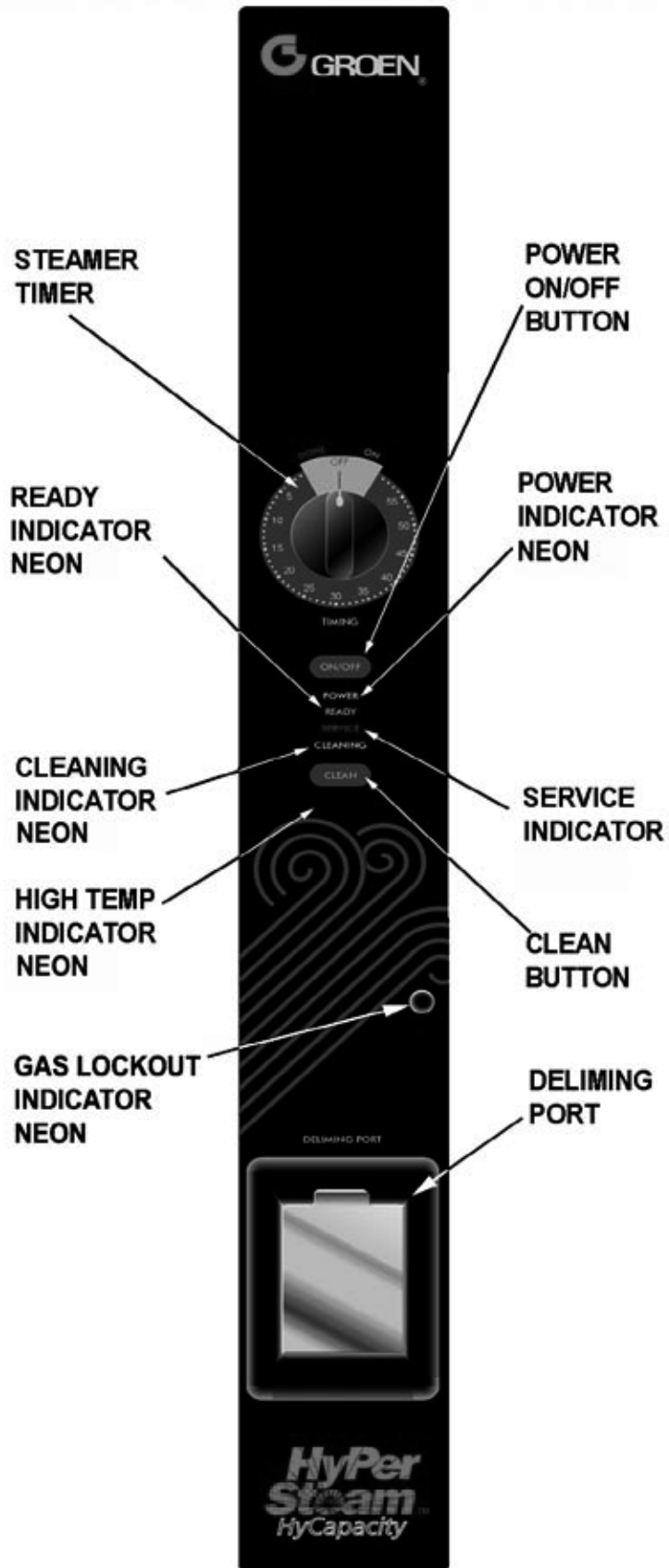
WARNING
WHEN YOU OPEN THE DOOR, STAY AWAY FROM THE STEAM COMING OUT OF THE UNIT. THE STEAM CAN CAUSE BURNS.

5. Open the door. Remove the pans from the steamer, using hot pads or oven mitts to protect your hands from the hot pans.
6. To shut down the unit, press the ON switch/pad to OFF. The steam generator will automatically drain.

Gas Lockout Indicator and Reset Control

Should the pilot fail to ignite during start-up, and indicator on the control panel (see below) will light, and the supply of gas to the unit will be halted.

When this happens, the ignition process may not be started again for five minutes. After that time, press the Lockout Reset switch located behind the front panel and try to start the unit again. If the lockout continues to occur after three attempts, contact your Groen Service Agency for assistance.



Cleaning

To keep your steamer in proper working condition, clean it periodically by the following procedure. Regularly scheduled cleaning reduces the effort required to clean the steam generators and cavities.

A. Suggested Tools

1. Mild detergent
2. Stainless steel exterior cleaner, like Zepper from Zep Manufacturing Company.
3. Lime-A-Way (from Ecolab) or equivalent de-liming agent. De-liming agent should contain phosphoric acid, not to exceed 30% total volume. **See warning about chlorides and sulfamic acid below.**
4. Degreaser, like Encompass, Malone 34, Puritan Puribruite, or Con-Lie.
5. Cloth or sponge
6. Plastic wool or a brush with soft bristles
7. Spray bottle
8. Measuring cup
9. Nylon pad
10. Towels
11. Plastic disposable gloves
12. Funnel



WARNING

BEFORE CLEANING THE OUTSIDE OF THE STEAMER, DISCONNECT THE ELECTRIC POWER SUPPLY. KEEP WATER AND CLEANING SOLUTIONS OUT OF CONTROLS AND ELECTRICAL COMPONENTS. NEVER HOSE OR STEAM CLEAN ANY PART OF THE UNIT.

DO NOT MIX DE-LIMING AGENTS (ACID) AND DE-GREASERS (ALKALI) ANYWHERE IN THE UNIT.

TAKE PRECAUTIONS TO AVOID CONTACT WITH ANY CLEANERS, DE-LIMING AGENT, OR DE-GREASER, AS RECOMMENDED BY THE SUPPLIER. MANY CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES, AND CLOTHING. CAREFULLY READ THE WARNINGS AND FOLLOW THE DIRECTIONS ON THE LABEL OF EACH CLEANING AGENT.

EVEN WHEN THE UNIT HAS BEEN SHUT OFF, DO NOT PUT HANDS OR TOOLS INTO THE COOKING CHAMBER UNTIL THE FAN HAS STOPPED TURNING.

DO NOT OPERATE THE UNIT UNLESS THE TWO REMOVABLE INTERIOR PARTITIONS HAVE BEEN RETURNED TO THEIR PROPER LOCATIONS.

DO NOT USE A CLEANING OR DE-LIMING AGENT THAT CONTAINS ANY SULFAMIC ACID OR ANY CHLORIDE, INCLUDING HYDROCHLORIC ACID (HCl). TO CHECK FOR CONTENT OF THESE SUBSTANCES, REFER TO THE "MATERIAL SAFETY DATA" SHEET PROVIDED BY THE CLEANING AGENT MANUFACTURER.

IMPORTANT

DO NOT USE ANY METAL MATERIAL (SUCH AS METAL SPONGES) OR METAL IMPLEMENTS (SUCH AS A SPOON, SCRAPER OR WIRE BRUSH) THAT MIGHT SCRATCH THE SURFACE. SCRATCHES MAKE THE SURFACE HARD TO CLEAN AND PROVIDE PLACES FOR BACTERIA TO GROW. DO NOT USE STEEL WOOL, WHICH MAY LEAVE PARTICLES IMBEDDED IN THE SURFACE WHICH COULD EVENTUALLY CAUSE CORROSION AND PITTING.

B. Procedure

1. Outside

- a. Prepare a warm solution of mild detergent as instructed by the supplier. Wet a cloth with this solution and wring it out. Use the moist cloth to clean the outside of the unit. Do not allow freely running liquid to touch the flue, exhaust outlet, controls, control panel, any electrical part, or any open louver.
- b. To remove materials stuck to the unit, use plastic wool, a fiber brush, or a plastic or rubber scraper with detergent solution. Do **not** use any metal material (such as metal sponges) or metal implements (such as a spoon, scraper, or wire brush) that might scratch the surface. Scratches make the surface hard to clean and provide places for bacteria to grow. Do **not** use steel wool, which may leave particles imbedded in the surface and cause corrosion and pitting.
- c. Stainless steel surfaces on the outside of the unit may be polished with a recognized stainless steel cleaner (Zepper, etc.).

2. Steam Generator and Cooking Chamber — On a regularly scheduled basis or if the SERVICE neon is on, follow the simple de-liming instructions below. This procedure should be followed for each cavity. **REMEMBER: DON'T ALLOW DE-LIMING AGENTS TO MIX WITH DEGREASERS.**

- a. Ensure that the unit is turned on.
- b. Set the timer to "OFF".
- c. Using a glove or towel for hand protection, carefully open the de-liming port. The port may be hot, and a small amount of pressureless steam may escape as you open the port.
- d. Add one liter of de-liming agent (or until the agent is 12 mm below the rim of the port).
- e. Close the de-liming port cover.
- f. Holding in the "CLEAN" button, press and release the ON button.
- g. The clean cycle will start and will take about 30 minutes.
- h. When the cleaning cycle is complete the CLEANING light will flash and the unit will beep.

- i. Wipe out the inside of the steamer cavity.
- j. If the steamer is to be used, turn the "ON" switch on and set the timer to the "ON" position. When READY neon turns on, the steamer is ready for operation.

NOTES:

1. If the clean cycle ends abruptly, the CLEANING neon will flash 5 times per second. This indicates that the clean cycle was aborted.



WARNING
SHOULD A CLEAN CYCLE BE INTERRUPTED, IT IS POSSIBLE THAT SOME CLEANING SOLUTION IS STILL PRESENT IN THE STEAM GENERATOR. RE-RUN THE CLEAN CYCLE AND CONFIRM THAT THE WATER IS DRAINING.

2. In the event of power outage during a clean cycle, rerun the clean cycle when the power is restored.
3. To abort a clean cycle, turn the "ON" switch off for one second and turn it back on. **REMEMBER, DE-LIMING AGENT MAY STILL BE PRESENT IN THE STEAM GENERATOR**

If the SERVICE neon is on:

1. Take the actions listed in the Troubleshooting Section of this manual. Turn the steamer off for 10 seconds and then re-start.
2. Repeat steam generator cleaning cycle.



The De-Liming Port is at the Bottom of the Control Panel.

Maintenance

The HY-12GF Steamer is designed for minimum maintenance, and no user adjustments should be necessary. Certain parts may need replacement after prolonged use.

If there is a need for service, only Groen personnel or authorized Groen representatives should perform the work.

Always supply water with a low mineral content that meets the standards outlined in the **Water Conditioning** section of this manual.

If steam or condensate is seen leaking from around the door, take the following steps:

1. Check the door gasket. Replace it if it is cracked or split.
2. Inspect the cooking chamber drain to be sure it is not blocked.

3. Adjust the door latch pin to allow for changes that might occur as the gasket ages.
 - a. Loosen the lock nut at the base of the latch pin, then turn the latch pin $\frac{1}{4}$ turn clockwise, and tighten the lock nut.
 - b. After adjustment, run the unit to test for further steam leakage.
 - c. If there is still leakage, repeat the adjustment.
 - d. Continue adjusting the pin clockwise until the door fits tightly enough to prevent leakage.

NOTE: It is important that the flue outlet be checked regularly. Debris covering the flue outlet can cause a potentially hazardous condition. Remove any foreign material before using this equipment.

Limited Warranty To Commercial Purchasers*
(for Areas Outside of the U.S. and Canada)

Groen Foodservice Equipment ("Groen Equipment") has been skillfully manufactured, carefully inspected and packaged to meet rigid standards of excellence. Groen warrant their 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 areas outside the U.S. and Canada.
- II. Damage during shipment is to be reported to the carrier, and is not covered under this warranty, and is the sole responsibility of the 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, draw off 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, or 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 Food Service Equipment Ordered After October 1, 1995)**



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