★ IMPORTANT INFORMATION ★ KEEP FOR OPERATOR ★ IMPORTANT INFORMATION ★

OPERATOR MANUAL

OM-DEE/4

Part Number 148783 Rev. D

DOMESTIC

MODEL: DEE/4
Steam Jacketed Kettle

Self-Contained
Electrically 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.

GROEN®

MADE IN USA™

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, BOILING AND SAFE PRODUCT TRANSFER.

WARNING: TAKE SPECIAL CARE TO AVOID CONTACT WITH HOT KETTLE BODY OR HOT PRODUCT WHEN ADDING INGREDIENTS, STIRRING OR TRANSFERRING PRODUCT TO ANOTHER CONTAINER.

WARNING: WHEN TILTING KETTLE FOR PRODUCT TRANSFER:

1) USE CONTAINER DEEP ENOUGH TO CONTAIN AND MINIMIZE PRODUCT SPLASHING.
2) PLACE CONTAINER ON STABLE, FLAT SURFACE, AS CLOSE TO KETTLE AS POSSIBLE.
3) DO NOT OVER FILL CONTAINER. AVOID DIRECT SKIN CONTACT WITH HOT CONTAINER AND ITS CONTENTS.

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.

IMPORTANT — READ FIRST — IMPORTANT

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.**

Table of Contents

References

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

NFPA/70 - The National Electrical Code

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

NSF/ANSI-4

UNDERWRITERS LABORATORIES, INC.
333 Pfingsten Road
Northbrook, Illinois 60062
UL / ANSI-197

Equipment Description

The Groen DEE/4 is a floor-mounted, tilting, steam jacketed kettle with a thermostatically controlled, self-contained, electrically-heated steam supply and appropriate controls, mounted on a sturdy base. The Model DEE/4 is available in 20, 40 or 60 gallon capacities.

The body of the DEE/4 Kettle is constructed of stainless steel, welded into one solid piece. The kettle is furnished with a reinforced rim and a butterfly shaped pouring lip. It has a steam jacket rated for working pressures up to 50 PSI. Kettle finish is 180 emery grit on the inside and bright semi-deluxe on the outside.

The kettle can be tilted with a hand crank to pour out its contents. Stainless steel panels enclose the controls and the base. Four stainless steel, tubular legs support the unit. Bullet feet on each of the legs can be adjusted to level the kettle.

A built-in steam generator, sized for the kettle capacity and heated by electricity, delivers steam into the jacket. “Airless” operation of the steam jacket permits uniform, efficient heating at temperatures as low as 150°F and as high as 298°F. In addition to the adjustable thermostat for operating control, the unit has a tilt cut-off switch, low water cut-off, safety valve, and high-limit pressure switch as safety features. A heating indicator light, pressure gauge, and sight glass are provided for monitoring kettle operation.

A single electrical connection is required for installation. The unit may be ordered for use with 208/240, 400 or 480 volt power. All kettles are wired for three-phase operation. Single-phase units are also available.

KETTLE CHARACTERISTICS					
	DEE/4-20	**DEE/4-40**		**DEE/4-60**	
		Before January 1989.	After January 1989	Before January 1989.	After January 1989
Kettle Capacity	20 gal (75 l)	40 gal (150l)	40 gal (150l)	60 gal (226l)	60 gal (226l)
Kettle Diameter	20 in (51 cm)	26 in (66 cm)	26 in (66 cm)	30 in (76 cm)	30 in (76 cm)
Rim Height	39 in (99 cm)	40 in (102 cm)	40 in (102 cm)	43 in (110 cm)	44 in (112 cm)
Total Width	38 in (97 cm)	44 in (112 cm)	42 in (107 cm)	50 in (127 cm)	47 in (119 cm)
Front to Back	28 in (71 cm)	31 in (79 cm)	32 in (81 cm)	33 in (84 cm)	35 in (90 cm)

FRONT VIEW

REAR VIEW

Optional equipment available with DEE/4 kettles:

1. 2” or 3" diameter tangent draw-off (product valve)
2. Lift-off or counterbalanced cover
3. Water fill faucets
4. TRI-BC basket cooking system
5. Powered agitators (TA/3 or INA/2)
6. Kettle brush kit
7. Gallon etch marks

Inspection & Unpacking

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

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.

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.

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

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 loose parts are not discarded with the materials.

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 sight glass (new models) or between the marks on the gauge glass (old models). If the level is low, follow the instructions under "Jacket Filling and Water Treatment," Page 13.

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 DEE/4 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 supply of the proper voltage, phase and amperage rating

ELECTRICAL SPECIFICATIONS*

	DEE/4-20		DEE/4-40		DEE/4-60	
	KW	AMP	KW	AMP	KE	AMP
208 Volts	11	30	21	59	21	59
240 Volts	12	31	24	61	24	61
480 Volts	12	15	24	29	24	29
400 Volts	12	17	24	35	24	35

*All three phase. Single phase is also available.

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. If the unit is equipped with a draw-off valve (product outlet), clean out any material which might clog or damage the draw-off.

3. Confirm that the tilting mechanism is operating properly by tilting the kettle through its full range. Then return the kettle to the upright position.

4. Turn on the electrical service to the unit.

5. Pour 1-2 quarts of water into the kettle.

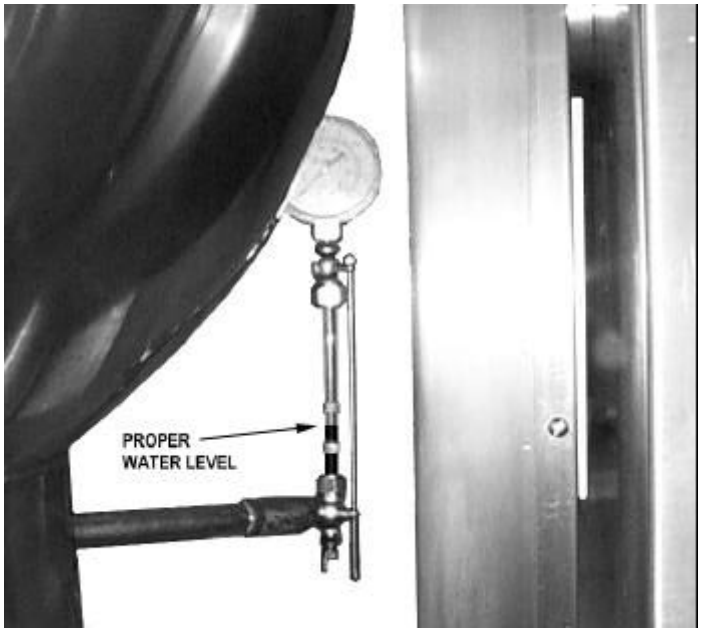
6. Following “To Start Kettle” instructions in the “Operation” section of this manual, begin heating the water at the highest thermostat setting. The heating indicator light should come on immediately, and heating should continue until the water boils.

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.

5. 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.



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

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 that 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 13.

2. 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 13.

3. Turn on the electrical power to the unit.

4. Turn the thermostat dial to the desired setting. The heating indicator light indicates 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 the contactors in the support housing will make a clicking sound. This is normal.**

B. To Transfer Product or Empty Kettle:

1. The kettle is tilted by means of the crank on the front of the control housing. The kettle remains in the position to which tilted until cranked again.

2. Product may also be transfered by means of the optional draw-off valve if the kettle is so equipped.

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.

TAKE SPECIAL CARE TO AVOID CONTACT WITH HOT KETTLE BODY OR HOT PRODUCT, WHEN ADDING INGREDIENTS, STIRRING OR TRANSFERRING PRODUCT TO ANOTHER CONTAINER.

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.

WARNING
WHEN TILTING KETTLE FOR PRODUCT TRANSFER:
1) WEAR PROTECTIVE OVEN MITT AND PROTECTIVE APRON.
2) USE DEEP CONTAINER TO CONTAIN AND MINIMIZE PRODUCT SPLASHING.
3) PLACE CONTAINER ON STABLE, FLAT SURFACE, AS CLOSE TO KETTLE AS POSSIBLE.
4) STAND TO LEFT OR RIGHT OF KETTLE WHILE POURING — NOT DIRECTLY IN POUR PATH OF HOT CONTENTS.
5) POUR SLOWLY, MAINTAINING CONTROL OF KETTLE AT ALL TIMES, AND RETURN KETTLE BODY TO UPRIGHT POSITION AFTER CONTAINER IS FILLED OR TRANSFER IS COMPLETE.
6) DO NOT OVERFILL CONTAINER. AVOID DIRECT SKIN CONTACT WITH HOT CONTAINER AND ITS CONTENTS.

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

Common Accessories

1. Lift-Off or Counterbalanced Cover

As with stock pot cooking, an optional cover can speed up the heating of water and food products. A cover helps retain heat and reduces the heat and humidity released into the kitchen. Using a cover can reduce some product cook times and help maintain the temperature, color and texture of products being held or simmered for longer periods.

Be sure the handle is secure on the lift-off cover before using. ALWAYS use the handle to place or remove cover from the kettle. Wear protective oven mitts and a protective apron.

When putting a lift-off cover on the kettle, position it on top of kettle rim, with its flat edge facing the pouring lip.

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.

When removing the lift-off cover:

a) Firmly grasp the handle

b) Lift rear edge (farthest from operator) 1-2" (3-5 cm) to allow steam and water vapor to escape the cooking vessel. Wait 2-3 seconds.

c) Tilt cover to 45-60° angle to allow any hot condensate or product to roll off cover back into kettle.

d) Remove cover, ensuring that any remaining hot condensate or product does not drip on operator, floor or work surfaces.

e) Place cover on safe, flat, sanitary, out-of-the-way surface, or return to kettle.

CAUTION
DO NOT TILT KETTLE WITH LIFT-OFF COVER IN PLACE. COVER MAY SLIDE OFF, CAUSING INJURY TO OPERATOR.

2. Basket Insert

An optional kettle basket insert set can assist in cooking water-boiled products including 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 3 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 and pouring lip. 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 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.

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, stopping 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. Every time the kettle is tilted, the tilt cut-off switch interrupts the power supply to the heaters, so that the heating elements will not operate while not submerged in the jacket water.

If steam pressure greater than 50 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:

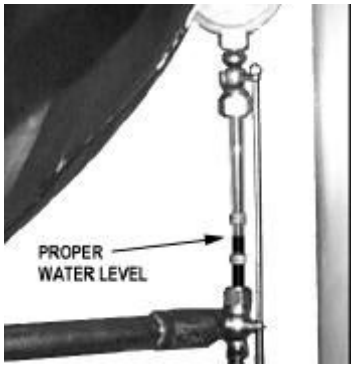
[BY OPERATOR]

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” on page 13.

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 13.



c. Test the safety valve at least twice each month. Test the valve with the kettle operating at 15 psi (105 kPa), by holding the test lever for at least 5 seconds. Then release the lever and let the valve snap shut. If the lever 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.

[BY SERVICE TECHNICIAN]

Test the safety valve at least twice monthly.

d. Electrical wiring should be kept securely connected and in good condition.

e. The inside of the support housing should be kept clean.

2. 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:

a. Start the unit.(Be sure there is water or product in the kettle when heating).

b. 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.

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, either 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."

b. Allow the kettle to cool. Turn the elbow on the safety valve counterclockwise (to avoid thread damage) until the opening of the elbow faces upward.

c. Open the safety valve and pour the water or treated water in at the elbow until the water level rises to a point between the marks on the gauge glass.

CAUTION
BEFORE YOU HEAT THE KETTLE AGAIN FOR ANY PURPOSE, TURN THE ELBOW BACK CLOCKWISE UNTIL THE OPENING FACES DOWNWARD.

e. Air introduced to the jacket during filling must be removed to obtain efficient heating. See "Jacket Vacuum" above.

4. Water Treatment Procedure

(1) Obtain water treatment compound and a pH test kit from your authorized Groen parts distributor. **(Groen Part No. 110324)**

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
DEE/4-20	*3¼ Gallons*
DEE/4-40	*4½ Gallons*
DEE/4-60	*5 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 use an electroanalytical instrument to measure the pH level or 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.

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

5. Service personnel should check the unit at least once a year. This periodic maintenance should include inspecting electrical wires and connections, cleaning the inside of the control console.

At least twice a year, grease the two trunnion bearings and worm gear. Groen recommends the use of number two grade LGI lithium grease. Add grease through the zerk fittings on the gear hosing until the grease flows out of the bearings around the trunion shaft. Also, add grease in the gear to cover arc that is in contact with the worm gear. Clean up excess grease.

WARNING
DISCONNECT ELECTRICAL POWER FROM THE UNIT BEFORE ATTEMPTING TO GREASE THE TRUNION BEARINGS.

Cleaning

1. Suggested Tools:

a. A high quality detergent and sanitizer, or a combination cleaning-sanitizing agent.
b. Kettle brushes.
c. Groen Spray Degreaser (P/N 114801) or equivalent.
d. Groen Delimer-Descaler (P/N 114800) or equivalent.
e. A high quality stainless steel cleaner.

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

When attaching the draw-off valve, just hand-tighten the nut.

g. When you reassemble the draw-off valve, **hand-tighten** the nut which holds it in place.
h. As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing.
i. 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.

Scrapers or steel wool can harm the kettle surface

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

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

j. The outside of the unit may be polished with a recognized stainless steel cleaner.

k. 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.

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

l. It is recommended that each piece of equipment be sanitized just before use.

m. 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-Away from Ecolab, in accordance with the manufacturer's directions. Rinse and drain the unit before further use.

n. 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 ✘indicates items which must be performed by an authorized technician.
Kettle will not heat, and heating indicator will not come on.	User	a. Electric power supply to the unit. b. Water level in jacket.
	Auth Service Rep Only	c. Control circuit fuses. Replace a blown fuse only with a fuse of the same AMP rating. ✘ d. For loose or broken wires. ✘ e. Tilt cut-off switch. ✘ f. That pressure switch is open. ✘ g. Operation of variable thermostat. ✘ h. Low water cutoff. ✘
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. ✘ c. Heater elements with ohmmeter for ground short or open element. If element is defective, call Groen. ✘
Kettle continues heating after it reaches the desired temperature	User	a. Thermostat dial setting.
	Auth Service Rep Only	b. Thermostat circuit for short. ✘ c. Thermostat operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. ✘ d. Contactor, to determine whether it is energized or stuck. ✘

SYMPTOM	WHO	WHAT TO CHECK ✘indicates items which must be performed by an authorized technician.
Kettle stops heating before it reaches the desired temperature.	User	a. Thermostat dial setting.
	Auth Service Rep Only	b. Thermostat calibration. ✘ c. Thermostat operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. ✘
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. ✘ c. Voltage of main power source. ✘
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 switch setting. ✘ d. Thermostat operation. Thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. ✘ e. Safety valve. If the valve pops at pressures below 48 PSI, replace it. ✘ f. Contactor, to determine whether it is de-energized. ✘
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 lever all the way briefly to blow the valve clean, then let the lever snap back to seat the valve.
	Auth Service Rep Only	b. Safety valve for defects. **Replace** any defective valve with an **identical** valve. ✘
Kettle is hard to tilt.	Auth Service Rep Only	a. Tilting gear and worm for contamination and for proper alignment and lubrication. ✘