# Maintenance Procedures & Parts Lists

## Electric Table Top Kettles

***For units built after April 2010***

KET-3-T
KET-6-T
KET-12-T
KET-20-T
TKET-3-T
TKET-6-T
TKET-12-T

*For your future reference.*

Model # _____

Serial # _____


Model # & Serial #.

***Read the manual thoroughly.***

***Improper installation, operation or maintenance can cause property damage, injury or death.***

Cleveland

*1333 East 179th St., Cleveland, Ohio, U.S.A. 44110*
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*www.clevelandrange.com*

*This manual is to be used in conjunction with the "Operators Manual". See "Operators Manual" for safety warnings, correct operation, installation and preventative maintenance.*

Manitowoc

SE95004 Rev. 9
August 2012

# *STATEMENT OF RESPONSIBILITIES / DÉCLARATION DES RESPONSABILITÉS / DECLARACIÓN DE RESPONSABILIDADES*

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All utilities (gas, electric, water and steam) should be turned OFF to the equipment and locked out of operation according to OSHA approved practices during any servicing of Cleveland Range equipment

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Au cours de tout entretien d'un appareil Cleveland Range, tous les services publics (gaz, électricité, eau et vapeur) doivent être FERMÉS au niveau de l'appareil et le dispositif de fonctionnement doit être verrouillé suivant les pratiques approuvées de l'OSHA.

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Cuando se esté dando servicio o mantenimiento a un aparato de Cleveland Range, todos los servicios públicos (gas, electricidad, agua y vapor) deben estar APAGADOS para el equipo en cuestión y se debe seguir el procedimiento de cierre de operaciones de acuerdo con las prácticas aprobadas por la OSHA.

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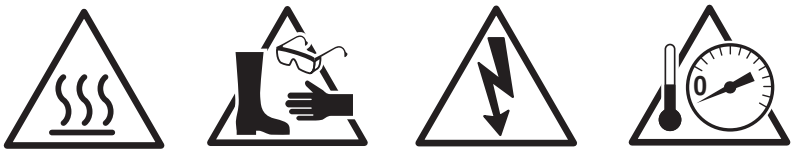
# *TROUBLESHOOTING AND MAINTENANCE PROCEDURES*

***The following trouble shooting guide and maintenance procedures are meant to be used by Qualified Service Technician***



**ANY REPAIRS TO THE PRESSURE VESSEL MUST BE DONE BY A CERTIFIED PRESSURE VESSEL REPAIR SHOP AND ALL REPAIR METHODS AND MATERIALS MUST BE APPROVED BY THE MANUFACTURER.**

**For periodic maintenance recommendations see "Operators Manual".**

**Extreme caution must be taken if unit is electrically energized for testing.**

**Remove power from the unit while servicing.**

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## DIAGNOSTIC GUIDE

This section contains servicing information intended for use by Authorized Service Personnel.
NOTE 1: If Fault Isolation Procedure is required, be sure to start at step #1.
NOTE 2: On table type kettles the entire control mounting panel may be removed from kettle control housing for easier troubleshooting and parts replacement.

### A/ Problem: Kettle is not heating at all. (Kettle must be on and temperature control set.)

*Possible Causes*

1. No incoming power.
2. Kettle is tilted.
3. Low water condition.
4. Defective ON/OFF switch.
5. Defective 12 VDC relay.
6. Defective safety thermostat.
7. Defective contactor/s.
8. Defective potentiometer (temperature control).
9. Defective low water level probe.
10. Defective thermistor.
11. Defective 240/16 VAC transformer.
12. Defective control box.
13. Defective elements.

#### *Fault Isolation Procedure*

*Step* *Test*

1. Is there proper incoming voltage at terminal block?
   Yes - Go to step #2.
   No - Correct external power supply problem.
2. Is the red LED illuminated?
   Yes - Follow Reservoir Fill Procedure. If this does not correct the problem, go to Problem D.
   No - Go to step #3.
3. Is the green LED illuminated?
   Yes - Go to step #4.
   No - Go to step #7.
4. Do both contactors energize?
   Yes - Check contactor contacts for pitting. Voltage across contactor terminals while in a closed position indicates a poor contact. Replace contactor/s as necessary. Check elements for short at ground or an open circuit. If element/s are defective contact the factory. Elements are not field replaceable.
   No - Go to step #5.
5. Measure continuity across safety thermostat. Is it an open circuit?
   Yes - Replace defective safety thermostat.
   No - Go to step #6.

6. Is there 120 VAC present across the coils of the contactors?
   Yes - Replace defective contactor/s.
   No - Go to step #7.

7. Remove wire from low water level probe and ground it to the body of the kettle. Do the contactors now energize?
   Yes - Clean or replace defective low water level probe. Replace defective red LED.
   No - Go to step #8.

8. Is there 16 VAC present at output of 16 VAC transformer?
   Yes - Go to step #9.
   No - Replace defective 240/16 VAC transformer.

9. Measure continuity of ON/OFF switch/ temperature control. Is it operating properly?
   Yes - Go to step #10.
   No - Replace defective ON/OFF switch/temperature control.

10. Unplug control box and measure the resistance across potentiometer. Is it approximately 0 ohms at maximum setting and 50,000 ohms at minimum?
    Yes - Go to step #11.
    No - Replace defective potentiometer (ON/OFF switch/temperature control)

11. Remove edge connector from control box. While kettle is cold or thermistor is removed and allowed to cool, measure the resistance between edge connector's pins #2 and #7. Is it approximately 100,00 ohms?
    Yes - Spray contact cleaner on control box terminals and edge connector. Try box again, if the problem still exists, replace defective control box.
    No - Replace defective thermistor.

## B/ Problem: Kettle heats too slowly or not hot enough. (Note: normal max. operating pressure with an empty kettle is 30-35 psi.)

*Possible Causes*

1. Air in jacket requires venting.
2. Defective safety thermostat.
3. Defective potentiometer (temperature control).
4. Defective thermistor.
5. Defective contactor/s.
6. Defective control box.
7. Defective elements/s.

### *Fault Isolation Procedure*

*Step* *Test*

1. In a cold state, does the pressure gauge read in the green zone?
   Yes - Go to step #2.
   No - There is air present in the jacket of the kettle. Follow Kettle Venting Procedure. If constant venting is required, there is a leak that should be corrected.

2. Do the contactors shut off too early? (before reaching normal maximum operating pressure.)
   Yes - Go to step #3.
   No - Check contactor contacts for pitting. Voltage across terminal of contactor while energized signifies a poor contact. Replace contactor/s as necessary. Check elements for short to ground or open circuit. If elements are defective, contact the factory. Elements are not field replaceable.

   3. Does the green LED remain illuminated after the contactors shut off?
   Yes - Replace defective safety thermostat.
   No - Go to step #4.

4. Unplug control box and measure the resistance across potentiometer (temperature control). Is it approximately 0 ohms at maximum and 50,000 ohms at minimum setting?
   Yes - Go to step #5.
   No - Replace defective thermistor.

5. Remove kettle thermistor and allow to cool. Remove edge connector from control box. Test resistance across edge connector's pins #2 and #7. Is it approximately 100,000 ohms?
   Yes - Go to step #6.
   No - Replace defective thermistor

6. Turn the potentiometer on the control box clockwise to increase the maximum operating temperature. Does the kettle now achieve maximum operating pressure of 30-35 psi in an empty kettle?
   Yes - Kettle is operating correctly.
   No - Spray contact cleaner on control terminals and edge connector. Try box again. If problem still exists, replace defective control box.

## C/ Problem: Kettle is overheating.

*Possible Causes*

1. Defective thermistor
2. Defective potentiometer (temperature control).
3. Defective 12 VDC relay.
4. Defective control box.

***Fault Isolation Procedure***

*Step* *Test*

1. Does the green LED turn off even though the contactors remain energized?
   Yes - Replace defective 12 VDC relay.
   No - Go to step #2.
2. Unplug the control box and measure the resistance across the potentiometer (temperature control), Is the resistance approximately 0 ohms at maximum and 50,000 ohms at minimum setting?
   Yes - Go to step #3.
   No - Replace defective thermistor.
3. Remove kettle thermistor and allow to cool Remove edge connector from control box. Test resistance across edge connector's pins #2 and #7. Is it approximately 100,000 ohms?
   Yes - Go to step #4.
   No - Replace defective thermistor.
4. Turn the potentiometer (temperature control) on the control box counter-clockwise to decrease the maximum operating temperature. does the kettle continue to overheat?
   Yes - Spray contact cleaner on control box terminal and edge connector. Try box again. If problem still exists, replace defective control box.
   No - Kettle is operating correctly.

## D/ Problem: Red LED remains illuminated even though water has been added.

*Possible Causes*

1. Defective low water level probe
2. Defective control box.

***Fault Isolation Procedure***

*Step* *Test*

1. Remove wire from low water level probe and ground the wire to the body of the kettle. Does the red LED turn off?
   Yes - Replace or clean defective low water level probe.
   No - Spray contact cleaner on control box terminals and edge connector. Try box again. If problem still exist, replace defective control box.

# SAFETY INSPECTION CHECKLIST

**NOTE:** The following instructions are intended for use by qualified service personnel.

Regular inspection and maintenance of units is essential to obtain trouble free and safe operation of equipment. **The following steps should be completed IN SEQUENCE every year or more frequently, if unit is in a high volume facility.**

## *A/ KETTLE PREPARATION*

1. **Disconnect main power at fused disconnect switch.**
2. Kettle should be cold. If necessary add water to kettle pot to cool unit.
3. The pressure gauge should now show a vacuum and have no indication of leakage. If gauge gauge looks damaged replace gauge.
4. Gauge must be showing a vacuum prior to proceeding. If not check for leaks, and repair kettle prior to proceeding. Refer to REFERENCE SECTION (KETTLE VENTING INSTRUCTIONS).

Photo of Pressure Gauge in Vacuum.

## *B/ MECHANICAL CHECKS*

1. Inspect controls, replace damaged seals, switches, LED's etc..
2. Remove the console cover and check that the seal is not cracked or split. Replace seal, screws, missing or worn nylon anchor nuts. **Leave cover off**.
3. Remove the kettle bottom cover and check that the seal is not cracked or split. **Leave cover off**.

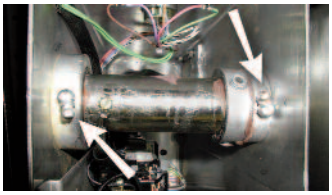


Photo of Grease Nipples.

### 4A. FOR UNITS WITH TILT HANDLE -

A. Check handle for tightness. If loose apply lock tight and reinstall. Check handle knob is on end of handle and firmly tightened. If missing replace, if loose apply lock tight and reinstall.

B. Check that kettle tilts smoothly and there is no excessive wear in the trunnion bearings. Add grease to nipples as required or for older units without grease nipples refer to REFERENCE SECTION (BEARING LUBRICATION PROCEDURE).

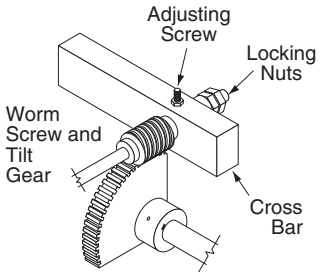



Illustration inverted for clarity.

### 4B. FOR UNITS WITH TILT CRANK -

A. Check that the kettle tilts smoothly. If there is excess play adjust the worm to gear clearance with Locking Nuts or Adjusting Screw as required.

B. Check that there is no excessive wear in the trunnion bearings.

C. Apply grease to gear teeth.

## C/ MARINE LOCK TEST

1. Check that lock mechanism is not bent or damaged.
2. Check that lock clears stop pin on side box without rubbing when kettle is tilted (Figure **A**).
3. Check side to side play. Lock should remain fully over stop pin when pushed to it's maximum side to side play (Figure **B**).
4. Check that the kettle when pushed fully upright forces the lock to a closed position. To check this:

   **A/** Hold the latch firmly in the unlocked position while tilting the kettle back to an upright position.

   **B/** The kettle sidebox will force the lock into a new position.

   **C/** Hold the lock in this position and try to tilt the kettle forward. The latch should prevent the kettle from tilting.
5. Check shoulder bolt is firmly seated against console body.
6. Check on inside of console box that shoulder bolt locknut is secure.

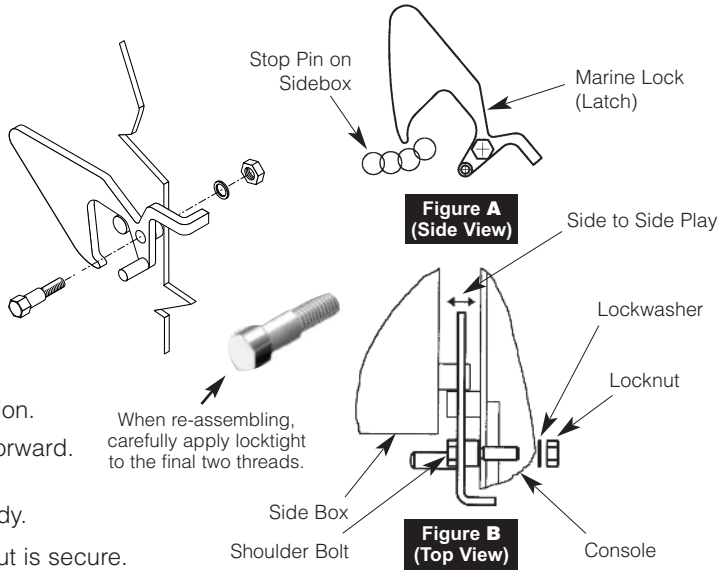
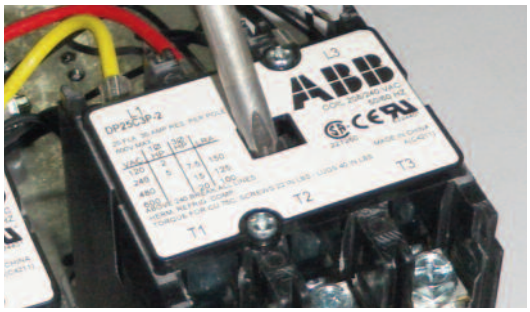



**Figure A (Side View)**




**Figure B (Top View)**

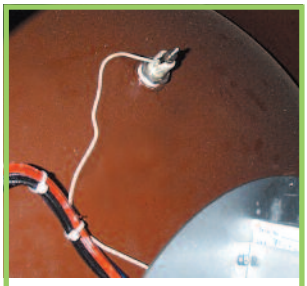



## D/ CONTACTOR TEST

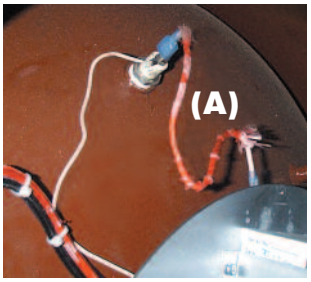
1. Remove power to unit.
2. Remove nut holding component mounting plate to console.
3. Pull plate out and place on top of console. (Depending on how the installer wired the kettle you may have to remove the supply wire and reconnect).
4. Physically push in on contacts of each contactor to check for free movement. Replace contactor(s) if required.

## E/ LOW WATER LEVEL PROBE:

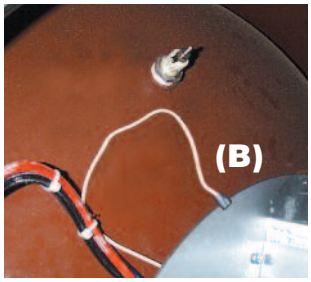
**Installation Check:**



✔ **Probe properly attached**




✘ **Probe bypassed by running (A) an additional wire**

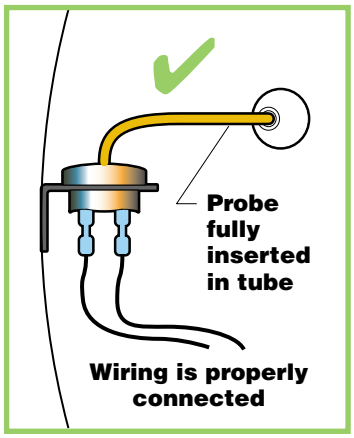


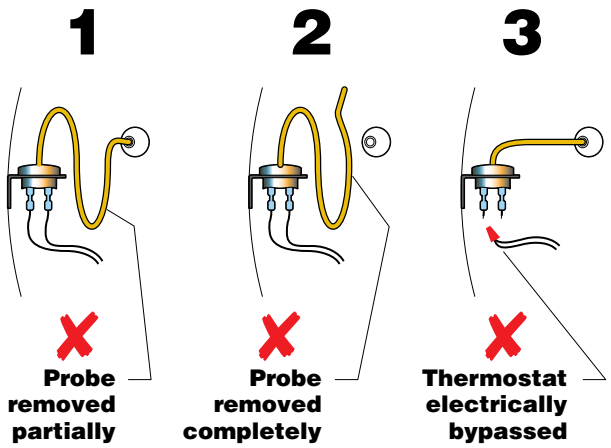

✘ **Probe bypassed by (B) grounding the connecting wire**

**Functional Test:**

1. **Turn main power on at fused disconnect switch.**
2. Turn kettle on and set temperature to maximum.
3. Green light will come on and contactors close.
4. Tilt kettle over. After approximately a five-second delay the red light will come on, green light go off and the contactors will disengage.
5. Turn kettle upright. Green light will come back on and contactors reengage.
6. Turn kettle off
7. If unit does not function as above, make required repairs.
8. **Disconnect main power at fused disconnect switch.**

## F/ SAFETY THERMOSTAT INSTALLATION CHECK:

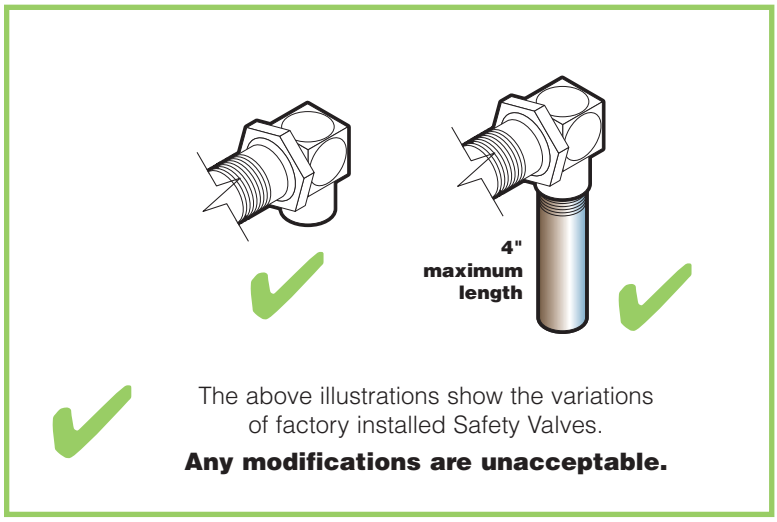



### Incorrect Installations

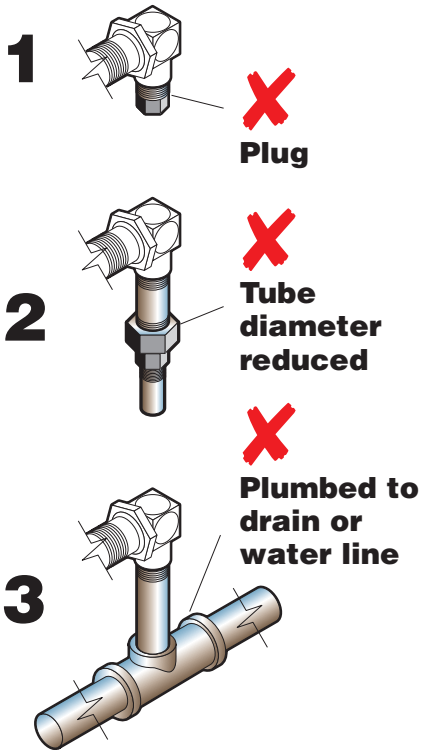
1. Safety thermostat probe is not completely inserted into tubing (except KET-3-T that has a small loop).
2. Safety thermostat probe is removed from tubing.
3. Safety thermostat electrical connection is bypassed.

## G/ SAFETY VALVE INSTALLATION CHECK:




The above illustrations show the variations of factory installed Safety Valves.

**Any modifications are unacceptable.**




### Incorrect Installations

1. Safety valve has plug threaded into the discharge opening preventing any steam from escaping.
2. Safety valve's tube diameter has been reduced.
3. Safety valve is plumbed to a drain or water line creating back pressure and reducing flow.

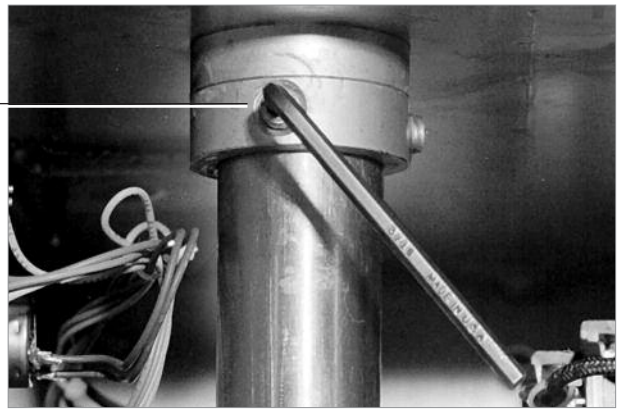
### Physical Checks

1. Check that the PSI rating on the valve matches MAWP (maximum allowable working pressure) on the plate welded to the kettle.
2. Check that the Safety Valve has a "UV" stamp.
3. Check that the valve is not damaged in any way.

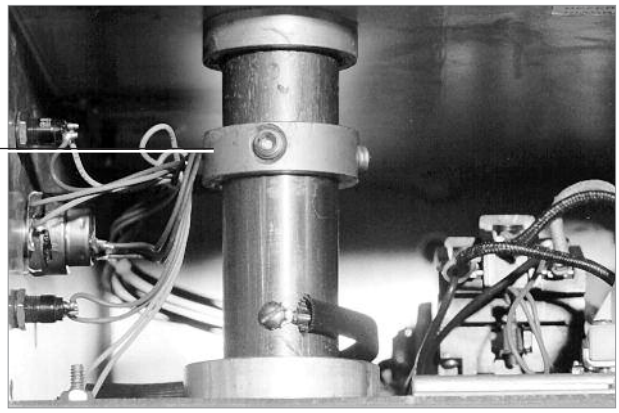
If any of the above criteria is not met, replace valve.

# BEARING LUBRICATING PROCEDURE

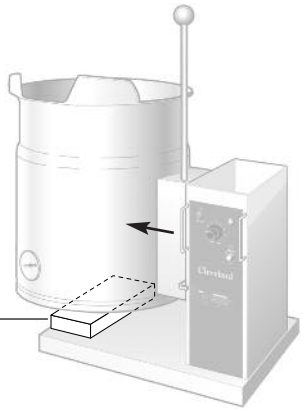
1. Remove console cover.
2. Loosen two Allen screws on locking ring.

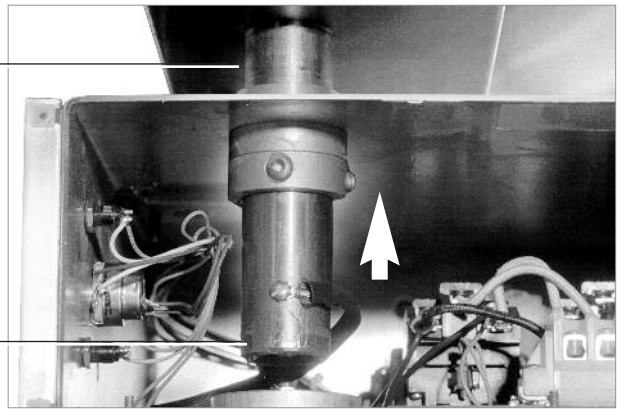


3. Pull locking ring to center of trunnion.

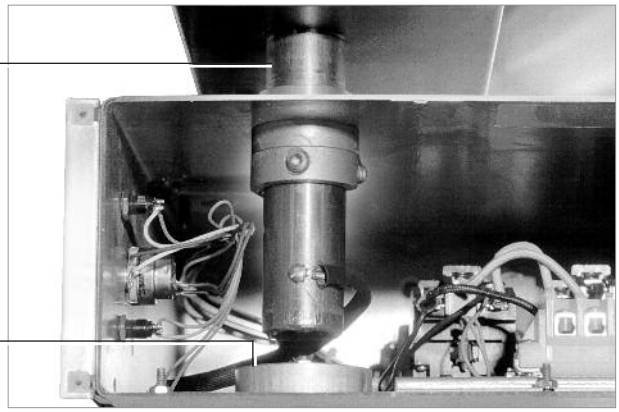


4. Pull kettle two inches away from console and rest on support block.



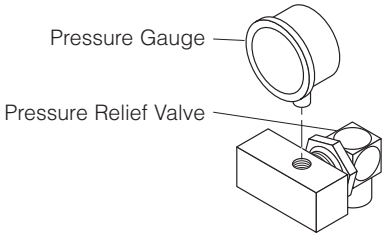


5. Clean newly exposed sections of trunnion.
6. Grease trunnion between kettle and console.



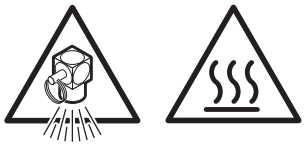
7. Repack outer needle bearing.
8. Push kettle back in place.
10. Reinstall trunnion and lock collar.
11. Replace console cover.

## CALIBRATING PROCEDURE

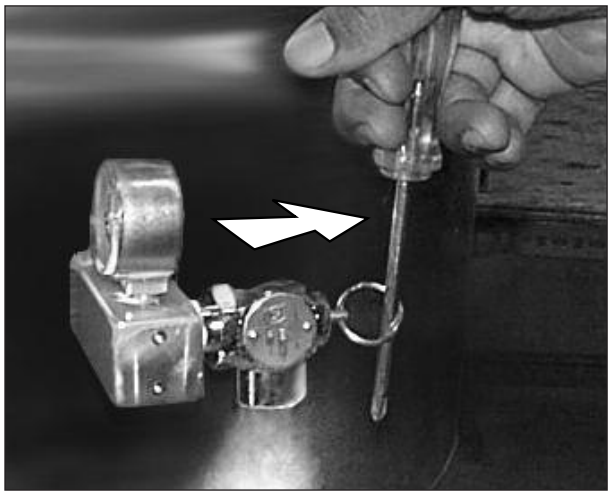



1. Kettle must be empty when this procedure is executed.
2. Insure the unit has a vacuum before you begin calibrating procedures. If unit requires venting refer to KETTLE VENTING INSTRUCTIONS.
3. Set On-Off Switch/Temperature Control to "10" (Max.).
4. Allow the unit to cycle twice.
5. Check temperature of the inner kettle surface with a digital surface thermometer.
6. Temperature should be between 260° F and 265° F.
7. Using a screw driver adjust temperature by turning the potentiometer on the black box. Turn very little. Turn clockwise to INCREASES and counter-clockwise to DECREASE temperature.
8. Allow the unit to cycle twice.
9. Check temperature of the inner kettle surface with a digital surface thermometer.
10. Repeat steps 5. through 9. until unit is calibrated.).

## PRESSURE RELIEF VALVE PERIODIC TESTING PROCEDURE



1. With the kettle empty, set On-Off Switch/Temperature Control to "10" (Max.). Allow the kettle to heat until the unit cycles off.
2. Switch On-Off Switch/Temperature Control to "0" (Off) and disconnect main power at fused disconnect switch.



3. Stand to the side of the pressure relief valve discharge tube and pull valve open for a maximum of one second. Repeat test three to four times. Each time the mechanism should move freely and be accompanied by a rapid escape of steam.

If valve appears to be sticking replace pressure relief valve.

If foreign material is discharged then drain kettle and replace pressure relief valve.

# KETTLE JACKET CLEANOUT AND PASSIVATION PROCEDURES

The following procedure should be preformed at least once every three years to prevent possible corrosion and ensure the optimum life of the kettle.

**DANGER:**
Rust inhibitor can be dangerous. read label and follow safety instructions.

**WARINING:**
Improper refilling of kettle jacket will result in irreversible damage to unit.

## RUST INHIBITOR

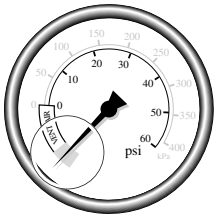
Use a “radiator rust inhibitor” that can be purchased at your local automotive centre. It should not contain any anti-freeze and preferably no lubricant.

To ensure satisfactory mixing follow the manufacturer’s instructions.

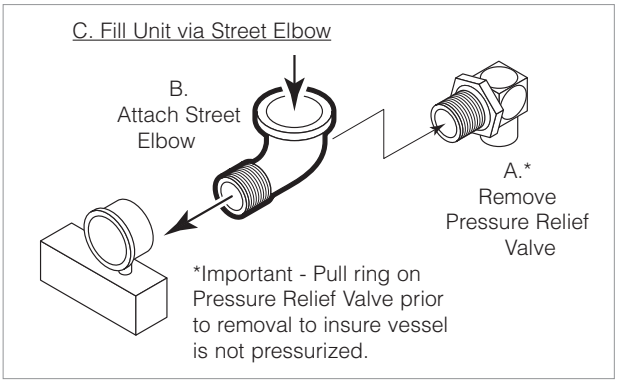
DISPOSAL - Follow all Federal, State and local codes when disposing of product.

*SPRING WATER REQUIREMENTS*

| Kettle Capacity | When Red “Low Water Light” comes on, add Spring Water |
|---|---|
| 3 gallon | 50 ounces |
| 6 gallon | 70 ounces |
| 12 gallon | 120 ounces |
| 20 gallon | 1 gallon |

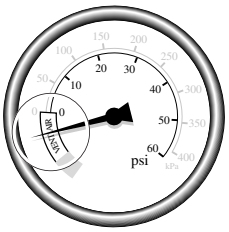


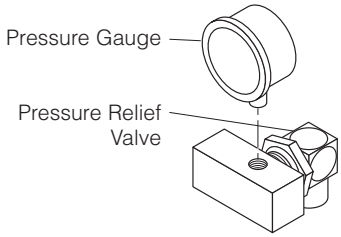

1. Ensure kettle is at room temperature and pressure gauge showing zero or less pressure.
2. Shut off power to the kettle at the fused disconnect switch.




3. Pull Pressure Relief Valve (A) open to insure vessel is not pressurized.
4. Remove Pressure Relief Valve (A).
5. Replace Pressure Relief Valve (A) with Street Elbow (B).
6. Add Spring Water (C) through the Street Elbow (B), using a funnel if necessary. Refer to Spring Water Requirements chart for the proper amount required.
7. Apply a thread sealant (i.e. Teflon tape) to the Pressure Relief Valve's (A) thread and replace.
8. Restore power to unit at the fused disconnect switch.
9. The kettle must now be vented. (Refer to the Kettle Venting Instructions).

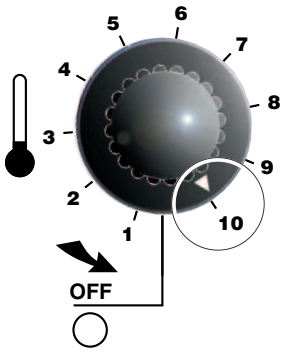
## KETTLE VENTING INSTRUCTIONS



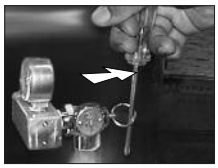




The following venting procedure should be followed when the Vacuum/Pressure Gauge needle is in the "VENT AIR" zone:

NOTE: Check for and eliminate leaks prior to venting (See REPAIRING LEAKS IN STEAM JACKETED KETTLE FITTINGS).

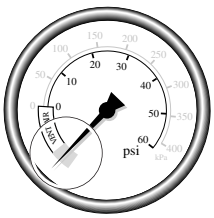



1. Set On-Off Switch/Temperature Control to "10" (Max.). Heat the empty kettle until unit cycles off.



2. Vent kettle by pulling safety valve ring 8-10 times in short 2-3 second blasts with a 5 second interval between pulls.

NOTE: If unit cycles ON, stop venting and wait for kettle to cycle OFF before continuing.




3. Turn kettle OFF. Add cold water to kettle until its surface temperature is below 100°F. The pressure gauge needle should be in the green zone, indicating a vacuum in the kettle’s jacket.

## VACUUM LEAKS

If unit will not hold a vacuum the most likely cause is a leak at one of the fittings.

Often, the easiest way to eliminate a leak is reseal the suspect areas.

1. Water Level Probe

   Remove, clean threads, apply teflon thread sealant and reinstall.

2 Pressure Relief Valve

   A/ Inspect for signs of leaks. Replace if required.

   B/ Remove, clean threads, apply teflon thread sealant and reinstall.

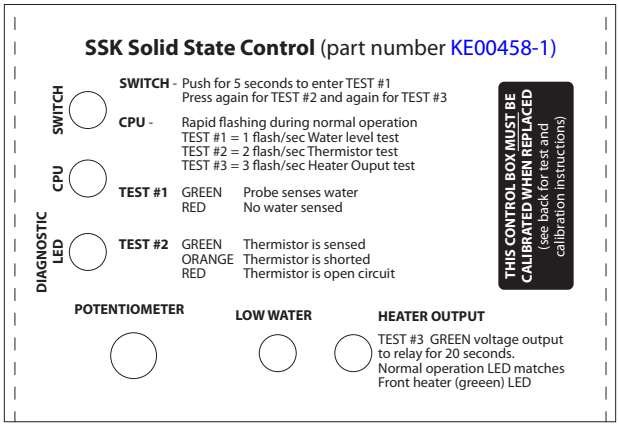
3. Pressure Gauge

   A/ Inspect face of gauge. If it contains moisture on the inside of face replace.

   B/ Remove, clean threads, apply teflon thread sealant and reinstall.

I leak persists replace all three components at same time.

## SSK SOLID STATE CONTROL TEST INSTRUCTIONS




1. If required remove board from holding bracket for better access.
2. Turn unit on and set to 10 (maximum).
3. Push and hold the SWITCH button for approximately 5 seconds until the CPU starts to flash 1 flash/second. You are now in TEST #1. Output to 12v relay is disabled. With kettle upright the DIAGNOSTIC LED should be green, with kettle tilted it should be red.
4. Push SWITCH button. The CPU starts to flash 2 flash/second. You are now in TEST #2. Check the DIAGNOSTIC LED for indication of the temperature probe status.
5. Push SWITCH button. The CPU starts to flash 3 flash/second. You are now in TEST #3. The HEATER OUTPUT LED should light for 20 seconds and power to the relay should energize the 12v relay for the heat source.

After 20 seconds test mode is exited and unit reverts to normal operation.

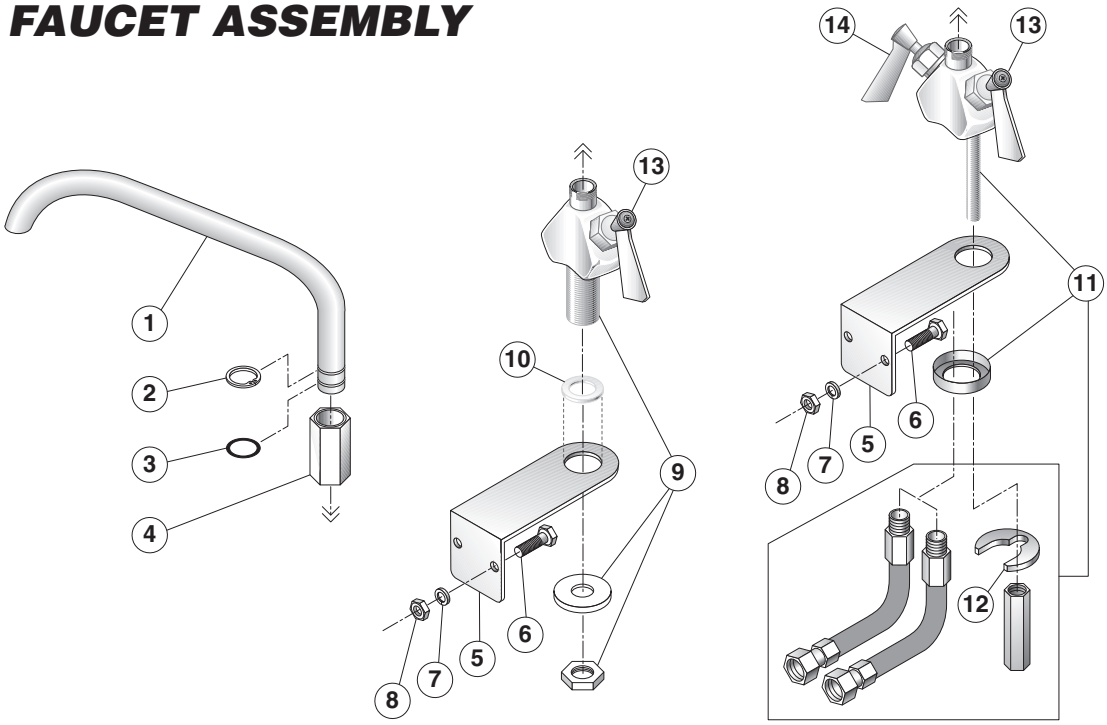
# SERVICE PARTS

## WARRANTY

Our Company supports a worldwide network of Maintenance and Repair Centers. Contact your nearest Maintenance and Repair Centre for replacement parts, service, or information regarding the proper maintenance and repair of your cooking equipment

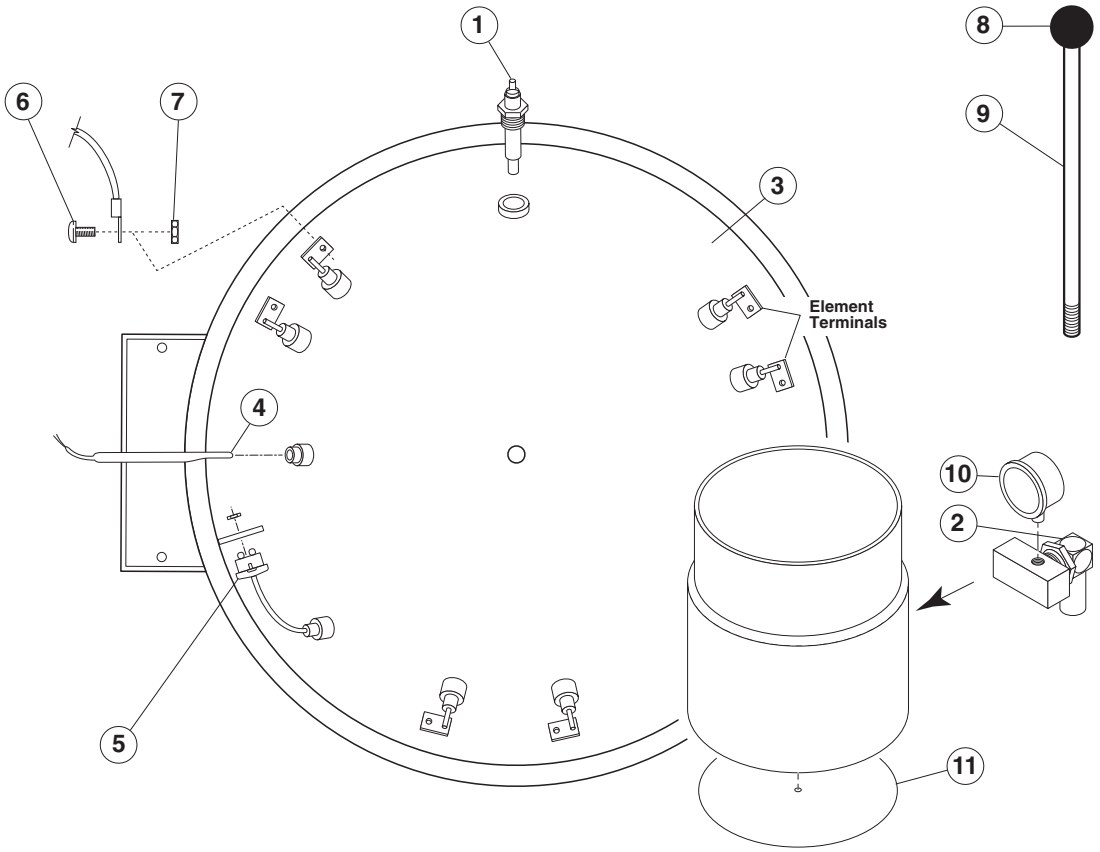
In order to preserve the various agency safety certification (UL, NSF, ASME/Ntl. Bd., etc.), only factory-supplied replacement parts should be used. The use of other than factory supplied replacement parts will void warranty.

## FAUCET ASSEMBLY



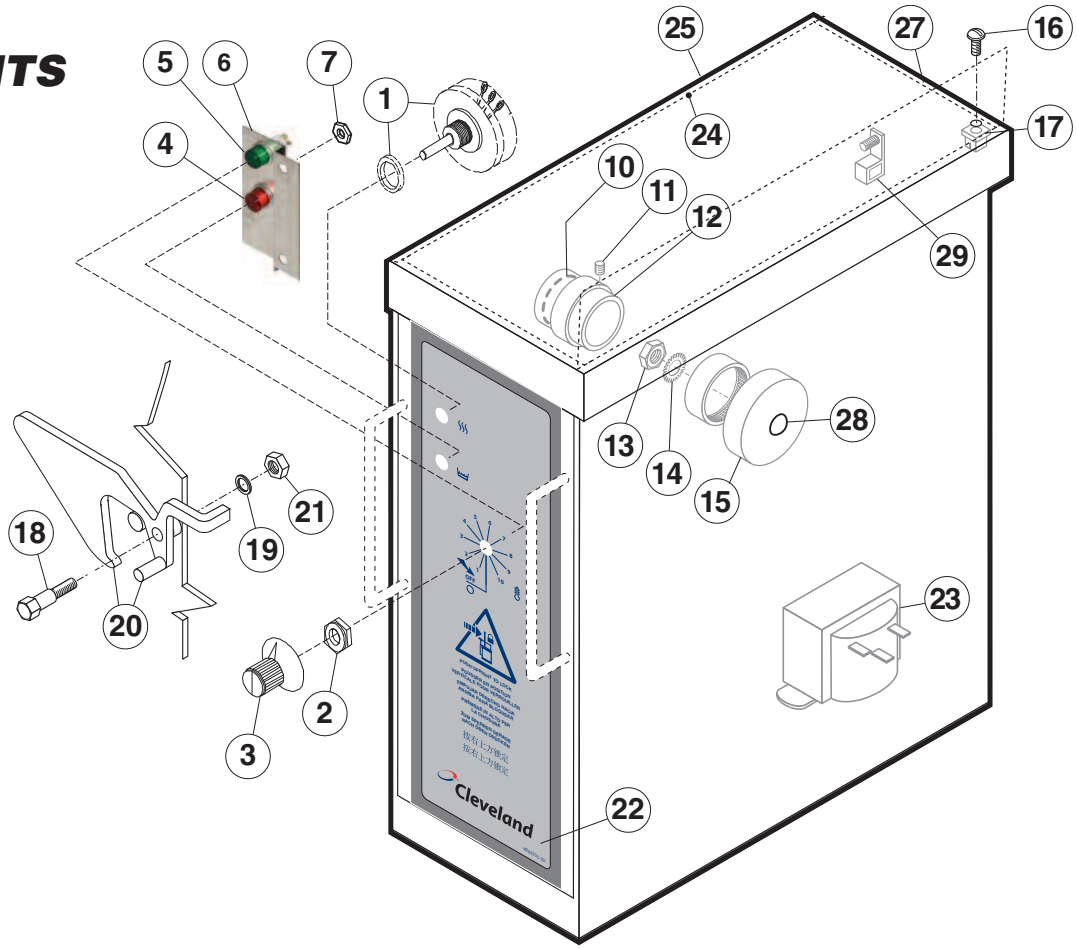

| ITEM # | PART # | DESCRIPTION | QTY. |
|---|---|---|---|
| | **SPK2** | **SINGLE PANTRY FAUCET** for KET20T & MKET12/20T (includes items 1-10) | |
| | **DPK2** | **DOUBLE PANTRY FAUCET** for KET20T & MKET12/20T (includes items 1-8 & 11) | |
| | **SPK9** | **SINGLE PANTRY FAUCET** for KET3/6/12T (includes items 1-10) | |
| | **DPK9** | **DOUBLE PANTRY FAUCET** for KET3/6/12T (includes items 1-8 & 11) | |
| 1. | KE50825-2 | 3/4" SPOUT for - SPK2 & DPK2 | 1 |
| | KE50825-9 | 3/4" SPOUT for - SPK9 & DPK9 | 1 |
| 2. | FA95007-10 | RETAINING RING | 1 |
| 3. | FA05002-19 | "O" RING | 1 |
| 4. | KE51736 | LONG FAUCET NUT | 1 |
| 5. | KE54159 | FAUCET MOUNTING BRACKET | 1 |
| | KE02071-1 | PRISON FAUCET MOUNTING BRACKET | 1 |
| 6. | FA11258 | HEX CAP SCREW | 2 |
| 7. | FA31029 | LOCK WASHER | 2 |
| 8. | FA210028 | HEX NUT | 2 |
| 9. | KE51401 | SINGLE PANTRY BODY (c/w item 13) | 1 |
| 10. | KE50335 | ADAPTER WASHER | 1 |
| 11. | KE51403 | DOUBLE PANTRY BODY (c/w item 13 & 14) | 1 |
| 12. | SE50447 | REPLACEMENT HORSESHOE WASHER | 1 |
| 13. | SE50021 | REPLACEMENT STEM ASSEMBLY, COLD WATER | 1 |
| 14. | SE50020 | REPLACEMENT STEM ASSEMBLY, HOT WATER | 1 |

# KETTLE BOTTOM & SIDE




| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1. | KE50556-1 | Probe, Low Water | 1 |
| 2. | KE54941-6 | Safety Valve, 50 PSI, 1/2" (North America) | 1 |
| | KE54941-31 | Safety Valve, 50 PSI, 1/2", (Europe) | 1 |
| 3. | KE55425-1 | Bottom Cover Gasket, 3 gallon kettle | 1 |
| | KE55425-2 | Bottom Cover Gasket, 6 gallon kettle | 1 |
| | KE55425-3 | Bottom Cover Gasket, 12 gallon kettle | 1 |
| | KE55425-4 | Bottom Cover Gasket, 20 gallon kettle | 1 |
| 4. | KE00515 | Thermistor Assembly | 1 |
| 5. | KE55069-5 | Safety Thermostat (140° C) | 1 |
| 6. | FA11145 | Screw | 2-12 |
| 7. | FA21007 | Nut | 2-12 |
| 8. | KE50151-E | Knob | 1 |
| 9. | KE54670-1 | Handle, 3 & 6 gallon kettle | 1 |
| | KE54670-2 | Handle, 12 gallon kettle | 1 |
| | KE54670-3 | Handle, 20 gallon kettle | 1 |
| 10. | KE50429-5 | Pressure Guage | 1 |
| 11. | KE52041 | Bottom Cover, 3 gallon kettle | 1 |
| | KE603864-1 | Bottom Cover, 6 gallon kettle | 1 |
| | KE603864-2 | Bottom Cover, 12 gallon kettle | 1 |
| | KE603864-3 | Bottom Cover, 20 gallon kettle | 1 |
| | KE54811 | Bottom Cover, 12 gallon kettle, 380-480V | 1 |

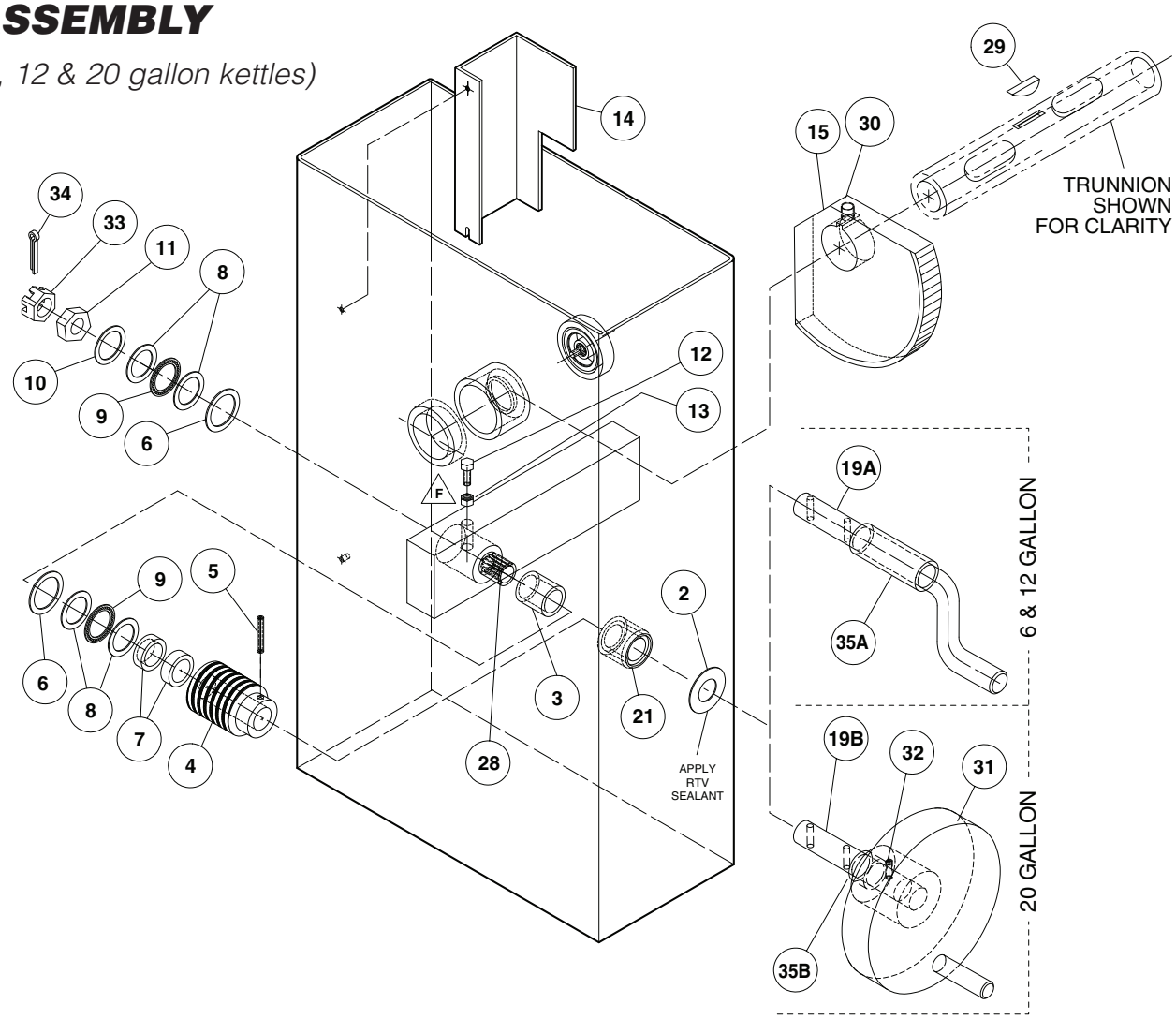
# CONSOLE COMPONENTS & MARINE LOCK




| ITEM NO. | PART NO. | DESCRIPTION | QTY. Single / Twin |
|---|---|---|---|
| 1. | SE00114 | Potentiometer with ON/OFF Switch, c/w Item #2 | 1/ 2 |
| 2. | KE51005 | Rubber Boot | 1/ 2 |
| 3. | KE50569-1 | Knob, Potentiometer | 1/ 2 |
| 4. | KE55486-2 | Indicator Light, Red | 1/ 2 |
| 5. | KE55486-3 | Indicator Light, Green | 1/ 2 |
| 6. | KE603634 | Bracket, Light | 2 / 4 |
| 7. | FA21006 | #10-24, Hex Nut, S.S. | 4/ 8 |
| 10. | FA05002-20 | "O" Ring | 1/ 2 |
| 11. | FA19184 | Allen Screw, #10 | 2/ 4 |
| 12. | SK50047-2 | Collar, Trunnion Lock, KET, TKET | 1/ 2 |
| | SK50047-3 | Collar, Trunnion Lock, TGB | 1/ 2 |
| 13. | FA21024 | Hex Nut, 5/16-18 | 1/ 2 |
| 14. | FA32027 | Lockwasher | 1/ 2 |
| 15. | KE01833 | Bearing, KET-3-T, KET-20-T, TGB | 1/ 2 |
| | KE01834 | Bearing, KET-6-T, KET-12-T, TGB | 1/ 2 |
| 16. | FA95031 | Screw | 4 |
| 17. | FA95074 | Nylon Anchor Nut | 4 |
| 18. | FA15019-1 | Hex Socket Shoulder Bolt | 1/ 2 |
| 19. | FA31029 | Split Lockwasher | 1/ 2 |
| 20. | KE02078-1 | Latch, Left Hand, KET | 1 |
| | KE02078-2 | Latch, Right Hand, TKET | 1 |
| 21. | FA21008 | Hex Nut, 1/4-20 | 1/ 2 |
| 22. | KE95555-1 | Label (KET-3-T, KET-6-T, KET-12-T, KET-20-T) | 1 |
| | KE95555-12 | Label (KET-6-TGB, KET-12-TGB, KET-20-TGB) | 1 |
| | KE95555-3 | Label (TKET-3-T) | 1 |
| | KE95555-4 | Label (TKET-6-T, TKET-12-T) | 1 |
| 23. | KE53838-11 | Transformer, 380 to 415v | 1 |
| | KE53838-12 | Transformer, 440 to 480v | 1 |
| 24. | KE54846-1 | Cover Gasket, KET- 3/6/12/20-T, TKET-3-T | 1 |
| | KE54846-2 | Cover Gasket, TKET-6/12-T | 1 |
| 25. | KE003688-1 | Console Cover, (KET-3-T, KET-6-T, KET-12-T, KET-20-T) | 1 |
| | KE003688-2 | Console Cover, (TKET-6-T, TKET-12-T) | 1 |
| 28. | FA95073 | Carriage Bolt | 1 |
| 29. | KE50473 | Ground Lug | 1/ 2 |

# TILTING GEARBOX ASSEMBLY

*(6, 12 & 20 gallon kettles)*



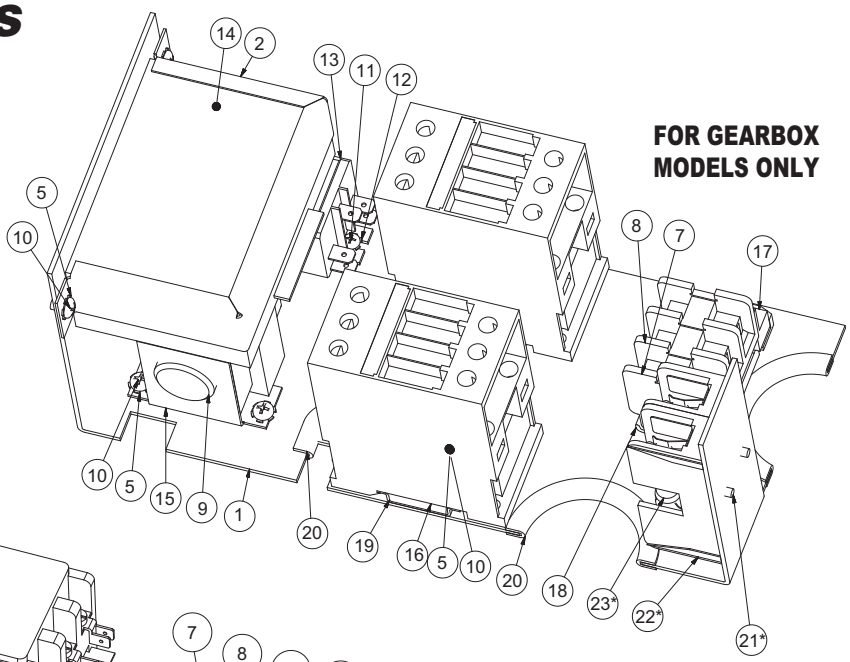

| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 2. | KE54738-3 | WASHER S.S. (SHAFT HOLE COVER) | 1 |
| 3. | KE51738 | BEARING SLEEVE FOR GEAR BOX | 1 |
| 4. | KE50315 | WORM GEAR | 1 |
| 5. | FA95005 | TENSION PIN | 1 |
| 6. | KE51891 | WASHER 1 1/2" O.D. X 13/16" I.D. | 2 |
| 7. | KE52193-1 | THRUST BEARING SPACER | 2 |
| 8. | KE52192 | THRUST WASHER | 4 |
| 9. | KE52191 | THRUST BEARING | 2 |
| 10. | FA30088 | TILT SHAFT WASHER | 1 |
| 11. | FA95008 | LOCK NUT 3/4-16 | 1 |
| 12. | FA19177 | SET SCREW 5/16-24 X 1" | 1 |
| 13. | FA20047 | JAM HEX NUT 5/16-24 | 1 |
| 14. | KE54927 | SUPPLY WIRE PROTECTION GUARD | 1 |
| 15 . | KE00151-2 | SEGMENT GEAR | 1 |
| 19A. | KE50306-2 | TILT SHAFT (3, 6 & 12 GALLON) | 1 |
| 19B. | KE50375 | TILT SHAFT (20 GALLON) | 1 |
| 21. | KE02057-1 | TILT SHAFT BEARING ASSEMBLY | 1 |
| 28. | KE50245 | BEARING FOR GEARBOXES | 1 |
| 29. | FA95083 | WOODRUFF KEY #808 | 1 |
| 30. | FA19500-4 | SET SCREW, 1/4-28 X 3/4 | 2 |
| 31. | KE00508 | HANDWEEL ASSEMBLY | 1 |
| 32 | FA19505 | SET SCREW 3/8-24 X 3/8 | 1 |
| 33. | KE55431 | NUT, SLOTTED | 1 |
| 34. | KE55432 | COTTER PIN, 3/32 X 1 3/4 | 1 |
| 35A. | KE55433-1 | SPACER, SAFETY (6 & 12 GALLON) | 1 |
| 35B. | KE55433-2 | SPACER, SAFETY (20 GALLON) | 1 |

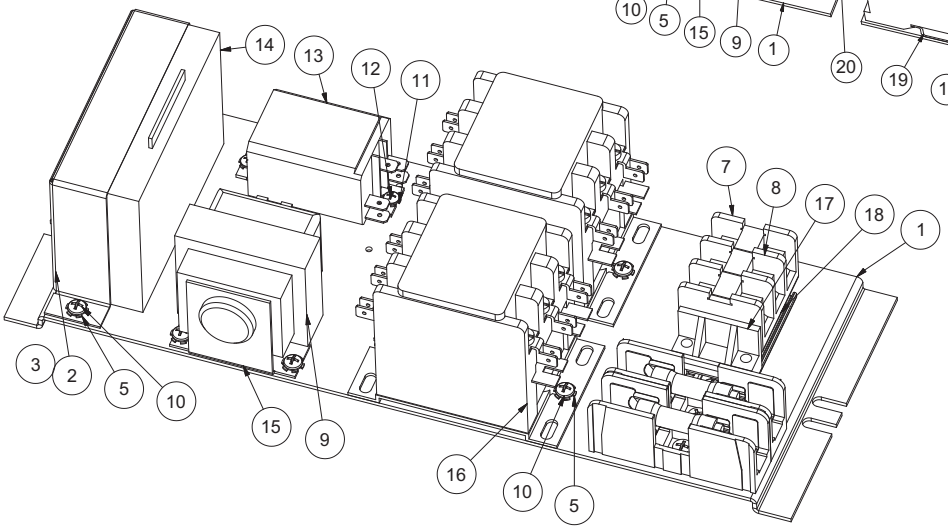
# ELECTRICAL PANELS

*ELECTRICAL PANEL ASSEMBLIES -*

KE00224 KET-20-T, T-KET-6/12-T
KE00224-1 KET-3, 208-240V
KE00224-2 KET-12-TGB
KE00224-3 T-KET-3, 380-600V
KE00224-4 K-ET-6/12/20, 208-240V
KE00224-5 K-ET-6/12/20, 380-600V
KE00224-6 T-KET-6/12, 208-240V
KE00224-7 T-KET-6/12, 380-600V
KE00224-8 T-KET-12, 208-24V

**FOR GEARBOX MODELS ONLY**




| ITEM | PART # | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | KE50343-1 | COMPONENT PLATE | 1 |
| 2 | KE50303-2 | ELECTRONIC BOX HOLDER | 1 |
| 3 | KE52548 | ELECTRONIC BOX BRACKET (NOT SHOWN) | 1 |
| 5 | FA32005 | TOOTH LOCK WASHER (PLATED) #8 | 10 |
| 6 | FA10231 | BINDING HEAD SCREW #6-32 x 1/4"LG (HIGH VOLTAGE) | 2 |
| 7 | SK50054-1 | TERMINAL BLOCK; END SECTION | 1 |
| 8 | SK50055-1 | TERMINAL BLOCK | 3 |
| 9 | KE53838-21 | TRANSFORMER; 240P/16S 60HZ | 1 |
| 10 | FA10237 | BINDING HEAD SCREW #8-32 x 1/4"LG | 10 |
| 11 | FA10135 | BINDING HEAD SCREW #6-32 x 1/2"LG | 2 |
| 12 | FA32004 | TOOTH LOCKWASHER (PLATED) #6 | 2 |
| 13 | KE50753-7 | RELAY | 1 |
| 14 | KE00458-1 | ELECTRIC CONTROL BOX | 1 |
| 15 | KE53444 | BRACKET TRANSFORMER | 1 |
| 16 | KE603902-2 | CONTACTOR | 2 |
| 17 | SK50054-2 | TERMINAL BLOCK; END ANCHOR | 1 |
| 18 | KE54761-1 | TERMINAL BLOCK MTG. RAIL | 1 |
| 19 | KE51139-1 | FUSE HOLDER 380-400V (HIGH VOLTAGE) | 2 |
| 20 | KE52936-1 | FUSE 380-600V (HIGH VOLTAGE) | 2 |

**NOTE**:
Component configuration may vary according to model but part numbers remain the same.

**FOR GEARBOX MODELS ONLY**

| ITEM | QTY | PART N0. | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | KE50343-17 | COMPONENT PLATE |
| 2 | 1 | KE50303-2 | ELECTRONIC BOX HOLDER |
| 5 | 8 | FA32005 | TOOTH LOCKWASHER (PLATED) #8 |
| 7 | 1 | SK50054-1 | TERMINAL BLOCK; END SECTION |
| 8 | 3 | SK50055-1 | TERMINAL BLOCK |
| 9 | 1 | KE53838-21 | TRANSFORMER;240/16S 60HZ |
| 10 | 8 | FA10237 | BINDING HEAD SCREW #8-32 x 1/4"LG |
| 11 | 2 | FA10131 | BINDING HEAD SCREW #6-32 x 1/4"LG |
| 12 | 2 | FA32004 | TOOTH LOCKWASHER (PLATED) #6 |
| 13 | 1 | KE50753-7 | RELAY; SPDT/10A/12VDC |
| 14 | 1 | KE00458-1 | ELECTRIC CONTROL BOX - SOLID STATE |
| 15 | 1 | KE53444 | BRACKET, TRANSFORMER |
| 16 | 2 | KE603902-9 | CONTACTOR |
| 17 | 1 | SK50054-2 | TERMINAL BLOCK; END ANCHOR |
| 18 | 1 | KE54761-1 | TERMINAL BLOCK MTG. RAIL |
| 19 | 1 | KE55288-3 | MOUNTING RAIL |
| 20 | 9 in | RB01850 | RUBBER GASCKET |
| | | | * HIGH VOLTAGE OPTION (380-600V) |
| 21 | 2 | FA10231 | BINDING HEAD SCREW #6-32 x 1/4"LG |
| 22 | 2 | KE51139-1 | FUSE HOLDER |
| 23 | 2 | KE52936-1 | FUSE |

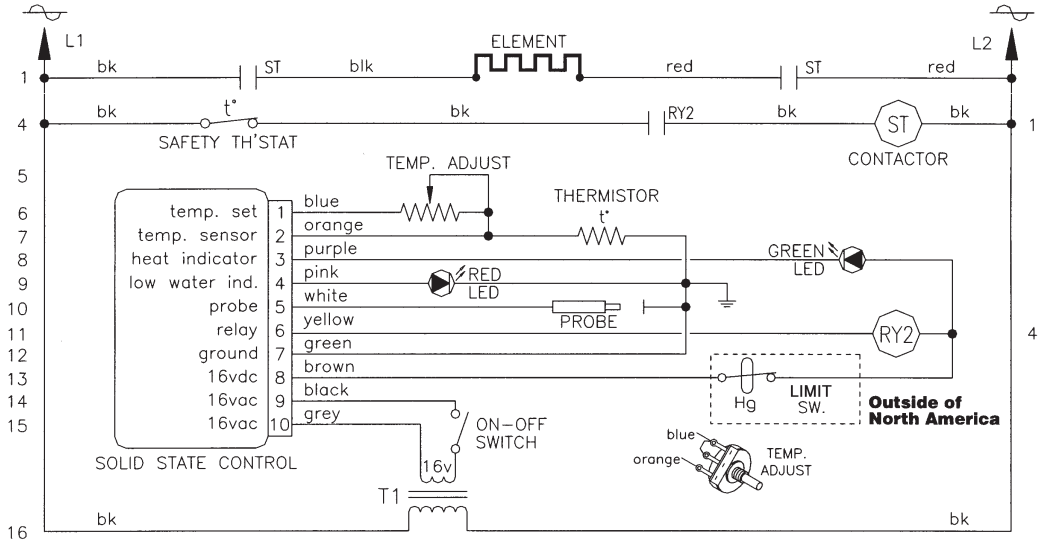
* HIGH VOLTAGE ( 380-600 V) OPTION PARTS

# WIRING DIAGRAM

## 3 Gallon Kettles

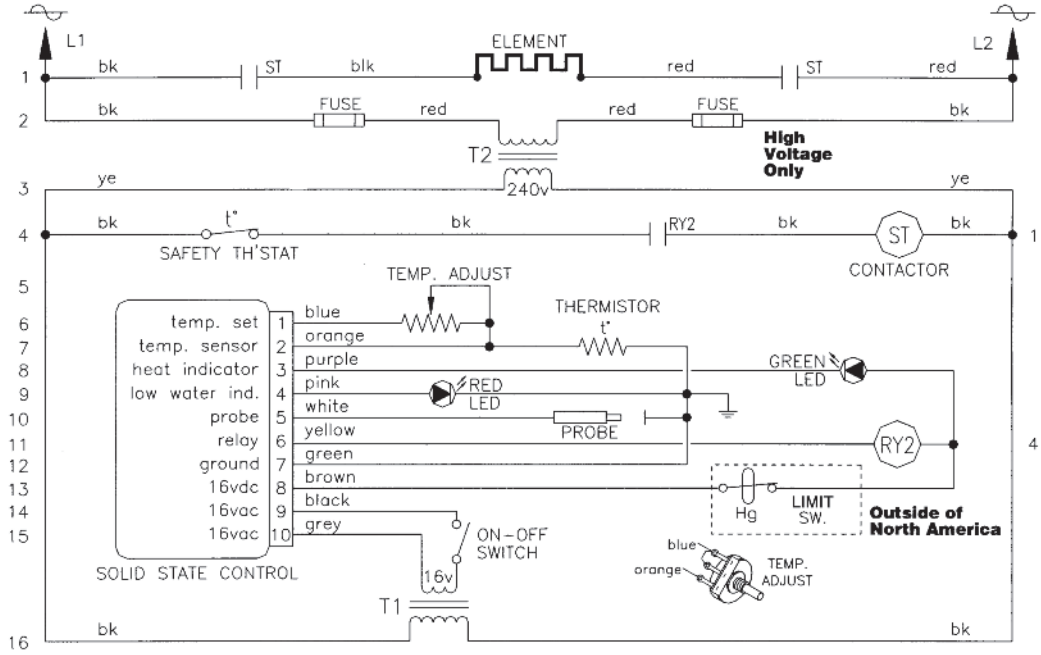
*200-240v*

*Single Phase Only*




*380-480v*

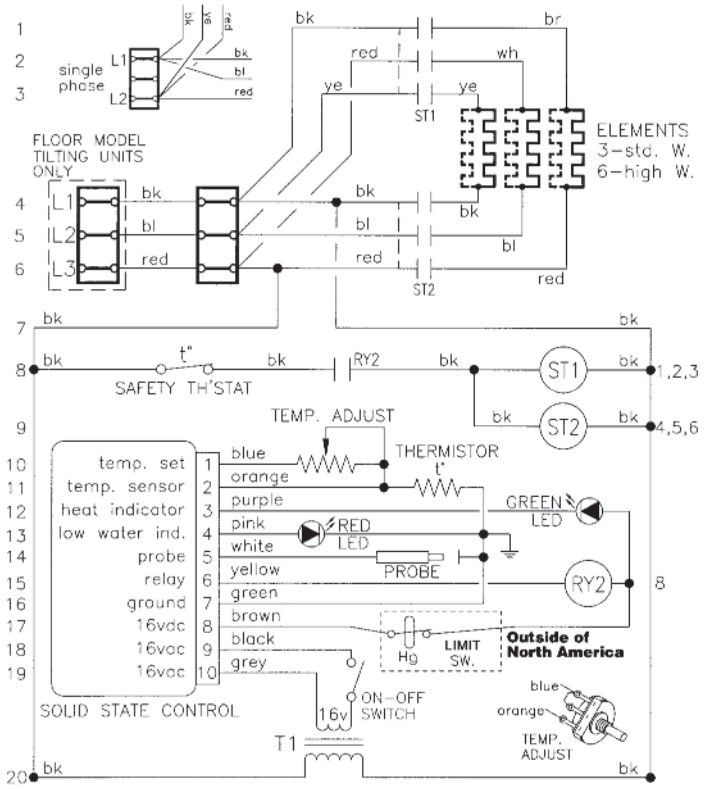
*Single Phase Only*



# WIRING DIAGRAM

## 6-20 Gallon

*200-240v*




*380-600v*