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FOREWORD

The purpose of this manual is to explain how to change the voltage and wattage of a commercial electric water heater by changing the elements. This manual is not intended to explain the rebuilding of electric water heaters in the field.

The number of heating elements must remain the same. Increasing or decreasing the number of heating elements from the original build is not approved by Underwriter Laboratories, Inc.

The heater to be converted and the appropriate conversion for the heater must be found on the same page of this manual. Read the instructions contained on pages 4 through 7 before attempting any conversion.

⚠ WARNING	
	Electrical Shock Hazard
	<ul style="list-style-type: none">• Turn off power at the branch circuit breaker serving the water heater before performing any service.• Label all wires prior to disconnecting when performing service. Wiring errors can cause improper and dangerous operation.• Verify proper operation after servicing.• Failure to follow these instructions can result in personal injury or death.

CONVERSION OF ANY WATER HEATER LISTED IN THIS MANUAL REQUIRES ABILITY EQUIVALENT TO THAT OF A QUALIFIED SERVICE TECHNICIAN OR QUALIFIED AGENCY.

CONVERSION MATERIALS

- 1. Screw Plug Element Remover: 1-1/2" deep well socket and ratchet.
- 2. Screwdrivers: Two required, one #2 Phillips and one slotted screwdriver.
- 3. Conversion kit: Includes conversion instructions, replacement electrical element(s), conversion kit label, caution label.

MODELS WITH TWO ELEMENTS, 277 VOLTS, SINGLE PHASE, SIMULTANEOUS, FOUR-WIRE A-8 CIRCUIT

INSTRUCTIONS

Using the table below, locate the row with the voltage and wattage (kW) the customer needs. Order the corresponding kit number.

See pages 4 through 7 for detailed conversion instructions.

Table 1. Kits for Two-Element Models, 277 Volts Single Phase, Simultaneous, Four-Wire A-8 Circuit			
Voltage	Total kW Input	Element Wattage	Kit Number
208	9.0	4500	100293211
240	11.0	5500	100293213

CONVERSION INSTRUCTIONS

REQUIRED ABILITY

CONVERSION OF ANY WATER HEATER LISTED IN THIS MANUAL REQUIRES ABILITY EQUIVALENT TO THAT OF A QUALIFIED SERVICE TECHNICIAN OR QUALIFIED AGENCY.

INTRODUCTION

Satisfying a customer order for an electric heater from inventory may require modification of the kW input or the voltage. Conversions may involve revision to one or both of these electrical characteristics. The number of elements cannot be changed.

HEATER PREPARATION

The heater should be placed in a well lit area. Removal of the shipping carton is not required. Locate front of carton (opposite side of heater identification label). Cut a three-sided flap into front of carton, cut should be on top, bottom and right side approximately 4" from carton edges. Leave the left side of the flap as a hinge. Cuts made 4" from the edge of carton will permit proper reclosure when conversion is completed.

If changes are required to the Simultaneous/Non-Simultaneous operation of the heater the top packaging locator will need to be removed for access to the heater's electrical junction box.

Remove the control panel screw on the water heater door(s).

To expose elements, fold insulation up. DO NOT RIP INSULATION. Remove the plastic personnel protector(s). Take care not to damage protector.

KW CONVERSION (ELEMENT REPLACEMENT)

- A. Remove wires from one element at a time.
- B. Remove element from heater using 1-1/2" deep well socket and ratchet. Return the elements to appropriate bin.
- C. Open the appropriate conversion kit and remove the element(s). Check each element head to ensure correct voltage and wattage.
- D. Install the new element with a 1-1/2" socket wrench. A new O-ring gasket should be installed on each element. Screw element into fitting until it seats. Tighten 1/2" to 3/4" turn with wrench.
- E. Rewire the element. Screw terminals must be snug, however, caution must be exercised. Overtightening may break the terminal block, requiring replacement of the element.
- F. Repeat steps A thru E for all other elements being replaced.

VOLTAGE CONVERSION

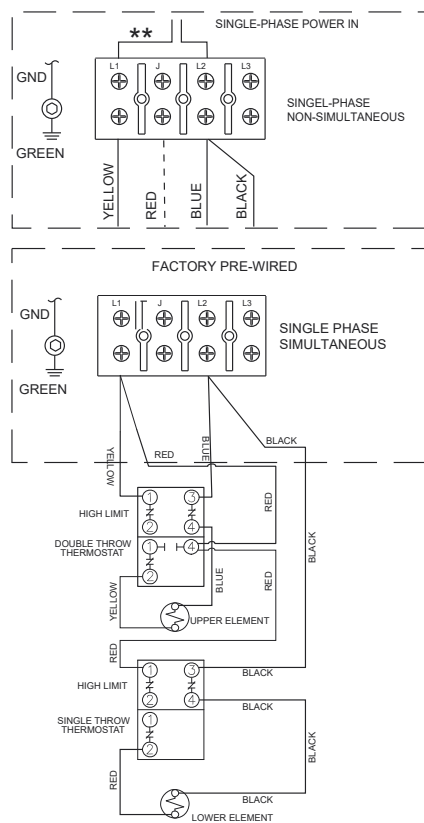
A. DO NOT CHANGE THE GROUND CONNECTIONS

SIMULTANEOUS/NON-SIMULTANEOUS CONVERSION

- A. Refer to **Figure 1** (Four-Wire Circuit for Dual-Element Heater) for simultaneous/non-simultaneous wiring configurations.
- B. Locate the junction box on top of the heater. Remove the cover.
- C. The heater is factory wired for simultaneous operation. For field conversion to single phase non-simultaneous operation, move the Red wire from the L1 terminal to the J terminal, see Figure 1 below. Leave the Yellow wire in the L1 terminal and check that all wiring connections are tight before applying power to the water heater.
- D. Re-install the junction box cover.

Notice

Recheck all terminals for tightness, proper wiring per schematic, and neatness of wiring. Heater should be no less than factory constructed quality and appearance.



NOTE:
MUST NOT BE CONVERTED TO
SIMULTANEOUS OPERATION IF TOTAL
CURRENT DRAW EXCEED 48 AMPS.



----- : FIELD CONVERSION

Figure 1. Four-Wire Circuit for Dual-Element Heater

FINAL ASSEMBLY

A. RATING PLATE MODIFICATION OF DUAL ELEMENTS ELECTRIC WATER HEATERS.

Following is an example of the standard rating plate supplied on the front of dual element commercial electric water heaters.

		COMMERCIAL STORAGE TANK WATER HEATER			
MODEL NUMBER		SERIAL NUMBER		ITEM ID/PART NUMBER	
VOLTS - AC	PHASE	WATTS UPPER	WATTS LOWER	CIRCUIT	
TOTAL WATTS CONNECTED INTERLOCK 1 PH / 3 PH		SIMULTANEOUS 1 PH 3 PH		CAPACITY US GAL. NOMINAL	
				MAX WORKING PRESSURE PSI	

VOLTS AC ONLY VOLT CA SEULEMENT	WATTS UPPER COURANT DE L'ELEMENT DU HAUT EN WATTS	WATTS LOWER COURANT DE L'ELEMENT DU HAUT EN WATTS	PHASE
TOTAL WATTS CONNECTED COURANT TOTAL			
INTERLOCK 1 PH / 3 PH		SIMULTANEOUS 1 PH 3 PH	
XXXXXXXXXX			

The volts, phase, and watts information of the rating plate must be modified by covering them with conversion label provided in the conversion kit. Be sure the new ratings on the label match the conversion you have just completed.

Peel off the back of the label and paste over the area as shown on the revised rating plate below.

B. CAUTION LABEL

Peel off back of caution label and place as near to rating plate as possible, taking care not to cover any existing labels.

C. CARTON IDENTIFICATION



Using a black permanent marker, cross out heater identification on carton as appropriate. In bold letters, write new electrical specifications on carton, matching those on the revised rating plate.

D. SHIPPING CARTON

Close and tape the cardboard flap on the front of carton and re-install the top locator if removed. Seal top of carton.



DO NOT ENERGIZE THE BRANCH CIRCUIT FOR ANY REASON BEFORE THE HEATER TANK IS FILLED WITH WATER. DOING SO WILL CAUSE THE HEATING ELEMENTS TO BURN OUT AND VOID WARRANTY.

		COMMERCIAL STORAGE TANK WATER HEATER			
MODEL NUMBER		SERIAL NUMBER		ITEM ID/PART NUMBER	
VOLTS AC ONLY VOLT CA SEULEMENT	WATTS UPPER COURANT DE L'ELEMENT DU HAUT EN WATTS	WATTS LOWER COURANT DE L'ELEMENT DU HAUT EN WATTS	PHASE	CIRCUIT	
TOTAL WATTS CONNECTED COURANT TOTAL		CAPACITY US GAL. NOMINAL			
INTERLOCK 1 PH / 3 PH		SIMULTANEOUS 1 PH 3 PH		MAX WORKING PRESSURE PSI	
XXXXXXXXXX					

MISCELLANEOUS INFORMATION

Table 2. Full Load Current in Amperes		
kW Input	208V	240V
4.5	21.6	N/A
5.5	N/A	22.9