

## OPERATOR AND SERVICE MANUAL

Part Number 128433

OM/SM-TDB/7(CE)

INTERNATIONAL

**MODEL: TDB/7 (CE)**  
**Steam Jacketed Kettle**

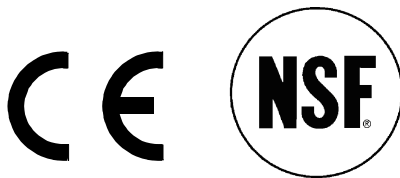
*Self-Contained*  
*Electric heated*  
*Table top mounted*  
*Stainless Steel*  
*Tilting*



Crank Tilt Model



Pull Tilt Model



**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

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

### I. E. E. REGULATIONS FOR ELECTRICAL INSTALLATIONS

ELECTRICITY AT WORK REGULATIONS

HEALTH AND SAFETY AT WORK ACT

FIRE PRECAUTIONS ACT

LOCAL AND NATIONAL BUILDING REGULATIONS

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

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

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

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

UNLESS OTHERWISE STATED, PARTS WHICH HAVE BEEN PROTECTED BY THE MANUFACTURER ARE NOT TO BE ADJUSTED BY THE INSTALLER.

BEFORE ATTEMPTING ANY SERVICING, ENSURE THAT THE ELECTRICAL SUPPLY IS DISCONNECTED.

**WARNING:** THE UNIT MUST BE INSTALLED BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY. IMPROPER INSTALLATION CAN RESULT IN INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT. THE UNIT MUST BE INSTALLED IN ACCORDANCE WITH APPLICABLE CODES.

**CAUTION:** SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT.

**WARNING:** TO AVOID DAMAGE OR INJURY, FOLLOW THE WIRING DIAGRAM EXACTLY WHEN CONNECTING A UNIT.

**WARNING:** BEFORE CLEANING THE OUTSIDE OF THE KETTLE, DISCONNECT ELECTRIC POWER . KEEP WATER AND SOLUTIONS OUT OF CONTROLS AND ELECTRICAL COMPONENTS.

**NOTICE:** DO NOT USE ANY DE-GREASER THAT CONTAINS POTASSIUM HYDROXIDE OR SODIUM HYDROXIDE OR THAT IS ALKALINE.

**WARNING:** USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR THEIR AUTHORIZED DISTRIBUTOR VOIDS ALL WARRANTIES AND CAN RESULT IN BODILY INJURY TO THE OPERATOR AND DAMAGE THE EQUIPMENT. SERVICE BY OTHER THAN FACTORY-AUTHORIZED PERSONNEL WILL VOID ALL WARRANTIES.

**WARNING:** HIGH VOLTAGE EXISTS INSIDE CONTROL COMPARTMENTS. DISCONNECT FROM BRANCH BEFORE SERVICING. FAILURE TO DO SO CAN RESULT IN SERIOUS INJURY OR DEATH.

**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.

## **OM/SM-TDB/7(CE)**

- 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) WEAR PROTECTIVE OVEN MITT AND PROTECTIVE APRON.
  - 2) USE CONTAINER DEEP ENOUGH 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 SIDE OF KETTLE WHILE POURING. DO NOT STAND DIRECTLY IN POUR PATH OF HOT CONTENTS.
  - 5) POUR SLOWLY, MAINTAIN CONTROL OF KETTLE, AND RETURN KETTLE BODY TO UPRIGHT POSITION AFTER CONTAINER IS FILLED OR TRANSFER IS COMPLETE.
  - 6) 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:** 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.

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**Equipment Description**

The Groen TDB/7 is a table top, tilting, steam jacketed kettle with a thermostatically controlled, self-contained, electrically-heated steam supply and appropriate controls, mounted on a sturdy base. The Model TDB/7 is available in 20 or 40 - quart capacity.

The body of the TDB/7 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 pressures up to 50 PSIG. Kettle finish is 180 emery grit on the inside and bright semi-deluxe on the outside. A tilt handle allows the operator to manually tilt the kettle body in a controlled manner. A crank tilt model is also available. Pouring height accepts pans up to 4 inches high on a table top.

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 295°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 230 Volt single phase or 400 Volt three phase power.

<b>KETTLE CHARACTERISTICS</b>				
	TDB/7-20+		TDB/7-40	
Kettle Capacity	20 qts.	18.8 liters	40 qts.	37.6 liters
Jacket Capacity	4 qts.	3.7 liters	5 qts.	4.7 liters
Diameter	14"	36 cm	16-1/2"	42 cm
Depth	11"	28 cm	14-1/4"	36 cm
Base Width	24"	60 cm	24"	60 cm
Base Depth	16"	41 cm	16"	41 cm
KW at 230 Volt Single Phase	7.8		13.3	
KW at 400 Volt Three Phase	7.8		13.3	
Rated Amp Load - 1M	33		57	
Rated Amp Load - 3M	11 (L1, L2, L3)		19 (L1, L2, L3)	

## Models



**Pull Tilt TDB/7, CE Model**



**Crank Tilt TDB/7, CE Model**

Optional equipment available with any model:

1. Stand that supports the unit and holds a pan in position for filling
2. Lift-off cover
3. Basket insert
4. Fill faucet
5. Manual stirrers (factory installed)
6. Motor driven agitator (factory installed)

## Inspection & Unpacking

The unit will arrive in a heavy shipping carton and will be attached 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 the 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 WEIGHS 140 TO 163 LB. (64 TO 74 KG). INSTALLER SHOULD OBTAIN HELP AS NEEDED TO LIFT THIS WEIGHT SAFELY.**

When installation is to begin, carefully cut the 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.

Attach the tilt handle (normally shipped inside the kettle) by carefully threading it into the socket on the trunnion support. Be careful to avoid cross-threading fine socket threads. This step is unnecessary if the kettle is a crank tilt model.



**The TDB/7 is shipped from the factory strapped on a pallet. If the unit is a pull tilt model, the handle is packed inside the kettle for shipment.**

## Installation

The Groen Kettle is provided with complete internal wiring. It is ready for immediate connection. A wiring diagram is 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. The base should be securely fastened to a table or work surface. Four 3/8"-16 N.C. threaded couplings are provided in the base of unit. Installation under a ventilation hood is recommended.
2. Provide electrical power as specified on the electrical information plate attached to the equipment. Observe all local and national codes, and all regulations in force at the time of installation.

TDB/7 ELECTRICAL SPECIFICATIONS					
		20 QUARTS		40 QUARTS	
VOLTAGE	PHASE	KW	AMPS	KW	AMPS
230	1	7.8	33	13.3	57
400	3	7.8	11.2	13.3	19

3. The equipment is shipped ready for three phase operation. Refer to the wiring diagram for single phase operation.
4. Bring the electrical service through the entrance at the rear of the support housing, making a watertight connection with the incoming lines. (A BX connection is **not** recommended.) Observe all local and national codes, and all regulations in force at the time of installation.

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

5. Confirm that the jacket water level is above mid point of sight glass. If the level is low, follow the instructions under "Jacket Filling and Water Treatment," Page 14.
6. Electrically earth the unit at the terminal provided.
7. Equipotential terminal: In accordance with national regulations, the unit has been fitted with an equipotential terminal.

### ELECTRICAL SUPPLY CONNECTION REQUIREMENTS

Unit	TDB/7-20	TDB/7-40
230V - 1 Phase	33 Amps	57 Amps
400V - 3 Phase	33 Amps	57 Amps



## 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. Confirm that the kettle tilts properly. Either turn the crank or use the handle to tilt the kettle and return it to the upright position.
2. Turn on the electrical service to the unit.
3. Pour two to four liters of water into the kettle.
4. 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.**

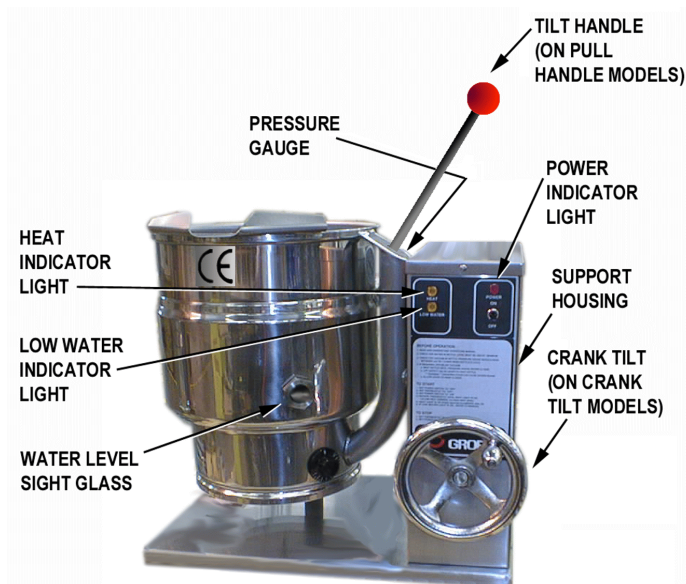
5. To shut down the unit, turn the thermostat dial to "OFF".

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

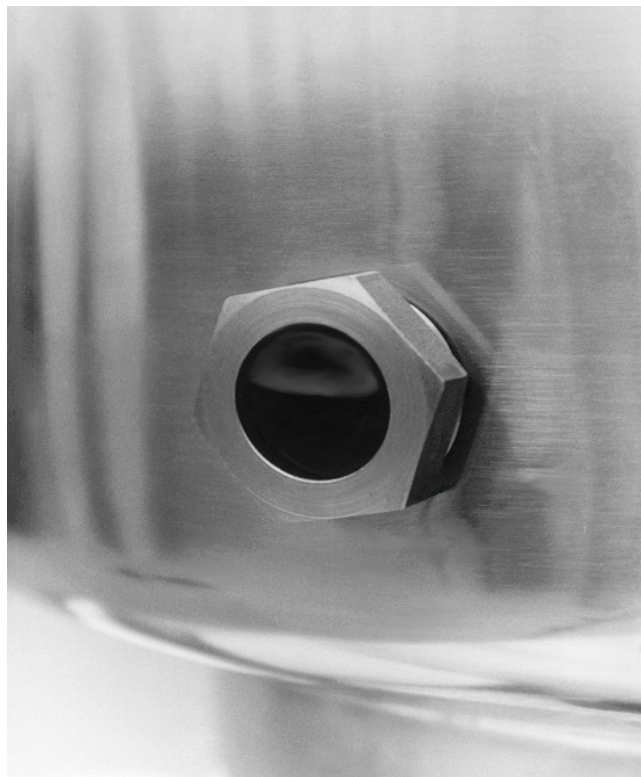


A simple turn of the thermostat controls the Groen TBD/7 Kettle

## Operation



CE units have three lights on the Control Panel. The "POWER" light comes on when the unit is turned on. It indicates that power is being supplied to the unit. The "HEAT" light comes on when heating elements are heating the kettle. The "LOW WATER" light will come on when the water level in the jacket falls below acceptable operating levels. Refer to "Jacket Filling and Water Treatment" on Page 14.



On most TDB/7 units the jacket water level is shown in a sight glass, right on the kettle.

### A. To Start Kettle

1. EVERY DAY make sure that the jacket water level is above the mid-point of the round sight glass. If the level is low, service is necessary.
2. Check the pressure gauge. If the gauge does not show 20 to 30 inches of vacuum (i.e., a reading of 20 to 30 below 0), see "Jacket Vacuum" on page 14.
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, and cycling of the light on and off indicates 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

The kettle is designed and manufactured to be tilted in a controlled manner. On those units equipped with a tilt handle, grasp the insulated plastic ball firmly. Maintain a firm grip on handle when tilting, while keeping kettle body in a tilted position and when SLOWLY returning the kettle body to an upright position. On those equipped with crank tilt, turn the handle. The kettle will remain in the position to which tilted until cranked again.



**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.

## OM/SM-TDB/7(CE)

### 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 (DEPENDING ON HANDLE PLACEMENT) WHILE POURING — NOT DIRECTLY IN POUR PATH OF HOT CONTENTS.**
- 5) **POUR SLOWLY, MAINTAIN CONTROL OF KETTLE BODY HANDLE 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 Cover

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

Make 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 the 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.**



**Lift the rear edge of the cover first.**

When removing cover:

- a) **Firmly grasp the handle.**
- b) **Lift rear edge (farthest from operator) 1-2" (3-5 cm) to allow any steam and water vapor to escape the cooking vessel. Wait 2-3 seconds.**
- c) **Tilt cover to 45-60° angle and 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 rim.**

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## CAUTION

**DO NOT TILT KETTLE BODY WITH COVER IN PLACE. COVER MAY SLIDE OFF, CAUSING INJURY TO OPERATOR.**

### 2. Basket Insert

An optional kettle basket insert can assist in cooking water-boiled products including eggs, potatoes, vegetables, shell fish, pasta and rice. The nylon mesh liner must be used when cooking product smaller than the mesh size of the basket, which is approximately 1/4" (6 mm). This includes rice and small pasta shapes.

#### Tips For Use.

- a) Allow for the water displacement of the basket and product to be cooked. This may mean only filling the kettle half full of water. Test the basket 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 A MINIMUM OF 2-3" (5-8 cm) BELOW THE KETTLE BODY RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING AND SAFE PRODUCT TRANSFER.**



## 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.**

- b) Load basket on a level, stable work surface.
- c) Lift the loaded basket with both hands. Get help from another person if the basket is too heavy for safe handling.
- d) Slowly lower product into kettle.
- e) When removing basket with cooked product, lift basket straight up, ensuring bottom of basket clears the rim and pouring lip of the kettle. 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 kettle basket on kettle rim or pouring lip. If basket is too heavy for individual to lift and safely move, get help from another person. Remove product immediately from basket into another container, being sure to avoid contact with hot product and hot basket or. . .

- g) Place basket with food on stable, flat surface, setting it 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 and the heating elements overheat, the high-limit control will open, shutting 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. Each time maintenance is performed on your Groen kettle, enter the date of the work, 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 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 14.



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

- b. Also check the jacket water level each day. It should be above mid point of the round sight glass. If the level is low, see "Jacket Filling and Water Treatment" on page 14.

#### [BY SERVICE TECHNICIAN]

- 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 chain for at least five seconds. Then release the chain and let the valve snap shut. If the valve does not activate, (there is no evidence of discharge, or the valve leaks) stop using the kettle immediately and contact a qualified Groen

service representative.

- d. The inside of the support housing should be kept clean.
- e. At least twice a year, grease the two trunnion bearings. The bearings are located within the kettle support housing. Remove the access panels from the support housing with a screwdriver to gain access to the grease fittings. Use a lithium-based, multi-purpose grease. When the access panels are removed, the mounting bolts for the trunnion bearings and tilt switch can also be checked for tightness.



**WARNING**  
WHEN TESTING, AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.  
DISCONNECT ELECTRICAL POWER FROM THE KETTLE BEFORE ATTEMPTING TO GREASE THE TRUNNION BEARINGS.

- f. On the crank-tilt models, the gear housing has fittings for proper lubrication of moving parts. Because the gears do not run in oil, periodic



Test the safety valve at least twice each month.

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lubrication with grease is necessary. Frequency of lubrication will depend on operating conditions, but the service should be performed at least once every six months.

Add grease through the Zerk fittings on the gear housing until you see grease flow out of the bearings around the trunnion shaft. Also place a liberal amount of grease on the gear to cover the arc that is in contact with the worm gear. When finished, reassemble access panels to support housing.

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

## 2. Jacket Vacuum

When the kettle is cold, a positive pressure reading or a reading around zero on the pressure/vacuum gauge indicates the presence of air in the jacket. Air in the jacket slows down the heating of the kettle.

To remove air:

- Start the unit. (See the "Operation" section of this manual.) (Be sure there is water or product in the kettle when heating).
- When the pressure/vacuum gauge reaches a positive pressure reading of five PSI, release the trapped air and steam by pulling up on the safety valve for about 1 second. Repeat this step, then let the chain 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 distilled water. You may need to restore the water to its proper level, either because water was lost as steam during venting or because treated water was lost by draining.

### IMPORTANT

**Pressure gauge must read 0 PSI or less before you fill jacket with water.**

To fill jacket with water:

- 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 3, "Water Treatment Procedure".
- Remove fill plug with open-end wrench or crescent wrench.
- Open shutoff valve (turn handle 90° on ball valve).

- Use a funnel and add water to jacket.
- Check water level in jacket, by viewing water level indicator glass.
- Continue to add water until the water level indicator glass is 3/4 full.
- Close shutoff valve, and install fill plug.

Follow procedure in "Jacket Vacuum" to remove air from kettle jacket.

## 3. Water Treatment Procedure

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

- Obtain water treatment compound and a PH test kit from your authorized Groen parts distributor.
- Fill the mixing container with the measured amount of water required. (See the table at right). Use distilled water.
- Hang a strip of pH test paper on the rim of the container, with about 25 mm of the strip below the surface of the water.
- Measure the water treatment compound you will be using. (One way to do this is to add the compound from a measuring cup.)
- 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 color of the test strip with the color chart provided in the pH test kit.
- Record the exact amounts of water and treatment compound used. These amounts may be used again, if the same sources of water and compound are employed to refill the jacket in the future. However, it is advisable to check the pH every time treated water is prepared. For optimum performance, use correctly treated, distilled water.

## 4. Component Replacement

Model	Jacket Capacity
TDB/7-20	3.8 Liters
TDB/7-40	4.7 Liters

**WARNING**  
**BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY.**

Wiring is marked as shown on the schematic drawings. Be sure new components are wired in the same manner as the old.

## Troubleshooting

Your kettle is designed to operate smoothly and efficiently if properly maintained. However, the following is a list of checks in the event of a problem. Wiring diagrams are furnished inside the service panel and at the back of this manual. **Items followed by X, should only be done by a qualified service representative. USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY GROEN OR ITS AUTHORIZED DISTRIBUTORS CAN INJURE TO THE OPERATOR AND DAMAGE THE EQUIPMENT AND WILL VOID ALL WARRANTIES.**

SYMPTOM	WHO	WHAT TO CHECK
		X 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. X d. For loose or broken wires. X e. Tilt cut-off switch. X f. That pressure switch is open. X g. Operation of variable thermostat. X h. Low water cutoff. X
Kettle will not heat, but heating indicator comes on.	Auth Service Rep Only	a. Contactor. X b. Heater elements with ohmmeter for ground short or open element. If element is defective, call Groen. 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 operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X d. Contactor, to determine whether it is energized or stuck.
Kettle stops heating before it reaches the desired temperature.	User	a. Thermostat dial setting.
	Auth Service Rep Only	b. Thermostat calibration. X c. Thermostat operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X
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. X c. Voltage of main power source. X
Safety valve pops.	User	a. For air in the jacket. See "Jacket Vacuum" in the "Maintenance" section of this manual.
	Auth Service Rep Only	b. Pressure switch setting. X c. Thermostat operation. Thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X d. Safety valve. If the valve pops at pressures below 49 PSI, replace it. X e. Contactor, to determine whether it is de-energized. X

## User Instructions

### ***Regulations and Safety Precautions***

These Appliances have been CE marked on the basis of compliance with the EMC and Low Voltage Directive.

These appliances **MUST BE** installed by a competent person in conformity with the **INSTALLATION AND SERVICING INSTRUCTIONS** and National Regulations in force at the time.

Particular attention **MUST** be paid to the following:

- I.E.E. Regulations for Electrical Installations
- Electricity at Work Regulations
- Health and Safety at Work Act
- Fire Precautions Act
- Local and National Building Regulations

Those parts which have been protected by the manufacturer **MUST NOT** be adjusted by the User.

Users should be conversant with the appropriate provisions of the Fire Precautions Act. In particular the need for regular servicing by a competent person to ensure the continued safe and efficient performance of the Appliance.



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

Upon completion of the installation, the Owners Manual should be handed to the users and the installer should instruct the responsible person(s) on the correct operation and maintenance of the Appliance. This equipment is **ONLY FOR PROFESSIONAL USE**, and shall be operated by **QUALIFIED** persons. It is the responsibility of the Supervisor or equivalent to ensure that users wear **SUITABLE PROTECTIVE CLOTHING** and to draw attention to the fact that, some parts will, by necessity, become **VERY HOT** and will cause burns if touched accidentally.

**IMPORTANT - READ FIRST - IMPORTANT** The Groen Steam Jacketed Kettle you have just purchased has been handcrafted from the finest materials, meticulously inspected, and carefully tested to ensure that you receive the best possible product. With reasonable care and periodic maintenance, it will provide years of faithful service. It is recommended that you establish a timetable for periodic maintenance as outlined in this manual. Space is provided in the Service Log at the back of this manual.

## Equipment Description

### **General**

Groen models TDB/7 are stainless steel, steam jacketed, table mounted, tilting kettles with a self-contained, electric-heated steam source. The kettle body is welded into one piece and furnished with a reinforced bar rim and welded "butterfly" pouring lip. The interior of the kettle is polished to a 180 emery grit finish, and the exterior is given a bright semi-deluxe finish. The unit is ASME shop inspected and registered with the National Board for working pressures up to 50 PSI. Kettle support, tilting mechanism, and controls are contained in an enclosed base. Tilting is provided by a self-locking, worm-and-gear device, or by a tilt handle.

Charged at the factory with treated, distilled water, the steam source provides kettle temperature of 65/ C to 150/ C. Controls for the unit include a thermostat, pressure gauge, gauge glass, safety valve, pressure limit control, low water cut-off and an on/off switch.

Service connections are required for 230 Volt, single phase, 50 Hz and 400 Volt, three phase, 50 Hz electricity.

**IMPORTANT: Prior to operation, clean out the kettle pan thoroughly using hot water and detergent. Rinse out and dry thoroughly.**



# OM/SM-TDB/7(CE)

## Operational and Maintenance Safety



**WARNING**  
INSTALLATION OF THE UNIT MUST BE DONE BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING IN ACCORDANCE WITH ALL APPLICABLE CODES.  
BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY.  
TO PREVENT SHOCKS, ALL APPLIANCES WHETHER GAS OR ELECTRIC, MUST BE EARTHED.

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

### Operation

#### 1. Initial Operational Readiness Check

After the TDB/7 Kettle has been installed according to service and installation instructions, perform initial start-up as a test, to ensure that the unit is operating correctly.

- Remove all literature and packing material from the interior and exterior of the unit.
- Make sure electricity supply is switched on.
- Ensure that the kettle is filled with water.
- Check the water level in the jacket. The level should be between the lines on the gauge glass. If the level is low, the jacket water level will be required to be topped up. (This will require a service call).
- Check the pressure gauge. If the gauge does not show sufficient vacuum (20 to 30 below zero) then the jacket will require venting. (This will require a service call).
- Switch the On/Off switch to the "On" position. The "power on" neon will illuminate.
- Turn the thermostat dial to the required setting. The "heat" neon will illuminate.



**WARNING**  
AVOID CONTACT WITH THE FLUE. SURFACES ARE VERY HOT AND WILL CAUSE BURNS. DO NOT OBSTRUCT FLUE OPENING.

#### 2. To Shut Down Kettle

- Turn the thermostat dial to the "Off" position.
- Switch the On/Off switch to the "Off" position.
- For a prolonged shut down, turn the electricity main off.

Follow steps a and b.

#### 3. Filling the Kettle

Prior to operation, thoroughly clean the kettle using hot water and detergent.

Kettle capacities:

Model	Maximum Capacity
TDB/7-20	18.8 Litres
TDB/7-40	37.6 Litres

**To prevent surge boiling, no more than 80% of the maximum capacity should be used.**

#### 4. Users Thermostat

Provides automatic control of the Kettle Jacket temperature at settings up to 147/ C maximum.

#### 5. 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

## OM/SM-TDB/7(CE)

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 PSIG 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.

### 6. To Empty Kettle

#### TDB/7 Kettles with Crank Tilt

To tilt the body of the kettle forward, turn the hand crank on the front of the cabinet anti-clockwise. The body will stay in the position it holds when you stop turning the handle. To return the body to the upright position, turn the crank clockwise.

#### TDB/7 Kettle with Tilt Handle

The kettle is designed to be tilted in a controlled manner. Grasp the insulated plastic ball firmly. Maintain a firm grip on the handle when tilting, while keeping the kettle body in a tilted position, and when **slowly** returning the kettle body to an upright position.



**WARNING**  
**DO NOT STAND IN FRONT OF THE KETTLE BODY WHEN TILTING IT. BE CAREFUL TO KEEP HOT CONTENTS FROM SPILLING. ENSURE PEOPLE ARE KEPT AWAY FROM THE KETTLE WHEN EMPTYING THE KETTLE.**

### 7. Power Failure

If the power to the unit fails do not attempt to operate the appliance until the electricity supply is re-established.

When the power comes back on follow the steps in Paragraph 8.2.1 Initial Kettle Operational Readiness Check.

## Cleaning

### 1. Suggested Tools:

- Cleaner, such as Klenzade HC-10 or HC-32 from ECOLAB, Inc.
- Kettle brushes in good condition.
- Sanitizer such as Klenzade XY-12.
- Film remover such as Klenzade LC-30.

### 1. 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

- 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.



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

- Scrape and flush out food residues. Be careful not to scratch the kettle with metal implements.



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



Scrapers or steel wool can harm the kettle surface.

- 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.
- Rinse the kettle thoroughly with hot water, then drain completely.
- As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing.
- 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

## OM/SM-TDB/7(CE)

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.

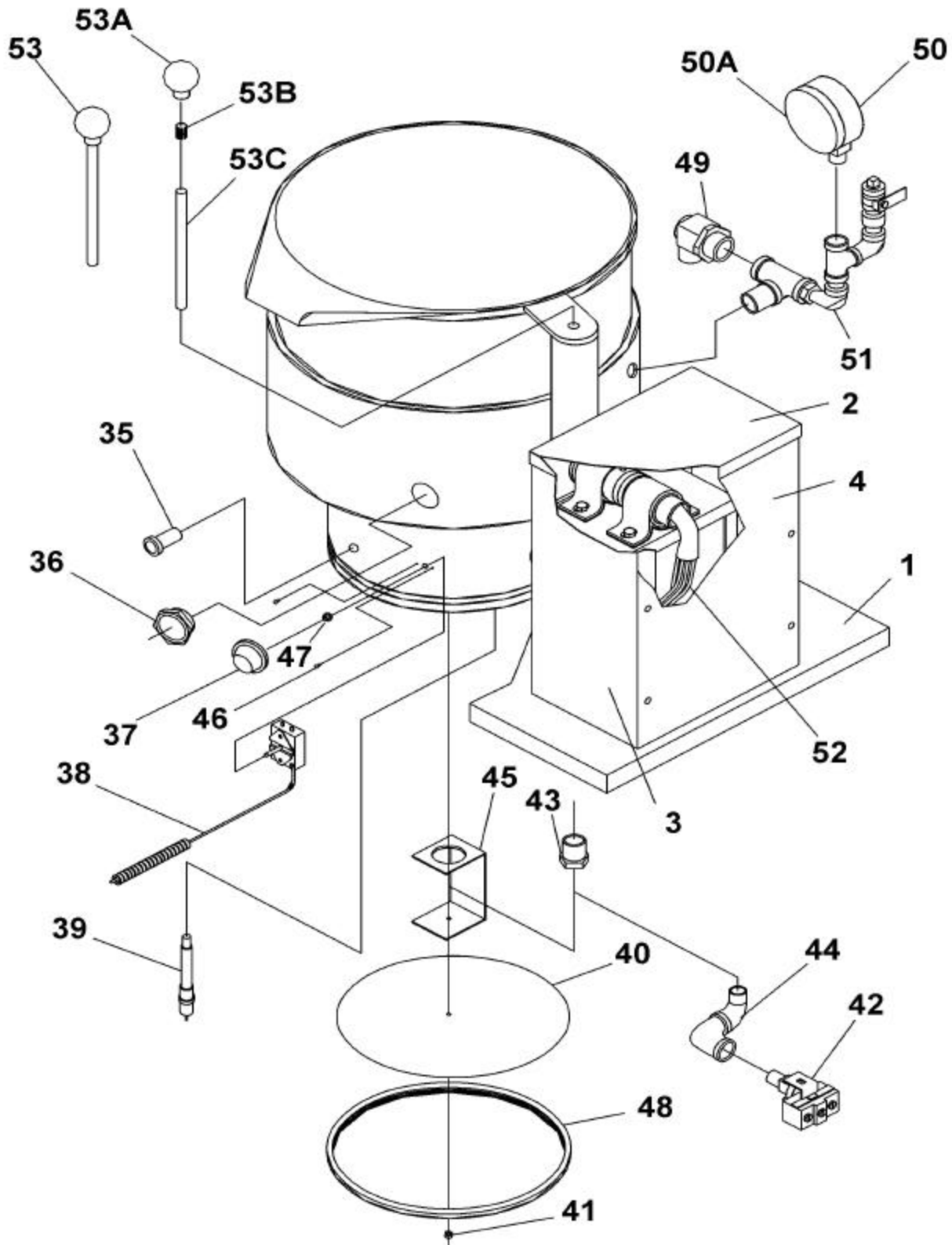
- g. The outside of the unit may be polished with a stainless steel cleaner such as “Zepper” from Zep Manufacturing Co.
- h. When equipment needs to be sanitized, use a solution equivalent to one that supplies 200 parts per million available chlorine. Obtain advice on sanitizing agents from your supplier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

- i. It is recommended that each piece of equipment be sanitized just before use.
- j. If there is difficulty removing mineral deposits or a film left by hard water or food residues, clean the kettle thoroughly 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.
- k. If cleaning problems persist, contact your cleaning product representative for assistance. The supplier has a trained technical staff with laboratory facilities to serve you.

<p style="text-align: center;"><b>NOTICE</b></p> <p><b>NEVER LEAVE A CHLORINE SANITIZER IN CONTACT WITH STAINLESS STEEL SURFACES LONGER THAN 30 MINUTES. LONGER CONTACT CAN CAUSE STAINING AND CORROSION.</b></p>
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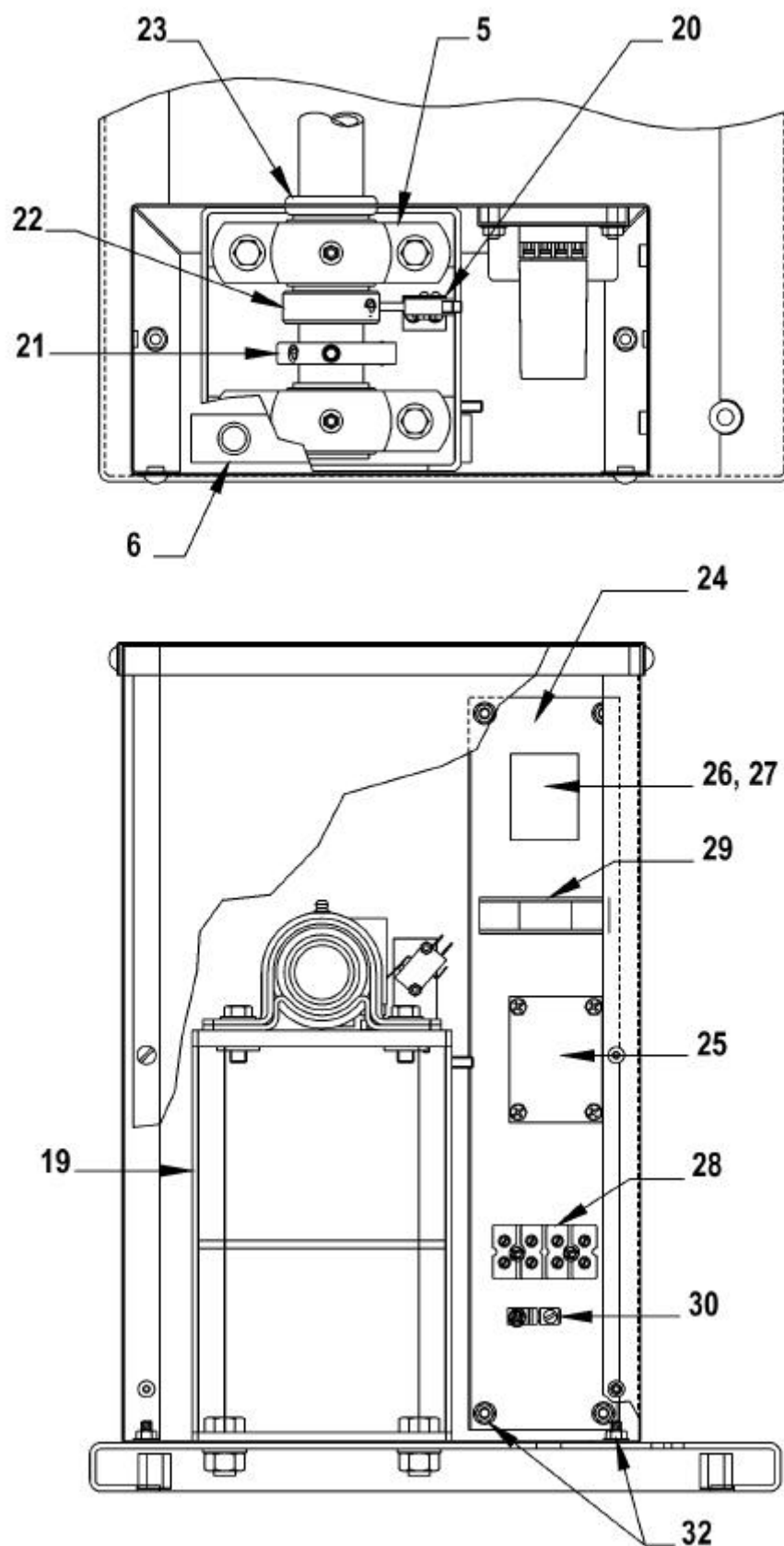
**Parts List - Kettle Body - Pull Tilt Model**

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

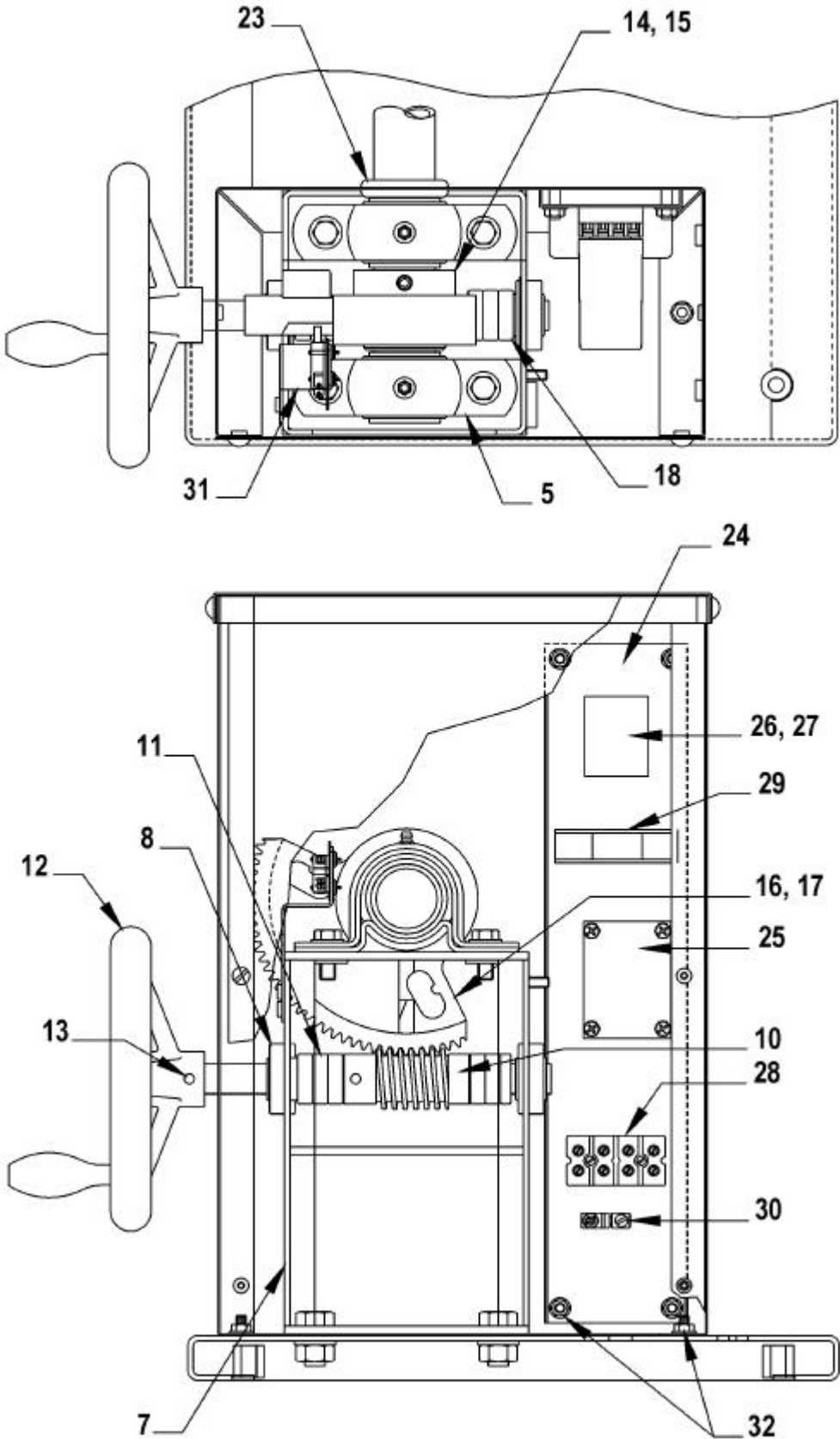


# Replacement Parts List

Pull Tilt Models



Replacement Parts List  
Crank Tilt Models



# OM/SM-TDB/7(CE)

## 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.

Key	Description	P/N	H	C	Key	Description	P/N	H	C
1	Base Weldment	122185	x	x	36	Bullseye sight glass	108554	x	x
2	Cladding, top, pedestal	122052	x	x	37	Thermostat knob	122054	x	x
3	Cladding, side, pedestal	122051	x	x	38	Thermostat	012313	x	x
4	Cladding, panel, pedestal	122053	x	x	39	Water level probe	015589	x	x
5	Pillow block, 1-1/2" bore	002989	x	x	40	Bottom Cover	003141	x	x
6	Shim	122031	x	x	41	Nut, hex 1/4-20	012940	x	x
7	Pedestal, machined	117786		x	42	Pressure switch	096963	x	x
8	Bearing with snap ring	002790		x	43	Reducing bushing 1/2 x 1/4 NPT	008739	x	x
9	Worm shaft	113057		x	44	Elbow Assembly	101543	x	x
10	Worm gear 3/4" bore	012026		x	45	Bottom cover bracket	002916	x	x
11	Spacer Washer	084956		x	46	Screw, round head #6-32 x 3/8"	009697	x	x
12	Hand wheel	012061		x	47	Thermostat adapter	107172	x	x
13	Roll pin, 1/4" x 1"	012614		x	48	Gasket bottom cover	007937	x	x
14	Gear bushing	113055		x	49	Safety Valve	097005	x	x
15	Set screw, socket 3/8-16 x 1"	005593		x	50	Pressure gauge	084208	x	x
16	Gear sector, 12 DP	009829		x	50a	Pressure gauge lens	087635	x	x
17	Key, 1/4" sq x 1-1/4" round ends	009262		x	51	Water fill assembly	101528	x	x
18	Spacer washer 1/4"	122117		x	52	Kettle body wire harness	096938	x	x
19	Pedestal, weldment	128517	x		53	Handle assembly	012695	x	
20	Tilt switch & bracket assembly	127635	x		53a	Ball knob	012691	x	
21	Stop assembly	065527	x		53b	Tolerance ring	012692	x	
22	Set collar	065528	x		53c	Handle rod	013597	x	
23	Grommet	003492	x	x	--	Equipotential terminal assembly	122021	x	x
24	Elec. component mounting panel	122103	x	x	--	Power light	116381	x	x
25	Contacto	122042	x	x	--	Heat & low water light	116382	x	x
26	Relay socket base	117738	x	x	--	Power switch	122004	x	x
27	Water level sensor	117737	x	x	--	Washer, lock 3/8", MS	005702	x	x
28	Terminal block	088214	x	x	--	Washer, lock 3/8" SS	005618	x	x
29	Fuse block	077840	x	x	--	Screw, hex 3/8-16 x 1" SS	005612	x	x
30	Ground lug	002863	x	x	--	Screw, hex 1/2-13 x 1"	005622	x	x
31	Tilt switch & bracket assembly	113074		x	--	Washer, lock 1/2"	005735	x	x
32	Nut, Keps, 1/4-20	012940	x	x	--	Nut, hex 1/2-13	005705	x	x
35	Indicator lamp	016028	x	x					

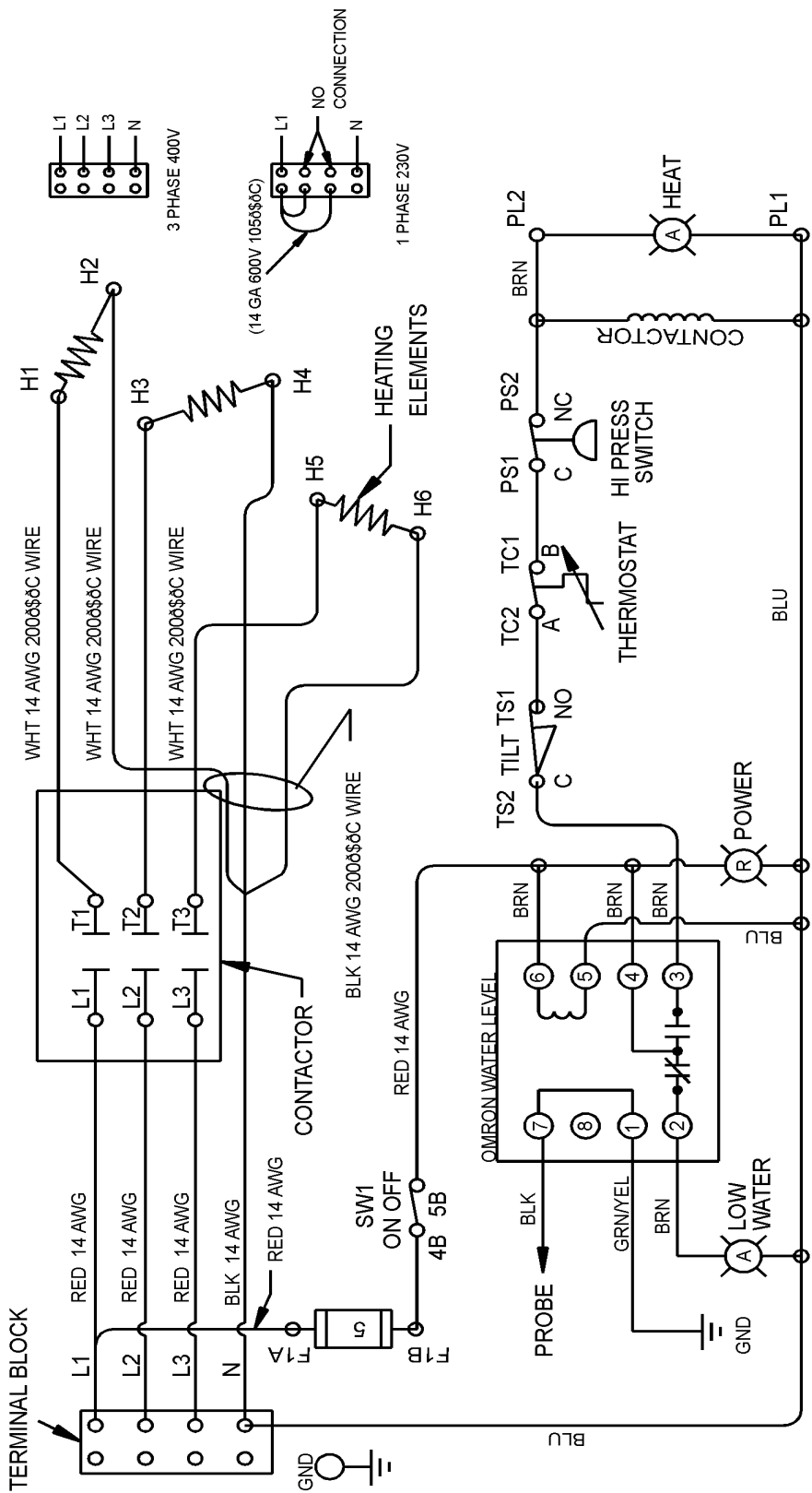
**H = Pull Tilt Model**

**C = Crank Tilt Models**

**-- = Item not shown in illustrations**



Wiring Diagram



NOTE: ALL WIRES 18 AWG UNLESS NOTED

# OM/SM-TDB/7(CE)

## Service Log

Model No. \_\_\_\_\_ Purchased From \_\_\_\_\_

Serial No. \_\_\_\_\_ Location \_\_\_\_\_

Date Purchased \_\_\_\_\_ Date Installed \_\_\_\_\_

Purchase Order No. \_\_\_\_\_ For Service Call \_\_\_\_\_

Date	Service Performed	Performed By

## References

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

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

NFPA/54 - Installation of Gas Appliances & Gas  
Piping  
NFPA/70 - The National Electrical Code

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

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

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

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

\* (Covers All Food Service Equipment Ordered After October 1,1995)



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**OM/SM-TDB/7(CE)**  
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