



KLS-E Series

ELECTRIC STATIONARY FLOOR KETTLE

INSTALLATION - OPERATION - MAINTENANCE



BLODGETT OVEN COMPANY

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PART NUMBER 170092 REV B (04/11)

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.

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. WE SUGGEST 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.

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 INGREDIENTS, STIRRING OR TRANSFERRING PRODUCT TO ANOTHER CONTAINER.
- 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 USE A HIGH PRESSURE HOSE TO CLEAN KETTLE SURFACES.
- 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 THE MANUFACTURER OR AN AUTHORIZED DISTRIBUTORS CAN CAUSE OPERATOR INJURY AND DAMAGE TO THE EQUIPMENT, AND WILL VOID ALL WARRANTIES.

IMPORTANT - READ FIRST - IMPORTANT

IMPORTANT: SERVICE PERFORMED BY OTHER THAN FACTORY AUTHORIZED PERSONNEL WILL VOID WARRANTIES.

WARNING: DO NOT HEAT AN EMPTY KETTLE. EXCESSIVE STEAM PRESSURE COULD DEVELOP.

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

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References

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

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

NFPA/70 - The National Electrical Code

ECONOMICS LABORATORY, INC.
St. Paul, Minnesota 55102

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

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

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

Equipment Description



Blodgett Model KLS-E 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.

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. 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:

- **Contactors:** 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°F 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 3 finish. The unit is ASME shop inspected and registered with the National Board for working pressures up to 30 PSI.

Optional equipment for the kettles includes:

- Three inch draw-off valve
- 1/4" perforated or solid disc strainer
- Basket inserts
- Water fill faucets
- Automatic water filler
- Kettle brush kit

| Model | 20E-KLS | 40E-KLS | 60E-KLS | 80E-KLS | 100E-KLS |
|------------------------|--------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
| Capacity | 20 gallons (75 liter) | 40 gallons (150 liter) | 60 gallons (226 liter) | 80 gallons (300 liter) | 100 gallons (378 liter) |
| Inside 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 | 38 in (97 cm) | 48 in (123 cm) | 47 in (120 cm) | 49 in (125 cm) | 49 in (125 cm) |

Inspection & Unpacking

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

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.

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.

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.

Thoroughly inspect the unit for concealed damage. Report any shipping damage or incorrect shipments to the delivery agent.

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

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



The unit will arrive in a heavy carton.



Inside it will be banded to a skid.

Installation

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 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 Food Service Engineering Department.

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," Pages 11 - 12.
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. Bring in the electrical supply through opening on control housing that is located below the thermostat dial. An opening is provided for 1-1/4" (35mm) conduit fitting.

Water tight, 90° elbow connection is recommended. Incoming power connections are made at the terminal block.

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 Blodgett recommends following the more stringent code. (A BX connection is not recommended.)

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



| | 20E-KLS | | 40E-KLS | | 60E-KLS | | 80E-KLS | | 100E-KLS | |
|-----------|---------|-----|---------|-----|---------|-----|---------|-----|----------|-----|
| | 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 |

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

Initial Start-Up

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

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

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

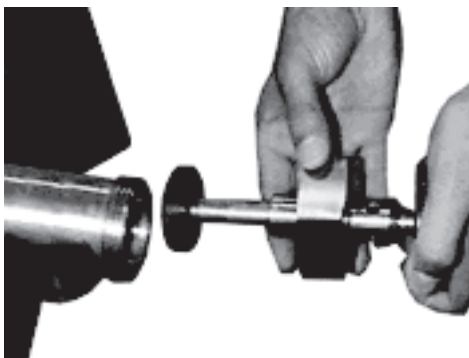


Now that the kettle has been installed, you should test it to ensure that the unit is operating correctly.

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.
4. Turn on the electrical service to the unit.
5. Pour water into the kettle unit it is about six inches deep (150 mm).
6. Test draw-off valve operation by opening it all the way, then closing it before all the water runs out.
7. 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.
8. 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 Certified Service Agency.

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

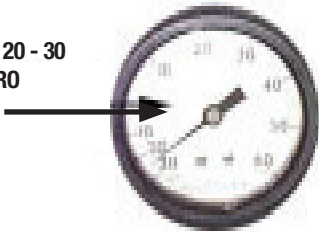
WARNING
OPEN THE KETTLE LID CAREFULLY TO AVOID STEAM WHICH MAY ESCAPE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

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

WARNING
AVOID ALL DIRECT CONTACT WITH HOT KETTLE BODY, 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 AT A MINIMUM OF 2-3" (5-8 CM) BELOW THE KETTLE BODY RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING AND SAFE PRODUCT TRANSFER.

PRESSURE 20 - 30
BELOW ZERO



Be sure that the pressure/vacuum gauge shows at least 20 inches of vacuum.



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 pages 11-12.
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 11.
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 basket insert.
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" (6mm). 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.
- 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.

Operation

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

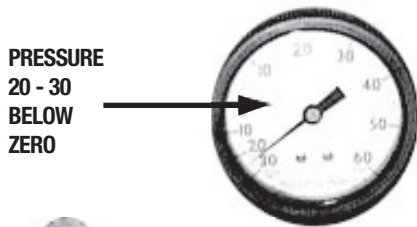
If steam pressure greater than 30 PSI is generated in the jacket, the safety valve will open and relieve the excess pressure.

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

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

Maintenance

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



PRESSURE
20 - 30
BELOW
ZERO



WATER LEVEL
BETWEEN
LINES



Test the safety valve at least twice monthly.

NOTICE: Contact an authorized representative when repairs are required.

A. Periodic Maintenance

A Maintenance and Service Log is provided at the back of this manual with the warranty information. Each time maintenance is performed on your 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:

1. Check the pressure/vacuum gauge 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.
2. 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”.
3. 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 service representative.

B. Jacket Vacuum

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

To remove air:

1. Start the unit. (Be sure there is water or product in the kettle when heating.)
2. Make sure that the elbow of the safety valve outlet is turned so that escaping steam is directed toward the floor.
3. 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.

C. Jacket Filling and Water Treatment

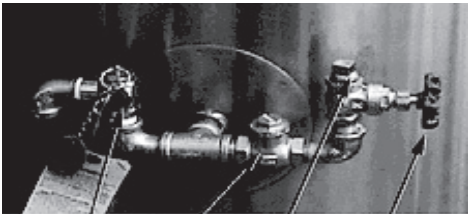
The jacket was charged at the factory with the proper amount of treated water. You may need to restore this water because it was lost as steam during venting or by draining.

1. 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 6, “Water Treatment Procedure.” Do not use tap water.

Maintenance

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

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



SAFETY VALVE CHECK VALVE PIPE PLUG GATE VALVE

| Kettle Model | Jacket Capacity |
|--------------|-----------------|
| 20E-KLS | 3 Gallons |
| 40E-KLS | 5 Gallons |
| 60E-KLS | 7 Gallons |
| 80E-KLS | 10 Gallons |
| 100E-KLS | 10 Gallons |

2. Allow the kettle to cool. Remove the pipe plug from the jacket fill assembly.
3. Open the gate valve and pour in the distilled or treated water.
4. 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.
5. Close the gate valve and replace the pipe plug.
6. Any air introduced into the jacket during filling must be removed to obtain efficient heating. See “Jacket Vacuum” section.

D. Water Treatment Procedure

1. Obtain water treatment compound and a pH test kit from your distributor.
2. Fill a mixing container with the measured amount of water required. (See table). Distilled water is recommended.
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

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. CAREFULLY READ THE WARNINGS AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER TO BE USED.

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



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



Scrapers or steel wool can harm the kettle surface.

A. Suggested Tools:

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

B. 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.

C. Procedure:

1. 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.
2. Scrape and flush out food residues. Be careful not to scratch the kettle with metal implements. Close the draw-off.
3. Prepare a hot solution of the detergent/ cleaning compound as instructed by the supplier. Clean the unit thoroughly. A cloth moistened with cleaning solution can be used to clean controls, housings, and electrical conduits.
4. Rinse the kettle thoroughly with hot water, then drain completely.
5. Disassemble the tangent draw-off valve. Clean the draw-off port and each valve part with a brush.
6. Rinse the kettle and draw-off valve parts thoroughly with hot water, then drain completely.
7. As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing.
8. 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.

Cleaning

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

9. The outside of the unit may be polished with a stainless steel cleaner such as “Zepper” from Zep Manufacturing Co.
10. 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.
11. It is recommended that each piece of equipment be sanitized just before use.
12. 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, in accordance with the manufacturer’s directions. Rinse and drain the unit before further use.
13. If cleaning problems persist, contact your cleaning product representative for assistance.

Troubleshooting

Your 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

USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY AN AUTHORIZED SUPPLIER/DISTRIBUTOR WILL VOID ALL WARRANTIES AND COULD INJURE THE OPERATOR OR DAMAGE THE EQUIPMENT.

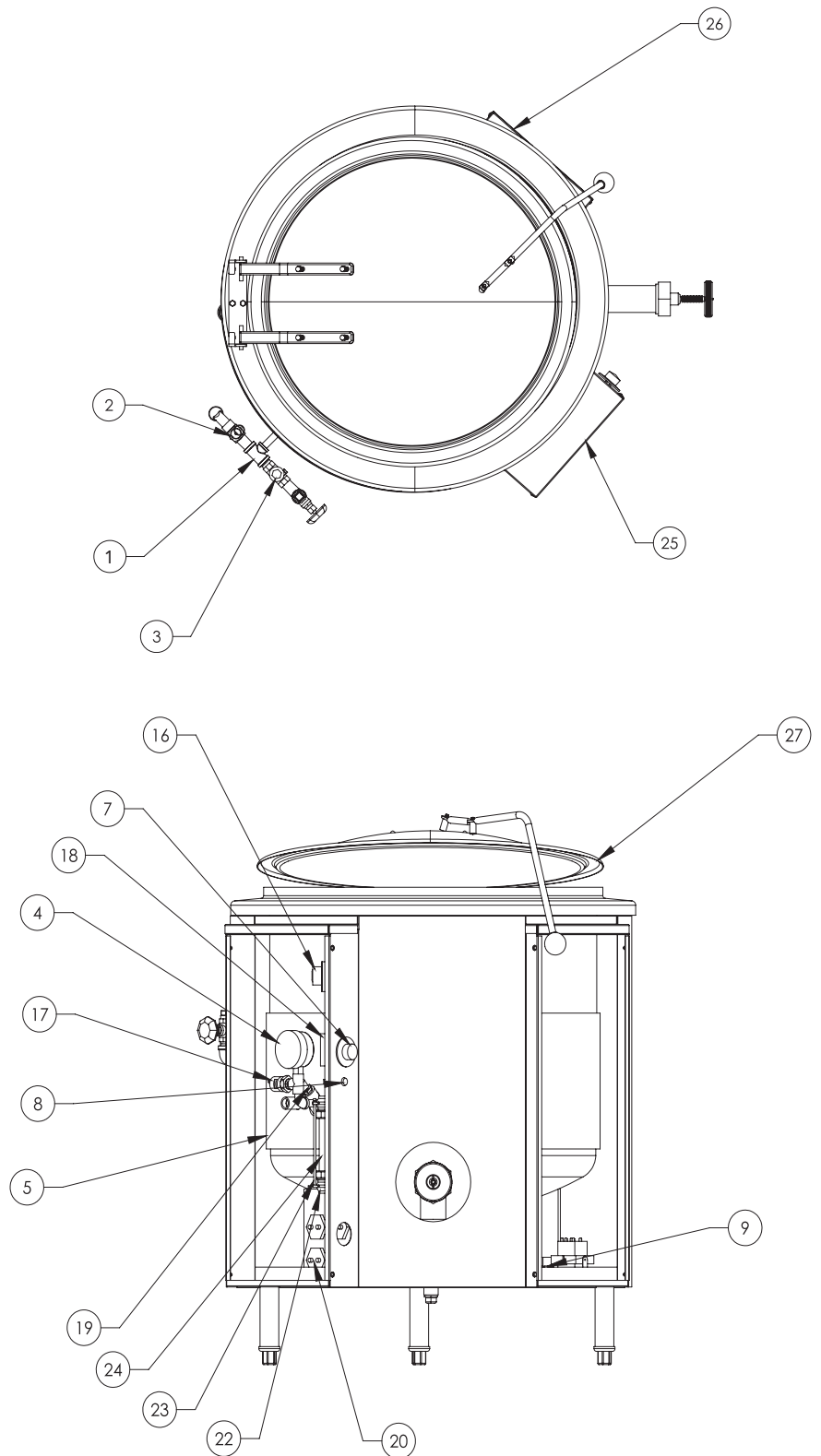
| SYMPTOM | WHO | WHAT TO CHECK <small>X indicates items which must be performed by an authorized technician.</small> |
|--|-----------------------|--|
| Kettle will not heat, and heating indicator will not come on. | User | a. Electric power supply to the unit. b. Water level in jacket. c. Control circuit 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. X e. Operation of variable thermostat. X f. Low water cutout switch. X g. Water probe. X h. That high limit pressure switch is closed. X |
| 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. |
| | Auth Service Rep Only | b. Contactor. X c. Heater elements with ohmmeter for ground short or open element. If element is defective, call Manufacturer. X |
| Kettle continues heating after it reaches the desired temperature. | User | a. Thermostat dial setting. |
| | Auth Service Rep Only | b. Thermostat circuit for short. X 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. X e. Contactor, to determine whether it is energized or stuck. X |
| 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. X d. Thermostat operation. Thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X e. Pressure limit switch. |
| 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 Manufacturer. X c. Voltage of main power source. X |

Troubleshooting

| SYMPTOM | WHO | WHAT TO CHECK <small>X indicates items which must be performed by an authorized technician.</small> |
|--|-----------------------|--|
| 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. X d. Thermostat operation. Thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X e. Safety valve. If the valve pops at pressures below 48 PSI, replace it. X f. Contactor, to determine whether it is de-energized. X |
| 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. X |

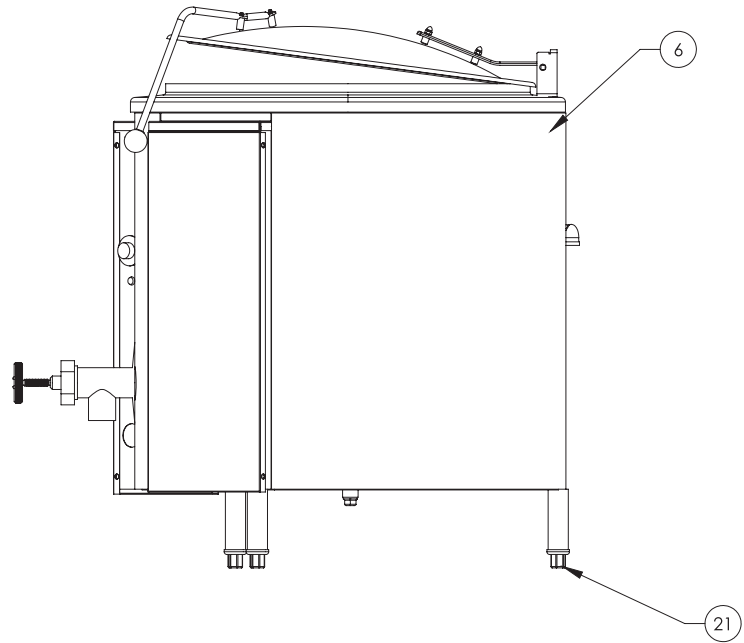
Parts List

| Key | Description | Part No. |
|-----|--------------------------------|----------|
| 1 | WATER FILL ASSEMBLY | 097007 |
| 2 | SAFETY VALVE | 097009 |
| 3 | CHECK VALVE | 004187 |
| 4 | PRESSURE GAUGE | 156047 |
| 5 | KBA 2" TDO 20 | 153211 |
| 5 | KBA 3" TDO 20 | 154937 |
| 5 | KBA 2" TDO 40 | 153218 |
| 5 | KBA 3" TDO 40 | 153219 |
| 5 | KBA 2" TDO 60 | 153226 |
| 5 | KBA 3" TDO 60 | 153227 |
| 5 | KBA 2" TDO 80 | 153231 |
| 5 | KBA 3" TDO 80 | 153232 |
| 5 | KBA 2" TDO 100 | 153233 |
| 5 | KBA 3" TDO 100 | 153234 |
| 6 | OUTER SHELL ASSEMBLY 20 | 147871 |
| 6 | OUTER SHELL ASSEMBLY 40 | 153212 |
| 6 | OUTER SHELL ASSEMBLY 60 | 153220 |
| 6 | OUTER SHELL ASSEMBLY 80 | 153228 |
| 6 | OUTER SHELL ASSEMBLY 100 | 153235 |
| 7 | KNOB THERMOSTAT | 170229 |
| 8 | LIGHT | 116384 |
| 9 | ELECTRICAL MOUNT ASSEMBLY | 147881 |
| 10 | CONTACTOR | 148102 |
| 11 | TRANSFORMER, 208/240v/24v 40va | 137441 |
| 11 | TRANSFORMER, 480v/24v 40va | 137694 |
| 12 | GROUND TERMINAL | 119829 |
| 13 | TERMINAL BLOCK | 003888 |
| 14 | FUSE HOLDER | 077854 |
| 15 | FUSE, 3 AMP | 077853 |
| 16 | WATER LEVEL BOARD | 122192 |
| 17 | PRESSURE SWITCH | 108559 |
| 18 | THERMOSTAT | 012313 |
| 19 | WATER LEVEL PROBE | 074665 |
| 20 | ELEMENT, 208v 3kw | 008852 |
| 20 | ELEMENT, 240v 4kw | 008851 |
| 20 | ELEMENT, 480v 4kw | 003891 |
| 21 | FOOT ADJUSTABLE BULLET | 002479 |
| - | FOOT, FLANGED | 119372 |



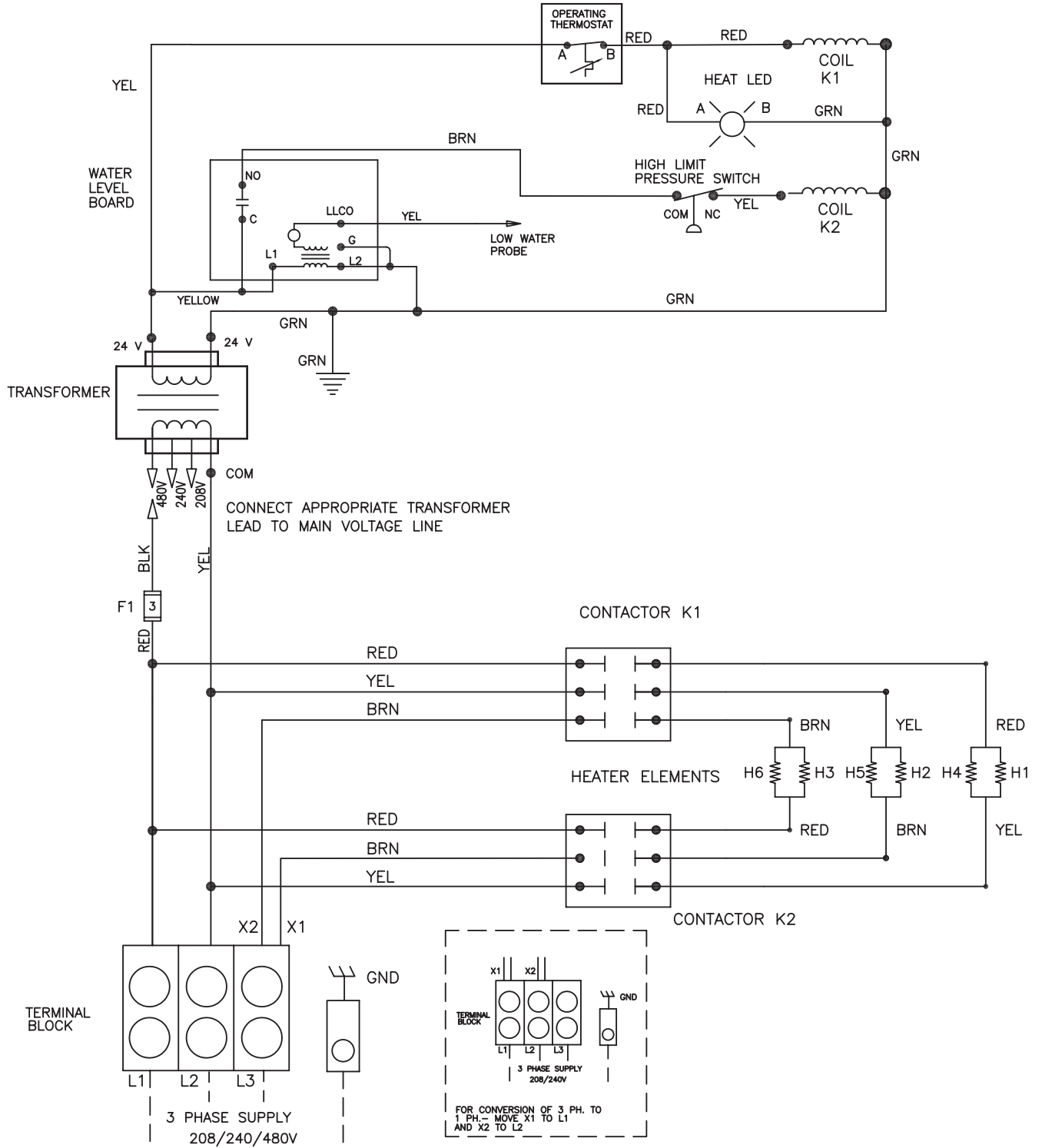
Parts List

| Key | Description | Part No. |
|-----|-----------------------------------|----------|
| 22 | FITTINGS, SIGHT GLASS ASSEMBLY | 002845 |
| 23 | GUARD, GLASS ROD GAUGE | 002981 |
| 24 | TUBE, WATER LEVEL | 008742 |
| 25 | INSTRUMENT BOX COVER 20 | 147869 |
| 25 | INSTRUMENT BOX COVER 40 | 146665 |
| 25 | INSTRUMENT BOX COVER 60 | 147870 |
| 25 | INSTRUMENT BOX COVER 80 | 147931 |
| 25 | INSTRUMENT BOX COVER 100 | 147932 |
| 26 | CONTROL BOX COVER 20 | 147867 |
| 26 | CONTROL BOX COVER 40 | 146666 |
| 26 | CONTROL BOX COVER 60 | 147868 |
| 26 | CONTROL BOX COVER 80 | 147927 |
| 26 | CONTROL BOX COVER 100 | 147928 |
| 27 | COVER ASSEMBLY 20 | 047695 |
| 27 | COVER ASSEMBLY 40 | 067417 |
| 27 | COVER ASSEMBLY 60 | 049884 |
| 27 | COVER ASSEMBLY 80, 100 | 047694 |
| X | HARNESS, CONTROL 20, 40 | 148503 |
| X | HARNESS, CONTROL 60, 80, 100 | 148507 |
| X | HARNESS, HIGH VOLTAGE 20, 40 | 148504 |
| X | HARNESS, HIGH VOLTAGE 60, 80, 100 | 148508 |
| X | HARNESS HEATER 20 | 148505 |
| X | HARNESS HEATER 40 | 148506 |
| X | HARNESS HEATER 60, 80, 100 | 148509 |



x- Item not depicted/called out in drawing

Wiring Diagram





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