

☆ IMPORTANT INFORMATION ☆ KEEP FOR OPERATOR ☆ IMPORTANT INFORMATION ☆

OPERATOR MANUAL

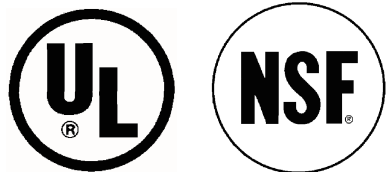
Part Number 121019

OM-EE & AE/1

DOMESTIC

MODEL: EE & AE/1
Steam Jacketed Kettle

Self-Contained
Electrically heated
Floor mounted
Stationary



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.**



IMPORTANT — READ FIRST — IMPORTANT

- CAUTION:** BE SURE ALL OPERATORS READ, UNDERSTAND AND FOLLOW THE OPERATING INSTRUCTIONS, CAUTIONS, AND SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL.
- WARNING:** THIS UNIT IS INTENDED FOR USE IN THE COMMERCIAL HEATING, COOKING AND HOLDING OF WATER AND FOOD PRODUCTS, PER THE INSTRUCTIONS CONTAINED IN THIS MANUAL. ANY OTHER USE COULD RESULT IN SERIOUS PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT AND WILL VOID WARRANTY.
- WARNING:** KETTLE MUST BE INSTALLED BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY. IMPROPER INSTALLATION CAN RESULT IN INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.
- DANGER:** ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND UNIT COULD RESULT IN ELECTROCUTION AND DEATH.
- WARNING:** AVOID ALL DIRECT CONTACT WITH HOT EQUIPMENT SURFACES. DIRECT SKIN CONTACT COULD RESULT IN SEVERE BURNS.
- WARNING:** AVOID ALL DIRECT CONTACT WITH HOT FOOD OR WATER IN THE KETTLE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.
- CAUTION:** DO NOT OVER FILL 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, AND BOILING.
- WARNING:** TAKE SPECIAL CARE TO AVOID CONTACT WITH HOT KETTLE BODY OR HOT PRODUCT WHEN ADDING OR STIRRING INGREDIENTS.
- CAUTION:** KEEP FLOORS IN FRONT OF KETTLE WORK AREA CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY, TO AVOID SLIPS OR FALLS.
- WARNING:** FAILURE TO CHECK SAFETY VALVE OPERATION PERIODICALLY COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.
- WARNING:** WHEN TESTING, AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.
- WARNING:** TO AVOID INJURY, READ AND FOLLOW ALL PRECAUTIONS STATED ON THE LABEL OF THE WATER TREATMENT COMPOUND.
- WARNING:** BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY.
- WARNING:** KEEP WATER AND SOLUTIONS OUT OF CONTROLS AND ELECTRICAL EQUIPMENT. NEVER SPRAY OR HOSE THE SUPPORT HOUSING OR ELECTRICAL CONNECTIONS.
- CAUTION:** MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. PRECAUTIONS SHOULD BE TAKEN. WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ THE WARNINGS AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER TO BE USED.
- CAUTION:** USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE OPERATOR INJURY AND DAMAGE TO THE EQUIPMENT, AND WILL VOID ALL WARRANTIES.
- IMPORTANT:** SERVICE PERFORMED BY OTHER THAN FACTORY AUTHORIZED PERSONNEL WILL VOID WARRANTIES.

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Equipment Description

Groen Model EE and AE/1 are floor-mounted, tilting, steam-jacketed kettles which have thermostatically controlled, self-contained, electrically-heated steam supplies and appropriate controls, mounted on a sturdy base. Heat produced by electric heating elements boils water in a reservoir below the jacket to produce steam under pressure. AE/1 models were manufactured and supplied by Groen through 1987. AE/1 kettles have half the Kilowatt input of corresponding EE models, and heat more slowly.

The kettle is surrounded by air-insulated stainless steel sheathing. Stainless steel panels enclose all of the controls. Three stainless steel, tubular legs support the unit.

EE and AE/1 kettles are available in 20, 40, 60, 80 and 100 gallon capacities. Kettle bodies are welded into one piece. Models are all equipped with a sanitary tangent draw-off (product faucet) valve and a stainless steel strainer. This standard draw-off is two inches in diameter, and uses a compression disc valve. The unit is controlled with a thermostat, which turns electric power on or off, and sets the cooking temperature. Instruments are provided to show what is happening inside the unit:

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

Automatic controls within the unit:

- *Contactor*: Controlled by the thermostat, turns heating element power on or off
- *Low-water cutoff*: Turns off power to keep heating elements from overheating if water loss exposes them above the water level.
- *Safety valve*: Releases steam if jacket pressure gets too high

The jacket is filled at the factory with water that contains rust inhibitors. When air is removed from the jacket, the kettle efficiently provides a uniform heating temperature range of 150 to approximately 270°F (65 to 132°C). This range allows the kettle to be used for warming, simmering, boiling or braising.

The interior of the kettle is polished to a 180 emery grit finish and the exterior is given a uniform Number 4 finish. The unit is ASME shop inspected and registered with the National Board for working pressures up to 30 PSI.

Optional equipment for the EE and AE kettles includes:

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



KETTLE CHARACTERISTICS					
	EE-20, AE/1-20	EE-40, AE/1-40	EE-60, AE/1-60	EE-80, AE/1-80	EE-100, AE/1-100
Capacity	20 gal (75 l)	40 gal (150l)	60 gal (226l)	80 gal (300L)	100 gal (378l)
Diameter	26 in (66 cm)	32 in (81 cm)	36 in (91 cm)	38 in (96.5 cm)	38 in (96.5 cm)
Rim Height	37 in (94 cm)	37 in (94 cm)	40 in (102 cm)	44 in (112 cm)	44 in (112 cm)
Total Width	26 in (66 cm)	32 in (81 cm)	36 in (91 cm)	38 in (96.5 cm)	38 in (96.5 cm)
Front to Back	38¼ in (97 cm)	48¼ in (123 cm)	47¼ in (120 cm)	49¼ in (125 cm)	49¼ in (125 cm)

Inspection & Unpacking

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

Write down the model number, serial number, and installation date, and retain this information for future reference. Space for these entries is provided at the top of the Service Log at the back of this manual. Keep this manual on file and available for operators to use.

CAUTION

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

CAUTION

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

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

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

Thoroughly inspect the unit for concealed damage. Report any shipping damage or



The unit will arrive in a heavy carton. incorrect shipments to the delivery agent.



Inside it will be banded to a skid.

Installation

The Groen Kettle is provided with complete internal wiring and is ready for immediate connection. Wiring diagrams are provided in this manual and on the inside of the control housing service panel. Any mechanical or electrical changes must be approved by Groen's Food Service Engineering Department.

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

The completed unit has been operated at the factory to test all controls and heater elements.

1. Set the kettle in place and level it by turning the bullet feet to adjust leg length. Allow clearance around the unit for cleaning, maintenance and service.
2. Confirm that the jacket water level is above the mid point of the gauge glass. If the level is low, follow the instructions under "Jacket Filling and Water Treatment," Page 11.
3. The open end of the elbow on the outlet of the safety valve must face downward. If it does not, turn it to the correct position.
4. Provide electrical power specified on the equipment electrical information plate. Observe local codes and/or The National Electrical Code in accordance with ANSI/NFPA 70 - (current edition).



5. The equipment is shipped ready for three phase operation. Refer to the wiring diagram for single phase operation.
6. Bringing the electrical service through the entrance at the rear of the support housing with one inch conduit, making a watertight connection with the incoming lines. Observe local codes and/or the National Electrical Code in compliance with ANSI/NFPA 70 (latest edition). When there is a choice between applicable codes, Groen recommends following the more stringent code. (A BX connection is **not** recommended.)



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

7. Electrically ground the unit at the terminal provided.
8. Check the following to confirm that your kettle is properly installed:
 - Room for cleaning and servicing
 - The kettle is level
 - The correct amount of water is in the kettle jacket
 - Safety valve is pointed down
 - Unit is connected with a waterproof electric power supply of the proper voltage, phase and amperage rating

ELECTRICAL SPECIFICATIONS*

	EE-20		EE-40		EE-60		EE-80		EE-100	
	KW	AMP	KW	AMP	KW	AMP	KW	AMP	KW	AMP
208 Volts	11	30	22	60	32	90	32	90	32	90
240 Volts	12	29	24	58	36	87	36	87	36	87
480 Volts	12	14	24	28	36	44	36	44	36	44
	AE/1-20		AE/1-40		AE/1-60		AE/1-80		AE/1-100	
208 Volts	5.6	16	11	30	16	46	16	46	16	46
240 Volts	6.0	14	12	29	18	43	18	43	18	43
480 Volts	—	—	12	14	16	20	16	20	16	20

*All three phase. Single phase is also available, except on EE-60, 80 and 100.

Initial Start-Up

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

Now that the kettle has been installed, you should test it to ensure that the unit is operating correctly.

1. Remove all literature and packing materials from inside and outside of the unit.
2. Clean out any material which might clog or damage the draw-off (product outlet).
3. Install the draw-off valve (packed separately) by sliding the assembly into the tangent and hand-tightening the large stainless steel nut.
3. Turn on the electrical service to the unit.
4. Pour water into the kettle until it is about six inches deep (150 mm).
5. Test draw-off valve operation by opening it all the way, then closing it before all the water runs out.

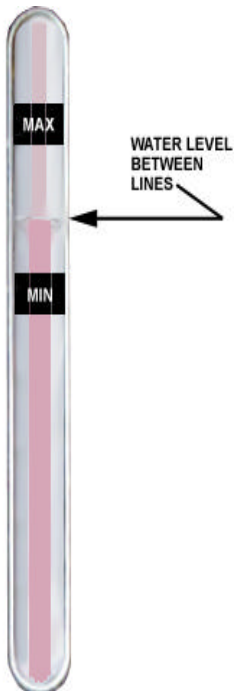


WARNING
AVOID ALL DIRECT CONTACT WITH HOT SURFACES. DIRECT SKIN CONTACT COULD RESULT IN SEVERE BURNS.

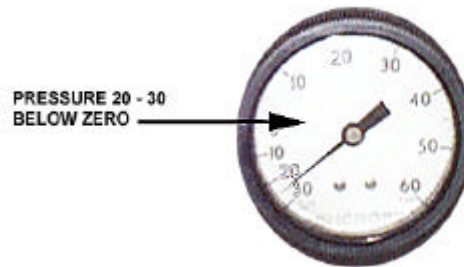
AVOID ALL DIRECT CONTACT WITH HOT FOOD OR WATER IN THE KETTLE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

7. To shut down the unit, turn the thermostat dial to "OFF".

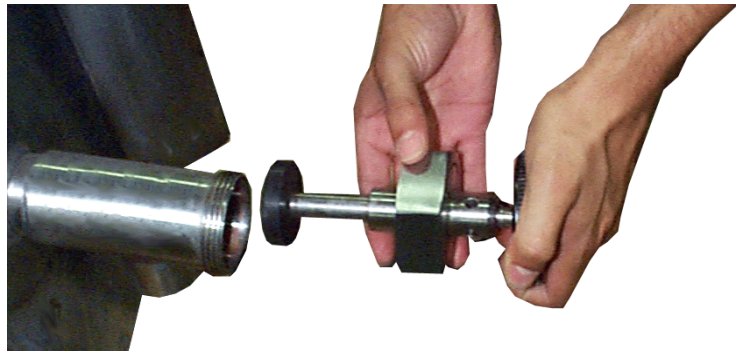
If the unit functions as described above, it is ready for use. If the unit does not function as described, contact your local Groen Certified Service Agency.



6. Following "To Start Kettle" instructions in the "Operation" section of this manual, begin heating the water at the highest thermostat setting. The heating indicator light should come on immediately, and heating should continue until the water boils.



Each day, confirm the jacket water level by checking the water gauge.



Slide the assembly into the tangent and hand-tighten the large stainless steel nut.

Operation

The operator controls kettle heating with the thermostat dial. The dial turns heating element power on or off and sets the kettle operating temperature.

A. To Start Kettle

1. EVERY DAY make sure the jacket water level is between the marks on the gauge glass. If the level is too low, see "Jacket Filling and Water Treatment" on page 11.
2. While the kettle is cold, check the pressure gauge. If the gauge does not show 20 to 30 inches of vacuum (that is, a reading of 20 to 30 below 0), see "Jacket Vacuum" on page 10.
3. Make sure that the strainer covers the draw-off valve outlet at the bottom of the kettle. This keeps food solids from collecting in the draw-off area.
4. Turn the thermostat dial to the desired setting. The indicator light will confirm that the kettle is heating. Cycling of the light on and off shows that the kettle is being held at the set temperature. **Once in each cycle contactors in the support housing will make a clicking sound. This is normal.**

B. To Transfer Product or Empty Kettle:

1. The kettle is emptied by means of its draw-off valve, by ladling product out, or with the optional tri-basket insert.



WARNING
OPEN THE KETTLE LID CAREFULLY TO AVOID STEAM WHICH MAY ESCAPE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

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



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

2. Use of Optional Basket Insert

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

Tips For Use.

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

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



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

- b) Load baskets on a level, stable work surface.
- c) Lift loaded baskets with both hands. Get help from another person if the basket is too heavy for safe handling.
- d) Slowly lower product into kettle and securely hook the basket to the "Y" frame.
- e) When removing baskets with cooked product, lift straight up, ensuring basket bottoms clear the kettle rim. Wear protective oven mitts and protective apron.

- f) Allow hot water to fully drain from product, before moving basket away from the kettle. Do not rest baskets on kettle rim or pouring lip. If baskets are too heavy for one individual to lift and safely move, get help. Remove product immediately from basket into another container, being sure to avoid contact with hot product and hot basket **or**.
- g) Place baskets with food on a stable, flat surface, inside a solid steamer or bake pan, to catch any remaining hot water draining from product.

B. To Turn Off the Kettle

1. Turn the thermostat dial to "OFF."
2. Before the unit is serviced, or if it will be off for a week or more:
 - a. Set the thermostat to "OFF."
 - b. Turn off electric power to the unit at the circuit breaker or fuse.

Sequence of Operation

The following "action-reaction" outline is provided to help the user understand how the equipment works.

When the operator starts up the kettle by turning the operating thermostat dial from "OFF" to a desired setting, the thermostat switch closes. This lights up the heating indicator light and causes the contactors to close, allowing power to flow to heating elements.

When the temperature of the steam jacket reaches the value corresponding to the dial setting, the thermostat switch opens. This turns off the heating indicator light and causes the contactors to open, cutting the power to the heaters.

As soon as the thermostat senses that the kettle is cooling below the set point, the thermostat

switch closes, the heating indicator light comes on, the contactors close, and the heaters come on again. On-off cycling continues, keeping the kettle at the set temperature. This is why the heating indicator light cycles on and off during normal operation.

If steam pressure greater than 30 PSI is generated in the jacket, the safety valve will open and relieve the excess pressure.

If the jacket water level gets too low before the heating elements overheat, the high-limit control will open and shut off power to the elements until the kettle cools.

Setting the operating thermostat dial to "OFF" shuts down all control and heating circuits.

Maintenance

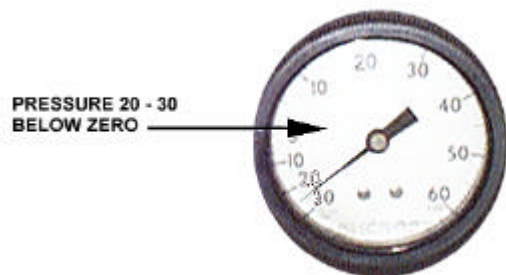
NOTICE: Contact Groen or an authorized Groen representative when repairs are required.

1. Periodic Maintenance

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

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

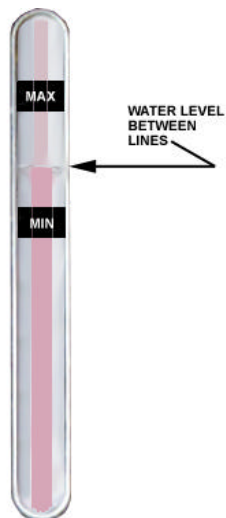
- a. Check the pressure/vacuum gauge



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

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

- b. Also check the jacket water level every day. It should be between the marks on the gauge glass. If the level is low, see "Jacket Filling and Water Treatment" on page 11.



- c. Test the safety valve at least twice each month. Test the valve with the kettle operating at 15 psi (105 kPa), by pulling up the test valve chain for at least 5 seconds. Then release the lever and let the valve snap shut. If the valve does not activate, or there is no evidence of discharge, or the valve leaks, stop using

the kettle and contact a qualified Groen service representative.



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

2. Jacket Vacuum

When the kettle is cold, a positive pressure/



Test the safety valve at least twice monthly.

vacuum gauge reading or a reading near zero indicates that there is air in the jacket. Air in the jacket slows kettle heating.

To remove air:

- a. Start the unit. (Be sure there is water or product in the kettle when heating).
- b. Make sure that the elbow of the safety valve outlet is turned so that escaping steam is directed toward the floor.
- c. When the pressure/vacuum gauge reaches a positive pressure reading of 5 PSI, release the trapped air and steam by pulling up or out on the safety valve lever or ring for about 1 second. Repeat

this step, then let the pull ring or valve lever snap back into the closed position.



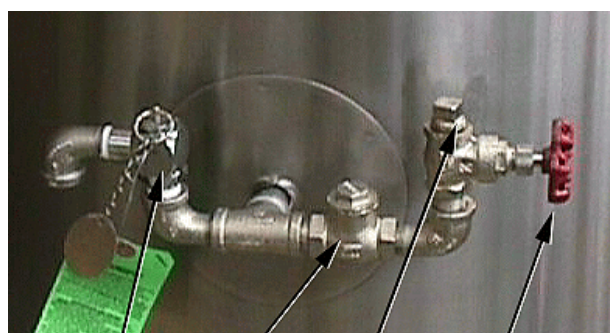
WARNING
STAY AWAY FROM THE STEAM THAT IS BLOWING OUT OF THE SAFETY VALVE. THE STEAM CAN CAUSE A SEVERE BURN.

3. Jacket Filling and Water Treatment

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

- a. If you are replacing water lost as steam, use distilled water. If you are replacing treated water that ran out of the jacket, prepare more treated water as directed in step 4, "Water Treatment Procedure." **Do not use tap water.**
- b. Allow the kettle to cool. Remove the pipe plug from the jacket fill assembly.
- c. Open the gate valve and pour in the distilled or treated water.
- d. Hold the safety valve open to allow air to escape from the jacket while you pour in the water. Continue to pour until the water level rises to a point between the marks on the gauge glass.
- e. Any air introduced into the jacket during filling must be removed to obtain efficient heating. See "Jacket Vacuum" above.

4. Water Treatment Procedure



SAFETY VALVE CHECK VALVE PIPE PLUG GATE VALVE

- (1) Obtain water treatment compound and a pH test kit from your Groen distributor.

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

- (2) Fill a mixing container with the measured amount of water required. (See table). Distilled water is recommended.

Kettle Model	Jacket Capacity
EE-20 or AE/1-20	3¼ Gallons
EE-30 or AE/1-30	4½ Gallons
EE-40 or AE/1-40	5¼ Gallons
EE-60 or AE/1-60	7¾ Gallons
EE-80 or AE/1-80	10 Gallons
EE-100 or AE/1-100	10 Gallons

- (3) 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.
- (4) Measure the water treatment compound (One way to do this is to add the compound from a measuring cup.)
- (5) Stir the water continuously, while you slowly add water treatment compound, until the water reaches a pH between 10.5 and 11.5. Judge the pH by frequently comparing the test strip color with the color chart provided in the pH test kit. If you are color blind have a person who is not color blind read the test strip color level.
- (6) Record the exact amounts of water and treatment compound used. These amounts may be used again, if the same water sources and compound are used in the future. However, it is best to check the pH each time treated water is prepared.

Cleaning

1. Suggested Tools:

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

2. Precautions

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

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



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

3. Procedure

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



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



Scrapers or steel wool can harm the kettle surface.

can be used to clean controls, housings, and electrical conduits.

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

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

- f. Rinse the kettle and draw-off valve parts thoroughly with hot water, then drain completely.

- g. As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing.
- h. To remove stuck materials, use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool with the cleaning solution. To reduce effort required in washing, let the detergent solution sit in the kettle and soak into the residue. Do NOT use abrasive materials or metal tools that might scratch the surface. Scratches make the surface harder to clean and provide places for bacteria to grow.

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

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

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

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

Troubleshooting

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

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

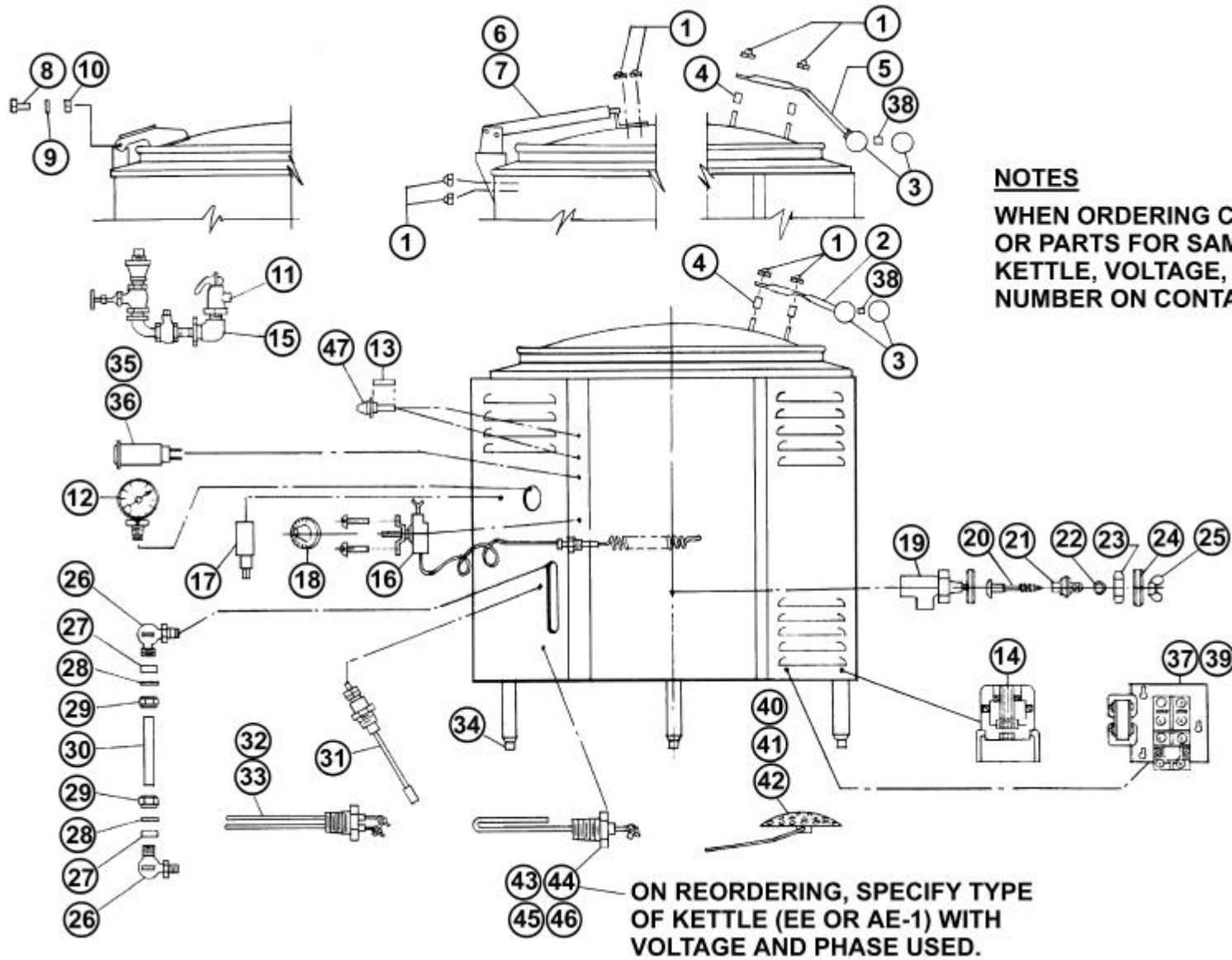
SYMPTOM	WHO	WHAT TO CHECK
Kettle will not heat, and heating indicator will not come on.	User	a. Electric power supply to the unit. b. Water level in jacket. c. Control circuit fuses in the control console. REPLACE BLOWN FUSES ONLY WITH A FUSE OF THE SAME AMP RATING. a HIGHER RATED FUSE WILL NOT PROTECT THE UNIT OR THE BUILDING.
	Auth Service Rep Only	d. For loose or broken wires. Y f. Operation of variable thermostat. Y g. Low water cutout switch. Y h. Water probe. Y i. That high limit pressure switch is closed. Y
Kettle will not heat, but heating indicator comes on.	User	a. For air in the jacket. See "Jacket Vacuum" in the Maintenance section of this manual.

Troubleshooting, Continued

SYMPTOM	WHO	WHAT TO CHECK <small>Y indicates items which must be performed by an authorized technician.</small>
	Auth Service Rep Only	b. Contactor. Y c. Heater elements with ohmmeter for ground short or open element. If element is defective, call Groen. Y
Kettle continues heating after it reaches the desired temperature	User	a. Thermostat dial setting.
	Auth Service Rep Only	b. Thermostat circuit for short. Y c. Thermostat calibration. d. Thermostat operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. Y e. Contactor, to determine whether it is energized or stuck. Y
Kettle stops heating before it reaches the desired temperature.	User	a. Thermostat dial setting. b. Jacket water level.
	Auth Service Rep Only	c. Thermostat calibration. Y d. Thermostat operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. Y e. Pressure limit switch. Y
Kettle heats slowly	User	a. For air in the jacket. See "Jacket Vacuum" in the "Maintenance" section of this manual.
	Auth Service Rep Only	b. Heater elements with ohmmeter for ground short or open element. If an element is defective, call Groen. Y c. Voltage of main power source. Y
Safety valve pops.	User	a. For air in the jacket. See "Jacket Vacuum" in the "Maintenance" section of this manual. b. Whether kettle was being heated empty when valve popped.
	Auth Service Rep Only	c. Pressure limit switch. Y d. Thermostat operation. Thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. Y e. Safety valve. If the valve pops at pressures below 48 PSI, replace it. Y f. Contactor, to determine whether it is de-energized. Y
Safety valve leaks a small amount of steam when the kettle is operating.	User	a. For contamination that prevents seating of valve. With full pressure in the jacket, pull the chain all the way briefly to blow the valve clean, then let it snap back to seat the valve.
	Auth Service Rep Only	b. Safety valve for defects. Replace any defective valve with an identical valve. Y

Parts List

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



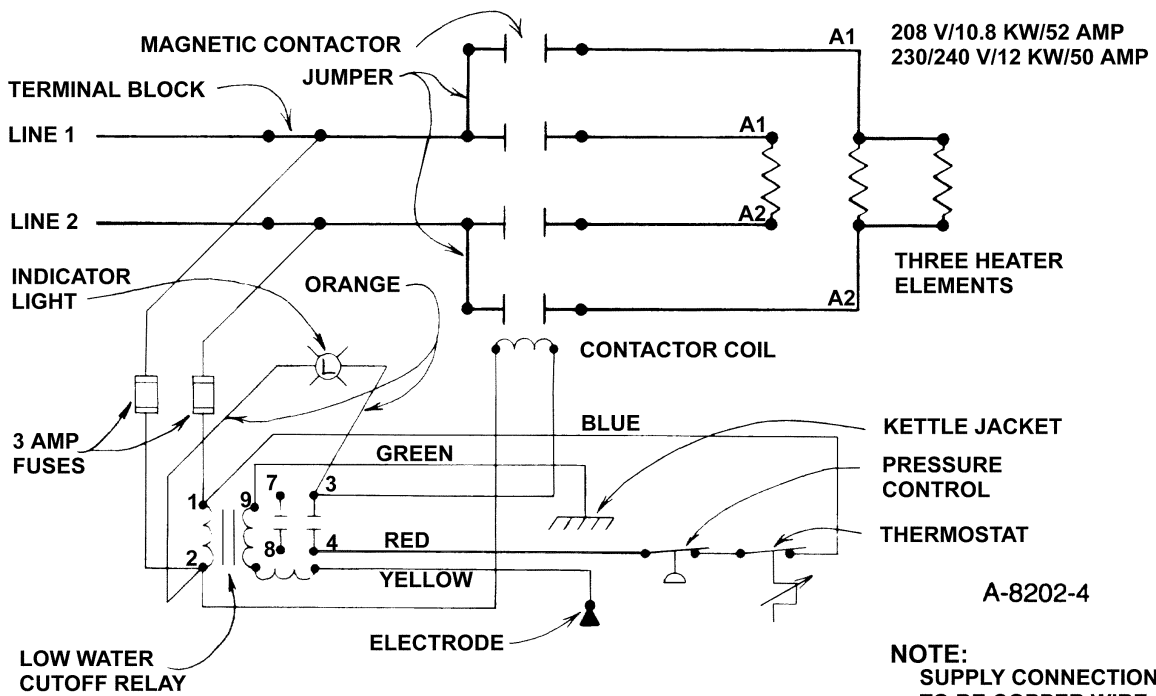
OM-EE

Parts List

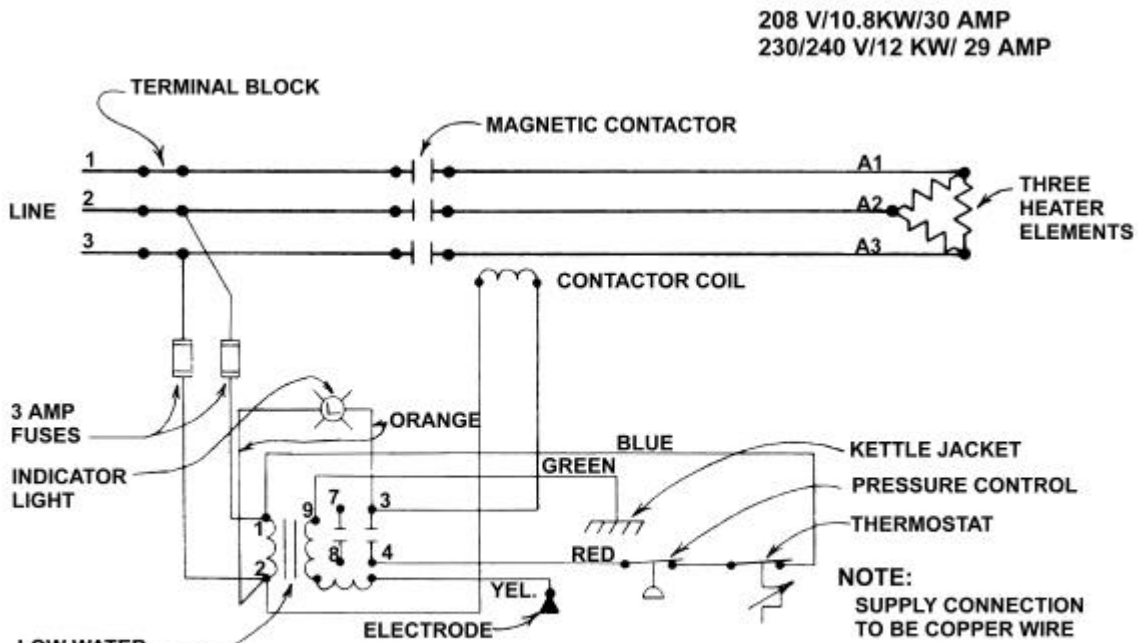
Key	Description	Part No.	Key	Description	Part No.
1	¼"-20 N.C. Cap Nut	005471	29	Hex. Nut (with Assembly 004071)	
2	Handle (40 Gal. & smaller kettles)	047714	30	Water Gauge Glass	008742
3	Knob (Friction)	012691	31	Warrick Electrode	074665
4	Spacer	012733	32	Doubel Heater Element 230/460V - 4000W	008801
5	Fuse Holder	002944	33	Double Heater Element 230/460V - 2000W	008802
6	Actuator Cover (60 Gal.)	012520	34	Bullet Foot Assembly	002479
7	Actuator Cover (80 Gal.)	012521	35	Snap-in Indicator Light 125 V	002986
8	½"-20 N.F.x 1" Hex Cap Screw	002212	36	Snap-in Indicator Light 250 V	016028
9	½" Brass Washer	001213	37	Warrick Relay 230V	010410
10	½"-20 N.F. x 5/16" Thick Jam Nut	002218	38	Tolerance Ring	012692
11	30 Lb. Safety Valve	097009	39	Warrick Relay 115V & 480V	010412
12	Pressure Gauge	099156	40	Removable Strainer 9" Dia ¼" holes	009007
13	Fuse - 3 Amp, 208 & 240 V	002945		Removable Strainer 9" Dia ¼" holes	009044
14	Contactor (SEE DRAWING NOTE)			2" Tangent Draw-Off	
15	Water Fill Assembly	097010	41	Removable Strainer 9" Dia C" holes	009040
16	Thermostat	012313		Removable Strainer 9" Dia C" holes	013785
17	Pressure Limit Control	096963		2" Tangent Draw-Off	
18	Thermostat Knob	012314	42	Removable Strainer 9" Dia no holes	009057
19	1½" Draw-Off Valve, Complete	009000		Removable Strainer 9" Dia no holes	013783
20	2" Draw-Off Valve, Complete	009046		2" Tangent Draw-Off	
21	Valve Stem	009048	43	Single Heater Element 240V-4000W	008851
22	Rubber "O" Ring	009034	44	Single Heater Element 208V-3600W	008852
23	Sanitary Hex. Nut #13H	008911	45	Single Heater Element 240V-2000W	008853
24	Valve Handle	009029	46	Single Heater Element 240V-2000W	008854
25	Wing Nut	009028		(240V-2500W)	
26	½"Gauge Glass Connector Assy.	004071			
27	Rubber Gauge Glass Gasket	008917			
28	Washer (with Assembly 004071)				

Note: To order a new contactor, specify the part number on the old contactor.

Electrical Schematics



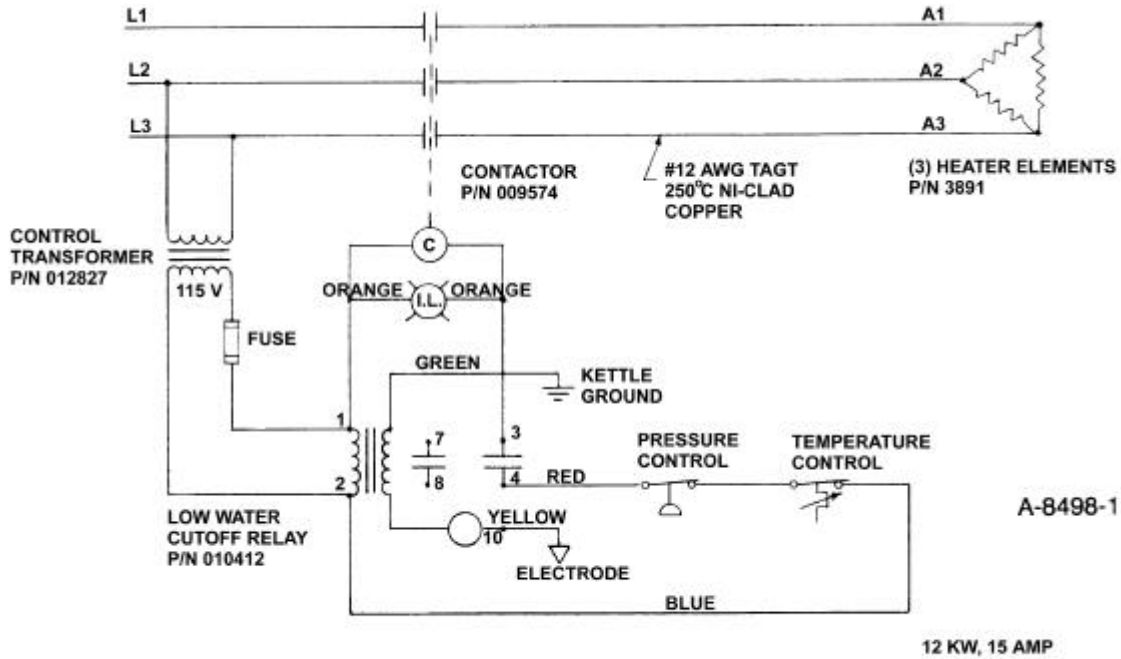
EE-20 208/230/240 V, 1 PH



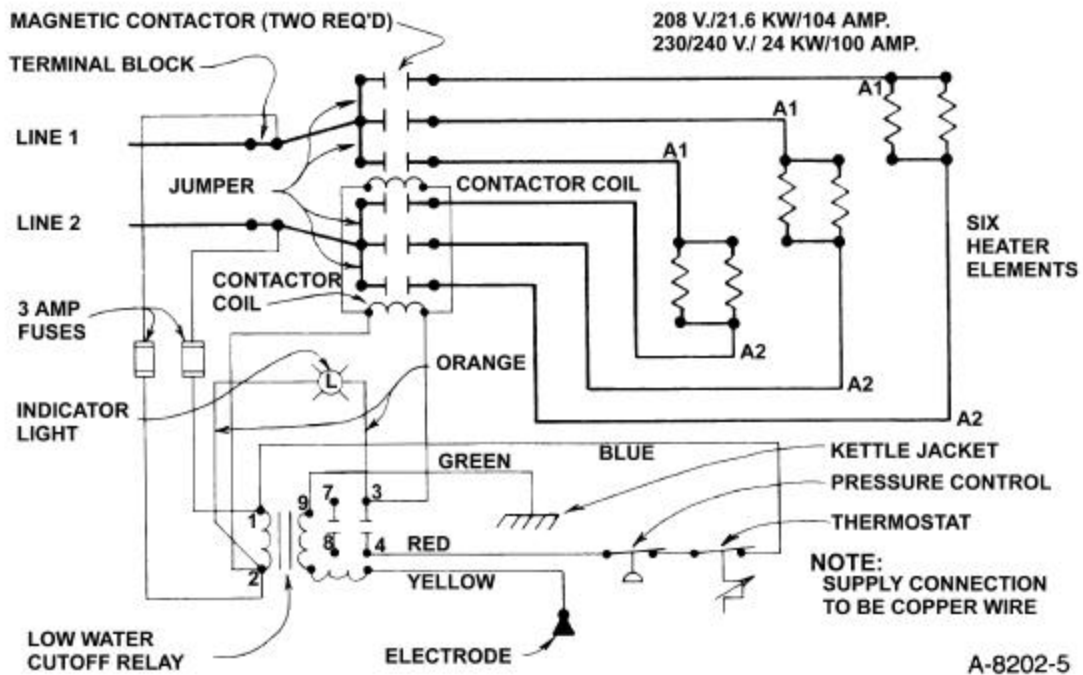
EE-20 208/230/240 V, 3 PH

A-8202-1

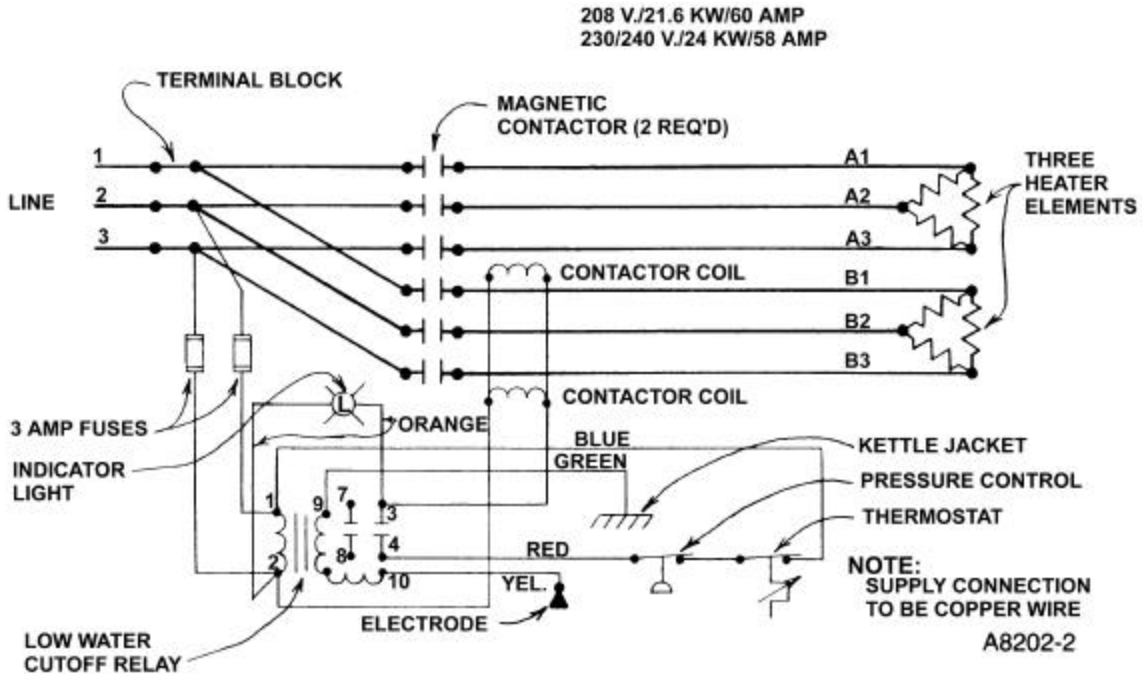
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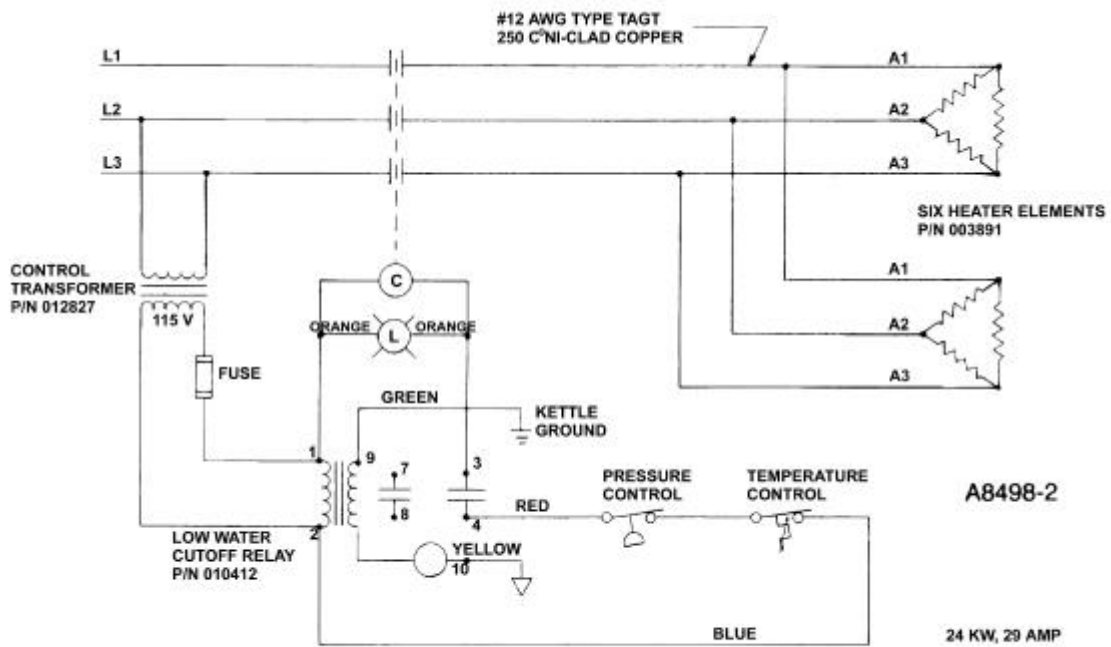
EE-20 480 V, 3 PH



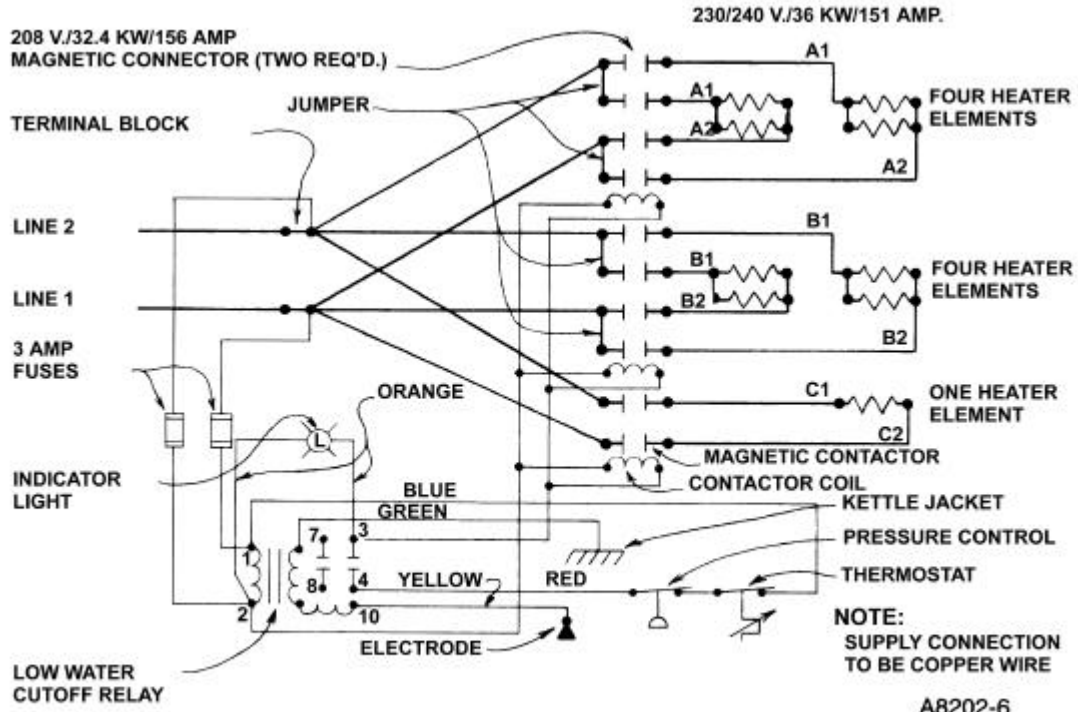
EE-30 & 40 208/230/240 V, 1 PH



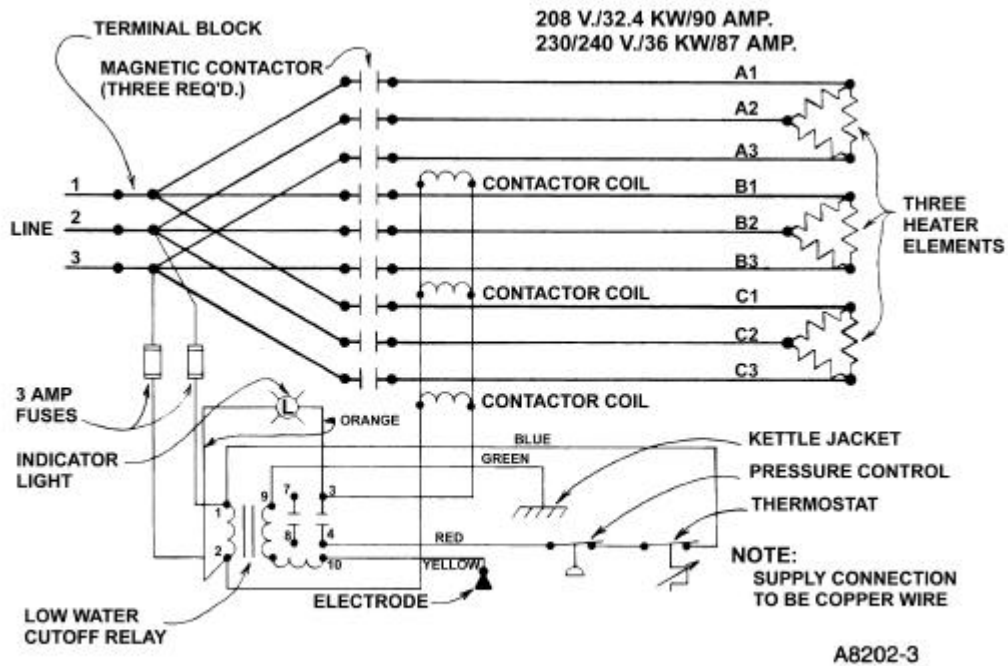
EE-30 & 40 208/230/240 V, 3 PH



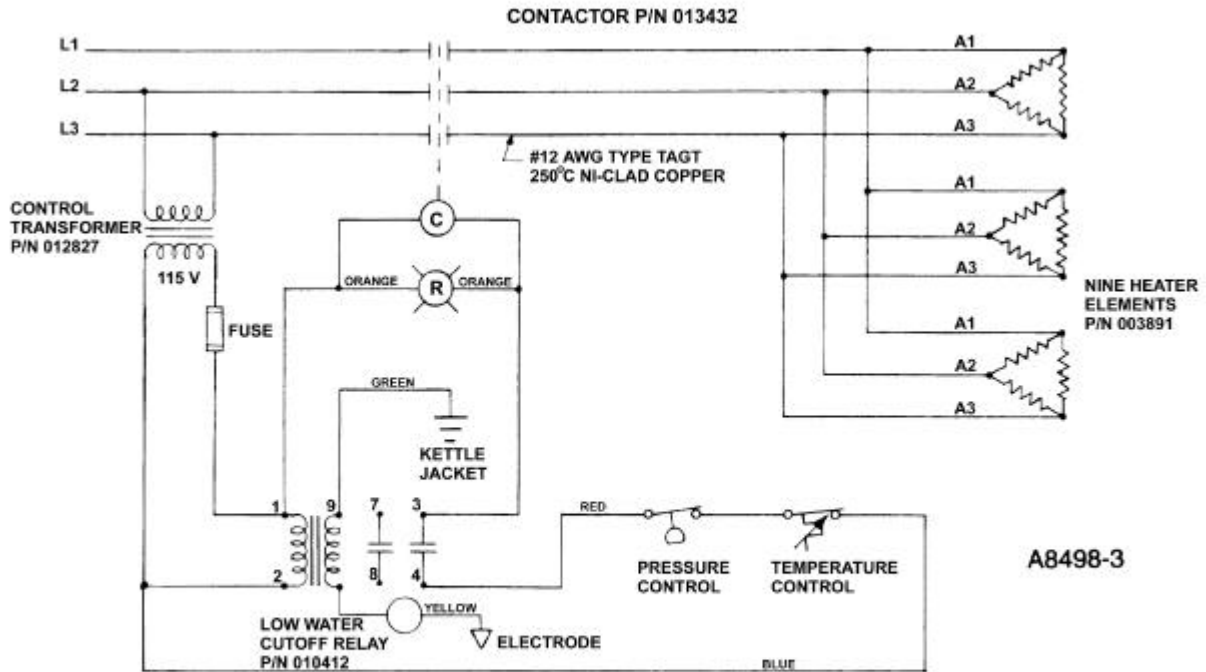
EE-30 & 40 480 V, 3 PH



EE-60, 80 & 100 208/230/240 V, 1 PH

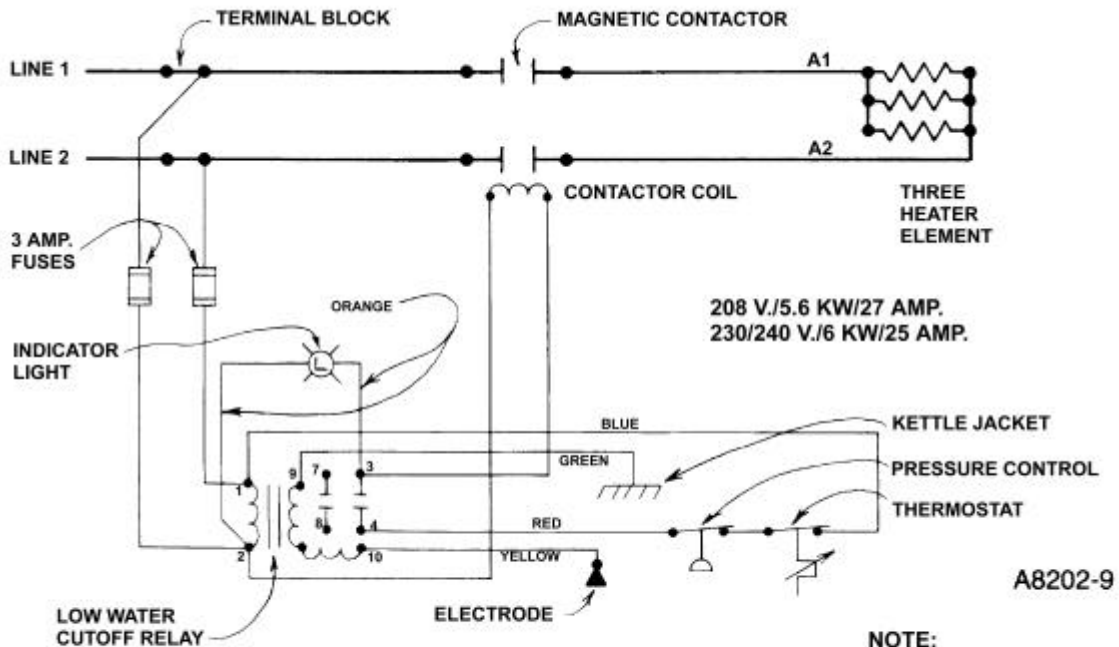


EE-60, 80 & 100 208/230/240 V, 3 PH



36 KW, 44 AMP.

EE-60, 80 & 100 480 V, 3 PH

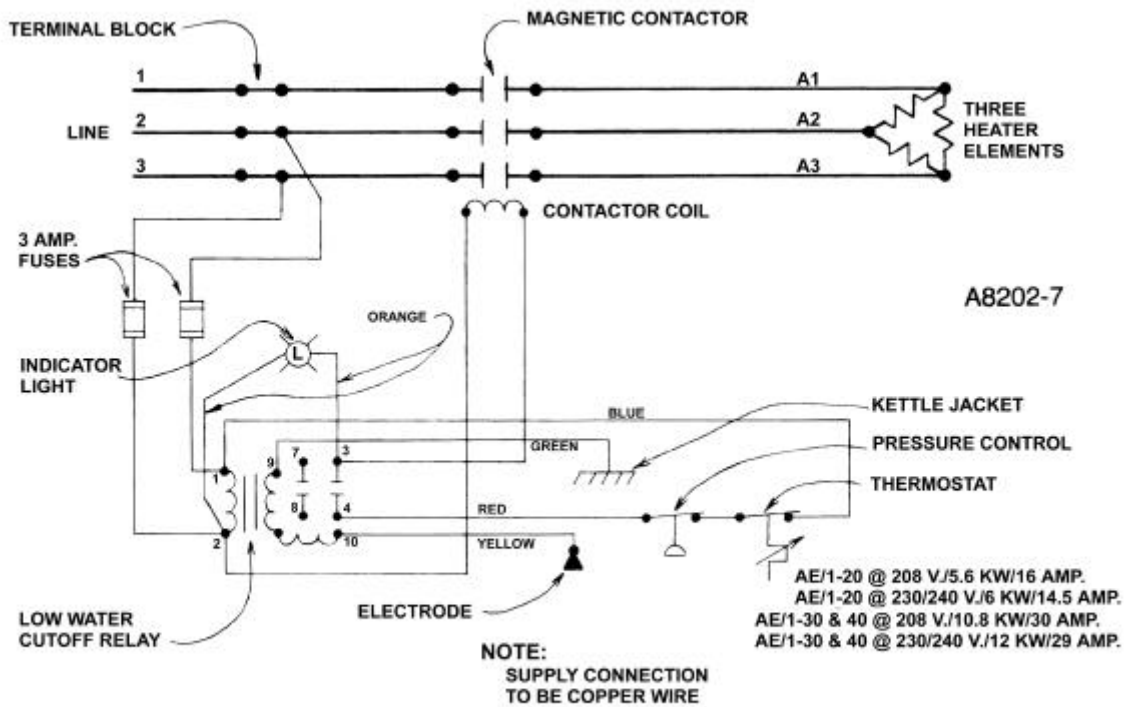


208 V/5.6 KW/27 AMP.
230/240 V/6 KW/25 AMP.

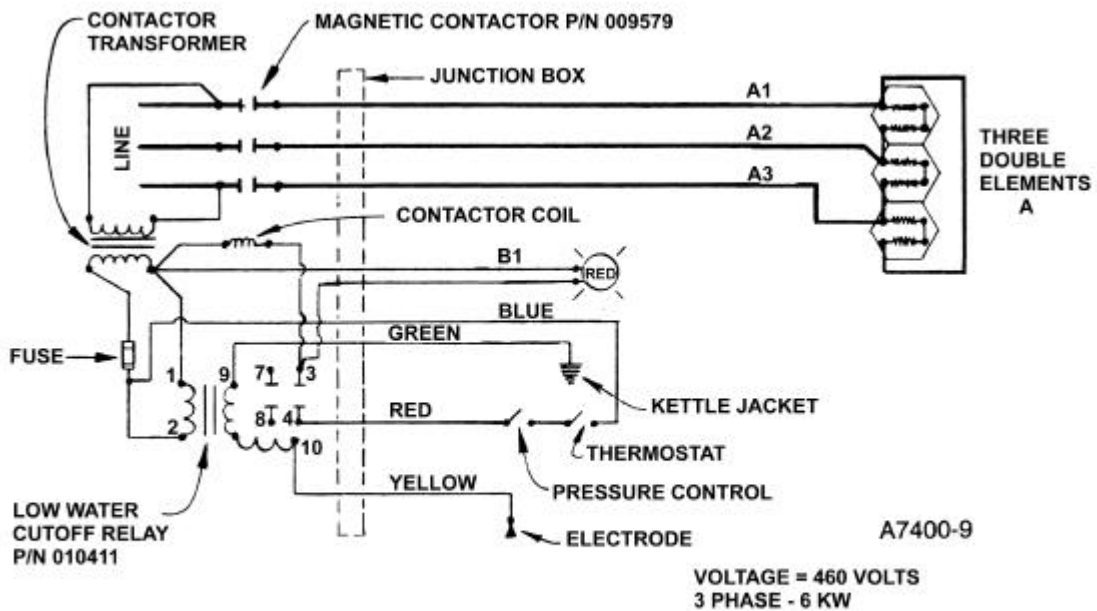
A8202-9

NOTE:
SUPPLY CONNECTION
TO BE COPPER WIRE

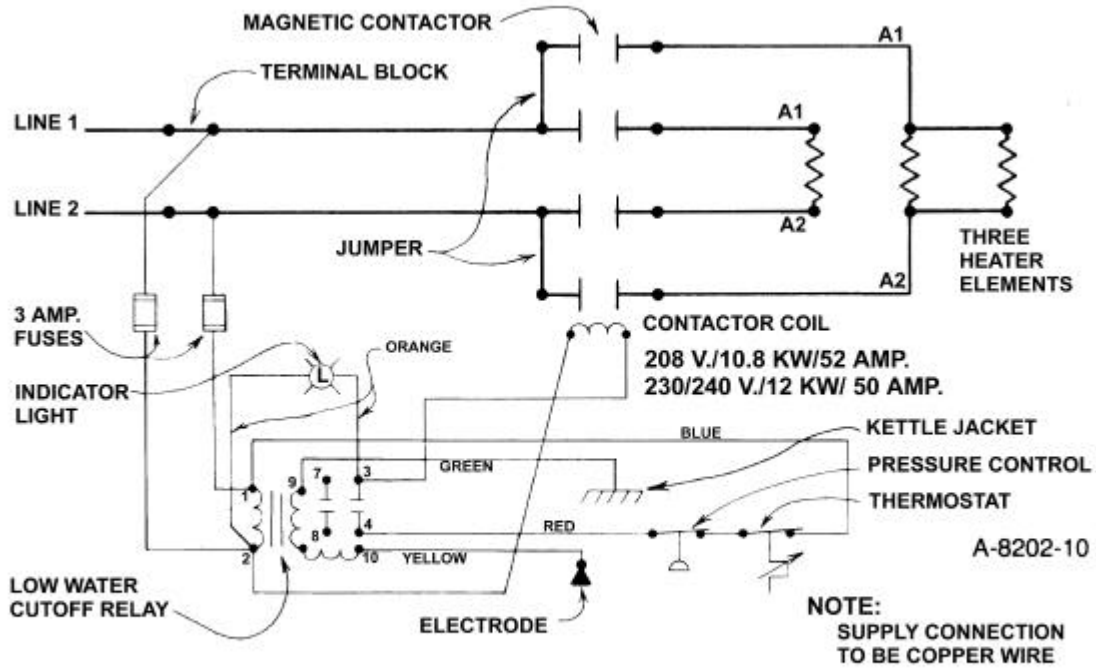
AE/1-20 208/230/240 V, 1 PH



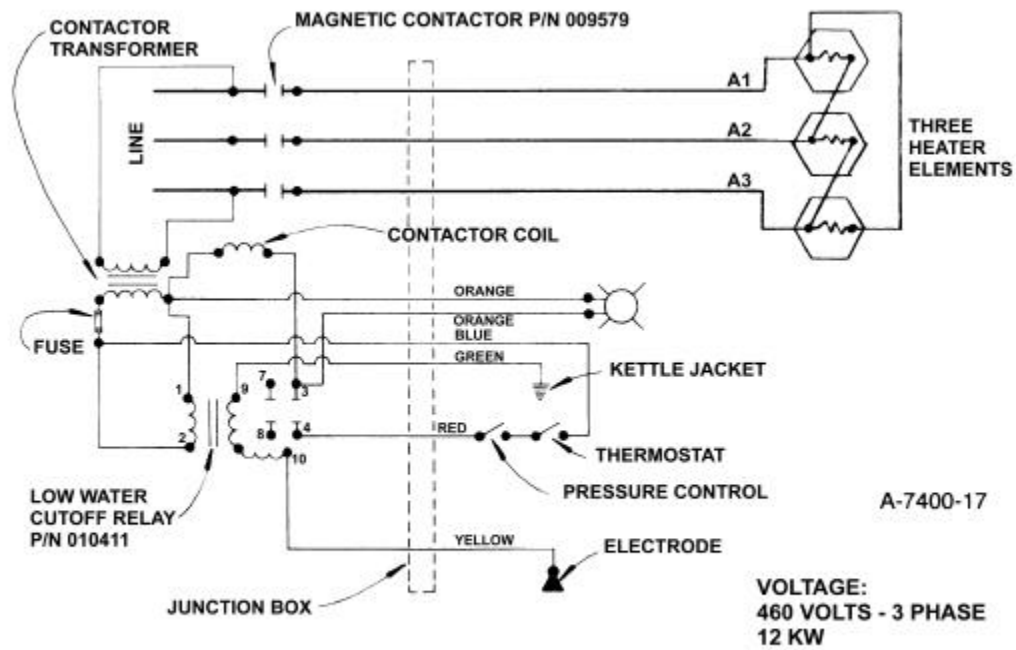
AE/1-20, 30 & 40 208/230/240 V, 3 PH



AE/1-20 460 V, 3 PH



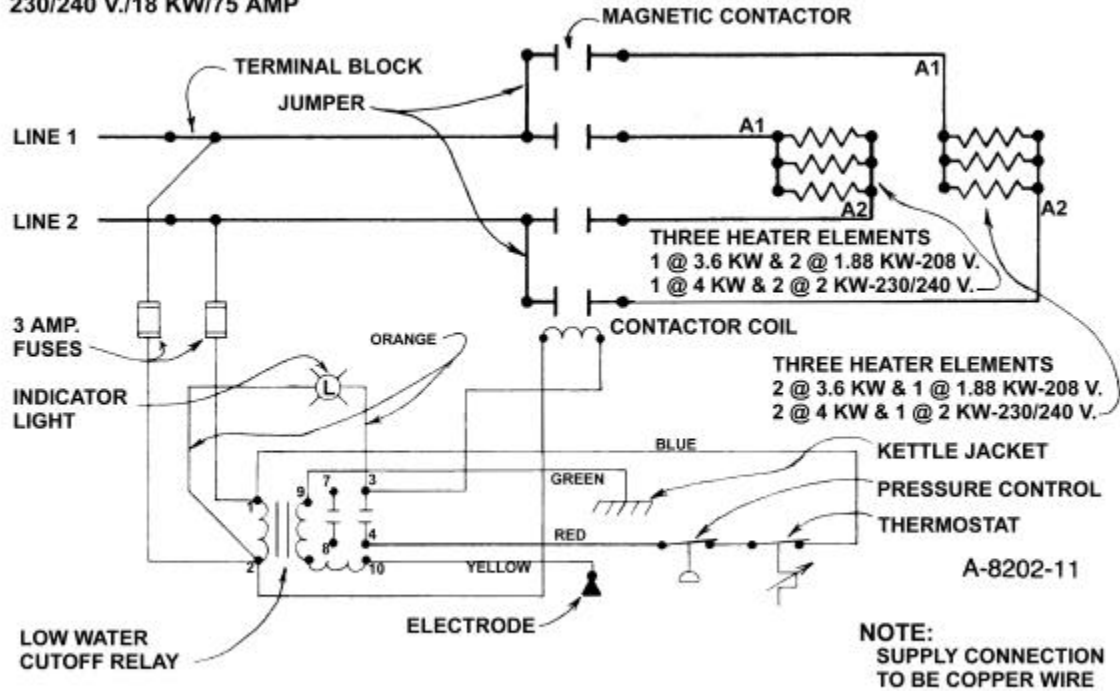
AE/1-30 & 40 208/230/240 V, 1 PH



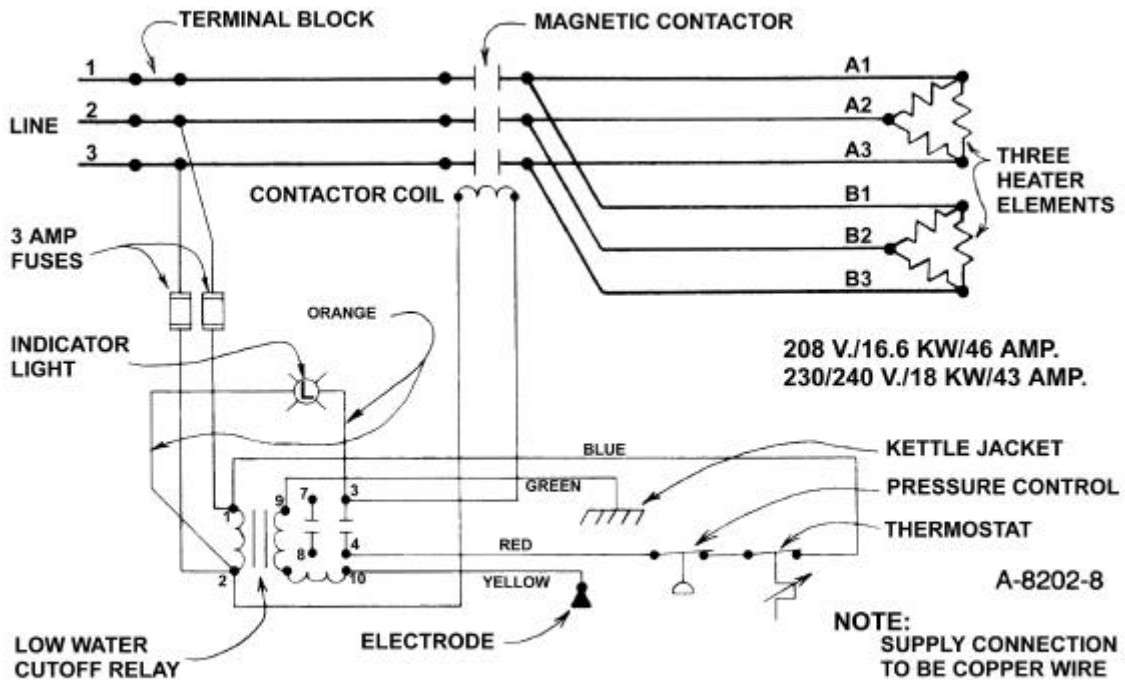
AE/1-30 & 40 460 V, 3 PH

OM-EE

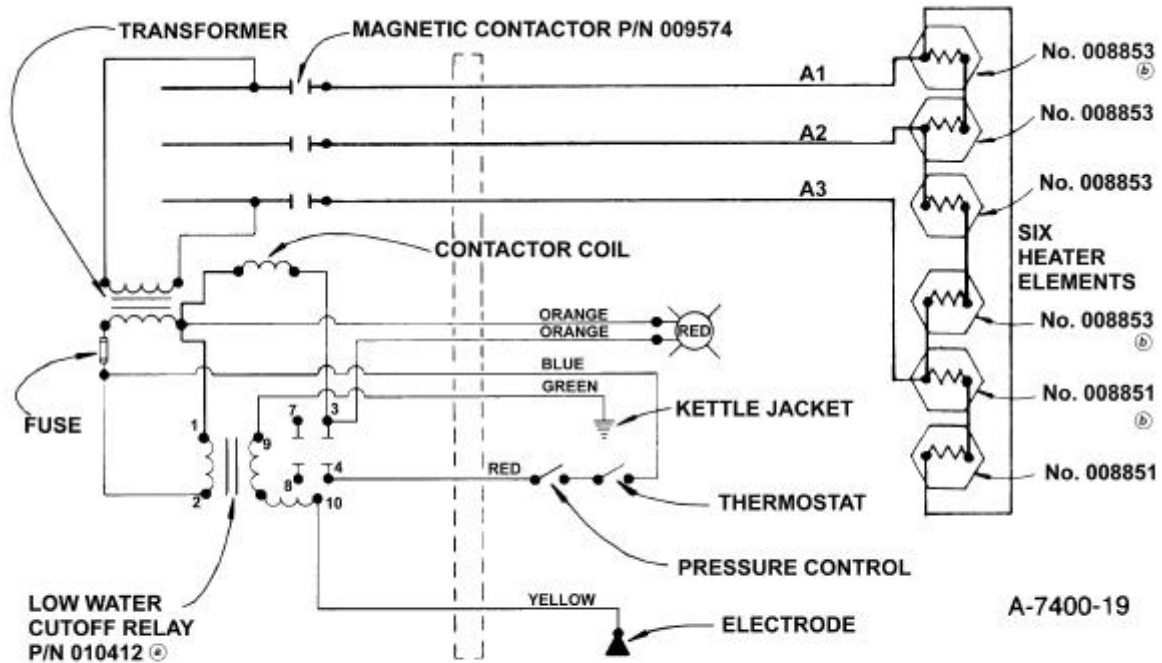
208 V./16.4 KW/78 AMP
230/240 V./18 KW/75 AMP



AE/1-60, 80 & 100 208/230/240 V, 1 PH



AE/1-60, 80 & 100 208/230/240 V, 3 PH



AE/1-60, 80 & 100 460/480 V, 3 PH

References

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

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

NFPA/70 - The National Electrical Code

ECONOMICS LABORATORY, INC.
 St. Paul, Minnesota 55102

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

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

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

Service Log

Model No. _____ Purchased From _____
Serial No. _____ Location _____
Date Purchased _____ Date Installed _____
Purchase Order No. _____ For Service Call _____

Date	Service Performed	Performed By

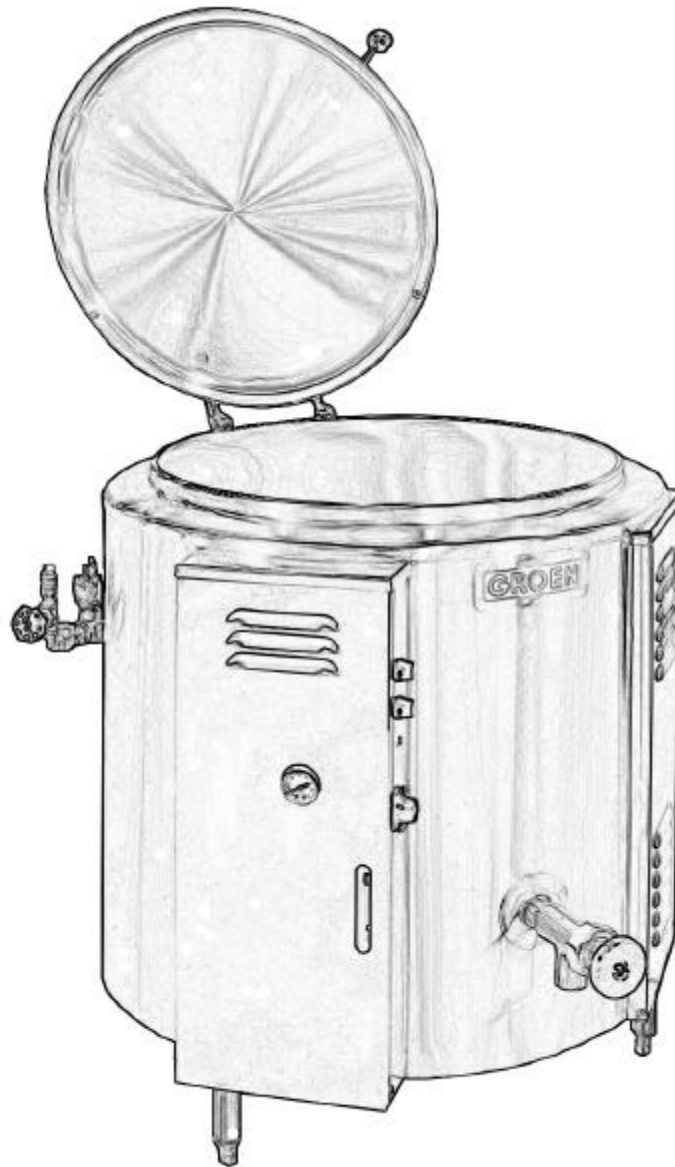
Limited Warranty To Commercial Purchasers *

(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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Jackson, Mississippi 39212
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FAX 601 373-9587

OM-EE (Revised 6/98)
Part Number 121019