



# OPERATOR MANUAL

IMPORTANT INFORMATION, KEEP FOR OPERATOR

88-994-7636, fax 888-864-7636  
groen.com

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

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

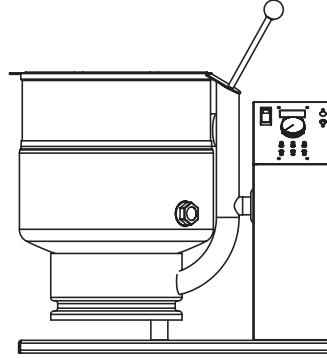
**WARNING** Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

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

Manufacture Service/Questions 888-994-7636.

This manual provides information for:

## STEAM JACKETED KETTLE MODELS TDB (C,A,C2T™) & TDBC (C,A,C2T™) DOMESTIC



### REFERENCES

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

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

KLENZADE SALES CENTER ECOLAB, Inc.  
370 Wabasha  
St. Paul, Minnesota 55102

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

NFPA-70 - The National Electric Code

ZEP MANUFACTURING COMPANY  
1310-T Seaboard Industrial Boulevard  
Atlanta, Georgia 30318

### EQUIPMENT DESCRIPTION



The TDB and TDBC are table top, tilting, steam jacketed kettles with an electronically controlled, self-contained, electrically-heated steam supply and appropriate controls, mounted on a sturdy base. Models are available in 20, 24, 40 and 48 quart capacity.

The body of the 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 a design pressure of 50 PSIG. Kettle finish is 180 emery grit on the inside and bright semi-deluxe on the outside. A tilt handle on the TDB kettle and a hand wheel crank on the TDBC kettle allows the operator to manually tilt the kettle body in a controlled manner. Pouring height accepts pans up to four 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 of the jacket to temperatures as low as 150°F and as high as 295°F. In addition to the operating control, the unit has a tilt cut-off switch, low water cut-off, pressure relief 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 or 480 volt power. All 208/240 volt kettles are wired for 208 volt, three-phase operation. For 240 volt, three-phase OR single-phase conversion, see the wiring diagrams and installation instructions in this manual.

Options available include:

1. Kit, cover and holder (P/N 128609, 20/24 qt - P/N 139806, 40/48 qt).
2. One-piece, lift-off cover (P/N 128003, 20/24 qt - P/N 128002, 40/48 qt).
3. Holder for Lift-off cover (P/N 133837).
4. Basket insert (P/N 001159, 20/24 qt - P/N 001161, 40/48 qt).
5. Lip Strainer (P/N 005187, 20/24 qt - P/N 005186, 40/48 qt).
6. Stand that supports the unit and holds a pan in position for filling (Model TS/9).



Information contained in this document is known to be current and accurate at the time of printing/creation. Reference our product line website for the most updated product information and specifications. © 2025 Electrolux Professional, Inc. All Rights Reserved.

## 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:** DO NOT STAND ON OR APPLY UNNECESSARY WEIGHT OR PRESSURE ON THE KETTLE FRONT OR POURING LIP. THIS COULD RESULT IN OVERLOAD AND FAILURE OF THE TILT MECHANISM, AND POSSIBLE SERIOUS INJURY AND BURNS TO THE OPERATOR AND OTHERS.
- 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 (DEPENDING ON TILTING HANDLE PLACEMENT) WHILE POURING . DO NOT STAND 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 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 PRESSURE RELIEF 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 PRESSURE RELIEF 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 UNIFIED BRANDS 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.
- WARNING:** DO NOT HEAT AN EMPTY KETTLE. EXCESSIVE STEAM PRESSURE COULD DEVELOP.
- NOTICE:** IT IS RECOMMENDED THAT AN INSTANT-READ THERMOMETER BE USED TO CHECK THE INTERNAL TEMPERATURE THROUGHOUT THE COOKING PROCESS AND AFTER THE COOKING PROCESS HAS BEEN COMPLETED TO ENSURE THE FOOD HAS BEEN COOKED SUFFICIENTLY.

7. Water fill swing faucet.
8. 316 stainless steel interior (must be ordered with original equipment order).

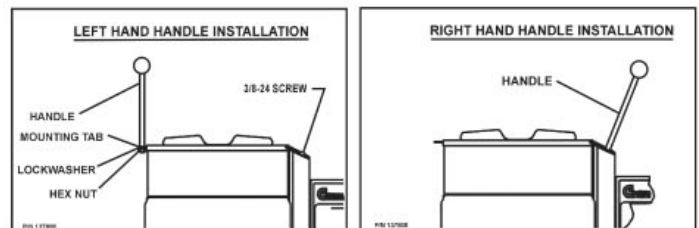
### PERFORMANCE DATA

Models	kW at 208V	kW at 240V	kW at 480V
TDB/TDBC-20/24 (C,A,C2T)	6.3	8.4	6.3
TDB/TDBC-40/48 (C,A,C2T)	10.8	14.4	12.0

Models	Kettle Capacity	Jacket Capacity	Kettle Body Diameter	Kettle Body Depth	Base Width	Base Depth
TDB/TDBC-20 (C,A,C2T)	5 Gal. (20 Qt.)	7 Qt	14 inches	11 inches	24 inches	16 inches
	18.9 liter	6.6 liter	356 mm	279 mm	610 mm	406 mm
TDB/TDBC-24 (C,A,C2T)	6 Gal. (24 Qt.)	7 Qt	14 inches	12-1/2 inches	24 inches	16 inches
	22.7 liter	6.6 liter	356 mm	318 mm	610 mm	406 mm
TDB/TDBC-40 (C,A,C2T)	10 Gal. (40 Qt.)	9 Qt	16-1/2 inches	14-1/4 inches	28 inches	16 inches
	37.8 liter	8.5 liter	419 mm	362 mm	711 mm	406 mm
TDB/TDBC-48 (C,A,C2T)	12 Gal. (48 Qt.)	9 Qt	16-1/2 inches	16-1/2 inches	28 inches	16 inches
	45.4 liter	8.5 liter	419 mm	419 mm	711 mm	406 mm

## INSPECTION & UNPACKING

- CAUTION:** SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT. TAKE CARE TO AVOID PERSONAL INJURY OR DAMAGE TO THE UNIT BY STAPLES LEFT IN THE WALLS OF THE CARTON.
- CAUTION:** THIS UNIT WEIGHS 140 TO 163 LBS (64 TO 74 KG). INSTALLER SHOULD OBTAIN HELP AS NEEDED TO LIFT THIS WEIGHT SAFELY.



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.

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 loose parts are not discarded with the materials.

For TDB units, 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 the fine threads on the trunnion. NOTE: After handle installation on the right hand side, retain the hardware supplied with the unit for left hand installation.

## INSTALLATION

**WARNING: INSTALLATION OF THE KETTLE MUST BE DONE BY A CERTIFIED ELECTRICIAN OR AUTHORIZED REPRESENTATIVE 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.**

**CAUTION: BEFORE ANY ELECTRICAL CONVERSION, VERIFY THAT THE BRANCH CIRCUIT WIRING IS ADEQUATE TO HANDLE ANY INCREASE AMPERAGE REQUIREMENTS. REFER TO THE ELECTRICAL SPECIFICATIONS LISTED BELOW.**



Pull lead from 208V tab and insert on 240V tab.



The TDB/TDBC 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 Unified Brand's 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. 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. Once the unit is anchored to a mounting surface, apply a small bead of silicone caulk around the perimeter of the kettle base and seal the joint.
3. Core probe storage bracket (C2T models only)
  - a. It is recommend that the core probe storage bracket be installed on the control console. It is not recommend that the core probe storage bracket be installed on the kettle body or cover.
  - b. To obtain proper adhesion, the bonding surface must be unified, clean and dry. Clean the bonding surface with rubbing alcohol and allow the surface to dry. Next firmly apply pressure to the storage bracket to help improve bond strength. After application, the bond strength will increase as the adhesive flows onto the surface. At room temperature, approximately 50% of the ultimate strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours.
4. Provide electrical power as specified on the electrical information plate attached to the equipment. Observe local codes and/or The National Electrical Code in accordance with ANSI/NFPA 70 - (current edition).
5. Standard equipment is shipped ready for 208V, 3-phase or 480V, 3-phase operation. Refer to the wiring diagram located on the inside cover of the control box and the instructions below for conversion to single-phase operation. A jumper wire and "conversion" label are included with the unit. They can be found in a plastic bag attached to the trunnion assembly inside the control box.
  - a. For conversion from 208V, 3-phase to 208V or 240V 1-phase or 480V, 3-phase to 480V, 1-phase:
    - i. Verify that the branch circuit wiring is adequate for any increased amperage requirements (see table).
    - ii. For 240V 1-phase only, enlarge electrical inlet opening for 1" conduit

fitting. Use a 1" sealtite conduit fitting.

- iii. Refer to wiring diagram for field conversion.
  - iv. For 240V 1-phase only, pull lead from 208V tab on control transformer and insert on 240V tab (See photo).
  - v. Complete "conversion label" (supplied in bag) and adhere it to the control box near the UL dataplate.
- b. For conversion from 208V, 3-phase to 240V, 3-phase:
    - i. Verify that the branch circuit wiring is adequate for any increased amperage requirements (see table).
    - ii. Pull lead from 208V tab on control transformer and insert on 240V tab. (See photo)
    - iii. Complete "conversion label" (supplied in bag and adhere it to the control box near the UL dataplate).
  - c. For conversion from 480V, 3-phase to 460V, 3-phase:
    - i. Verify that the branch circuit wiring is adequate for any increase amperage requirements (see table below).
    - ii. Complete "conversion label" (supplied in bag and adhere it to the control box near the UL dataplate).
6. Bring incoming electrical service through the conduit fitting (for 240V 1-phase, a new one inch conduit fitting is required) at the rear of the support housing, making a watertight connection with the incoming lines. A BX style connection is not recommended.
  7. Confirm that the jacket water level is at or just above mid point of sight glass (new models). If the level is low, follow the instructions under "Jacket Filling and Water Treatment" in the "Maintenance" section of the manual.
  8. Ensure that the open end of the elbow on the outlet of the pressure relief valve is directed downward.

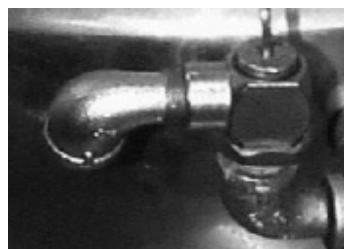
### TDB/TDBC SUPPLY WIRE REQUIREMENTS (THWN (75°) / THHN (90°) COPPER ONLY)

TDB/TDBC-20/24 (C,A,C2T)			TDB/TDBC-40/48 (C,A,C2T)		
VOLTAGE	AMPS	SUPPLY WIRE	VOLTAGE	AMPS	SUPPLY WIRE
208V 1 PH	31	8	208V 1 PH	52	6
3 PH	18	12	3 PH	30	8
240V 1 PH	35	8	240V 1 PH	60	4
3 PH	20	12	3 PH	35	8
460V 3 PH	7.3	14	460V 3 PH	14	12
480V 1 PH	14	14	480V 1 PH	25	10
3 PH	8	14	3 PH	15	12

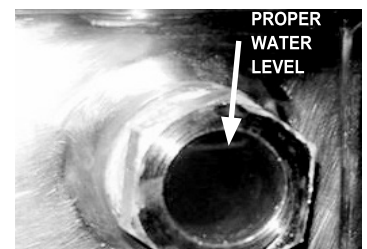
## INITIAL START-UP

**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.**



The open end of the pressure relief valve elbow must face downward.



Correct water level.



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

1. Remove literature and packing materials from inside and outside of the unit.
2. Turn on the electrical service to the unit.
3. Pour 1-2 quarts 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 temperature setting. The heating indicator light should come on immediately, and heating should continue until the water boils.
5. To shut down the unit, turn the main power switch to “OFF”.

If the unit functions as described above, it is ready for use. If the unit does not function as intended, first recheck power supply connections and, if necessary, contact your local Certified Service Agency.

## OPERATION

### WARNING: WHEN TILTING KETTLE:

- 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 RIGHT OF KETTLE WHILE POURING — NOT DIRECTLY IN POUR PATH OF HOT CONTENTS.
- 5) POUR SLOWLY, MAINTAINING CONTROL OF KETTLE, AND RETURN KETTLE BODY TO UPRIGHT POSITION AFTER CONTAINER IS FILLED OR TRANSFER IS COMPLETE.
- 6) DO NOT OVERFILL CONTAINER. AVOID SKIN CONTACT WITH HOT CONTAINER AND ITS CONTENTS.

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

**CAUTION:** DO NOT OVERFILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS AT LEAST 2-3” (5-8 CM) BELOW THE KETTLE 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.

**CAUTION:** HEATING AN EMPTY KETTLE MAY CAUSE THE RELEASE OF STEAM FROM THE PRESSURE RELIEF VALVE.

**CAUTION:** DO NOT TILT KETTLE BODY WITH COVER OR BASKET INSERT IN PLACE. COVER MAY SLIDE OFF, CAUSING INJURY TO OPERATOR.

**CAUTION:** ANY POTENTIAL USER OF THE EQUIPMENT MUST BE TRAINED IN SAFE AND CORRECT OPERATING PROCEDURES.

**WARNING:** KEEP AREA AROUND KETTLE FREE AND CLEAR OF ALL COMBUSTIBLE MATERIALS. DO NOT ATTEMPT TO LIGHT ANY BURNER WITH A FLAME.



Classic Control



Advanced Control



Cook2Temp Control

## CONTROLS

### 1. Classic Control (-C) Models

- a. Lighted Power ON switch located on the control console. Controls main power to the unit.
- b. The temperature knob, located on the control console, is used to set the kettle heat values between 1 and 10.
- c. Heating indicator light located on the control console, lights when the controller energizes the heating elements and will cycle on and off once the unit reaches set temperature. If the unit is tilted, the heating elements will be disabled and the light will turn off until the unit is returned to the cooking position.
- d. A LOW WATER indicator light, located on the control console, illuminates when the jacket water falls below acceptable levels. When lit, the heating elements are disabled and will not function until the jacket water is refilled using the procedure in this manual.
- e. Crank tilt - a handle controls the worm and gear mechanism that smoothly tilts the kettle body and holds it in the desired position.

### 2. Advanced Control (-A) Models

- a. Lighted Power ON switch located on the control console. Controls main power to the unit.
- b. The temperature knob, located on the control console, is used to set the kettle heat values between 1.0 and 10.0. The current setting will be reflected on the display.
- c. Heating indicator light located on the control console, lights when the controller energizes the heating elements and will cycle on and off once the unit reaches set temperature. If the unit is tilted, the heating elements will be disabled and the light will turn off until the unit is returned to the cooking position.
- d. A LOW WATER indicator light, located on the control console, illuminates when the jacket water falls below acceptable levels. When lit, the heating elements are disabled and will not function until the jacket water is refilled using the procedure in this manual.
- e. SET TnnP Mode - Allows power to the controller without the kettle heating; the kettle will heat once the LOW TEMP, MANUAL or HIGH TEMP button is selected.
- f. LOW TEMP Button – Used to set operating temperature of the kettle at a preset low intensity (default = 2.0). Can be pressed at any time during operation of the unit to change the set temperature to the preset value except when there is an active TIMER enabled.
- g. MANUAL Mode button – Enables the user modify the desired cooking temperature of the kettle (between 1.0 and 10.0) using the temperature knob and display (default = 5.0). The operator will press the MANUAL button and set the desired temperature using the temperature knob and display. Once the desired temperature is reached, the user may either press the MANUAL button again or wait 5 seconds and the set temperature will be accepted by the controller and locked in. After the set temperature is accepted, it may be changed at any time by pressing the MANUAL button and resetting the temperature using the same process above.

- h. HIGH TEMP button – Used to set operating temperature of the kettle at a preset high intensity (default = 7.0). Can be pressed at any time during operation of the unit to change the set temperature to the preset value except when there is an active TIMER enabled.
- i. TIMER button - once the appropriate set temperature is selected using the HIGH TEMP, MANUAL or LOW TEMP buttons; a countdown timer can be set to remind the user when the cooking process is completed.
  1. Range – 1 minute to 10 hours
  2. When the timer expires:
    - a. the set temperature will automatically change to the LOW TEMP setting and will continue at this setting until the user changes the temperature via MANUAL or HIGH TEMP buttons
    - b. An audible alarm will notify the user that attention is required, the alarm will continue to sound until the user presses the TIMER button.
  3. An active timer can be cancelled by pressing and holding the TIMER button for 5 secs.
  4. Set temp can be changed during an active timer by pressing the MANUAL button and adjusting the set temp using the Temperature knob and display.
  5. HIGH TEMP and LOW TEMP presets cannot be used to change the setpoint once a TIMER has started.
- j. READY alarm – The control will sound 3 beeps when the unit has reached within 20 degrees of set point during pre-heat and when a higher set temperature is selected.
- k. Crank tilt - a handle controls the worm and gear mechanism that smoothly tilts the kettle body and holds it in the desired position.

### 3. Cook2Temp™ Control (-C2T™) Models

- a. Lighted Power ON switch located on the control console. Controls main power to the unit.
- b. Heating indicator light located on the control console, lights when the controller energizes the heating elements and will cycle on and off once the unit reaches set temperature. If the unit is tilted, the call for heat will be interrupted and the light will turn off until the unit is returned to the cooking position.
- c. Low Water indicator light, located on the control console, lights when the jacket water falls below the acceptable levels. When lit, the heating elements are disabled and will not function until the jacket water is refilled using the procedure in the operator manual.
- d. Set Mode – Allows power to the controller without the kettle heating, the kettle will heat once the LOW TEMP, MANUAL or HIGH TEMP button is selected.
- e. LOW TEMP Button – Used to set a unit temperature of the kettle at a preset low temperature (default = 175°F). Can be pressed at any time during operation of the unit to change the unit temperature to the preset value except when there is an active TIMER or an active Cook2Temp.
- f. MANUAL Button – Enables the user to modify the unit temperature of the kettle (between 100°F and 287°F) using the temperature knob and display (default = 183°F). The operator will press the MANUAL button and then select the desired unit temperature using the temperature knob and display. Once the desired unit temperature is shown on the display, the user may either press the MANUAL button again or wait 5 seconds and the selected temperature will be accepted by the controller and locked in. After the selected temperature is accepted it may be changed at any time by pressing the MANUAL button and resetting the temperature using the same process as above except when there is an active AUTO Cook2Temp.
- g. HIGH TEMP Button – Used to set unit temperature of the kettle at a preset high temperature (default = 287°F). Can be pressed at any time during operation of the unit to change the unit temperature to the preset value

except when there is an active TIMER or an active Cook2Temp.

- h. TIMER Button – Once the appropriate unit temperature is selected using the LOW TEMP, MANUAL or HIGH TEMP buttons, a countdown timer can be set to remind the user when the cooking process is completed.
  1. Range – 1 minute to 10 hours.
  2. When the timer expires:
    - a. The unit temperature will automatically change to the LOW TEMP setting and will continue at this setting until the user changes the temperature via MANUAL or HIGH TEMP buttons.
    - b. An audible alarm will notify the user that attention is required, the alarm will continue to sound until the user presses the TIMER button.
  3. An active timer can be cancelled by pressing and holding the TIMER button for 5 seconds.
  4. Unit temperature can be changed during an active timer by pressing the MANUAL button and adjusting the unit temperature using the temperature knob and display.
  5. LOW TEMP and HIGH TEMP presets cannot be used to change the unit temperature once a TIMER has been enabled.
  6. AUTO C2T and MANUAL C2T cannot be used once a timer has been enabled. The timer must first be cancelled and then AUTO C2T or MANUAL C2T can be enabled.
- i. Ready alarm – The control will sound 3 beeps when the unit has reached within 20 degrees of set point during pre-heat and when a higher unit temperature is selected.
- j. AUTO C2T Button – Enables the user to select a set product temperature (between 100°F and 230°F) using the temperature knob and display. The operator will press the AUTO C2T button and then select the set product temperature using the temperature knob and display. Once the set product temperature is shown on the display, the user may either press the AUTO C2T button again or wait 5 seconds and the selected temperature will be accepted by the controller and locked in. The unit temperature is automatically set 100°F above the set product temperature and cannot be changed at any time during an active AUTO C2T. After the set product temperature is accepted it may be changed at any time by first cancelling AUTO C2T and then using the same process as above to reset the temperature.
  1. After the set product temperature is accepted by the controller and locked in. The unit will begin to heat and the display will scroll the actual product temperature followed by the set product temperature. This display will continue until the cook process has completed.
  2. An active AUTO C2T can be cancelled by pressing and holding the AUTO C2T button for 5 seconds and the unit will then return to Set Mode.
  3. LOW TEMP, MANUAL or HIGH TEMP presets cannot be used to change the unit temperature once there is an active AUTO C2T. The unit temperature is automatically set by the controller.
  4. Once the set product temperature has been reached and held for 20 seconds consecutively the unit will automatically enable Hold Mode.
- k. MANUAL C2T Button – Enables the user to select a set product temperature (between 100°F and 230°F) using the temperature knob and display. The operator will press the MANUAL C2T button and then select the set product temperature using the temperature knob and display. Once the set product temperature is shown on the display, the user may either press the MANUAL C2T button again or wait 5 seconds and the selected temperature will be accepted by the controller and locked in. Once the set product temperature has been accepted the user will be prompted to select a unit temperature via the MANUAL button. Once the set unit temperature is shown on the display, the user may either press the MANUAL C2T button again or wait 5 seconds and the selected

temperature will be accepted by the controller and locked in. After the set product temperature and unit temperature are accepted the product temperature may be changed at any time by first cancelling MANUAL C2T and then using the same process as above to reset the temperature.

1. After the set product temperature and unit temperature are accepted by the controller and locked in. The unit will begin to heat and the display will scroll the actual product temperature followed by the set product temperature. This display will continue until the cook process has completed.
  2. An active MANUAL C2T can be cancelled by pressing and holding the MANUAL C2T button for 5 seconds and the unit will then return to Set Mode.
  3. Unit temperature can be changed during an active MANUAL C2T by pressing the MANUAL button and adjusting the unit temperature using the temperature knob and display.
  4. Once the set product temperature has been reached and held for 20 seconds consecutively the unit will automatically enable Hold Mode.
- I. Hold Mode – Allows the unit to be controlled by the set product temperature and core probe.
1. Hold Mode is automatically enabled once a set product temperature has been reached and held for 20 seconds consecutively.
  2. The display will scroll the actual product temperature followed by the hold timer.
  3. If the actual product temperature falls below 142°F.
    - a. An audible alarm along with the display flashing the actual product temperature will notify the user that attention is required.
    - b. The alarm can be silenced by pressing any button.
    - c. The Alarm will resound every 10 minutes until the actual product temperature returns above 142°F.
  4. If the actual product temperature rises 10°F above the set product temperature.
    - a. An audible alarm along with the display flashing the actual product temperature will notify the user that attention is required.
    - b. The alarm can be silenced pressing any button.
    - c. The alarm will resound every 10 minutes until the actual product temperature returns to within 10°F of the set product temperature.
  5. At initial hold timer completion (default = 4 hours).
    - a. An audible alarm will be given for 5 seconds.
    - b. The alarm can be silenced by pressing any button.
    - c. The alarm will continue to resound every 15 minutes until Hold Mode is exited.
- m. Display Descriptions
1. SET nndE – Allows power to the controller without the pan heating, the pan will heat once the LOW TEMP, MANUAL or HIGH TEMP button is selected.
  2. SET PrOd tEnP – Indicates the desired finished product temperature.
  3. SET Unit tEnP – Indicates the desired unit temperature.
  4. SET POInt – Indicates the set point for the desired finished product temperature.
  5. ACT – Indicates the actual product temperature.
  6. CPER – Indicates a core probe error and will continue to display until the error has been resolved.
  7. Prob – Indicates a unit probe error and will continue to display until the error has been resolved.

8. End – Indicates the cooking process has completed.
9. End HOLD – Indicates the initial hold timer has completed.

#### 4. Cook2Temp™ Control (-C2T™) Core Probe

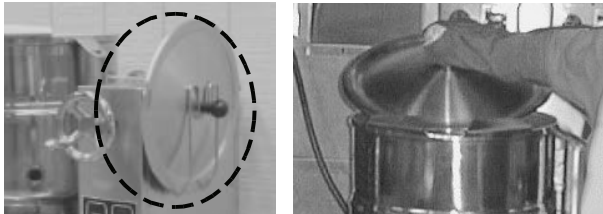
- a. Ensure the core probe has been properly cleaned and sanitized before each use.
- b. It is important that the tip of the core probe be placed correctly into the product since only the tip of the core probe senses the product temperature. Do this by inserting the core probe halfway into the product, positioning the tip at the center of the food mass, avoiding any bones. If placing into a semi-liquid or liquid product, occasionally stirring the product will ensure an accurate core probe reading. Do not let the core probe tip touch the edges, bottom or side of the unit.
- c. If the core probe is not plugged into the receptacle when either the AUTO C2T or MANUAL C2T button is pressed then an audible alarm along with a core probe error message will notify the user that attention is required. Simply plug the core probe into the receptacle and continue with the input process.
- d. If the core probe is unplugged from the receptacle during the cooking process or while in Hold Mode an audible alarm along with a core probe error message will notify the user that attention is required. Simply plug the core probe back into the receptacle and the cook process or Hold Mode will continue.
- e. While the core probe is not in use ensure the sealing cap is properly protecting the panel mount connector. Failure to properly use the sealing cap could result in damage to the unit.

#### OPERATING PROCEDURE

1. To Start Kettle Heating with Classic Controls:
  - a. EVERY DAY make sure that the jacket water level in the middle of the sight glass. If the level is too low, see “Jacket Filling and Water Treatment” in this manual.
  - b. Check the pressure/vacuum gauge. If the gauge does not show 20 to 30 inches of mercury (Hg) vacuum (that is a reading of 20 to 30 below 0 atmospheric pressure), see “Jacket Vacuum” in this manual.
  - c. Turn on the electrical power to the unit.
  - d. Turn on the main power switch on the control face.
  - e. Turn the temperature knob to the desired setting. The heating indicator light indicates that the kettle is heating, and cycling of the 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.
2. To Start Kettle Heating with Advanced or Cook2Temp Controls:
  - a. EVERY DAY make sure the jacket water level is above the mid-point of the round sight glass. If the level is too low, see “Jacket Filling” and “Water Treatment” in this manual.
  - b. Check the pressure gauge. If the gauge does not show 20-30 inches of vacuum (that is, a reading of 20 to 30 below 0), see “Jacket Filling” and “Water Treatment” in this manual.
  - c. Turn on the electrical power to the unit.
  - d. Turn on the main power switch on the control face, controller will show SET TnnP in the display.
  - e. Press the MANUAL button and turn the temperature knob to the desired setting using the display (if a temperature is not selected after the MANUAL button is pressed, the kettle will default to a heat setting of 5.0). The heating indicator light indicates that the kettle is heating, and cycling of the 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.

### 3. To Transfer Product or Empty Kettle

- a. TDB: The kettle is designed and manufactured to be tilted in a controlled manner. Grasp the insulated plastic ball firmly. Maintain a firm grip on handle when tilting, while keeping the kettle body in a tilted position and slowly return the kettle body to an upright position. DO NOT release handle when kettle is partly tilted. It will impact in either the upright or fully tilted position and may cause burns.
- b. TDBC w/ STD Control: The kettle is tilted using its crank tilt hand wheel. Turning the crank clockwise tilts the kettle; counter-clockwise returns it to an upright position. The kettle will remain in any cranked position.



Lift the rear of the lid first.

### USE OF 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 plastic ball handle is secure on the lift off cover before using. ALWAYS use the plastic 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.

When removing cover:

- a. Firmly grasp plastic 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. Cover may also be placed in the optional holder for the cover as shown in the photograph.

#### 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.
- 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.

- 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.

### 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. READ THE WARNINGS AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER CAREFULLY.

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

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



Use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool to clean.



Don't use metal implements or steel wool when cleaning.



### SUGGESTED CLEANING SUPPLIES

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

### PRECAUTIONS

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

### 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.
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 and draw-off valve parts thoroughly with hot water, then drain completely.
5. As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing, underside of cover, etc.

6. To remove burnt on foods, 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.
7. The outside of the unit may be cleaned with a warm water (100°F or less) spray. Do not use a high pressure spray.
8. The outside of the unit may be polished with a stainless steel cleaner such as “Zepper” from Zep Manufacturing Co.
9. 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.
10. It is recommended that each piece of equipment be sanitized just before use.
11. Clean the kettle thoroughly. If there is difficulty removing mineral deposits or a film left by hard water or food residues, then use a de-liming agent, following manufacturer directions.
12. Rinse and drain the unit thoroughly before further use.
13. If cleaning problems persist, contact your cleaning product representative for assistance. The supplier has a trained technical staff with laboratory facilities to serve you.

**CLEANING CORE PROBE**

Remove all food soil from core probe by wiping entire core probe and cable assembly with warm detergent solution and a clean cloth. Remove detergent solution by wiping core probe and cable assembly with clean rinse water and a cloth. Allow core probe and cable assembly to air dry. Do not immerse core probe. Hand wash only and immediately let air dry.

**MAINTENANCE**

**WARNING: AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE PRESSURE RELIEF VALVE. SEVERE BURNS CAN RESULT ON EXPOSED SKIN. FAILURE TO CHECK PRESSURE RELIEF VALVE OPERATION PERIODICALLY COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.**

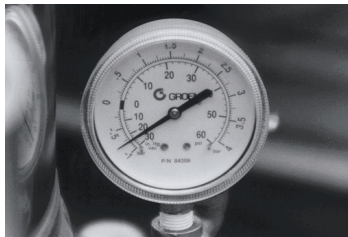
**CAUTION: KEEP GREASE AWAY FROM ELECTRICAL PARTS LOCATED NEAR THE GEARS.**

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

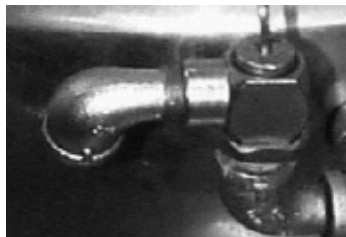
**WARNING: USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY THE MANUFACTURER OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.**

**CAUTION: INSURE ELECTRICAL POWER IS REMOVED AND THE GAS IS TURNED OFF AT THE SHUTOFF VALVE PRIOR TO PERFORMING ANY MAINTENANCE ON THIS KETTLE.**

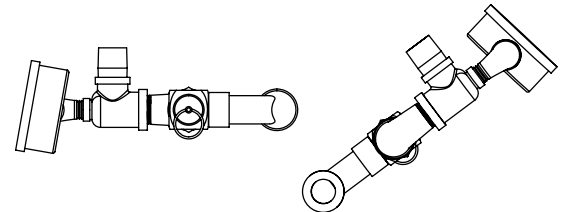
**WARNING: THIS KETTLE IS DESIGNED TO BE WATER RESISTANT. FAILURE TO FOLLOW PROPER MAINTENANCE PROCEDURES MAY VOID THE WARRANTY.**



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



The open end of the pressure relief valve elbow must face downward.



The pressure relief valve is located directly behind the pressure/vacuum gauge.

**PERIODIC MAINTENANCE**

**NOTICE:** Contact an authorized representative when repairs are required.

A Maintenance & Service Log is provided at the back of this manual. 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:

**JACKET VACUUM/REMOVING AIR FROM JACKET**

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

To remove air:

1. Start the unit. (See “Operation” section).
2. Make sure the elbow on the outlet of the pressure relief valve is turned so that escaping steam is directed down toward the floor. Be sure and follow the instructions on the attached pressure relief valve tag.
3. When the pressure/vacuum gauge reaches a positive pressure reading of 5 PSI, release trapped air by lifting the pressure relief valve ring for about one second. Repeat this step, then let the valve ring snap closed, so the valve will seat properly and not leak.

**PRESSURE RELIEF VALVE**

At least twice a month, test the pressure relief valve. Test the valve with the kettle operating at 15 PSI (105 kPa), by holding the test ring for at least five seconds. Then release the ring and permit the valve to snap shut. If the ring does not activate, if there is no discharge, or if the valve leaks, stop using the kettle immediately and contact a authorized service representative.

**GREASE / LUBRICATION**

1. Hand Tilt Models

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. When finished, reassemble access panels to support housing.

2. Crank Tilt Models

The gear housing has been fitted for proper lubrication of moving parts. Since the gears do not run in oil, periodic lubrication with grease is essential. Frequency of lubrication depends on operating conditions, but should occur at least once every six months. The use of a Number Two grade LGI lithium grease is recommended. Add grease through the Zerk fittings on the gear housing until grease flows out of the bearings around the trunnion shaft. Place a liberal amount of grease on the gear to cover the arc that is in contact with the worm gear.



## JACKET FILLING

Every day, before you turn on the unit, make sure the water level is approximately in the center of the water gauge glass. The jacket was filled at the factory with the proper amount of treated water, and is airtight, but over time steam may be vented and water lost.

From time to time, you may need to restore the water to its proper level. The procedure for adding water follows.

1. If you are replacing water lost as steam, use distilled water. Do not use tap water. If you are replacing treated water that was drained from the jacket, prepare more treated water as directed below.
2. Allow the kettle to cool completely. Remove the elbow and pressure relief with an open-end wrench or crescent wrench. Pour in the distilled or treated water. Using a funnel will help you in this process. Continue adding water until the water level rises to the center of the round sight glass.
3. Apply teflon tape in a clockwise pattern and reinstall the pressure relief.
4. Air that gets into the jacket during the filling operation must be removed, because it will make heating less efficient. Follow the procedure in Jacket Vacuum/Removing Air From Jacket above, to restore a negative pressure reading.

## WATER TREATMENT

1. Fill a mixing container with the amount of water required. Use only distilled water.

Model	Kettle Capacity	Jacket Capacity
TDB/TDBC-20	20 qt (5 gal), 18.9 liter	7 quart, 6.6 liter
TDB/TDBC-24	24 qt (6 gal), 22.7 liter	7 quart, 6.6 liter
TDB/TDBC-40	40 qt (10 gal), 37.8 liter	9 quart, 8.5 liter
TDB/TDBC-48	48 qt (12 gal), 45.4 liter	9 quart, 8.5 liter

2. 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.
3. Stir the water continuously, while you slowly add water treatment compound until a color between indicating a pH of 10.5 and 11.5 is reached. (Shown on the pH test kit chart.) Judge the pH by frequently comparing the test strip with the color chart provided in the pH test kit. If there is a problem distinguishing color, use a pH meter.
4. Use a measuring cup to add the compound so that you may record the exact amount used.
5. The amount may be used again, if the same water sources and compound are used in the future. However, it is best to check the pH each time treated water is prepared.

## SEQUENCE OF OPERATION

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

When the operator starts up the kettle by turning the power switch to "ON" and temperature dial from "OFF" to a desired setting, the control relay closes. This lights up the heating indicator light and causes the contactors to close, allowing power to flow to the heating elements. When the temperature of the steam jacket reaches the value corresponding to the dial setting, the control relay opens. This turns off the heating indicator light and causes the contactors to open, stopping the power to the heaters. As soon as the control senses that the kettle is cooling below the set point, the 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 pressure relief valve will open and relieve the excess pressure.

In the event that the jacket water level gets too low and the heating elements overheat, the high limit control will open and shut off power to the elements until the kettle cools. Setting the operating power switch to "OFF" shuts down all control and heating circuits.

## REPLACEMENT PARTS

To order parts, contact your Authorized Service Agent. Supply the model designation, serial number, part description, part number, quantity, and when applicable, voltage and phase.

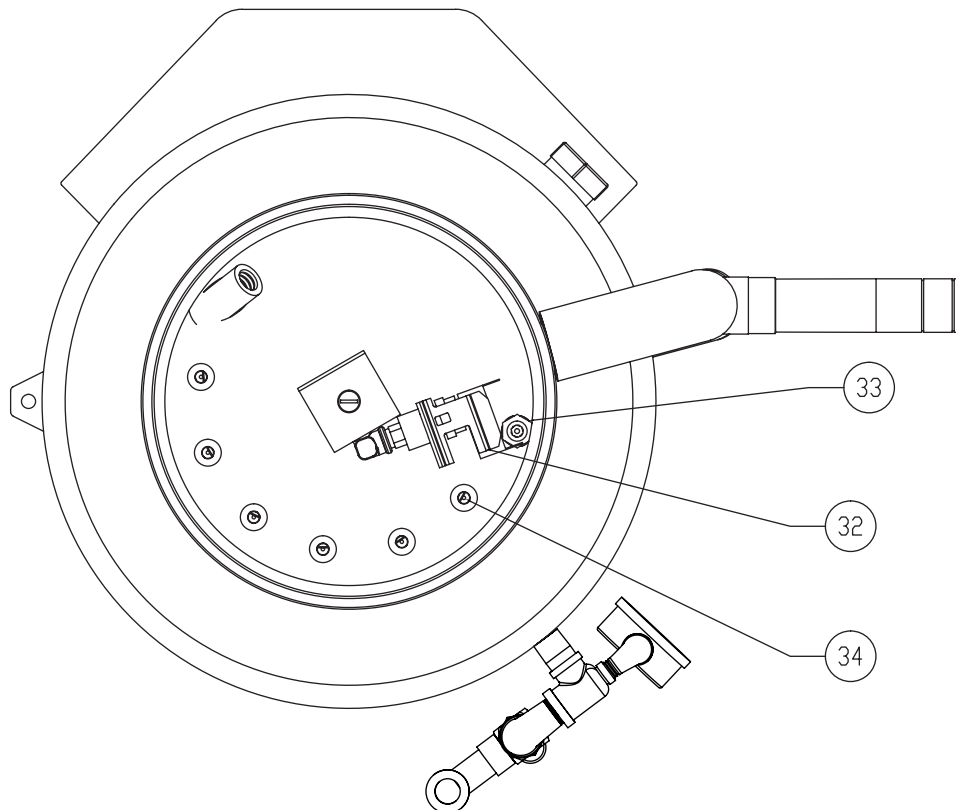
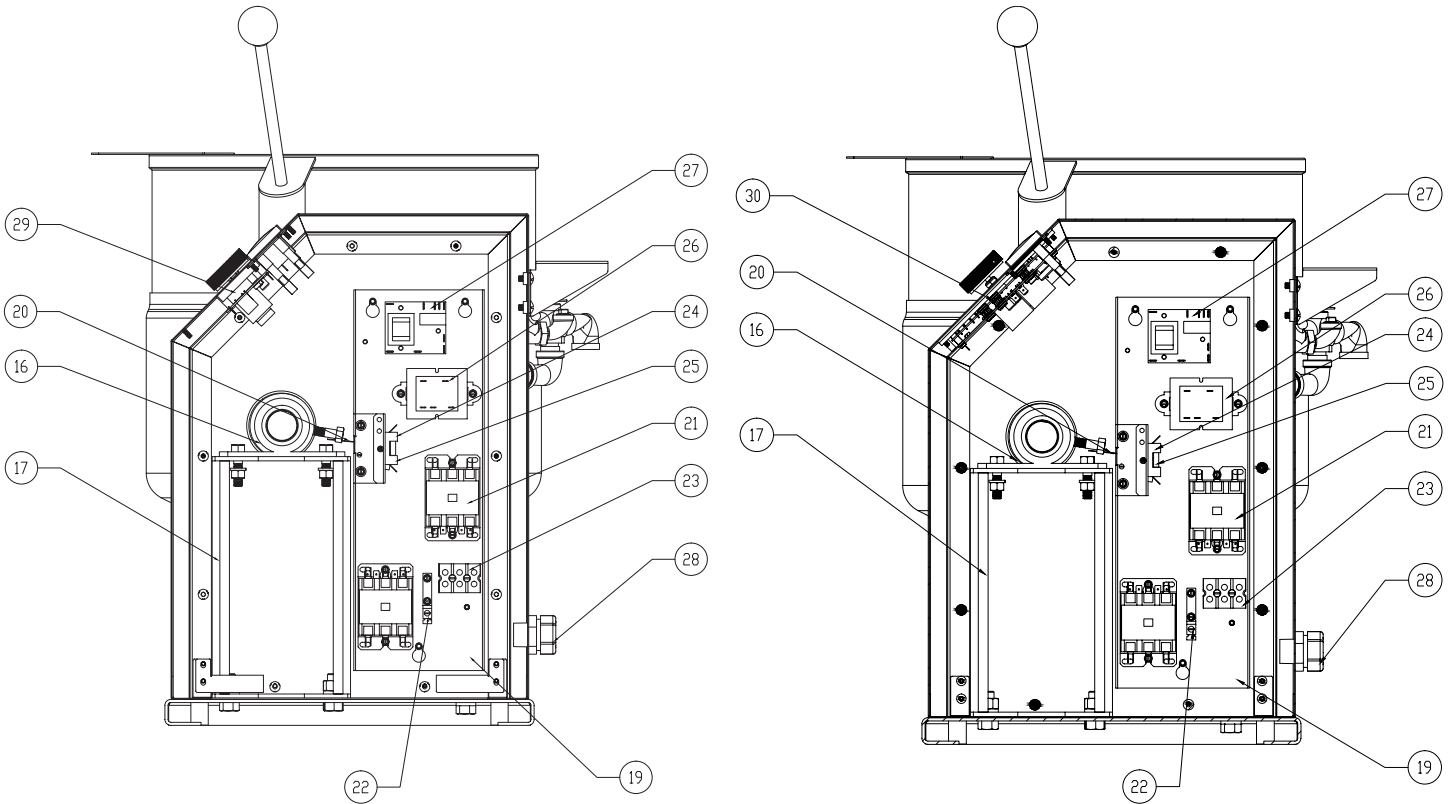
## CONTACT US

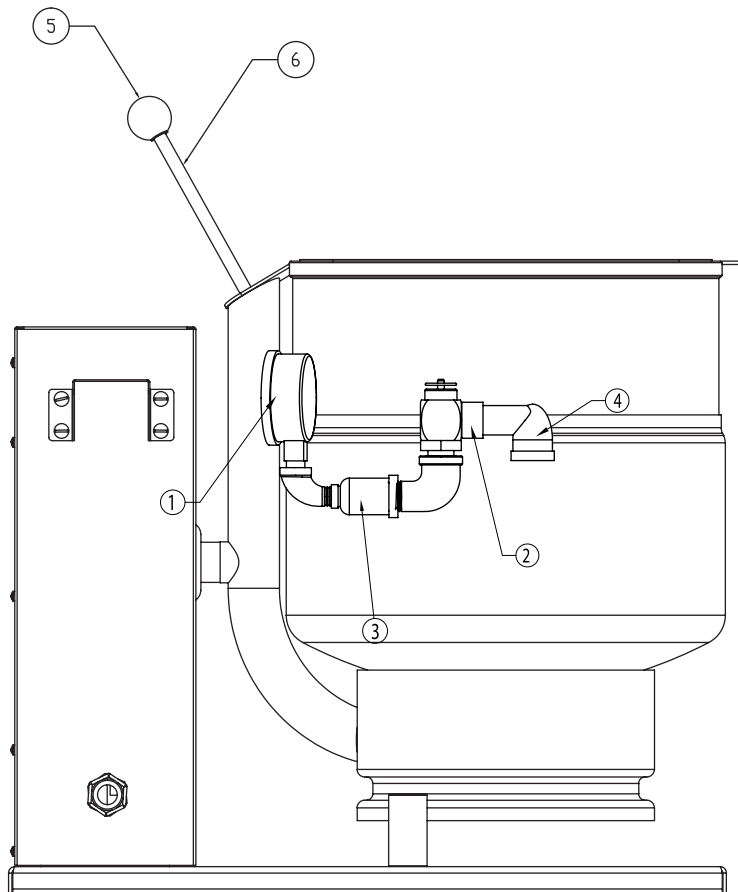
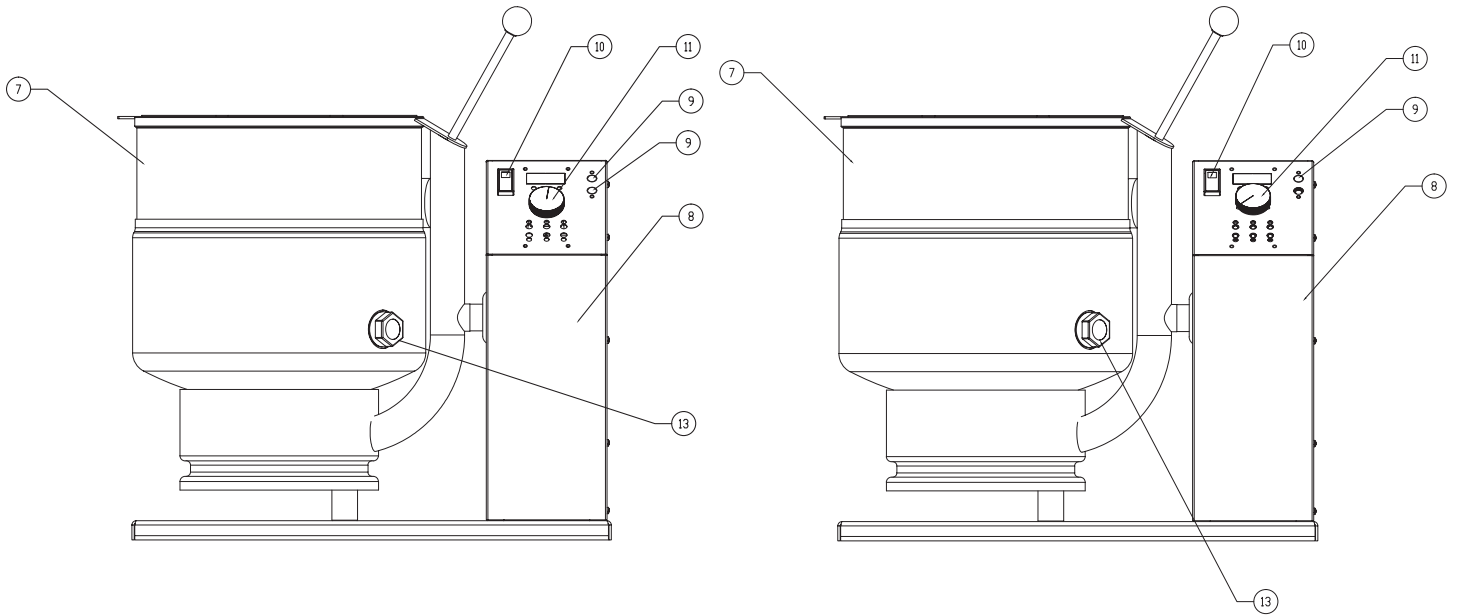
If you have questions pertaining to the content in this manual, contact Groen at 888-994-7636.

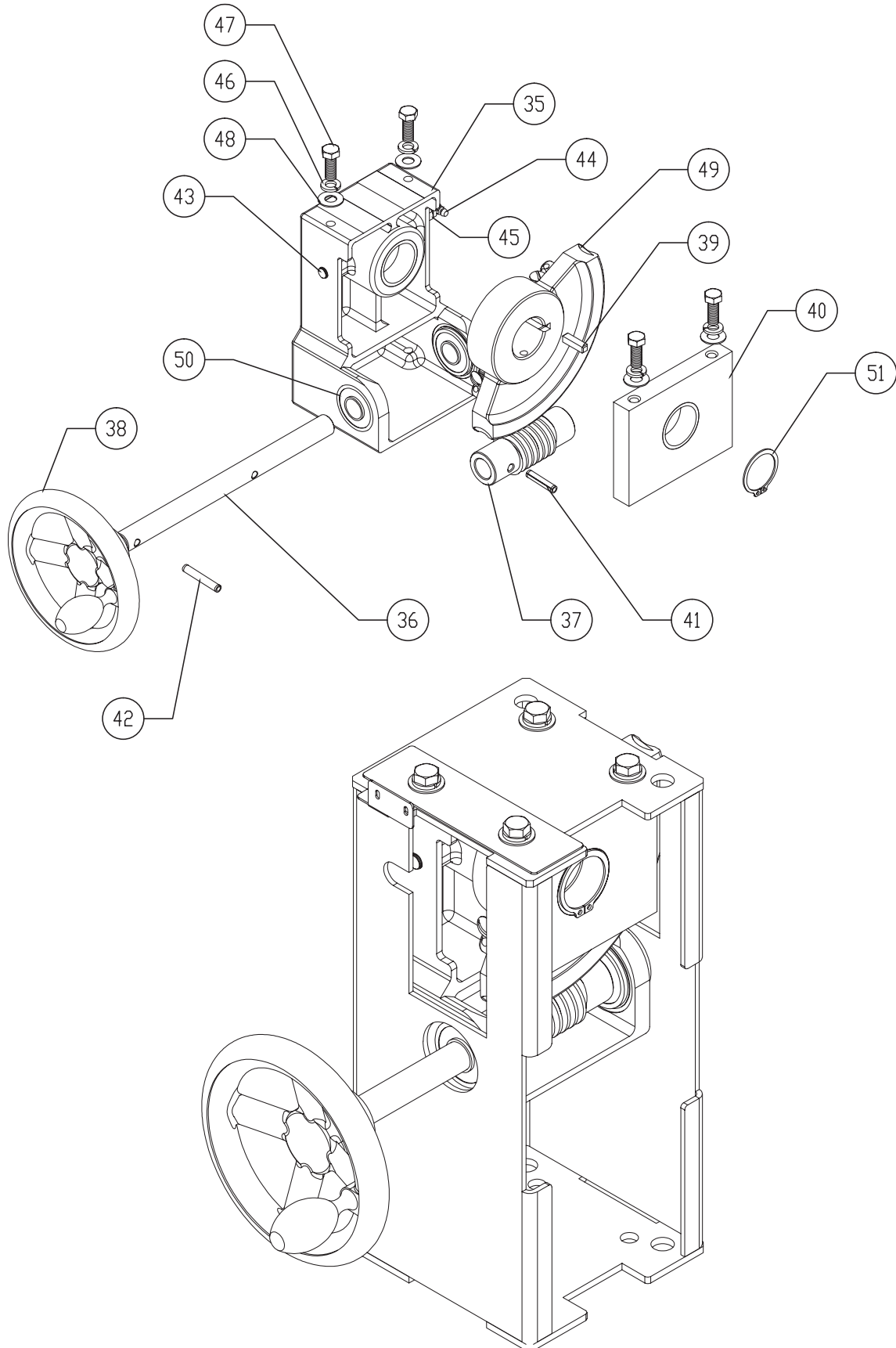
## TROUBLESHOOTING

This unit 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 found at the end of this manual. When in doubt, turn unit off and call for service at 888-994-7636. If an item on the check list is marked with (X), it means that the work should be done by an Authorized Service Agent.

SYMPTOM	WHO	WHAT TO CHECK
Display not lit (Advanced & C2T only)	User	a. That power supply is on.
	Authorized Service Rep Only	b. Fuses, accessible by removing caps on the side of the control box. c. For loose or broken wires. X d. Temperature controller functioning, by listening for a click when the switch opens or closes and verifying LEDs on back of board. X e. Contactor functioning. X
PROB in display (Advanced & C2T only)	Authorized Service Rep Only	a. For loose or broken wires or damaged/failed RTD probe. X b. PCB board malfunction/failure
HI in display (Advanced & C2T only)	Authorized Service Rep Only	a. For loose or broken wires or damaged/failed RTD probe. X b. PCB board malfunction/failure
Kettle is hard to tilt	Authorized Service Rep Only	a. Gears for foreign materials, and lubrication. X b. Gears for alignment. X c. Worn gears or broken gears. X
Kettle will not heat, and heating indicator will not come on	User	a. Electric power supply to the unit. (Check the circuit breaker.) b. Water level in jacket.
	Authorized 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 temperature control. X h. Low water cutoff. X
Kettle will not heat, but heating indicator comes on	Authorized Service Rep Only	a. Temperature control calibration and offsets. X b. Heater elements with ohmmeter for ground short or open element. If element is defective, call service. X
Kettle continues heating after it reaches the desired temperature	User	a. Control knob setting.
	Authorized Service Rep Only	b. Temp control circuit for short. X c. Temp control operation. The contacts 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. X
Kettle stops heating before it reaches the desired temperature	User	a. Control knob setting.
	Authorized Service Rep Only	b. Temp control calibration and offsets. X c. Temp control operation. The contacts 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.
	Authorized Service Rep Only	b. Heater elements with ohmmeter for ground short or open element. If an element is defective, call service. X c. Voltage of main power source. X
Pressure Relief Valve pops	User	a. For air in the jacket. See "Jacket Vacuum" in the "Maintenance" section of this manual.
	Authorized Service Rep Only	b. Pressure switch setting. X c. Temp control operation. The contacts should click when the dial is rotated above and below the setting for the temperature of the kettle. X d. Pressure relief valve. If the valve pops at pressures below 49 PSI, replace it. e. ontactor, to determine whether it is energized. X
CPEP in display (C2T only)	User	a. That core probe is plugged into the receptacle.
	Authorized Service Rep Only	b. For loose or broken wires or damaged/failed RTD probe. X c. PCB board malfunction/failure. X







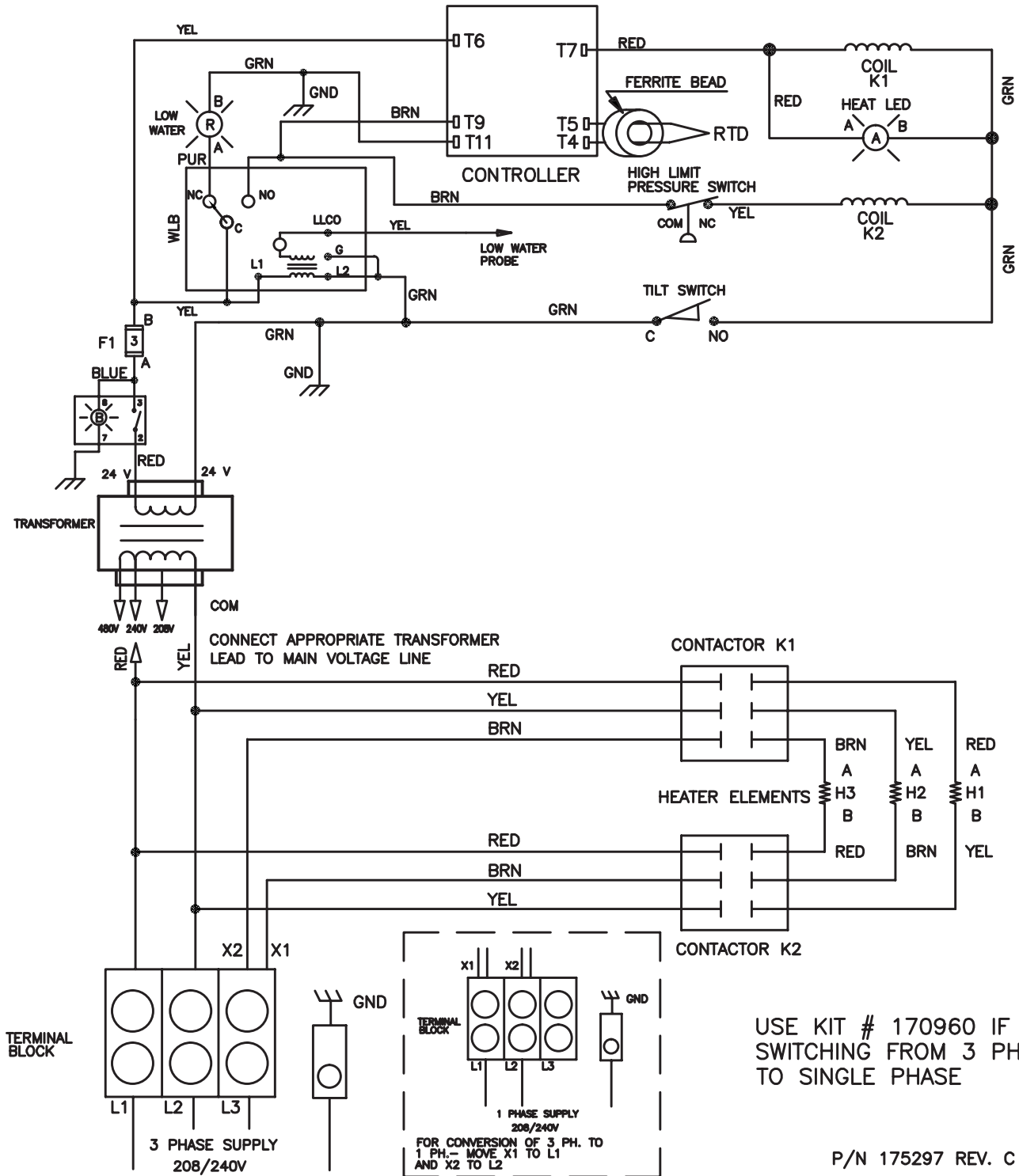
# Parts List

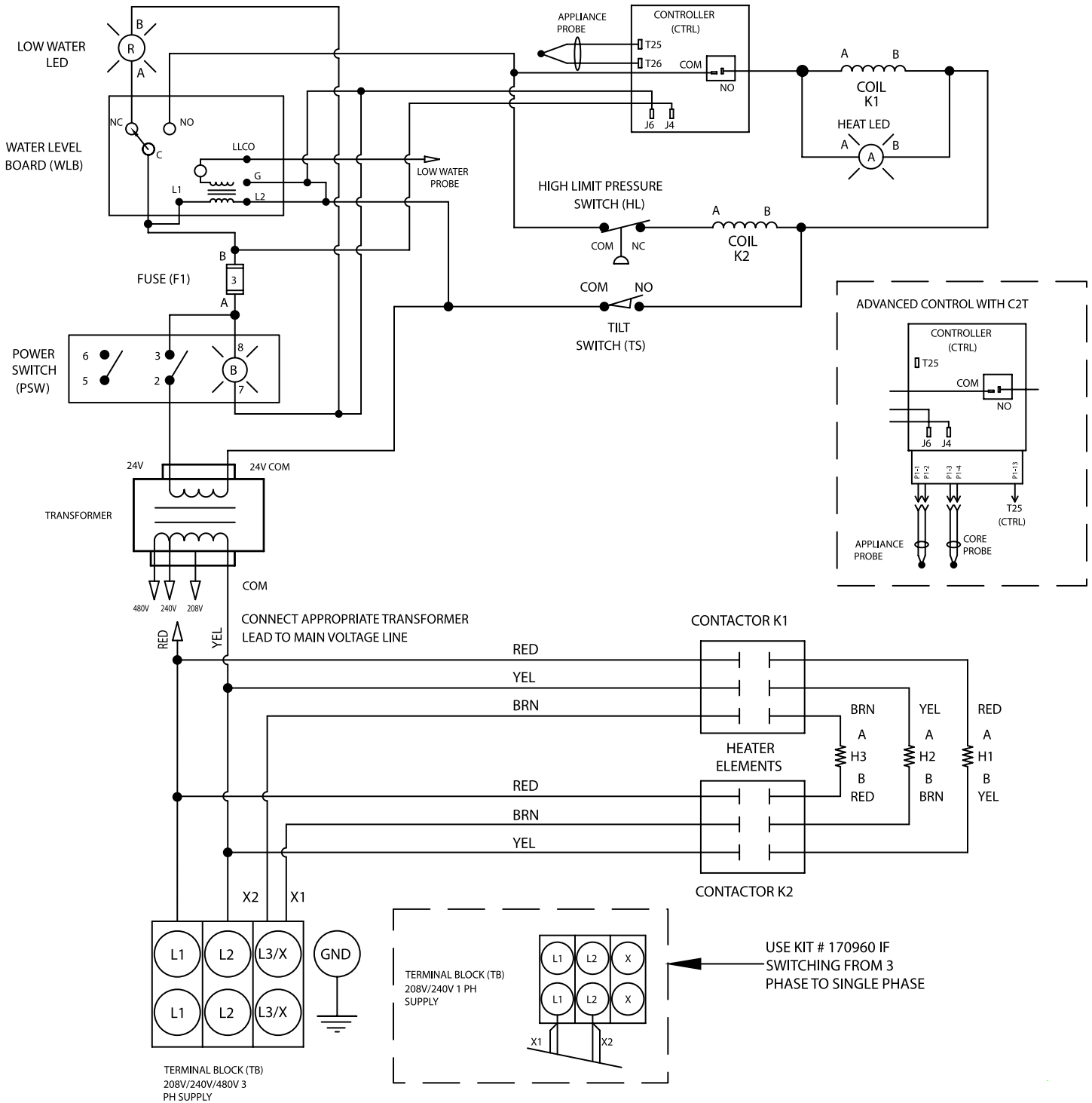
To order parts, contact your Authorized Service Agent. Supply the model designation, serial number, part description, part number, quantity, and when applicable, voltage and phase.

Key	Description	Part No.
1	PRESSURE GAUGE	084208
2	SAFETY VALVE	097005
3	ASSY, WATER FILL SUB	137438
4	ELBOW 90 DEG STREET 1/2 NPT CHROME	010108
5	KNOB	175095
6	HAND & BALL KNOB ASSEMBLY	012694
7	KETTLE BODY ASSEMBLY, 20 QT	175062
7a	KETTLE BODY ASSEMBLY, 20 QT, 480V	175061
7b	KETTLE BODY ASSEMBLY, 24 QT	175067
7c	KETTLE BODY ASSEMBLY, 24 QT, 480V	175068
7d	KETTLE BODY ASSEMBLY, 40 QT	175072
7e	KETTLE BODY ASSEMBLY, 40 QT, 480V	175071
7f	KETTLE BODY ASSEMBLY, 48 QT	175084
7g	KETTLE BODY ASSEMBLY, 48 QT, 480V	175085
8	BASE & PEDESTAL ASSEMBLY - 20/24QT HAND TILT	174752
8a	BASE & PEDESTAL ASSEMBLY - 40/48QT HAND TILT	175362
8b	BASE & PEDESTAL ASSEMBLY - 20/24QT CRANK TILT	175358
8c	BASE & PEDESTAL ASSEMBLY - 40/48QT CRANK TILT	175296
9a	LIGHT, AMBER	116384
9b	LIGHT, RED	116383
10	POWER SWITCH	176921
11A	2" ALUMINUM KNOB, CLASSIC CONTROL	175095
11B	2" ALUMINUM KNOB, ADVANCED & C2T	174829
12	NUT, ROTARY SHAFT SEAL(NOT SHOWN)	101145
13	SIGHT GLASS	108554
14	LIGHT MOUNT BRACKET(NOT SHOWN)	175222
15	LIGHT MOUNT SPACER(NOT SHOWN)	175221
16	HAND TILT MECHANISM ASSEMBLY	137741
17	PEDESTAL WELDMENT - HAND TILT	140321
-	PEDESTAL WELDMENT - CRANK TILT	174630
18	ELECTRICAL MOUNT ASSEMBLY(CRANK TILT) - 208/240V	175229
18a	ELECTRICAL MOUNT ASSEMBLY - 480V	175579
19	ELECTRICAL MOUNT ASSEMBLY(HAND TILT) - 208/240V	175439
19a	ELECTRICAL MOUNT ASSEMBLY - 480V	175440
20	TILT SWITCH	182176
21	CONTACTOR	148102
22	GROUND TERMINAL	129714
23	TERMINAL BLOCK	003888
24	FUSE HOLDER	077854
25	FUSE, 3 AMP	77853
26	TRANSFORMER, 208/240V	137441
26a	TRANSFORMER, 480V	137694

Key	Description	Part No.
27	WATER LEVEL BOARD	122192
28	CONNECTOR	140416
29	CLASSIC CONTROL	174843
30A	ADVANCED CONTROL	174837
30B	C2T CONTROL	176895
31	RTD PROBE(NOT SHOWN)	175429
32	PRESSURE SWITCH	096963
33	ELECTRODE WATER LEVEL	015589
34	ELEMENT - 20/24 208/240V	001706
34a	ELEMENT - 20/24 480V	010996
34b	ELEMENT - 40/48 208/240V	011094
34c	ELEMENT - 40/48 480V	011088
x	CRANK TILT MECHANISM ASSEMBLY	-
35	GEAR CARRIER ASSEMBLY	124741
36	HANDWHEEL SHAFT	122374
37	WORM GEAR	128001
38	HANDWHEEL ASSEMBLY	124719
39	KEY, 1/4 SG X 1"	122371
40	BEARING BACK ASSEMBLY	128021
41	ROLL PIN .25 X 1.25	012614
42	ROLL PIN .25 X 1.625	128036
43	PLUG PIPE	010286
44	FITTING, GREASE 90	012195
45	BRASS FITTING, 1/8 NPT	175231
46	WASHER, SPLIT LOCK 3/8	005618
47	SCREW, 3/8-16 X 1 HEX HEAD	005612
48	WASHER, FLAT 3/8	005830
49	GEAR SECTOR ASSEMBLY	128028
50	BEARING ROLLER	002790
51	RETAINING RING, 1.5"	124764
52	COVER ELEMENT HOUSING	003141
53	STATION COVER	175237
54	DECAL OPERATING INSTRUCTIONS - CLASSIC CTRL	175298
55	DECAL OPERATING INSTRUCTIONS - ADVANCED CTRL	175610
x	HARNES, HIGH VOLTAGE	149945
x	HARNES, CONTROL, TDB	175289
x	HARNES, ELEMENT	148718
x	FERRITE BEAD (NOT SHOWN)	175836
x	OVERLAY, C2T	176892
x	CORE PROBE, TDB-20 & 24, C2T	176677
x	CORE PROBE, TDB-40 & 48, C2T	176678
x	BRACKET, CORE PROBE, TDB-20 & 24, C2T	176658
x	BRACKET, CORE PROBE, TDB-40 & 48, C2T	176659
x	BRACKET ASSEMBLY, CORE PROBE STORAGE	177091
x	SOCKET, PANEL MOUNT ASSY, CORE PROBE, C2T	176925
x	CAP, SOCKET, PANEL MOUNT, CORE PROBE, C2T	176927
x	WIRE HARNES, CONTROL, CORE PROBE, C2T	176920
x	HARNES, CONTROL, TDB, C2T	177262

x- Item not depicted/called out in drawing or photograph





P/N 174728 REV. E



# Service Log

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

Date	Maintenance Performed	Performed By