

OPERATOR MANUAL

IMPORTANT INFORMATION, KEEP FOR OPERATOR

This manual provides information for:

MODELS

DH/INA/2-100 *Domestic* STEAM JACKETED KETTLE

- Self-Contained
- Gas Heated
- Floor Mounted
- Tilting



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

FOR YOUR SAFETY

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

POST IN A PROMINENT LOCATION

Instructions to be followed in the event user smells gas. This information shall be obtained by consulting your local gas supplier. As a minimum, turn off the gas and call your gas company and your authorized service agent. Evacuate all personnel from the area.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

NOTIFY CARRIER OF DAMAGE AT ONCE

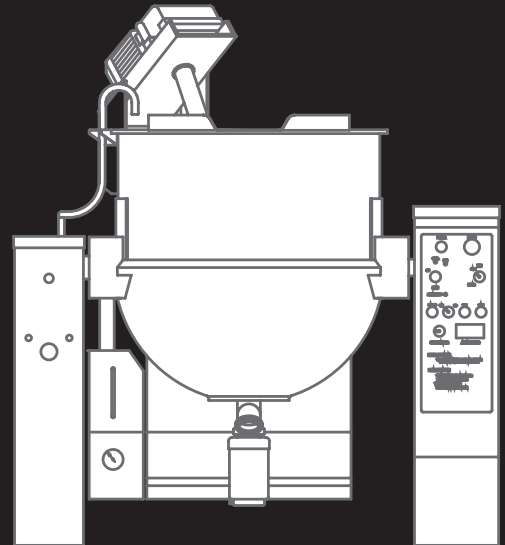
It is the responsibility of the consignee to inspect the container upon receipt of same and to determine the possibility of any damage, including concealed damage. Unified Brands suggests that if you are suspicious of damage to make a notation on the delivery receipt. It will be the responsibility of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

Manufacture Service/Questions 888-994-7636.

Information contained in this document is known to be current and accurate at the time of printing/creation. Unified Brands recommends referencing our product line websites, unifiedbrands.net, for the most updated product information and specifications.

PART NUMBER 121018, REV. D (05/08)

G GROEN®



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A DOVER COMPANY

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IMPORTANT — READ FIRST — IMPORTANT

- WARNING:** FAILURE TO DISCONNECT POWER BEFORE SERVICING COULD RESULT IN ELECTROCUTION AND DEATH.
- WARNING:** IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.
- WARNING:** DO NOT PLACE HANDS, TOOLS OR HOSES IN KETTLE WHILE AGITATOR IS MOVING. AGITATOR CAN BE JOGGED WHILE KETTLE IS TILTED.
- WARNING:** THE UNIT MUST BE INSTALLED BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING. UNIT MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- WARNING:** DO NOT ATTACH THE UNIT TO A TYPE “B” VENT. IT COULD CAUSE FIRE OR PROPERTY DAMAGE.
- WARNING:** DO NOT CONNECT ANY PIPING TO THE SAFETY VALVE. IT MUST BE FREE TO VENT STEAM AS NEEDED. TO AVOID BURNS FROM THE VENTED STEAM THE VALVE DISCHARGE SHOULD POINT DOWNWARD.
- DANGER:** ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND THE UNIT COULD RESULT IN ELECTROCUTION AND DEATH.
- CAUTION:** BE SURE ALL OPERATORS READ, UNDERSTAND AND FOLLOW THE OPERATING INSTRUCTIONS, CAUTIONS AND SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL.
- CAUTION:** DO NOT OVERFILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS A MINIMUM OF 2-3” (5-8 CM) BELOW THE KETTLE BODY RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING AND SAFE TRANSFER OF PRODUCT.
- CAUTION:** KEEP FLOORS IN FRONT OF KETTLE WORK AREA CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY TO AVOID SLIPS OR FALLS.
- WARNING:** KEEP WATER AND SOLUTIONS OUT OF CONTROLS AND BURNERS. NEVER SPRAY OR HOSE DOWN THE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC.
- CAUTION:** MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. TAKE PRECAUTIONS: WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ WARNINGS AND FOLLOW DIRECTIONS ON CLEANER LABELS .
- NOTICE:** NEVER LEAVE A SANITIZER IN CONTACT WITH STAINLESS STEEL SURFACES LONGER THAN 10 MINUTES. LONGER CONTACT CAN CAUSE CORROSION.
- WARNING:** FAILURE TO PERIODICALLY CHECK SAFETY VALVE OPERATION COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.
- WARNING:** WHEN TESTING, AVOID EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.
- WARNING:** TO AVOID INJURY, READ AND FOLLOW ALL PRECAUTIONS STATED ON THE LABEL OF THE WATER TREATMENT COMPOUND.
- WARNING:** BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY AND CLOSE THE MAIN GAS VALVE. ALLOW FIVE MINUTES FOR GAS TO VENT.
- CAUTION:** USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR AUTHORIZED DISTRIBUTORS CAN CAUSE INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.
- WARNING:** KEEP AREA AROUND KETTLE FREE AND CLEAR OF ALL COMBUSTIBLE MATERIALS. FAILURE TO DO SO COULD RESULT IN FIRE OR PROPERTY DAMAGE.
- WARNING:** OPENING BOTTOM DROP VALVE EMPTIES KETTLE CONTENTS. CONTENTS MAY BE HOT.
- CAUTION:** HEATING AN EMPTY KETTLE MAY CAUSE THE RELEASE OF STEAM FROM THE SAFETY VALVE.
- Important:** Service Performed by Other than Factory Authorized Personnel Will Void All Warranties.

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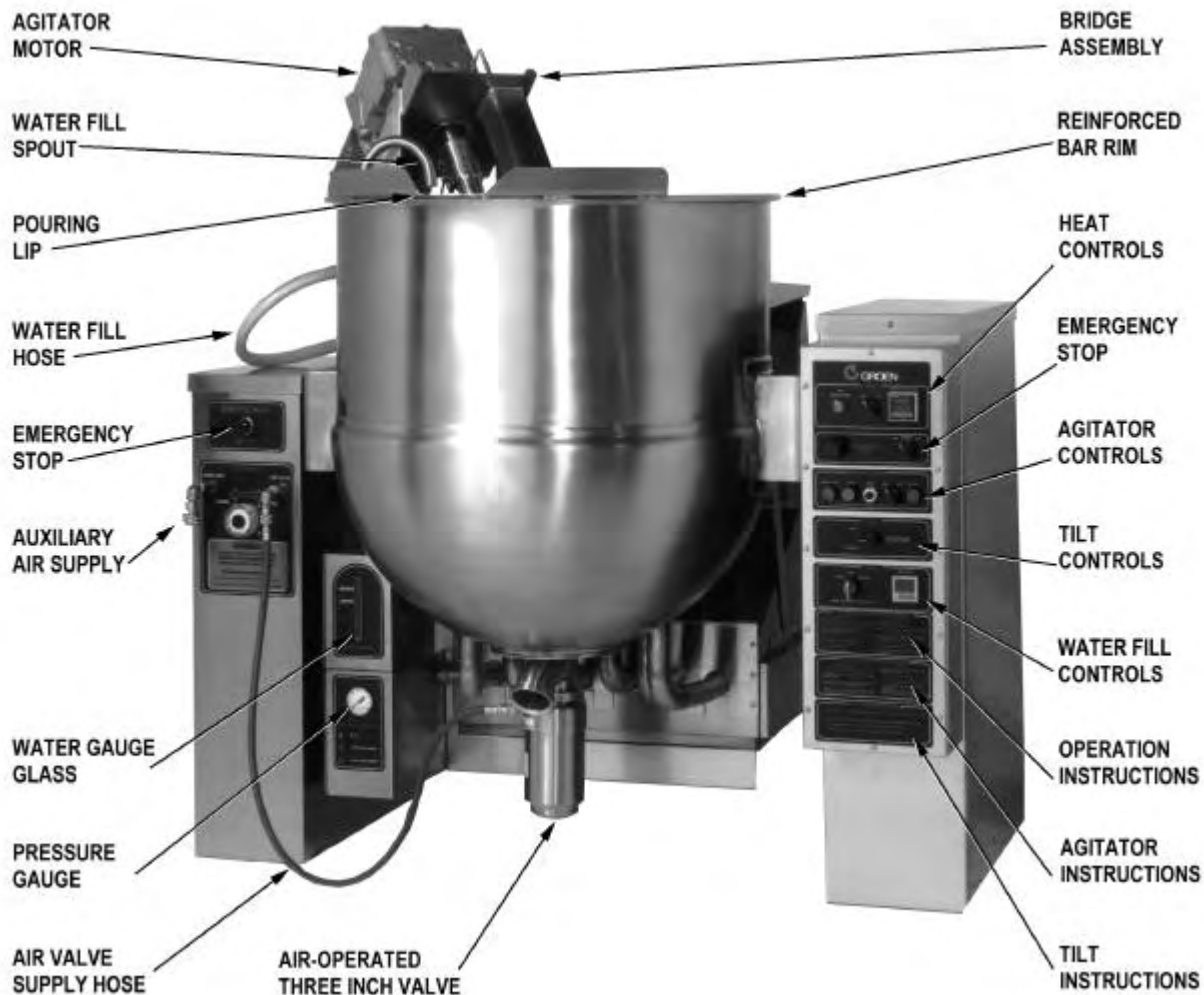
Equipment Description

Groen Model DH/INA/2-100 is a stainless steel, steam jacketed, floor mounted, tilting kettle with a self-contained, gas heated steam source. The Model DH/INA/2-100 is equipped with the INA/2 style inclined agitator/mixer. The kettle body is welded into one piece and furnished with a reinforced bar rim and welded "butterfly" pouring lip. The interior of the kettle is polished to a 180 emery grit finish and the exterior given a uniform Number 4 finish.

The unit is ASME shop-inspected and is registered with the National Board for working pressures up to 50 PSI. Kettle supports mount directly to the floor by use of lag bolts. A power tilt feature is standard. Options available include: Air-operated bottom outlet valve, 1½, two or three inch manual ball valve, "Gallon Master" metering system, product outlet strainer, and Honeywell DPR 100C Recorder.

The self-contained steam source is heated by either propane or natural gas. The ignition system is spark or standing pilot. The kettle is charged at the factory with chemically pure water containing corrosion inhibitors. The steam source provides kettle temperatures of 150 to approximately 280 ° F. Controls for the unit include a thermostat, pressure gauge, water level glass, safety valve, pressure limit control, low water cutoff, gas regulator valve, and a printed circuit board that monitors product temperature. The gas supply shuts down automatically when the kettle is tilted. The agitator operates only in partial rotation mode when the kettle is tilted.

The unit must be specified for use with natural or propane gas. Service connections are required for gas, electric, air (if the air-operated valve is specified), water (if Gallon Master metering is specified).



KETTLE CHARACTERISTICS

Model	Ignition	Firing Rate, BTU / Hour	
		Natural Gas	Propane Gas
DH-INA/2-100	Electronic	360,000	360,000

Dimensions				
Kettle Capacity	Kettle Diameter	Overall Width	Overall Front-to-Back	Rim Height
100 Gal (378.5 L)	34" (86 cm)	64¼" (163 cm)	54" (137 cm)	54¼" (138 cm)

Inspection & Unpacking

WARNING
THIS UNIT MUST BE INSTALLED BY PERSONNEL WHO ARE QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING. IMPROPER INSTALLATION CAN CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO THE EQUIPMENT. THE UNIT MUST BE INSTALLED IN ACCORDANCE WITH APPLICABLE CODES.

The unit is delivered completely assembled, on a heavy skid surrounded by a wooden crate.. Immediately upon receipt, inspect the unit for damage. Report any shipping damage or an incorrect shipment to the delivery agent.

Write down the model number, serial number, and installation date of your unit, and keep this information for future reference. Space for these entries is provided at the top of the Service Log provided at the rear of this manual. The unit is anchored to two metal shipping channels (braces) which may be discarded after

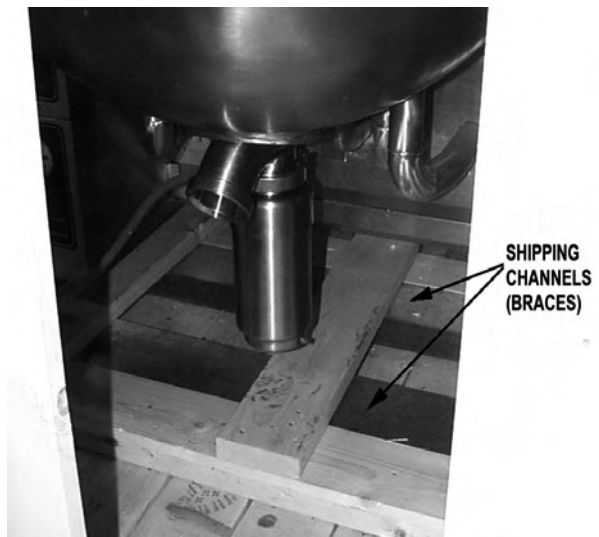
installation. Carefully unbolt one side of shipping channel. Position the kettle and remove second shipping channel.

WARNING
SHIPPING CHANNELS (BRACES) ARE VERY HEAVY. USE PROPER LIFTING AND HANDLING EQUIPMENT FOR MOVEMENT

CAUTION
WATCH OUT FOR NAILS AND SPLINTERS WHILE DISMANTLING THE SHIPPING CRATE.



The unit is delivered crated and bolted to a heavy skid.



Two heavy shipping channels (braces) anchor the unit for shipment.

CAUTION

UNIT HAS AN APPROXIMATE SHIPPING WEIGHT OF 1750 LBS. (795 KG.). FOR SAFE HANDLING, INSTALLER SHOULD OBTAIN PROFESSIONAL RIGGING HELP AS NEEDED AND USE MATERIAL HANDLING EQUIPMENT (SUCH AS A FORKLIFT, OVERHEAD HOIST, OR PALLET JACKS) TO REMOVE THE UNIT FROM THE SKID AND MOVE IT TO ITS PLACE OF INSTALLATION.

When installation is to begin, unbolt the unit from the skid, and lift the unit straight up and off the skid.

UTILITY REQUIREMENTS

1. Electrical Supply Connection-3 Phase Operation Only

- a. The panel must be removed to gain access to the electrical supply connection. Open the wiring and control panel by unscrewing the eight screws which hold it in place. Grasp the panel by the base at the bottom edge. While lifting the panel, swing its bottom toward you. Set the panel aside.
- b. Supply Voltage: The unit must operate at the rated nameplate voltage, plus or minus 10 percent.
- c. Wiring Information: Refer to the electrical schematic for wiring information. A copy of the schematic is found inside the control panel and at the rear of this manual.
- d. Terminal Block: The terminal block for incoming power is located at the back of the control compartment. The ground terminal is located next to the terminal block. **The unit must have a separate ground wire for safe operation.**
- e. High Voltage safety



WARNING
TO AVOID DAMAGE OR INJURY, FOLLOW THE ELECTRICAL SCHEMATIC EXACTLY WHEN CONNECTING THE UNIT.

- f. Branch Circuit Protection: Each conductor must have over-current protection. Refer to the label on the back of the unit for the proper wire type and size. Connections to the unit must be watertight.

We strongly recommend that the DH/INA/2-100 Kettle have its own branch circuit protection. Current and power demands for the different voltage units are as follows:

Maximum Voltage Three Phase Current, Per Line

208	7 AMP
240	7 AMP
480	3.5 AMP

2. Water Connection(s)

Install a check valve in the incoming cold water line, if required by local plumbing codes. Water pressure in the line should be between 30 and 60 PSIG (210 and 420 kPa).

A 3/4 NPT connector is needed to attach the water supply to the water inlet valve. The minimum recommended water feed line diameter is 1/2 inch (13mm).

Do not allow the connection to leak, no matter how slowly. **THE INSTALLER MUST PROVIDE THE CHECK VALVE (ANTI-SYPHON DEVICE) IF REQUIRED BY LOCAL CODES.**

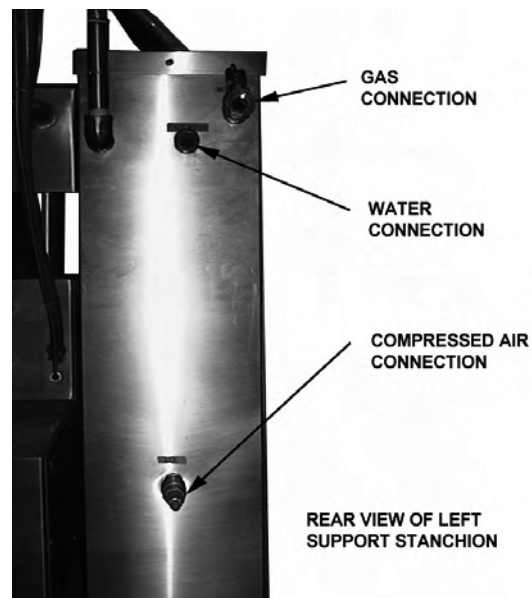
3. Air Connection.

Connect 1/2 NPT air line to the air connector.

4. Gas Connection

Connect 1 NPT gas line to the gas inlet valve on the rear of the left stanchion. Be sure that the gas supply meets the following criteria:

	Natural Gas	Propane
Minimum	7" W.C.	11" W.C.
Maximum	10" W.C.	14" W.C.



Gas, Water and Air Connections are on the back of the left stanchion

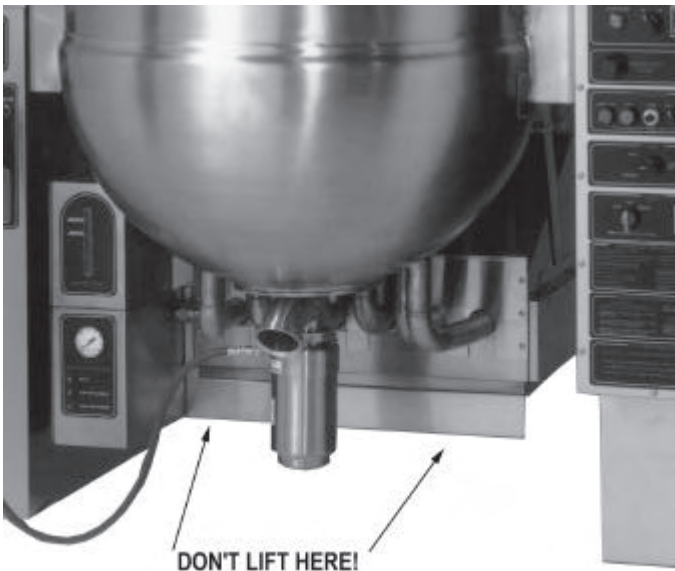
WARNING
THIS UNIT IS FOR COMMERCIAL USE. NEVER USE HOME OR RESIDENTIAL GRADE GAS CONNECTIONS. THEY DO NOT MEET GAS CODES AND COULD BE HAZARDOUS.

Installation and Initial Start-Up

A. Installation

The unit should be installed in a well-ventilated room on **non-combustible flooring**. Anything which might obstruct or restrict the flow of air for combustion and ventilation must be removed. The area directly around the appliance must be free of combustible materials.

1. Installation requires connection with air, gas, water and electric services. See items 8 to 14 for details.
2. To protect the unit from damage, leave it on the shipping pallet until installation. When ready to start installation, disassemble the shipping crate, unbolt the stanchions, disconnect the shipping channels (braces) and raise the unit straight up off the skid.
Do not lift the kettle at the heat exchanger.



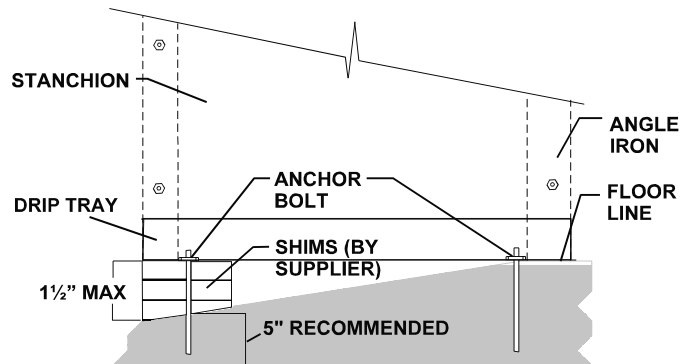
Lifting the kettle at the heat exchanger could damage the unit.

3. **Install the unit with at least 22 inches clearance from the back walls.** Also leave enough room for easy cleaning, maintenance, and service.
4. **Do not alter the kettle in any way. Any mechanical, electrical, or gas change must be approved by the Groen Food Service Engineering Department.**

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

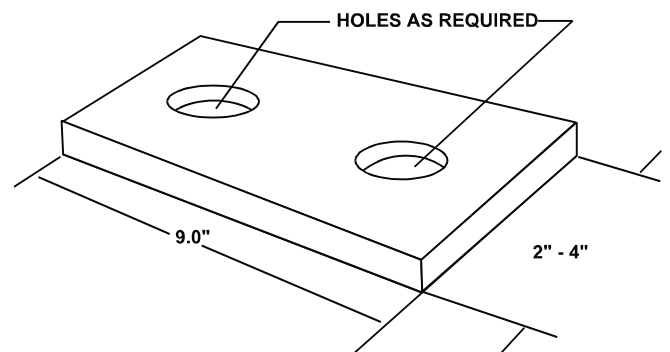
5. Level the unit as follows.

The stanchions are each supplied with a drip tray in which the angle frame is placed. Steel leveling shims (not included, supplied by installer) are placed between the drip tray and frame so that the drip tray will be flush with the floor, as shown.



Start with the right stanchion and level it as shown in the sketch. Once the right stanchion is levelled and properly anchored front to rear, level the left stanchion front to rear and side to side.

Level the entire unit side to side by placing a four foot carpenter's level on the kettle rim. Once the rim is level from side to side, rotate the level to check front to back. Shim the left stanchion in the same manner as the right, and anchor the equipment firmly to the floor through the shims.



Recommended shim size is shown below.

6. Make sure the jacket water level is correct by confirming that it is between the marks on the gauge glass. If the water level is low, follow the instructions under "Jacket Filling" in the "Maintenance" Section of this manual.

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

7. To protect personnel from steam coming from the safety valve, the open end of the elbow at the outlet must be directed downward. If it is not, turn the elbow to the correct position.



8. **INSTALL**
 Check valve in the incoming cold water line, if required by local plumbing codes, as described in Paragraph 2, page 6



DANGER
ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND UNIT COULD CAUSE ELECTROCUTION AND DEATH.

9. Provide electrical service per Paragraph 1, Electrical Supply Connector in the Inspection and Unpacking,

Requirements Section, Page 6. Use ½ inch waterproof conduit and waterproof connections. Observe local Codes and/or The National Electrical Code in accordance with ANSI/NFPA 70 - latest edition. **AN ELECTRICAL GROUND IS REQUIRED.** The electrical schematic is located on the inside of the service panel. **In Canada,** provide electrical service in accordance with the Canadian Electrical code, CSA C22.1 Part 1 and/or local codes.

10. The internal gas lines of the unit were cleaned and closed with a gas cock before the unit was shipped from the factory. Ensure that external gas lines are free of lint, dirt, metal chips, sealant, grease, oil or other contaminants, before you connect the line to the kettle.
11. Connect the kettle gas cock to the gas service main using a 1" NPT gas connection.
12. Installation must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z 223.1-1988 (or latest edition). The unit should be installed in an well-ventilated room with a provision for adequate air supply. The best ventilation will use a vent hood and exhaust fan with no direct connection between the vent duct and the unit flue.

Do NOT obstruct the flue or vent duct after installation. In Canada, the installation must conform with the CAN/CGA B149 Installation Codes for Gas Burning Appliances and Equipment and/or local codes.

13. Adequate space for proper service and operation is required. Do **NOT** block any air intake spacings to the combustion chamber or obstruct the air flow by piling or stacking anything near the kettle.
14. After the kettle has been connected to the gas supply, all gas line joints must be checked for leaks. **DO NOT USE A FLAME TO CHECK FOR LEAKS.** A thick soap solution or other suitable leak detector should be used.
15. The appliance and its individual shutoff valve must be **disconnected** from the gas supply piping system during any pressure testing of that system at test pressures **in excess of ½ PSIG (3.48 kPa).** The appliance must be **isolated** from the gas supply piping system by closing its individual manual shutoff valve during any testing of the gas system at pressures **equal to or less than ½ PSIG (3.48 kPa).**
16. Connect the kettle compressed air supply to a d " NPT air line

17. Check the following to confirm that your kettle has been installed properly:

- Enough room between the kettle and nearby objects for cleaning and service.
- Minimum clearance of 24 inches from sides and 24 from back.
- Unit vented to an exhaust hood.
- Kettle level.
- Correct amount of water in the jacket.
- Safety valve outlet pointed down.
- Connected with a waterproof electric power cable in accordance with Paragraph 1 Electrical Supply Connecton (above) and local electrical codes.
- Gas lines cleaned before connection.
- Gas connected with 1 NPT or larger.
- Gas line joints checked for leaks.
- No obstruction to air supply or venting.
- Gas lines (1 NPT) connected to supply.
- Water supply connection (¾") completed.

B. Initial Start-Up

After the kettle has been installed, the installer should test to ensure that the unit is operating correctly.

1. Remove all literature and packing materials from the inside and outside of the unit. Clean out any material that might clog or damage the product outlet.
2. Put water into the kettle until the water is about 12 inches deep. Test operation of the product outlet ball valve by opening it all the way then closing it before all the water runs out.
3. Make sure the supplies of gas and electric power are on.
4. Following "Start Kettle Heating" instructions in the "Operating Instructions" section of this manual, begin heating the water at the highest thermostat setting. The pilot lamp should come on as soon as you pull out the emergency stop and turn on power. Heating should continue until the water boils.
5. To turn off the unit, follow "To Stop Kettle Heating" in "Operating Instructions," below.

If the kettle functions as described, it is ready for use. If the unit does not operate as designed, contact an authorized Groen Service agent.

Operation

WARNING
ANY POTENTIAL USER OF THE EQUIPMENT MUST BE TRAINED IN SAFE AND CORRECT OPERATING PROCEDURES

A. Controls

Refer to the drawing on the following page for identification and function of kettle controls. Numbers in parentheses in the operating instructions below correspond to these controls.

B. Operating Instructions

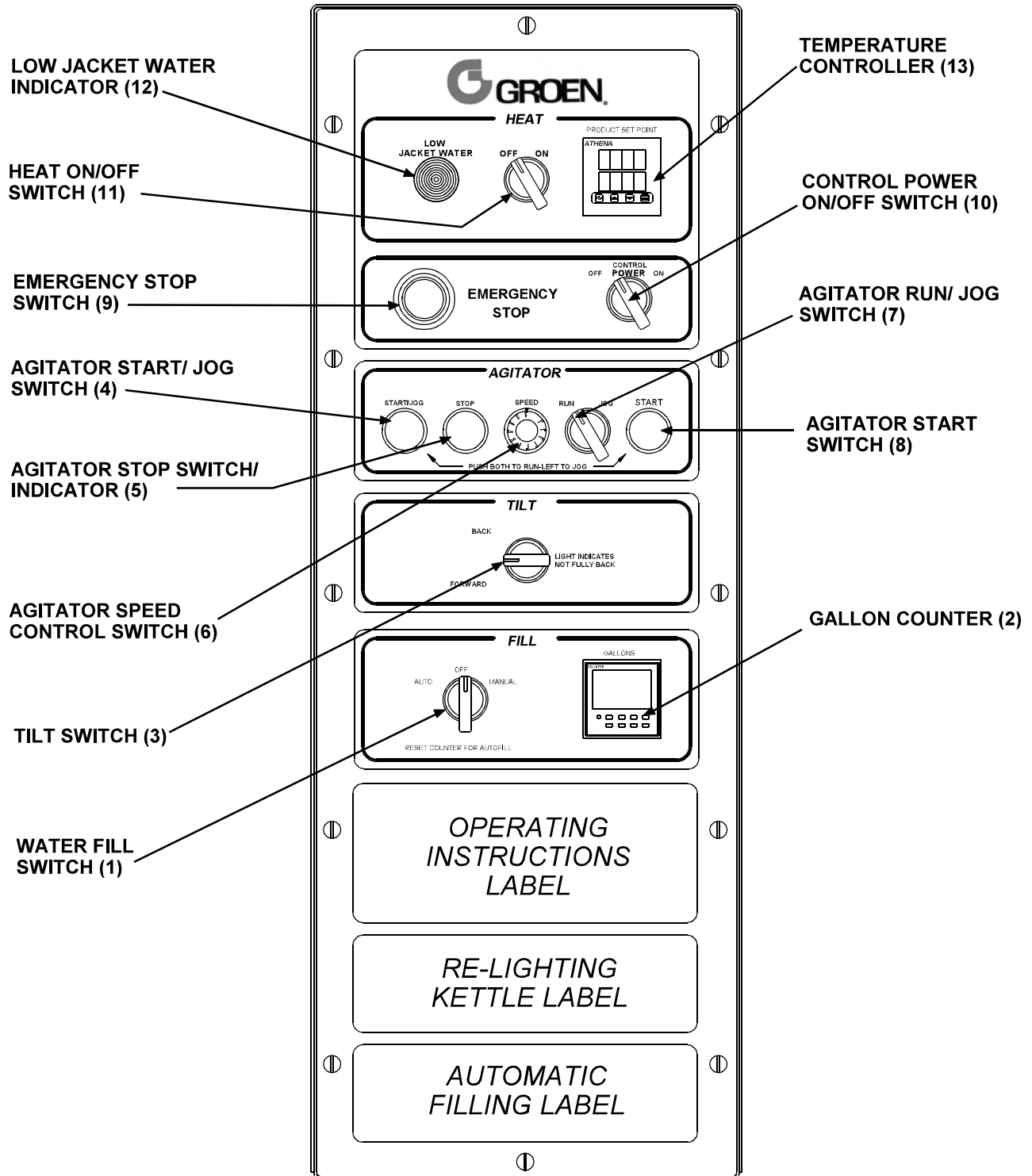
WARNING
KEEP AREA AROUND KETTLE FREE AND CLEAR OF ALL COMBUSTIBLE MATERIALS

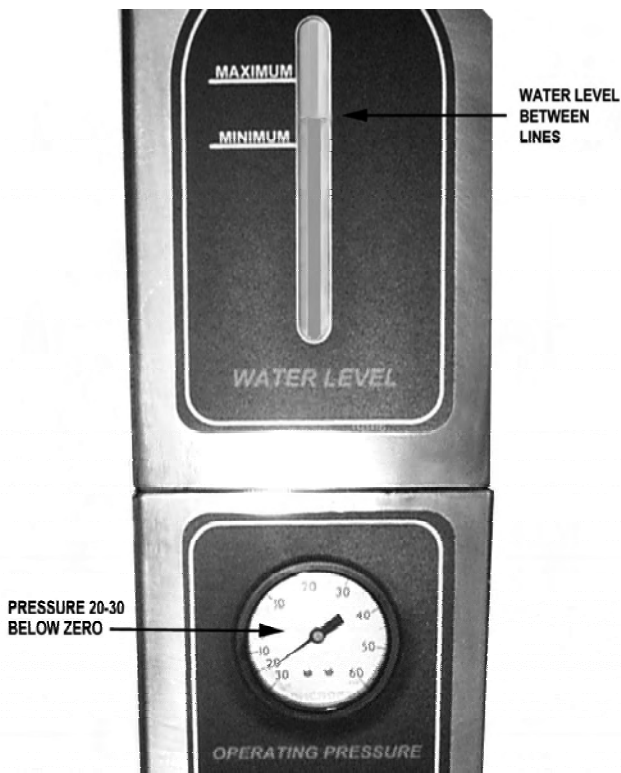
CAUTION
HEATING AN EMPTY KETTLE MAY CAUSE THE RELEASE OF STEAM FROM THE SAFETY VALVE.

1. To Start Kettle

- a. CHECK THE WATER LEVEL IN THE JACKET EVERY DAY. The level must be between the lines on the glass. If the level is low, see "Jacket Filling" in the "Preventive Maintenance" section of this manual.
- b. With the kettle cold, check the pressure gauge. If it does not show 20 or more inches of vacuum (a reading of 20 to 30 below 0), see "Jacket Vacuum" in the "Preventive Maintenance" section of this manual.

Right Stanchion Control Panel





Check water level and vacuum daily.

c. Start Kettle Heating

1. Open main gas supply valve.
2. Pull out the emergency stop (9) and turn on the control power on-off switch (10).
3. Ensure kettle is fully upright (tilt light (3) must be off).
4. Pilot and pilot indicator lamp (near water sight glass on front panel) will light

(DO NOT ATTEMPT TO LIGHT PILOT WITH FLAME).

5. Fill kettle with water or product.
6. Turn heat switch (11) to on.
7. Select desired product temperature using the temperature controller (13).

c. To Stop Kettle Heating

Turn heat switch (11) or control power (10) off.

d. To Relight Kettle

1. Close main gas supply valve.
2. Set control power switch (10) to off.
3. Wait five minutes then start the kettle.

2. To Run Agitator



WARNING
DO NOT PLACE HANDS, TOOLS, OR HOSES IN KETTLE WHILE AGITATOR IS MOVING. AGITATOR CAN BE JOGGED WHILE KETTLE IS TILTED.
ENSURE AGITATOR AREA IS CLEAR BEFORE RUNNING OR JOGGING THE AGITATOR. SERIOUS INJURY CAN RESULT.

- a. Ensure kettle is upright (tilt light must be off).
- b. Place run/jog switch (7) in run position.
- c. Set the agitator speed dial (6) to desired speed (1 - 10 RPM).
- d. Press the left (4) and right (8) agitator start switches at the same time. This is for safety, to avoid accidental start-up of the agitator.



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

3. To Stop Agitator.

- a. Press the red stop button (5) or
- b. Press the emergency stop button (9).

4. To Jog Agitator

The operator can “jog” or partially rotate the agitator to assist in shifting product, or to help clean interior kettle and agitator surfaces. Do not press the Jog button with any personnel near the kettle agitator.



WARNING
AGITATOR WILL JOG WITH KETTLE IN ANY POSITION. TO AVOID SERIOUS INJURY KEEP CLEAR WHEN JOGGING AGITATOR.

- a. Place run/jog switch (7) in the jog position.
- b. Press and release the start / jog button (4) as needed. (The jog speed is fixed.)

5. To Tilt Kettle



WARNING
DO NOT STAND IN FRONT OF KETTLE DURING TILTING. PRODUCT IS HOT AND WILL CAUSE BURNS.

To tilt kettle forward, rotate the tilt switch (3) clockwise. Turn counter-clockwise to tilt back.

- b. When the tilt indicator (3) is lit, it indicates that the kettle is not fully upright.
- c. The kettle will not heat or agitate while tilted. **It WILL jog!**

6. To Fill Kettle Automatically with Water

- a. Select desired gallons by pressing the Gallons Counter (2) keys. Do not set counter to a value greater than the remaining capacity of the kettle.
- b. Move fill switch (1) to auto. Reset the gallons counter (2) to zero (if needed).
- c. After filling stops, turn the fill switch (1) to off. The switch must be set to off before another fill cycle can begin.
- d. More water can be added by rotating the fill switch (1) to manual.
- e. The gallons counter (2) will show any added water.

7. If Electric Power Fails

Do not attempt to operate the unit. The main burner cannot be lit until power is restored.

Cleaning

A. KETTLE

1. Suggested Tools

- a. Detergent and sanitizer, or a combination agent such as Micro-Quat from ECOLAB.
- b. Kettle brushes.
- c. Bottle brush for cleaning the draw-off valve.



WARNING
KEEP WATER AND SOLUTIONS OUT OF CONTROLS AND BURNERS. NEVER SPRAY OR HOSE THE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC.

2. Precautions

Before any cleaning operation:

- a. Turn off the main burner by turning the heat control dial to "OFF".
- b. Cut off electric power to the unit

3. Procedure

- a. Clean food contact surfaces as soon as possible after use, preferably while the kettle is still warm. If the unit is in continuous use, clean and sanitize inside and outside at least once every 12 hours.
- b. Scrape and flush out large amounts of food residues. Be careful not to scratch the kettle with metal implements.

CAUTION
NEVER LEAVE A SANITIZER IN CONTACT WITH STAINLESS STEEL FOR LONGER THAN 30 MINUTES. LONGER CONTACT CAN CAUSE CORROSION.

- c. Prepare a solution of the detergent/cleaning compound as instructed by the supplier. Clean the unit thoroughly. A cloth moistened with cleaning solution can be used to clean controls, housing, electrical conduit, etc.



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

- d. Rinse the kettle thoroughly with hot water. Then drain completely.
- e. As part of the daily cleaning program, clean all inside and outside surfaces that may have been soiled. Remember to check such parts as the underside of the cover, control housing, etc.
- f. To remove materials stuck to the equipment, use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool along with the detergent solution. To make washing easier, let the detergent solution sit in the kettle and soak into the residue, or warm the detergent solution briefly. Do not use any metal material (like metal sponges) or metal (like 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 eventual corrosion and pitting.
- g. The outside of the unit may be polished with a recognized stainless steel cleaner like “Zepper” from Zep Manufacturing Company.
- k. When the equipment needs to be sanitized, use a sanitizing solution equivalent to one that supplies 100 parts per million chlorine. Obtain advice on the best sanitizing agent from your supplier of sanitizing products. Following the



Use a brush, rag or other non-abrasive material to clean products that are stuck or burned on.



Don't use metal implements or steel wool.

supplier's instructions, apply the sanitizing agent, after the unit has been cleaned and drained. Rinse off the sanitizer thoroughly

- i. It is recommended that the unit be sanitized just before use
- j. If there is difficulty removing mineral deposits or a film left by hard water or food residues, clean the kettle thoroughly. Then use a de-liming agent, such as Lime-Away from ECOLAB, following manufacturer directions. Rinse and drain the unit before further use.
- k. If especially difficult cleaning problems persist, contact your cleaning product supplier for assistance. The supplier has a trained technical staff with laboratory facilities to serve you.

B. AGITATOR

1. Suggested Tools and Materials

- a. Cleaner such as Klenzade HC-10 or HC-32 from ECOLAB, Inc.
- b. Stiff brush
- c. Sanitizer, such as Klenzade XY-12

2. Precautions



WARNING
SHUT OFF POWER TO THE UNIT TO AVOID POSSIBLE ELECTRIC SHOCK.

KEEP WATER AND SOLUTIONS OUT OF CONTROLS, ELECTRICAL WIRING AND DRIVE MECHANISM. NEVER SPRAY OR HOSE MIXER.

3. Procedure

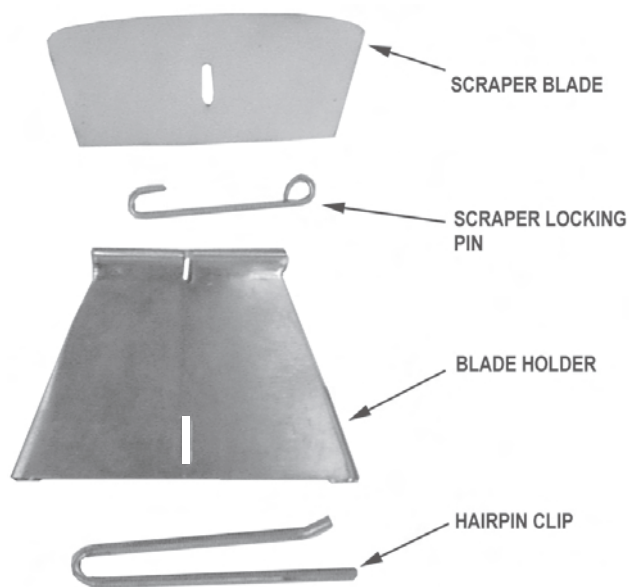
- a. Wash the agitator as soon as possible after use. If the unit is used continuously, thoroughly clean and sanitize all parts of the mixer at least once every 12 hours.
- b. Disassemble the scrapers and clean them along with the rest of the agitator. Once clean, reassemble each of them.

To disassemble a scraper:

- 1) Pull the hairpin clip out of the yoke. As needed to make this easier, squeeze the ends of the clip closer together. (See illustrations).
- 2) Remove the locking clip to take the blade out of its holder.

To reassemble a scraper:

- 1) Push the blade into the holder as far as it will go.
- 2) From the back (convex) side of the holder (the side which will face the kettle wall) hook the locking clip through the slot in the blade. Position the loop of the locking clip so that the hairpin clip will pass through it when the blade is reattached to the yoke.



Be sure that the hairpin clip passes through the loop of the locking pin assembly during reassembly.

CAUTION
ALWAYS MAKE SURE THAT THE SCRAPER CURVES THE SAME WAY AS THE KETTLE. A REVERSED SCRAPER WILL NOT SCRAPE, AND CAN CAUSE SERIOUS DAMAGE.

- 3) Position the scraper in the yoke, then insert the hairpin clip. Make sure that the hairpin clip passes through the loop of the locking clip. Squeeze the ends of the hairpin clip closer together to pass them through the second side of the yoke.
- c. Prepare a hot solution of the cleaning compound as instructed by the supplier. Wash the agitator parts and rinse them well. (Use cloth moistened

with cleaning solution to clean other parts of the mixer).

- d. To remove materials stuck to the agitator use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool with the cleaning solution. To make washing easier, let the cleaning solution soak into the residue.
- e. When cleaning stainless steel parts do not use any abrasive material (metal sponges, scouring powder) or metal implements (spoon, scraper, wire brush) which might scratch the surface.

Scratches make the surface more difficult to clean, and provide breeding places for bacteria. Do not use steel wool, which might leave particles imbedded in the surface and could lead to corrosion and pitting.

- f. As part of the daily cleaning, clean all soiled surfaces. Remember to check such parts as the back and underside of the drive housing.
- g. When the agitator needs to be sanitized, use a sanitizing solution that supplies 200 parts per

million available chlorine. Get advice about the best sanitizing agents from your supplier of sanitation products. Following supplier directions, apply the sanitizer after the agitator has been washed, then rinse it completely off. We recommend that the agitator be sanitized just before use.

- h. The exterior of the unit may be polished with a recognized stainless steel cleaner such as "Zepper" from Zep Manufacturing Company.

CAUTION
NEVER LEAVE A SANITIZER IN CONTACT WITH A STAINLESS STEEL SURFACE FOR LONGER THAN 30 MINUTES. LONGER CONTACT CAN CAUSE CORROSION. (see pages 11 & 12)

Preventive Maintenance

This section describes actions the operator must take to maintain warranty coverage and to keep the unit working safely and efficiently.

1. Jacket Vacuum/Removing Air from Jacket

Every day, while the kettle is cold, read the pressure/vacuum gauge. A positive pressure reading or a vacuum reading between zero and 20 on the pressure/ vacuum gauge indicates excess air in the jacket. Air in the jacket slows kettle heating and can prevent the kettle from reaching operating temperature.

To remove air:

- a. Start the kettle. (See the "Operation" section of this manual).
- b. Make sure the elbow on the outlet of the safety valve is turned so it will direct escaping steam down toward the floor.
- c. When the pressure/vacuum gauge reaches a positive pressure reading of five PSI, release entrapped air and steam by lifting the safety valve lever for about one second. Repeat this step, then let the valve lever snap back into the closed position, so the valve will seat properly and not leak.

2. Test Safety Valve

At least twice a month, test the safety valve. Test the valve with the kettle operating at 15 psi (105 kPa), by holding the test lever for at least five

seconds. Then release the lever and permit the valve to snap shut. If the lever does not activate, there is no discharge, or the valve leaks, stop using kettle immediately and contact a qualified factory service representative.



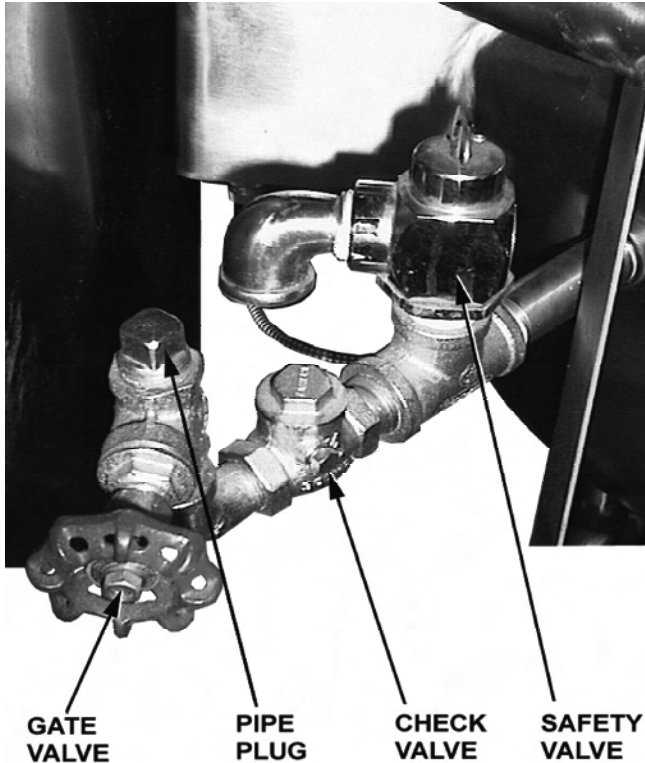
WARNING
AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. SEVERE BURNS CAN RESULT ON EXPOSED SKIN.

FAILURE TO CHECK SAFETY VALVE OPERATION PERIODICALLY COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.

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

3. Jacket Filling

Every day, **before you turn on the unit**, make sure the water level is between the marks on the water gauge glass. The jacket was filled at the factory with the proper amount of treated water. From time to time, you may need to restore the water to its proper level, either because water was lost as steam during venting or because treated



Water is added to the jacket at the pipe plug location near the safety valve.

water was lost by draining. The procedure follows.

- a. If you are replacing water lost as steam, use distilled water. **Do not use tap water.** If you are replacing treated water that was drained from the jacket, prepare more treated water first, as directed below.

- b. Allow the kettle to cool **completely**. Remove the pipe plug from the jacket fill assembly. Then open the gate valve and pour in the distilled or treated water. Using a funnel will help you in this process. Hold the safety valve open while you pour, to let air escape from the jacket. Continue adding water until the water level rises to a point between the marks on the gauge glass.

- c. Close the gate valve.

- d. Air that gets into the jacket during the filling operation must be removed because it will make heating less efficient. Follow the procedure in "Jacket Vacuum," above to restore a negative pressure reading.

4. Water Treatment

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

- a. Fill a mixing container with the amount of water required (distilled water preferred). The DH/INA/2-100 requires 5½ gallons (20.4 liters)

- b. Follow instructions. Apply to Groen water treatment kit part number 110324.

- c. Hang a strip of pH test paper on the rim of the container, with about 1 inch of the strip below the surface of the water.

- d. Stir the water continuously, while you slowly add water treatment compound until a color between indicating a pH of 10.5 and 11.5 is reached. (Shown on the pH test kit chart.) Judge the pH by frequently comparing the test strip with the color chart provided in the pH test kit.

- e. Use a measuring cup to add the compound so that you may record the exact amount used. The amount may be used again, if the same water sources and compound are used in the future. However, it is best to check the pH each time treated water is prepared.

5. Venting System

Periodically check the hood to make sure that nothing will block or hinder the free flow of exhaust gases.

Sequence of Operation

The following “action-reaction” outline is provided to help service personnel understand how the unit functions for systematic troubleshooting and fault isolation.

When the operator turns the heat off/on switch to “ON”, electric power at 120V is supplied to the thermostat. The automatic gas control is then energized. Simultaneously, an electric arc is established at the spark gap, and the automatic valve for the pilot burner opens. When the electric spark ignites gas flowing from the pilot burner, a pilot flame probe detects the flame. The probe sends a control signal that causes the spark to shut off and a circuit to close for 24 V power.

The 24 V provides power for the heating indicator light and the main automatic valve. Gas flowing from the main burner is ignited by the pilot flame. If a pilot flame is not sensed within 60 seconds after the spark, a timer shuts down the whole operation.

As heat from the main burner brings the temperature of steam in the jacket up to the thermostat setting, the thermostat switch opens. With electric power cut off, the main burner valve closes and turns off the burner. When jacket steam cools below the thermostat set point, the thermostat switch closes and begins another heating cycle. On-off cycling continues to maintain the kettle at the desired temperature.

The thermostat controls heating by alternately calling for flames at the full capacity of the main burner or signaling the control to shut the burner completely off. Because the control works in this “all or nothing” way, the kettle will heat as fast as it can until it reaches the set temperature, no matter what that temperature is. Turning the thermostat dial to a higher setting will cause heating to continue longer, until the kettle reaches the higher temperature, but it cannot make the unit heat any faster.

The unit is equipped with a Pressure Limit Switch, Low Water Cut-Off and a Safety Valve. **These safety features operate as follows:**

1. Pressure limit switch: If jacket steam pressure exceeds 43 PSI, the switch opens and breaks the electrical circuit to the main gas valve solenoid coil. The valve closes and stays closed until jacket pressure decreases to 44 PSI. The pressure limit switch then closes, energizes the gas valve coil, and allows operation to resume.
2. Low-water cutoff: As long as steam jacket water touches the cutoff electrode, kettle operation can continue. If the water falls below the end of the electrode, an electrical control circuit is broken, and the main gas valve closes. Jacket water must be restored to a safe operating level before the kettle can be heated again.
3. Safety valve: If steam pressure in the jacket reaches 50 PSI, the valve will open and relieve the excess pressure.

Maintenance

A Service Log is provided at the rear of this manual. Each time service is performed on this Groen equipment, enter the date on which the work was done, and who did it. Keep this manual with the equipment.

1. Periodic Service

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

- a. Every day, when the kettle is cold, the pressure/vacuum gauge should show a

vacuum of 20 to 30 inches. If it does not, see “Jacket Vacuum” in the “Preventive Maintenance” section of this manual.

- b. Every day, the jacket water level must be between the marks on the gauge glass. If it is not, see “Jacket Filling” in the “Preventive Maintenance” section of this manual.
- c. Keep the primary air shutter of the burner gas jets free of dust and lint.
- d. The pilot flame should be blue and should envelop about ½ inch of the flame sensor tip.

- e. Keep electrical wiring and connections in good condition.
- f. Keep the inside of the control console clean and dry.
- g. Keep the burner ports clean.
- h. Keep the burner shield and adjacent parts clean.
- i. Twice a month, check the safety valve to make sure that it works freely. When gauge pressure is about 5 PSI, lift the valve lever enough to vent steam, then quickly let it snap back into place.

WARNING
AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. SEVERE BURNS CAN RESULT ON EXPOSED SKIN.

2. Component Replacement

When replacement involves breaking a gas pipe connection, check the new connection with soap solution or other appropriate leak detector.

DO NOT USE A FLAME TO TEST FOR LEAKS. Internal wiring is marked as shown on circuit schematic drawings. Be sure that new components are wired in the same manner.

Troubleshooting

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

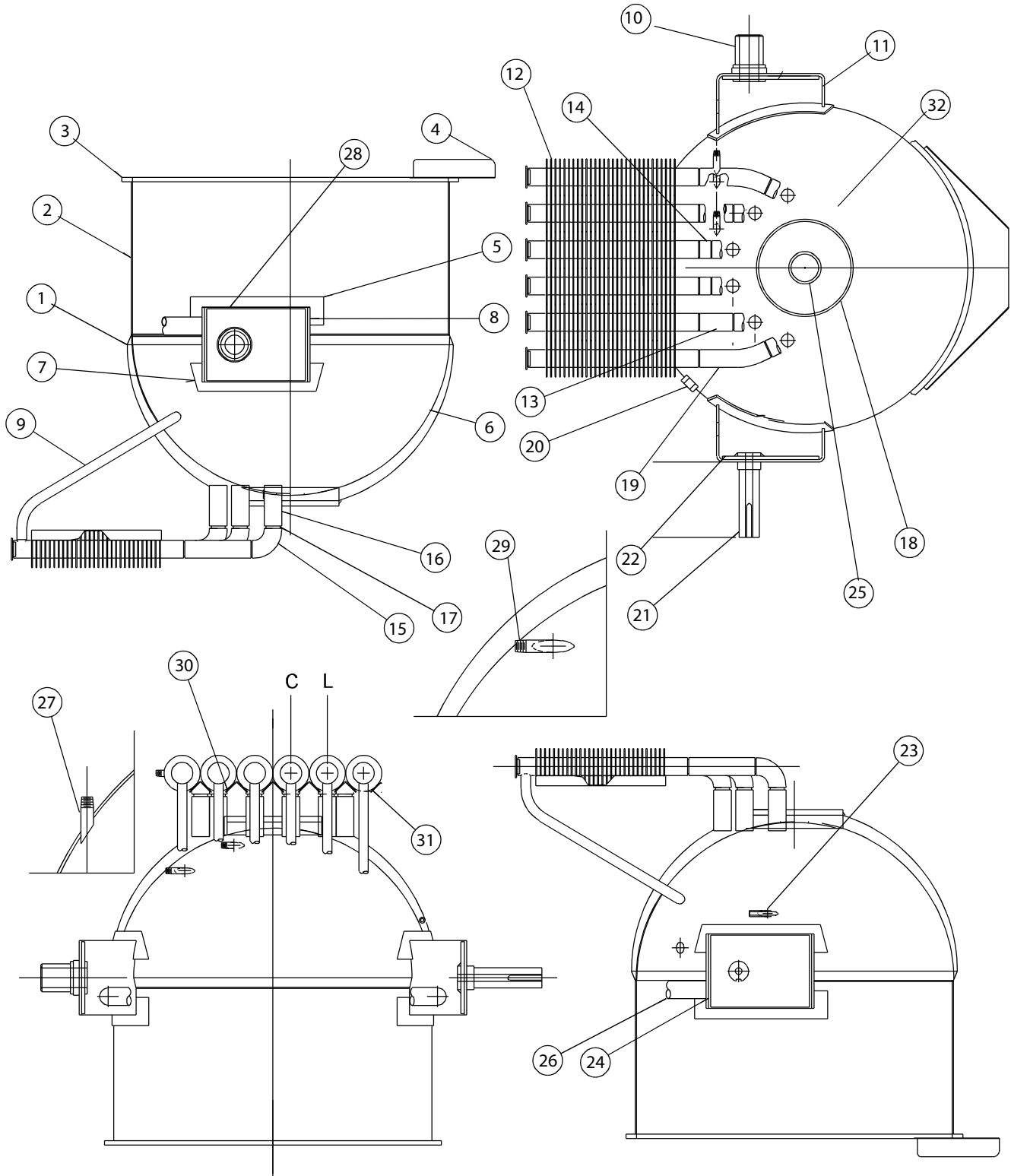
WARNING
BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY AND CLOSE THE MAIN GAS VALVE. ALLOW FIVE MINUTES FOR UNBURNED GAS TO VENT.

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

SYMPTOM	WHO	WHAT TO CHECK <small>Xindicates items which must be performed by an authorized technician.</small>
Kettle continues heating after it reaches desired temperature.	User	a. That the temperature controller is correct.
Kettle stops heating before it reaches the desired temperature.	User	a. That the temperature controller setting is correct. b. That the Heat on/off switch is ON. c. Reading of the pressure/vacuum gauge. If it is not 20 to 30 below zero when the kettle is cold, see "Jacket Vacuum" in the "Preventive Maintenance" section of this manual.
Pilot burner and/or burner will not light or goes out after working for a while.	User	a. That the main gas valve is open (handle is in line with the gas pipe) b. That the Heat on/off switch is ON. c. That the temperature controller is at the correct setting. d. Use the "Start Kettle Procedure." See the manual's "Operation" Section. e. Jacket water level. If it is low, see "Jacket Filling" in the "Preventive Maintenance" section of this manual. f. That electric power is turned on at the circuit breaker or fuse box, and that power is being supplied to your building. g. Gas supply to your building. h. Is steam trap working?
Kettle heats slowly.	User	a. Reading of the pressure/vacuum gauge. If not 20 to 30 below zero when the kettle is cold, see "Jacket Vacuum" in the "Preventive Maintenance" section of this manual.

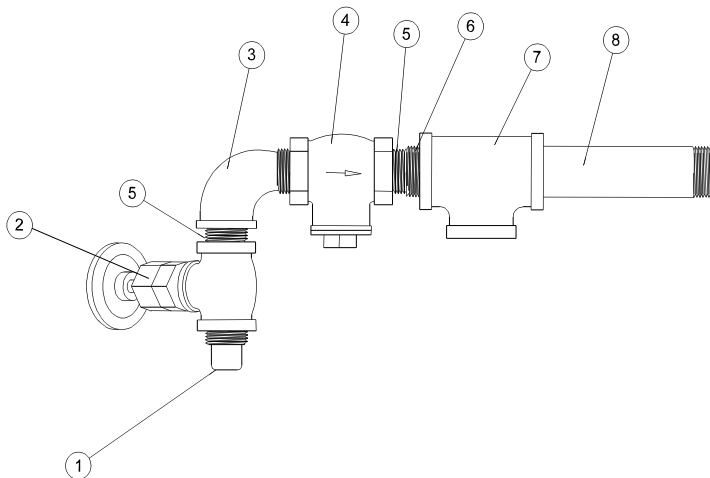
SYMPTOM	WHO	WHAT TO CHECK X indicates items which must be performed by an authorized technician.
	Auth Service Rep Only	b. Check operation of pressure limit switch. X
Safety valve pops.	User	a. Reading of the pressure/vacuum gauge. If it is not 20 to 30 below zero when the kettle is cold, see "Jacket Vacuum" in the "Preventive Maintenance" section of this manual.
System does not produce a spark	Auth Service Rep Only	a. Thermostat, and close the contacts if they are open. X b. AC voltage between terminals "2" and "GR". If it is not 24 Volt: (1) Check high limit switch, which should be closed. X (2) Replace the transformer. X c. Pilot spark gap. Regap, if it is not 7/64 inch. X d. Pilot electric ceramic for crack or break. X e. That the high tension cable is firmly attached and in good condition. If cracked or brittle, replace the pilot. X f. Replace the electronic portion of the G60 electronic system. X
Spark is present but the pilot will not light.	Auth Service Rep Only	a. That the pilot valve is securely connected to terminals "1" and "GR". Some models have the pilot valve grounded internally. X b. That gas pressure meets the control manufacturer's specifications. X c. For gas at the pilot. If it is not flowing: (1) Check the pilot gas line for kinks and obstructions. X (2) Replace the pilot valve. X d. That the pilot spark gap is 7/64 inch and located in the pilot gas stream. If not, adjust or replace the pilot. X e. Pilot orifice, and clean, if necessary. X f. For drafts. Shield the pilot burner, if necessary. X
Pilot lights, but main burner will not come on, and spark does not stay on.	Auth Service Rep Only	a. For 24 V between terminals "3" and "GR". If voltage is not correct, replace the G60 electronics. X b. That the gas pressure meets the control manufacturer's specifications. X c. Electrical connections to the main valve to terminals "3" and "GR", to assure that they are securely attached. If they are, replace the main valve."
Pilot lights, but main burner will not come on, the spark stays on.	Auth Service Rep Only	a. Sensor cable, to make sure of secure and attachments to the sensor and to terminal "4" the G60. X b. That the cable is not grounded. If it is, correct the ground fault. X c. Cable for continuity and insulation condition. X d. Sensor ceramic for cracks. X e. That sensor probe current is less than 0.7 microamp, by disconnecting the sensor cable from terminal "4" and connecting a DC microammeter between the sensor cable terminal and terminal "4". If the current is equal to or greater than 0.7 microamp, replace the G60 electronics. X If the current is less than 0.7 microamp: (1) Check the gas pressure. X (2) Clean the pilot assembly. X (3) Tighten mechanical and electrical connections. X f. Pilot application and correct to increase sensor probe current, by: (1) Increasing or decreasing pilot orifice size. X (2) Shielding the pilot from drafts. X

Kettle Body Parts



Parts List - Kettle Body

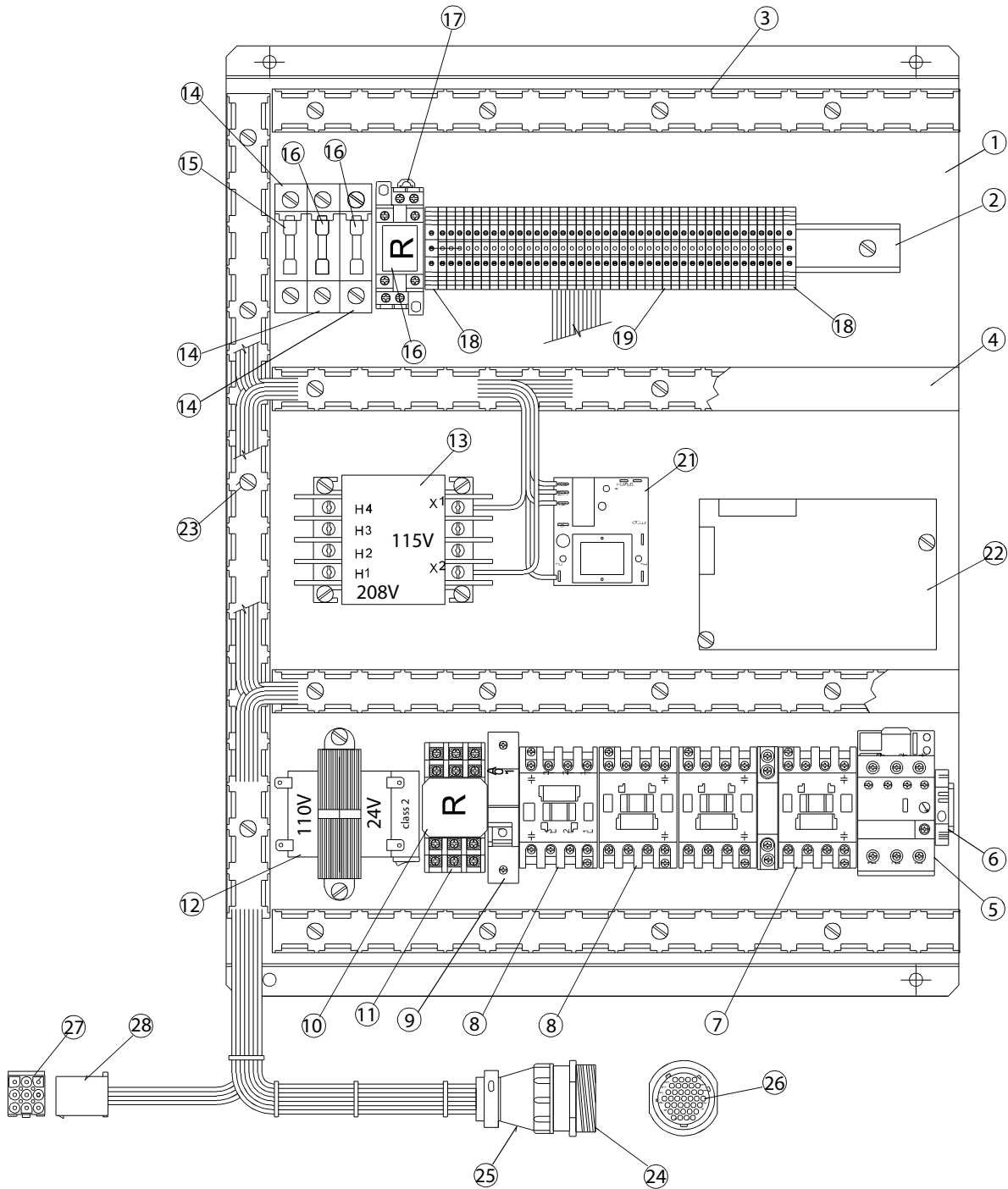
Key	Description	Part No.	Key	Description	Part No.
1	Outer Jacket	003501	17	Ring, Chill 1-9/16" tube x 3/4" long, S851-10/20 (18)	077778
2	Top Cylinder 34"OD x17"x.135 Thk	115260	18	Well, Bottom	115261
3	Bar Rim 1/2 X 1	095473	19	Tube, Extension Outer (No's.1&6)	115258
4	Pouring Lip	003313	20	Coupling Half Recessed 3/4 NPT	010002
5	Doubler Pad (2)	115253	21	Trunnion, Drive Side	115227
6	Inner Hemisphere	084940	22	Reinforcing Pad, Drive Side	115226
7	Doubler Pad, Outer Jacket (2)	115252	23	Fitting, T-Stat Probe	115259
8	Trunnion Support, Take-up Side	115249	24	Trunnion Support, Drive Side	115250
9	Riser Tube (6)	115204	25	Fitting, Ferrule	005963
10	Trunnion, Take-up Side	115224	26	Tube Wire Chase	115246
11	Reinforcing Pad, Take-up Side	115228	27	Fitting, Water Level	115262
12	Fin Tube (6)	115254	28	Cover, Trunnion Support (2)	115248
13	Tube, Extension (No's 2 & 5) (2)	115255	29	Fitting, Top Gauge Glass	115274
14	Tube, Extension (No's. 3 & 4) (2)	115256	30	Diverter Plate Fin Tube Middle (5)	115306
15	Elbow, Sweep (6)	115251	31	Diverter Plate Fin Tube Ends	115307
16	Tube, Sump (6)	115257	32	RTD Coupling (RTD) N88779 (GASKET) N88778 (NUT) N88777	



Parts List - Water Piping Assembly

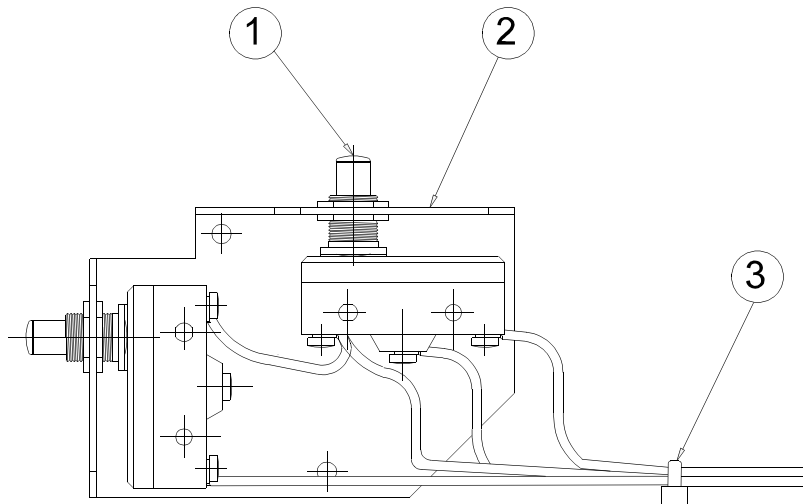
Key	Description	Part No.	Key	Description	Part No.
1	1/2 NPT Square Head Pipe Plug	011146	5	Nipple 1/2 NPT x Close Blk Iron	008877
2	1/2 NPT Gate Valve 150 lb Steam	004180	6	Bushing Face 3/4 NPT x 1/2 NPT	096920
3	Elbow 90° St 1/2 NPT Blk Iron 150 lb Cl.	004185	7	Tee 3/4 NPT Blk Iron 150 lb Class	008301
4	Check Valve 1/2 NPT	004187	8	Nipple 3/4 NPT x 4" long Blk Iron	008229

Parts List - Electrical Side Panel Assembly



Parts List - Electrical Side Panel Assembly

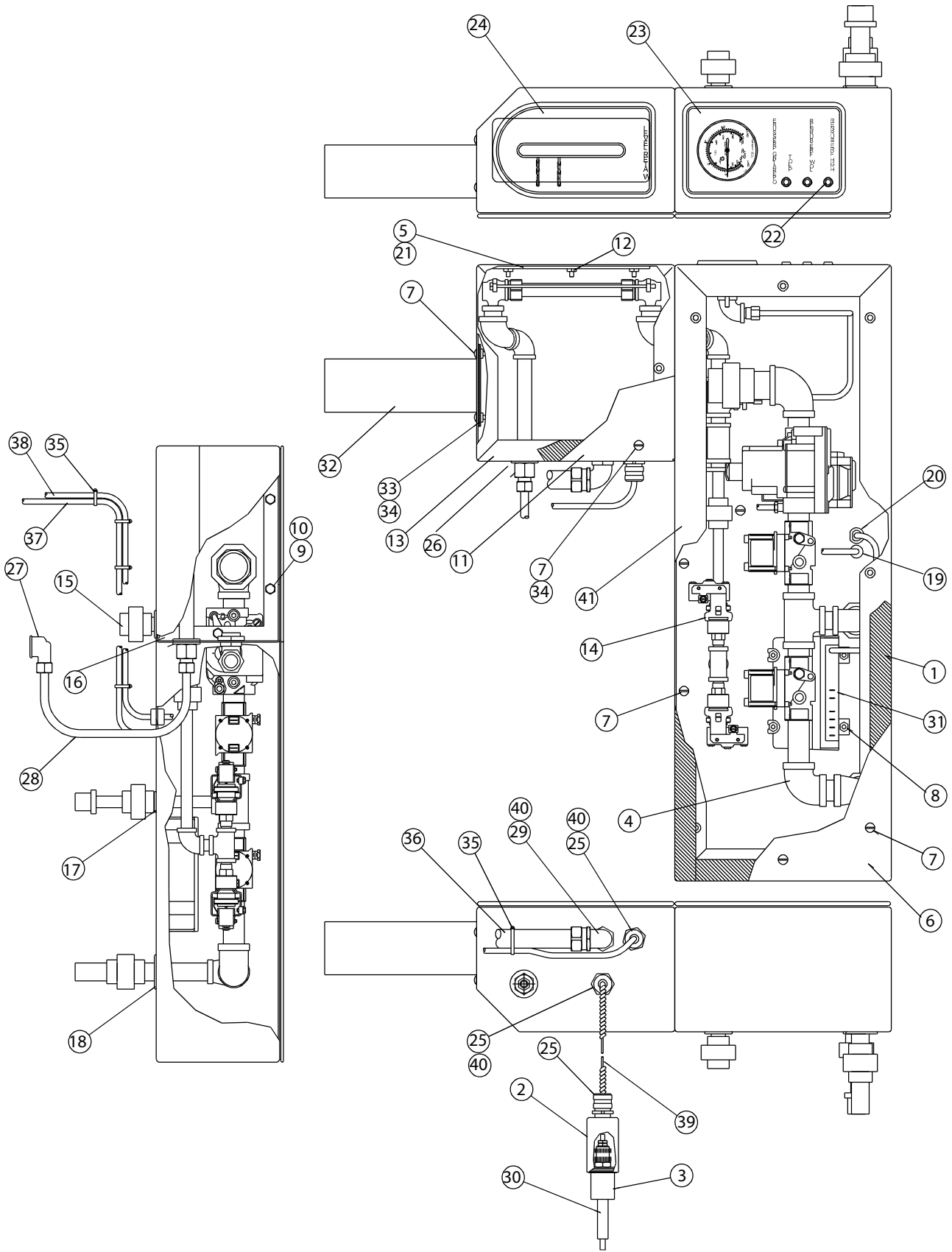
Key	Description	Part No.	Key	Description	Part No.
1	Electrical Panel	115216	15	Fuse 20 AMP (3)	071489
2	Dinrail	115348	16	Relay Control 2PDT	115358
3	Duct Wire 1x2	115349A	17	Socket Relay Dinrail Ly Series:	115359
4	Wire Duct Cover 1"	115349B	18	Terminal Block Ground 35 mm DIN (2)	115360
5	Overload Motor Smp-1, 1.6-5a	115350	19	Terminal Block 35 mm DIN (42)	115361
6	Dinrail End Stop	115351	20	Terminal Block Jumper 3 Pos:	115362
7	Contactor, Reversing 120 V , 9A	115352	21	Water Level Control Board 120V	097023
8	Contactor, 120 V , 12 A (2)	111072	22	P.C. Board Assembly	115286A
9	Circuit Breaker 1.0 A 120V	115353	23	Screw Truss Head #8-32 x d" LG (34)	005764
10	Relay 120 V SPDT	115354	24	Connector CPC, 37 Pin: AMP	115363
11	Socket Relay, Dinrail KU Series	115355	25	Shell CPC Std. Size	115364
12	Transformer 75 VA Class 2	106233	26	Pin (31)	115365
13	Transformer 100 VA 208 V	115356	27	Connector, Plug 9 Pin .093	115366
14	Fuse Block 1 Pole (3)	115357	28	Pin Male .093 (7)	115367



Tilt Switch Assembly - Parts List

Key	Description	Part No.
1	Switch, Overtravel Plunger Type	115267
2	Tilt Switch Bracket	115221
3	Wire Harness Assembly	115281

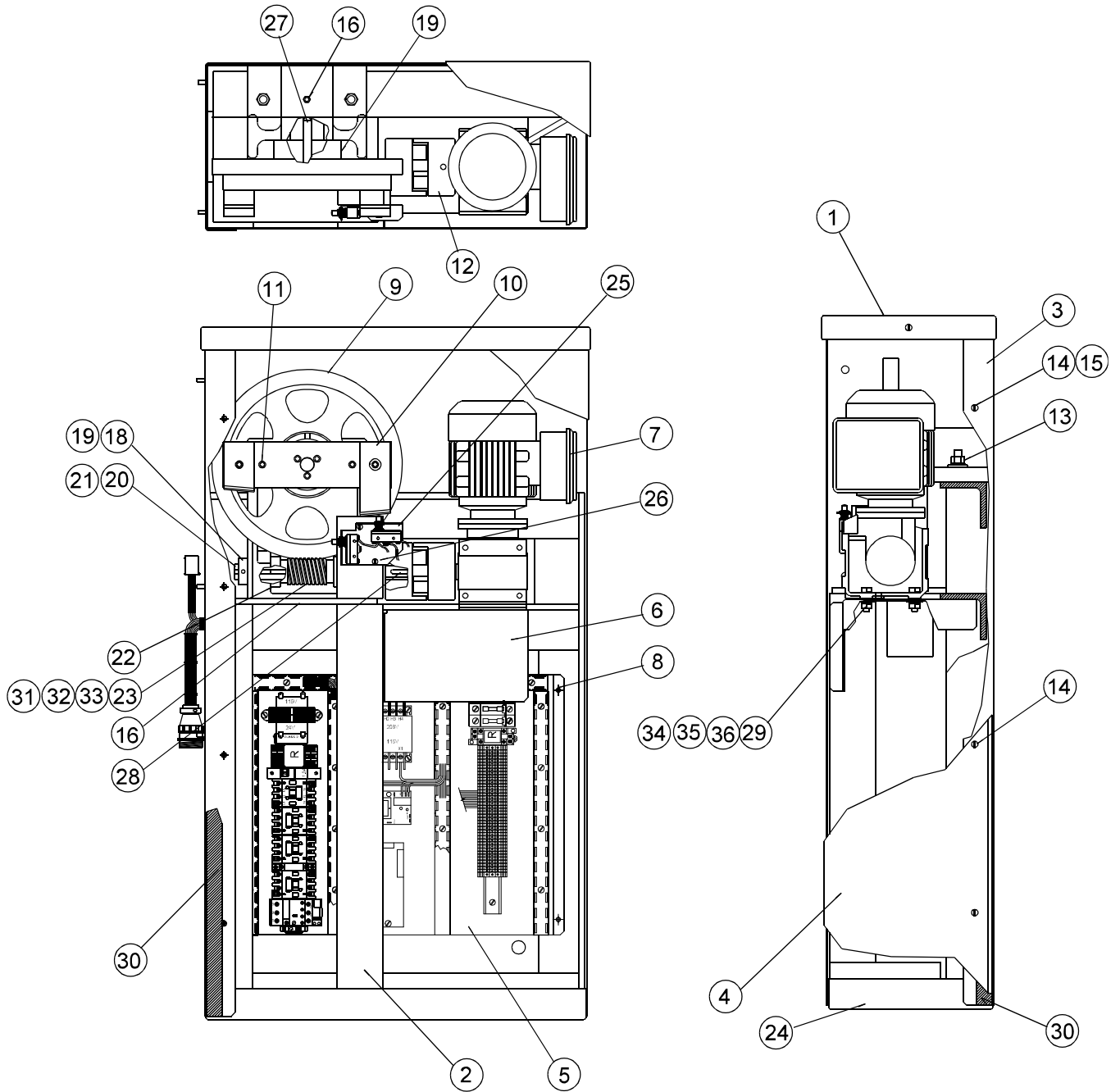
Parts List - Gas Valve Piping, Pressure Gauge and Box Assembly



Parts List - Gas Valve Piping, Pressure Gauge and Box Assembly

Key	Description	Part No.	Key	Description	Part No.
1	Gasket, Adhesive Backed	115336	22	Light, LED Red	115370
2	Cap, Water Level	115319B	23	Overlay, Operating Pressure	115317D
3	Fitting, Water Level	115319A	24	Overlay, Water Level Min/max	115317C
4	Piping Assembly, Gas Train	115297	25	Connector Straight	009196
5	Lens, Water Level	115295	26	Fitting Compression 3/8 NPT x 3/8 CC Tube	117801
6	Cover, Gas Valve Enclosure	115294	27	Fitting 90° Compression 3/8 NPT x 3/8 CC Tube	117802
7	Screw Truss Head #10-32 x 1/2" LG	072189	28	Tubing, 3/8 Diameter Copper	062965
8	Nut Hex #8-32	011030	29	Connector, 90° Sealtite	001668
9	Screw Hex Head Cap 1/4x20x1/2" LG	005608	30	Electrode, Water Level	015589
10	Nut Hex 1/4-20	005601	31	Ignition Module	085153
11	Cover, Water Level Enclosure	115290	32	Conduit Gas Piping	115234
12	Nut Hex #10-32	011032	33	Gasket, Gas Conduit Piping	115299
13	Enclosure, Water Level	115289	34	Rivnut, Open End #10-32	113235
14	Press Switch-Gauge Piping Assy	115243	35	Wire Tie 6" lg	117803
15	3/8 NPT Union	027421	36	1/2" Sealtite	001697
16	Grommet 11/16 I.D.	007245	37	1/4" Aluminum Tubing	006796
17	Grommet 9/16 I.D.	074974	38	Cable Spark Ignition 36" lg	096728
18	Grommet f I.D.	007400	39	Wire Harness Main	115335
19	Grommet 1/4 I.D.	001518	40	1/2" Conduit Nut Water Proof	008808
20	Grommet Strain Relief	088239	41	Enclosure, Gas Valve Piping	115292
21	Sealant, Clear RTV #732	001711			

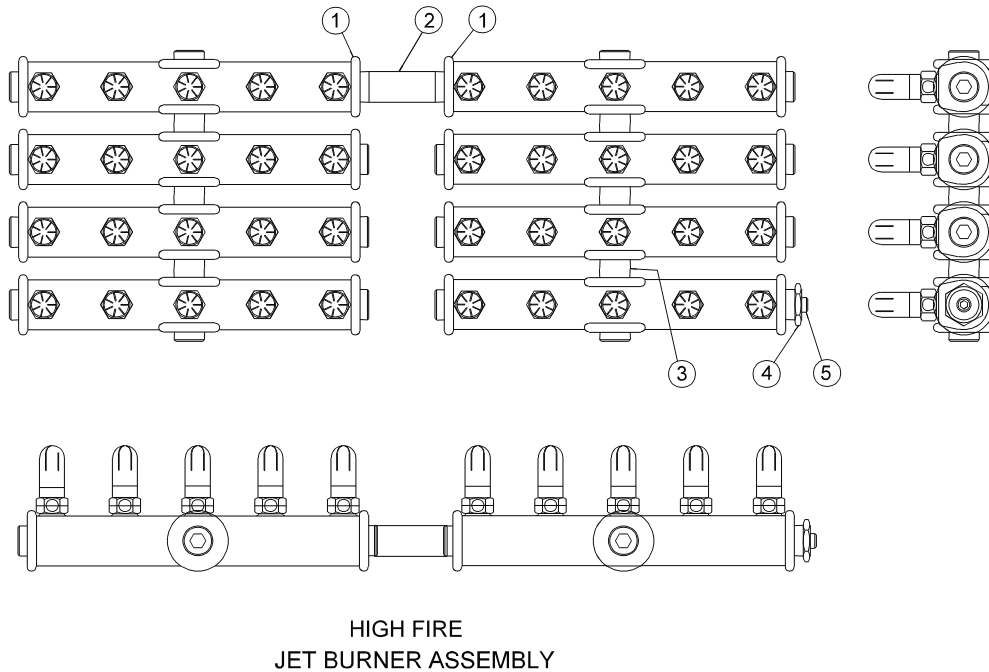
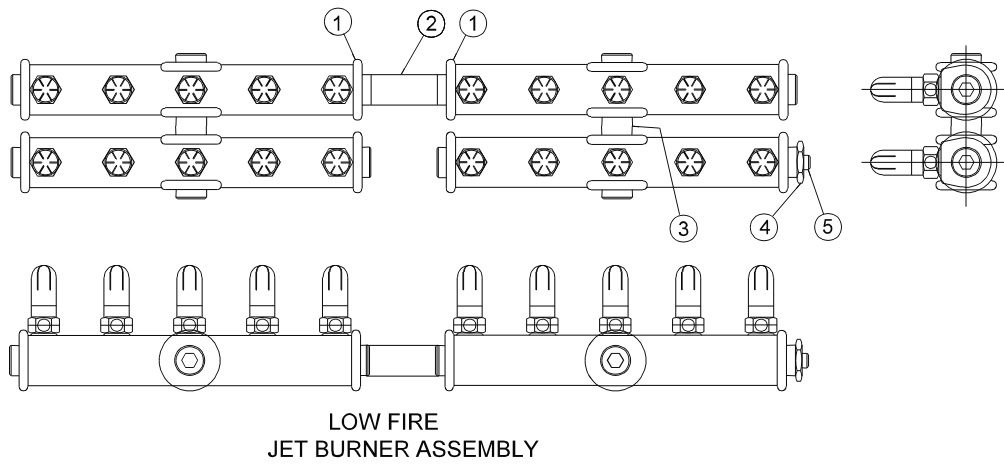
Parts List - Right Stanchion



Parts List - Right Stanchion

Key	Description	Part No.	Key	Description	Part No.
1	Cover, Right Side Stanchion	115217	19	Set Screw 5/16-18x1" w-Nylok Insert	012060
2	Frame Assembly, Right Side	115271	20	Drive Shaft	115242
3	Cladding Stanchion, Right Side	115244	21	Key ¼" X ¾" lg	012468
4	Cover, Stanchion Right Side	115270	22	Roller Bearing 1" Shaft	012036
5	Electrical Panel Assembly	115279A	23	Worm Gear	012054
6	Bracket, Tilt Motor	115238	24	Bottom Tray, Right Side	115273
7	Motor, Tilt Drive	115304	25	Tilt Switch Assembly	115282
8	Nut Keps Hex ¼-20	012940	26	Screw, Truss Head #8-32 X 3/8" lg	005764
9	Gear, Rework	115269	28	Key ¼" X 2" lg	009258
10	Mechanical Stop Assembly	115240	29	Screw Hex Head Cap 3/8 -16x 1½" lg	003467
11	Screw Socket Cap 5/16-18 X 2" lg	115302	30	Gasket 1"x1/16" Adhesive Back	115336
12	Shaft Coupling	115276	31	Shim, (.001)	012192
13	Nut Hex ½-13	003565	32	Shim, (.003)	012193
14	Rivnut Open End, #10-32	113235	33	Shim, (.005)	012079
15	Screw, Truss Head #10-32 X ½" lg	072189	34	Flat Washer 3/8	005830
16	Fitting Grease Straight	009547	35	Lock Washer 3/8	005618
17	Housing Gear Carrier	012222	36	Hex Nut 3/8-16	005619
18	Set Collar 1"	012012			

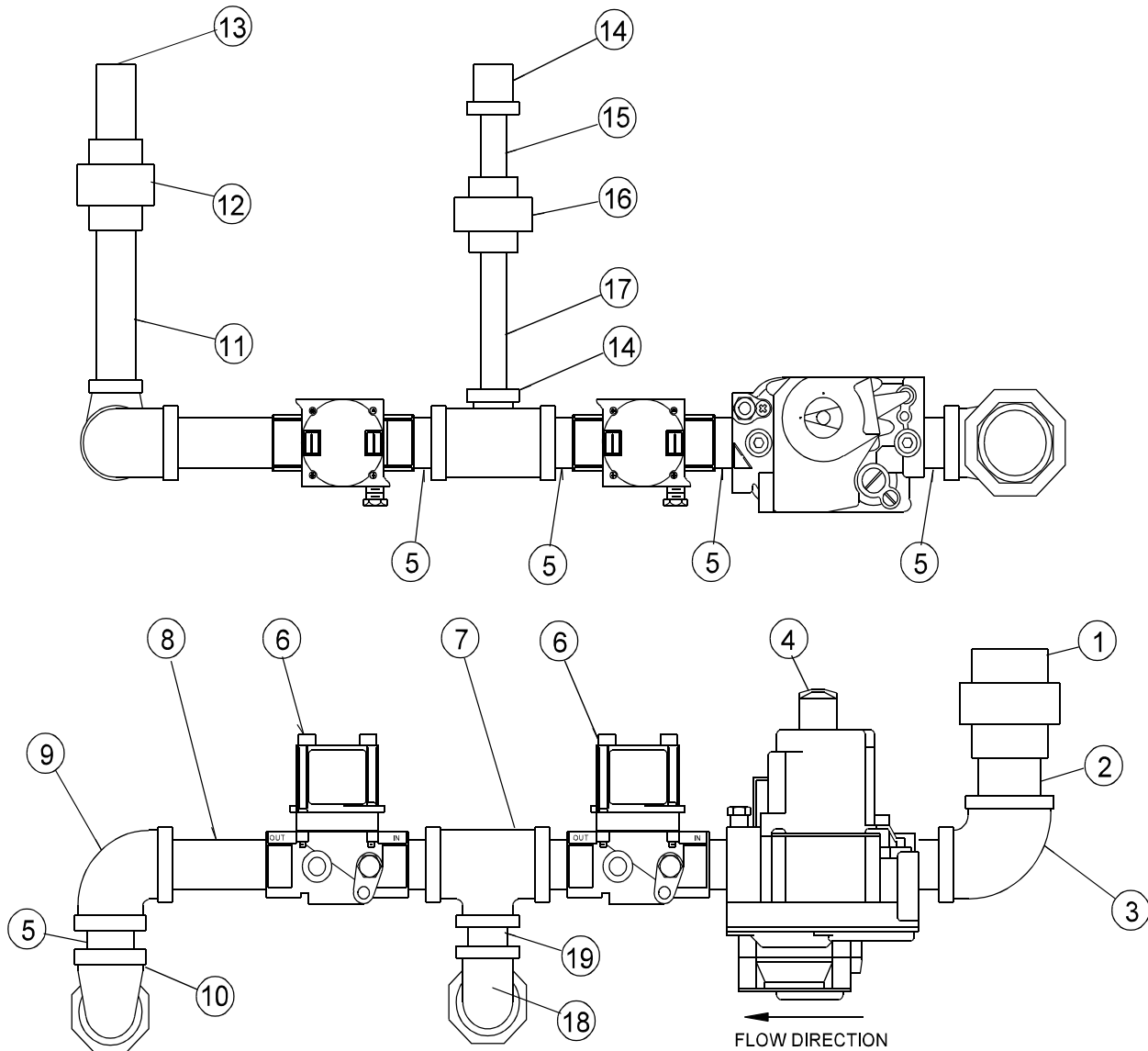
Parts List - High and Low Fire Jet Burner Assemblies



Jet Burner Assemblies - Parts List

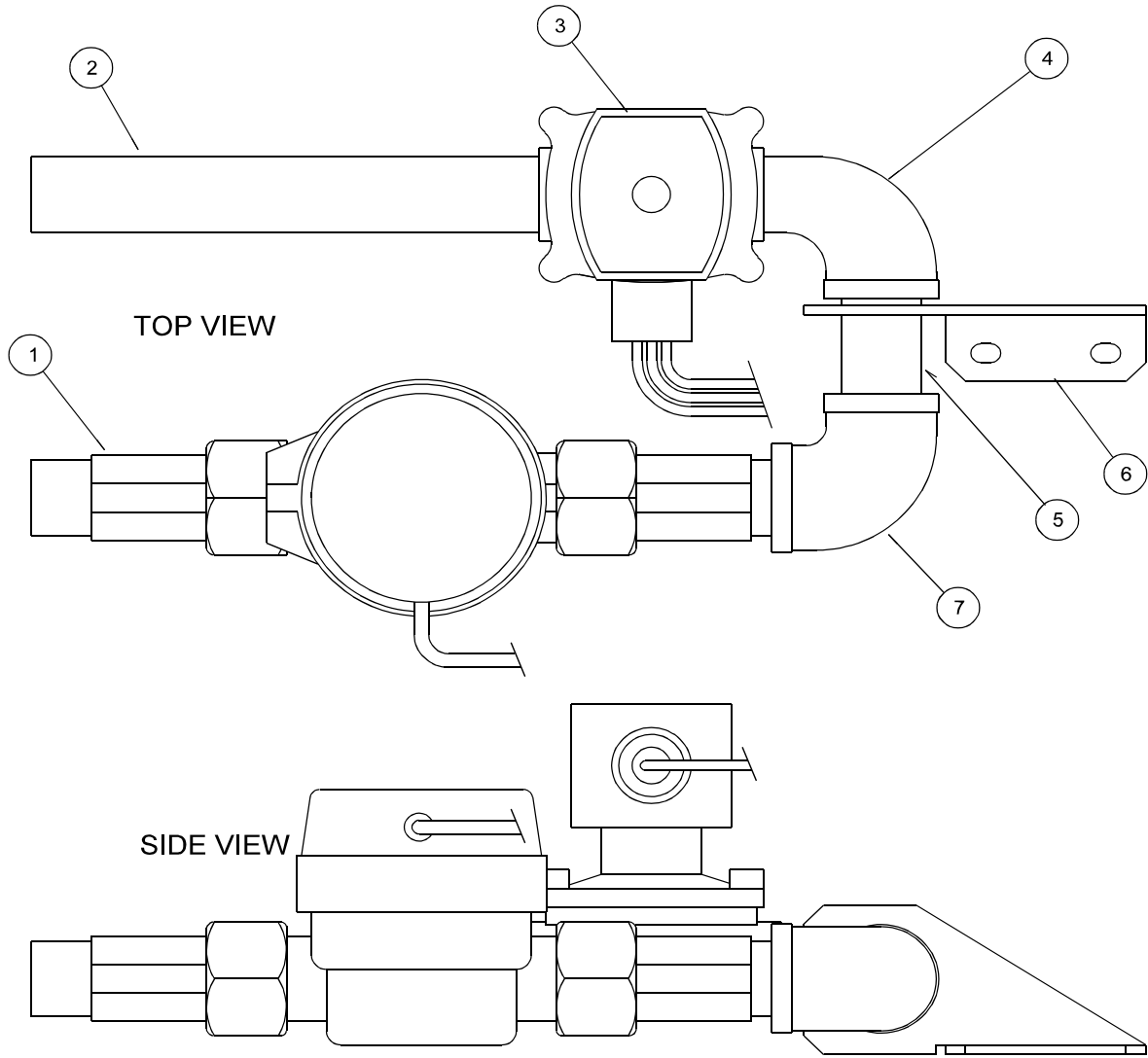
Key	Description	Part No.
1	Solarflo L-50 Jet Burner Unit	120701
2	½ NPT x 3 ½ Lg Nipple	008227
3	½ - 1/8 NPT Reducer Bushing Hexagon	088290
4	½ NPT x 1 ½ Lg Pipe Nipple	004184
5	1/8 NPT Pipe Plug Recessed	010286

Parts List - Gas Valve Piping Assembly



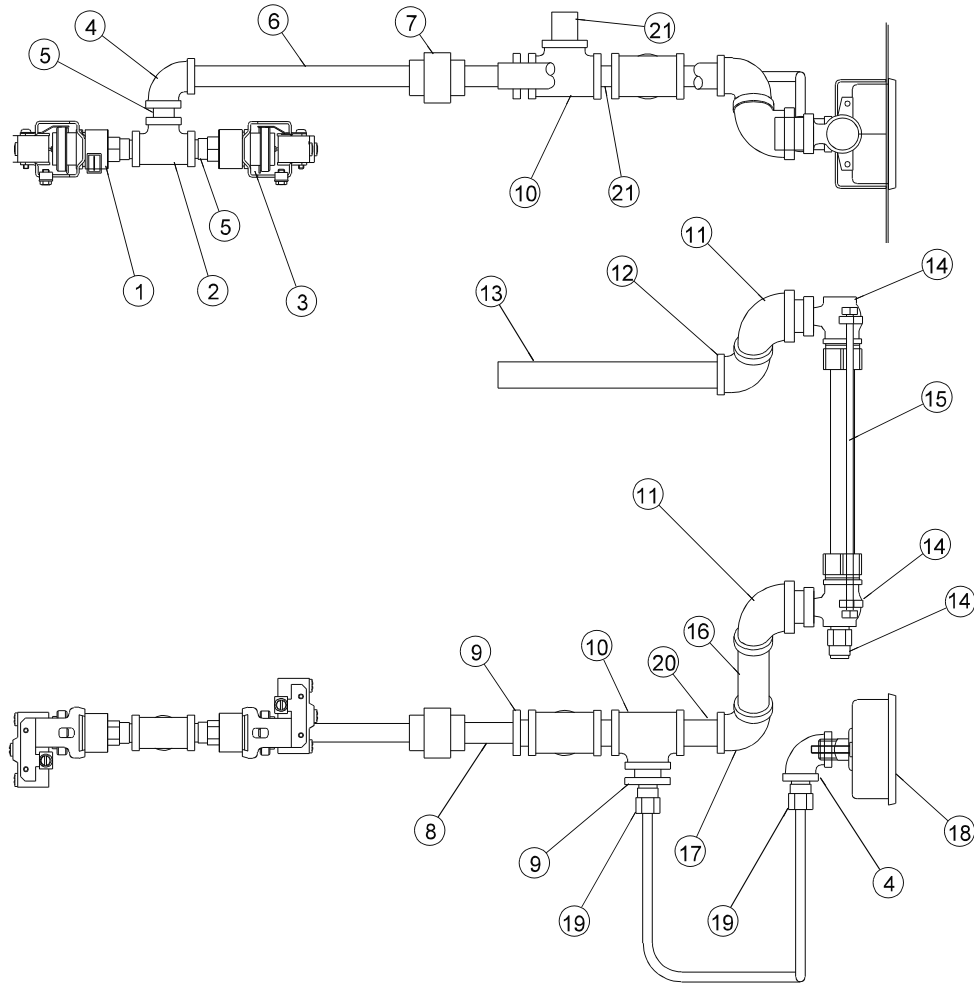
Key	Description	Part No.	Key	Description	Part No.
1	Straight Union 1 NPT	005534	11	Nipple ½ NPT X 4" LG.	005554
2	Nipple Close 1 NPT	005517	12	Straight Union ½ NPT	004186
3	Reducing Elbow 1 NPT X ¾ NPT	003610	13	Nipple ½ NPT X 2" LG.	005551
4	Gas Valve Main	115298	14	Reducing Bushing ½ NPT X ¼ NPT	008739
5	Nipple Close ¾ NPT (5)	008238	15	Nipple 1/4 NPT X 2" LG. (2)	005675
6	Gas Solenoid Valve ¾ NPT (2)	108963	16	Straight Union ¼ NPT	005126
7	Reducing Tee ¾ X ¾ X ½ NPT	005484	17	Nipple ¼ NPT X 3-½" LG.	041509
8	Nipple ¾ NPT X 3" LG.	008239	18	90° Elbow ½ NPT	008747
9	Elbow ¾ NPT	008124	19	Nipple ½ NPT X 1-½" LG.	004184
10	Reducing Elbow ¾ NPT X ½ NPT	008751			

Parts List - Water Piping Assembly



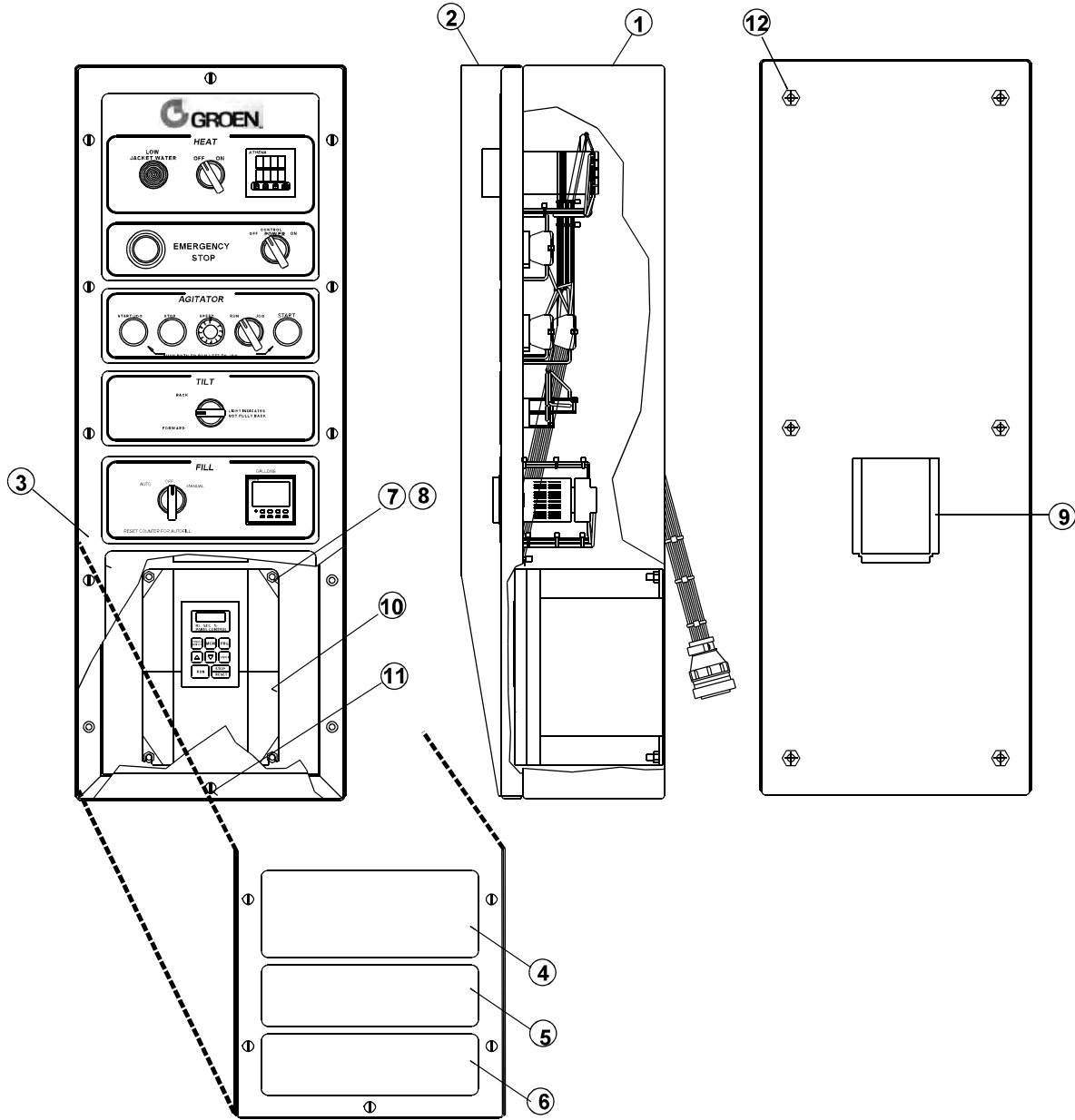
Key	Description	Part No.	Key	Description	Part No.
1	Water Meter 3/4 NPT	055211	5	Nipple, 3/4 NPT x 2" Lg Brass	009823
2	Nipple, 3/4 NPT x 7" Brass	077977	6	Bracket, Water Supply Support	115332
3	Water Solenoid Valve	056521	7	3/4 NPT 90° Elbow Brass	008399
4	3/4 NPT 90° Street Elbow Brass	013660	8	Pipe Dope	078938

Parts List - Pressure Switch and Pressure Gauge Piping Assembly



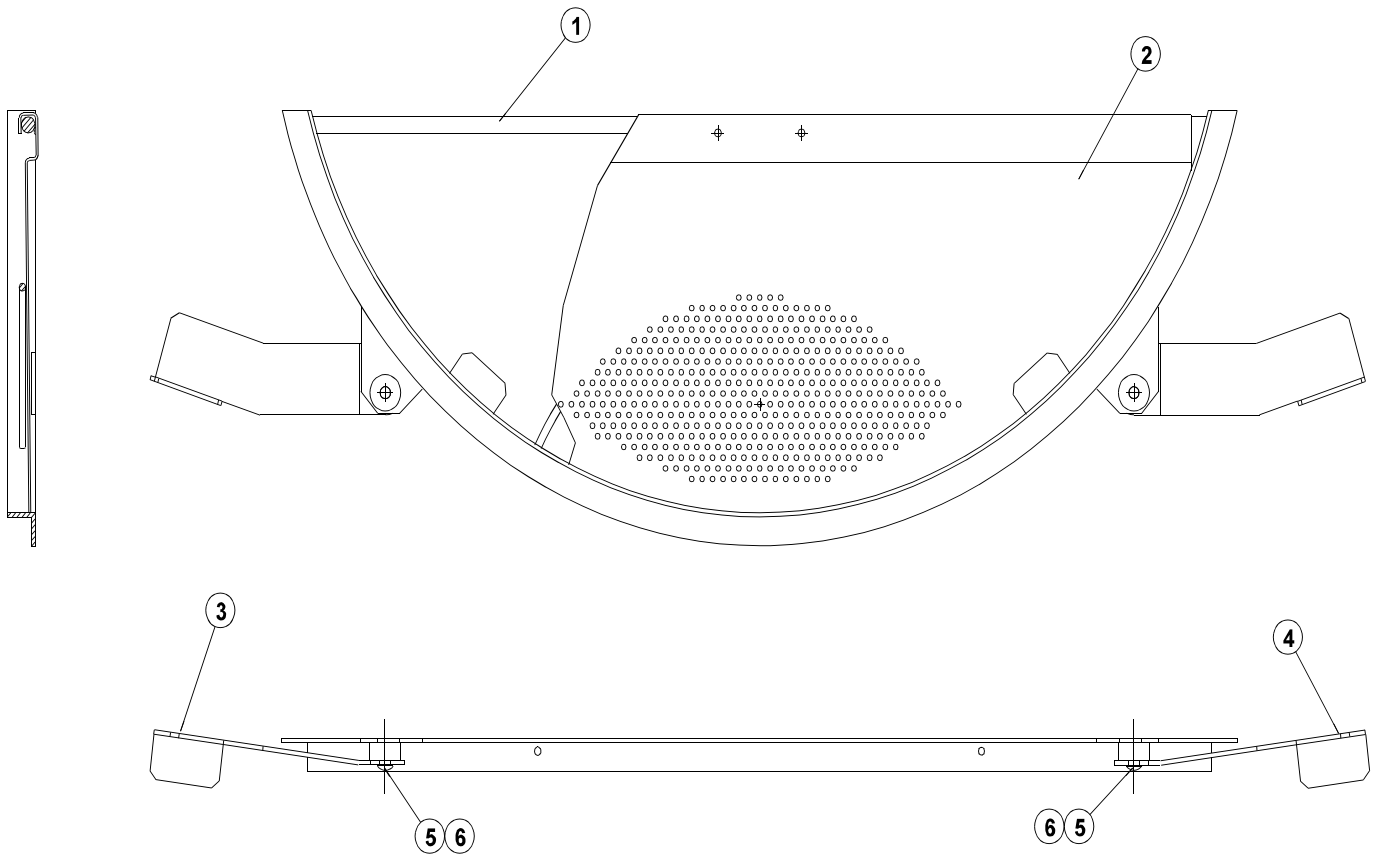
Key	Description	Part No.	Key	Description	Part No.
1	Pressure Switch Set @ 43 PSI	096963	13	3/8 NPT x 6" LG Nipple	005752
2	1/4 NPT Tee	008539	14	Sightglass Fittings	054196
3	Pressure Switch Set @ 5 PSI	099222	15	Sight Glass	002987
4	1/4 NPT 90° Elbow	005682	16	3/8 NPT x 2-1/2" LG Nipple	005676
5	1/4 NPT x 1" LG Nipple	005683	17	3/8 NPT 90° Elbow	012781
6	1/4 NPT x 6-1/2" LG Nipple	003674	18	Pressure Gauge	115293
7	1/4 NPT Straight Union	005126	19	Straight Comp. Fitting 1/4 NPT Male x 1/4 Tube Compression	064565
8	1/4 NPT x 2" LG Nipple	005675	20	3/8 NPT x 1-1/2" Lg Nipple	005678
9	Hex Red. Bushing d NPT x 1/4 NPT	059907	21	3/8 NPT x 1" Lg Nipple	007439
10	3/8 NPT Tee	012794	22	1/4 Copper Tubing 1 Pc Cut @ 24"	116002
11	Reducing Elbow 1/2 NPT x d NPT	005680			
12	3/8 NPT 90° Street Elbow	009853			

Parts List - Front Control Assembly



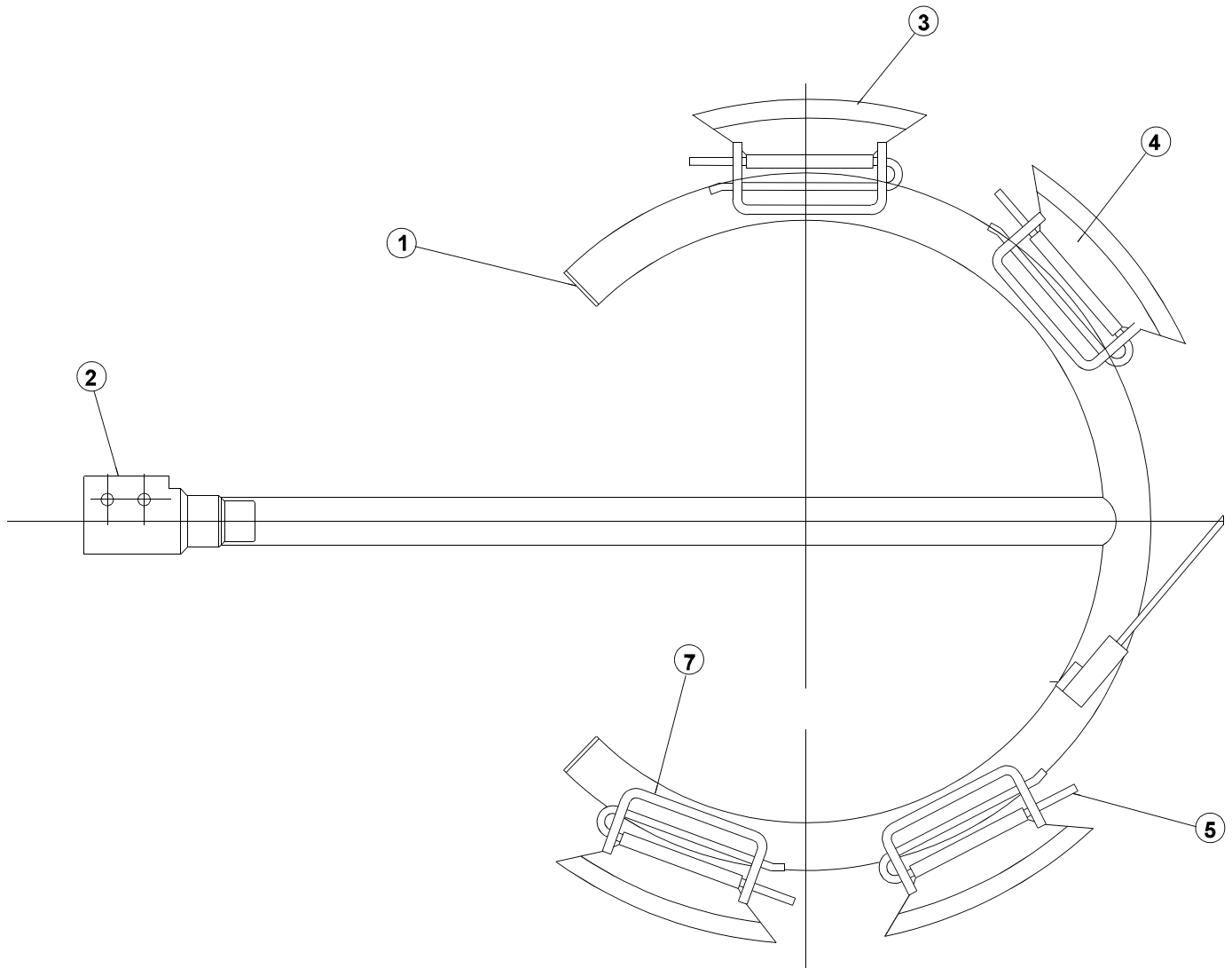
Key	Description	Part No.	Key	Description	Part No.
1	Front Electrical Enclosure	115220	7	Weld Stud #10-32 ¾" LG Stainless	002966
2	Shroud, Protective Front	115314	8	Nut Hexagon #10-32	011032
3	Front Panel Agitator Fill-Tilt Options	115280	9	Gasket, "U" Shape	007937
4	Ops Instructions, Basic	115316A	10	Movitrac Variable Speed Control	115303A
5	Ops Instructions, Tilt Option	115316B	11	Screw Truss Head#10-32 x 1-½" lg SS	097013
6	Ops Instructions Agitator Option	115316C	12	Nut Hexagon Keps ¼-20	012940

Parts List - Strainer and Frame Assembly



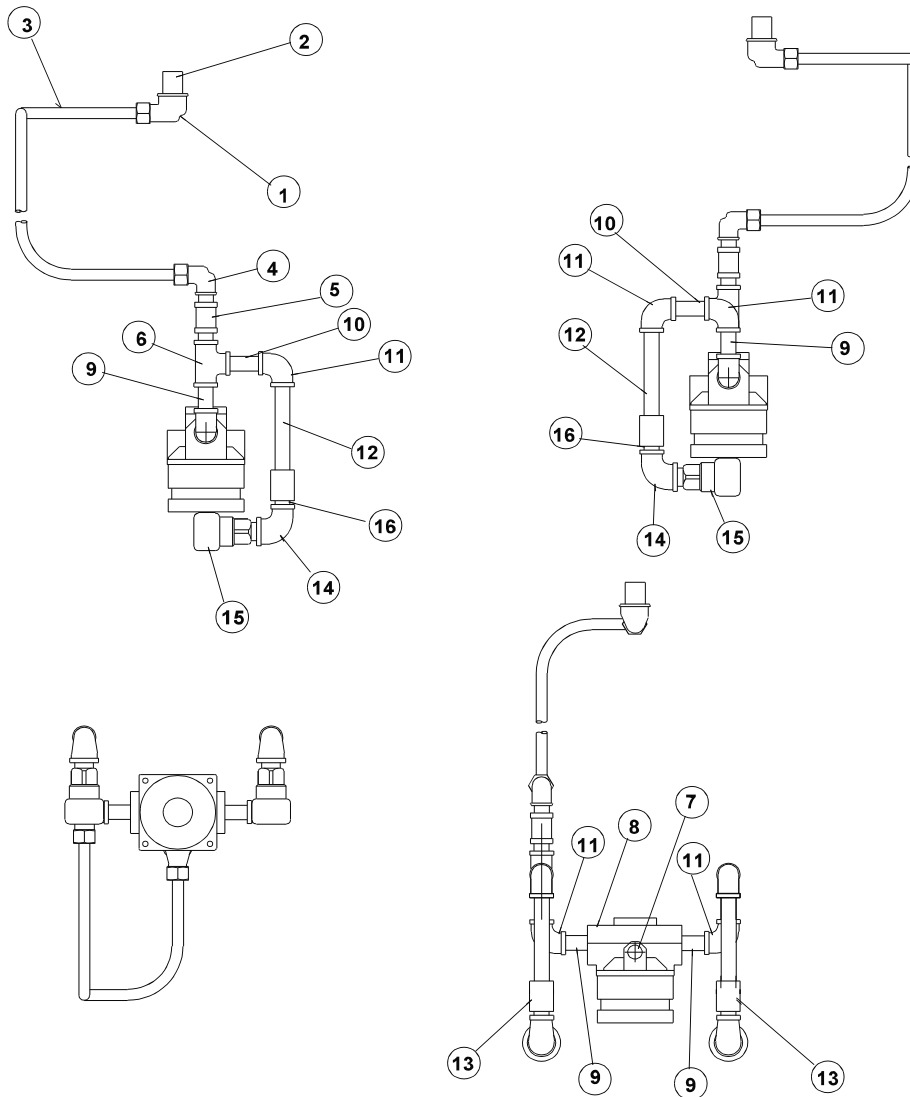
Key	Description	Part No.	Key	Description	Part No.
1	Frame Assembly, Strainer	115325	4	Latch Right Side	115321B
2	Strainer	115324	5	Screw Slotted Truss ¼-20 X ½ LG	012700
3	Latch Left Side	115321A	6	Loctite #242	073282

Parts List - Agitator Assembly



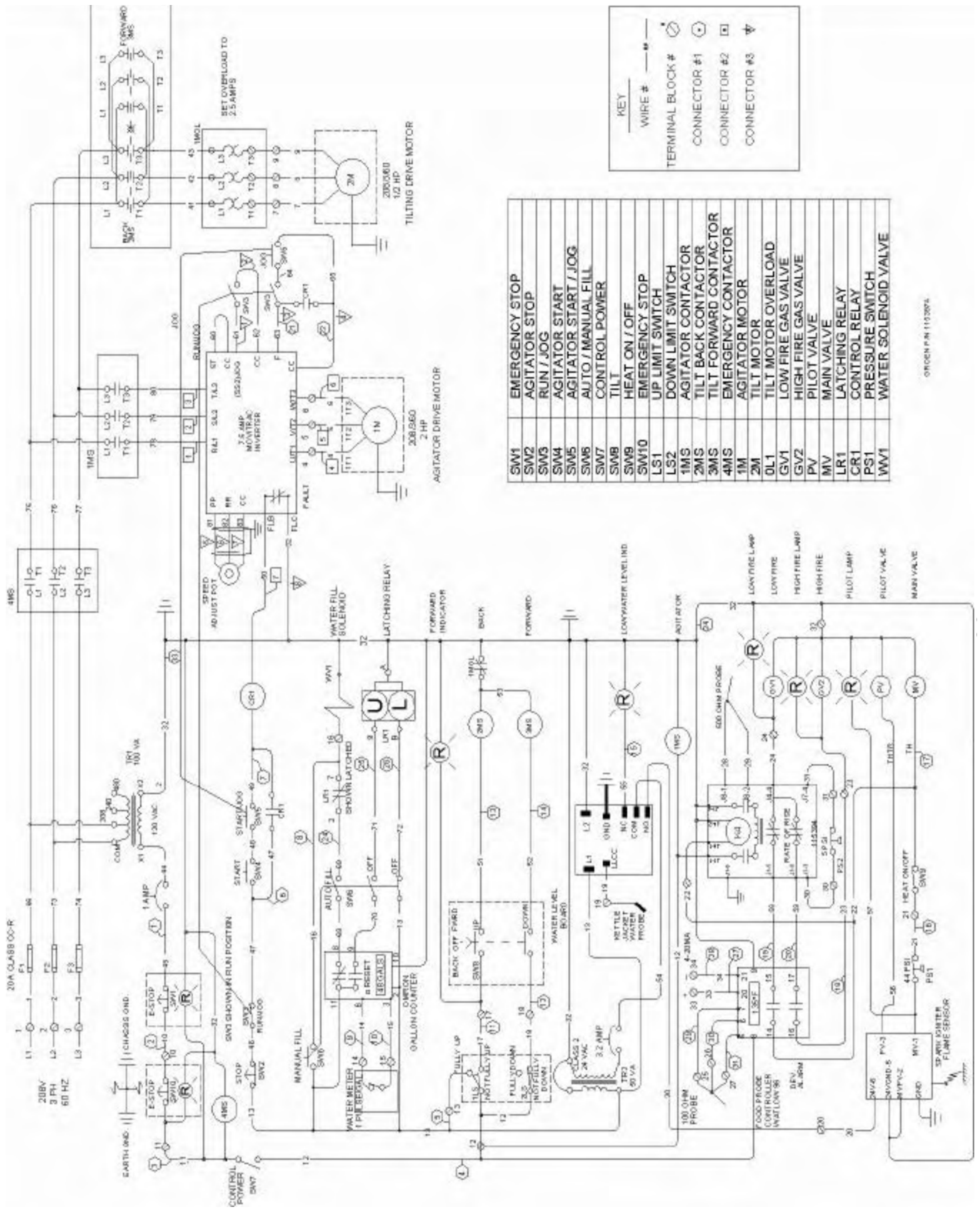
Key	Description	Part No.	Key	Description	Part No.
1	Disc, 1ϕ Diameter x 10 GA (2)	019058	-	Scraper Locking Pin (not shown)	003655
2	Coupling, Quick Disconnect	012719	5	Locking Hairpin Clip (6)	003652
3	Blade, Scraper (6)	005098	7	Yoke, Blade Carrier (6)	004923
4	Holder Scraper Blade (6)	005099			

Parts List - Air Valve and Piping Assembly



Key	Description	Part No.	Key	Description	Part No.
1	Fitting 90° Compression 3/8 NPT x 3/8 Tube Comp.	117802	10	Nipple 1/4 NPT X 1-1/2" Lg Blk Iron	008337
2	Nipple 3/8 NPT xClose Blk	007439	11	Elbow 90° 1/4 NPT Blk Iron 150 lb Class	005682
3	Copper Tubing 3/8" O.D.	062965	12	Nipple 1/4 NPT X 3-1/2" Lg Blk Iron	041509
4	Fitting Compression 90° 3/8 O.O Tube x 1/4 FNPT	057218	13	Coupling 1/4 NPT 150 lb Class 304 S/S	005545
5	Filter in Line 1/4 NPT Male	069038	14	Elbow 90° Reducing 3/8 NPT X 1/4 NPT 304 S/S 150 lb Class	010036
6	1/4 NPT Tee Blk Iron 150 lb Class	086899	15	Adapter Quick Disconnect 3/8 NPT Male	071348
7	Pipe Blue 1/4 NPT Hex Head	004145	16	Nipple 1/4 NPT X Close PCP 150 lb Class	002668
8	Valve Air Modulating	050119			
9	Nipple 1/4 NPT X 1-1/4" Lg Blk Iron	115371			

Electrical Schematic



SM1	EMERGENCY STOP
SM2	AGITATOR STOP
SM3	RUN / JOG
SM4	AGITATOR START
SM5	AGITATOR START / JOG
SM6	AUTO / MANUAL FILL
SM7	CONTROL POWER
SM8	TILT
SM9	HEAT ON / OFF
SM10	EMERGENCY STOP
LS1	UP LIMIT SWITCH
LS2	DOWN LIMIT SWITCH
1MS	AGITATOR CONTACTOR
2MS	TILT BACK CONTACTOR
3MS	TILT FORWARD CONTACTOR
4MS	EMERGENCY CONTACTOR
1M	AGITATOR MOTOR
2M	TILT MOTOR
DL1	TILT MOTOR OVERLOAD
GV1	LOW FIRE GAS VALVE
GV2	HIGH FIRE GAS VALVE
PV	PILOT VALVE
MV	MAIN VALVE
LR1	LATCHING RELAY
CR1	CONTROL RELAY
PS1	PRESSURE SWITCH
WV1	WATER SOLENOID VALVE

KEY

WIRE # ——— #

TERMINAL BLOCK #

CONNECTOR #1

CONNECTOR #2

CONNECTOR #3

ORION P/N 1102074

References

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

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

NFPA/54 Installation of Gas Appliances &
Gas Piping

NFPA/70 The National Electrical Code

NSF INTERNATIONAL
798 N. Dixboro Rd.
P.O. Box 130140
Ann Arbor, MI 48113-0140

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

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

Limited Warranty To Commercial Purchasers *

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

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

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

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



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