SERIES TWO

MODEL(S) COVERED:	EFT-15000-4-D-10	240V
	EFT-19000-4-D-10	240V
	EFT-16000-5-D-10	277V
	EFT-20000-5-D-10	277V

ELECTRIC INSTANTANEOUS TANKLESS WATER HEATER

INSTALLATION GUIDE AND OWNERS MANUAL

WARNING

READ THE GENERAL SAFETY SECTION BEGINNING ON THE INSIDE COVER AND THEN THIS ENTIRE MANUAL BEFORE INSTALLING OR OPERATING THIS WATER HEATING UNIT. IF YOU DON'T FOLLOW THE SAFETY RULES, THE UNIT WILL NOT OPERATE PROPERLY AND COULD CAUSE DEATH, SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE. READ ALSO THE ENCLOSED WARRANTY CARD. WARRANTY OF THIS WATER HEATING UNIT WILL DEPEND ON PROPER INSTALLATION AND OPERATION. THE WARRANTY SHALL BE VOID IF THE DESIGN HAS BEEN ALTERED IN ANY WAY WHATSOEVER. THE MANUFACTURER OF THIS UNIT WILL NOT BE LIABLE FOR ANY DAMAGES BECAUSE OF FAILURE TO COMPLY WITH THE INSTALLATION AND OPERATING INSTRUCTIONS OUTLINED ON THE FOLLOWING PAGES.

THE INSTALLATION MUST CONFORM WITH THE INSTRUCTIONS IN THIS MANUAL; ELECTRIC COMPANY RULES; AND THE LOCAL CODES, OR IN THE ABSENCE OF LOCAL CODES, WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE. A COPY OF THE N.E.C IS AVAILABLE FROM UNDERWRITERS LABORATORIES, 333 PFINGSTEN ROAD NORTHBROOK, IL, 60062.

IF ASSISTANCE IS REQUIRED OR ANY QUESTIONS RELATING TO THE INSTALLATION OR PERFORMANCE OF THIS UNIT ARISE, CONTACT TECHNICAL SERVICE TOLLFREE : 1-800-334-3393 .
HAVE THE INFORMATION LISTED BELOW BEFORE CALLING :

SERIAL NO._____ MODEL NO._____ INSTALLATION DATE _____

GENERAL SAFETY

This water heating unit is specifically designed to take in cold water and heat it to temperatures suitable for normal domestic usage up to a maximum of 140° F (60° C). To obtain optimum performance and energy savings, the unit should be located as near as possible to the point of use. This unit can not be fed with pre-heated water and used as a booster.

There is no need for additional screwed fittings and under no circumstances shall a blow torch be used on pipe connected to the unit (serious damage to the electronic flow switch will result).

Also, ensure that the pipes are clear of installation debris before connecting to the heating unit.

THIS WATER HEATING UNIT MUST HAVE **TWO DEDICATED INDEPENDENT** CIRCUITS, USING CORRECTLY RATED WIRES AND CIRCUIT BREAKERS.

WARNING

FAILURE TO **GROUND** THE SYSTEM MAY RESULT IN DEATH OR SERIOUS INJURY.

WARNING

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE **DEATH, SERIOUS BODILY INJURY OR PROPERTY DAMAGE**. REFER TO THIS MANUAL FOR ASSISTANCE OR CONSULT THE LOCAL ELECTRIC UTILITY COMPANY FOR FURTHER INFORMATION.

WARNING

WATER HEATERS EQUIPPED FOR ONE VOLTAGE ONLY: THIS WATER HEATING UNIT IS EQUIPPED FOR ONE VOLTAGE TYPE ONLY: CHECK THE RATING PLATE ON THE FRONT COVER OF UNIT FOR THE CORRECT VOLTAGE. DO NOT CONNECT THIS WATER HEATING UNIT TO ANY OTHER VOLTAGE OTHER THAN THE ONE SHOWN ON THE MODEL RATING PLATE.FAILURE TO USE THE CORRECT VOLTAGE CAN CAUSE PROBLEMS WHICH CAN INCLUDE DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE. IF ANY QUESTIONS OR DOUBTS ARISE CONSULT TECHNICAL SERVICE OR YOUR ELECTRIC COMPANY.

WARNING

ELECTRICAL SHOCK HAZARD! BEFORE REMOVING THE COVER OR SERVICING THE WATER HEATER, MAKE SURE THE ELECTRICAL SUPPLY TO THE WATER HEATING UNIT IS TURNED “OFF”. FAILURE TO DO SO CAN RESULT IN **DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE**.

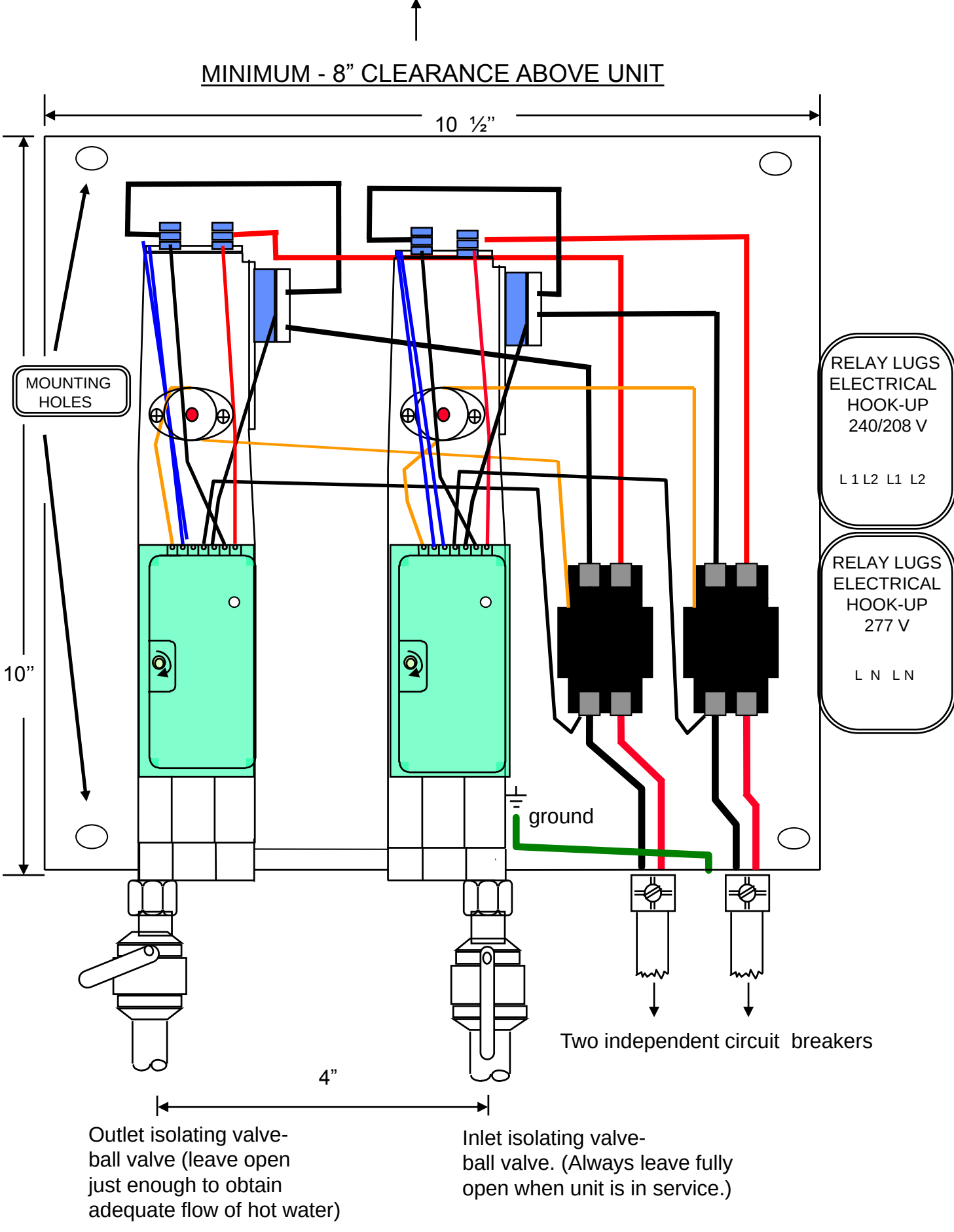

MINIMUM - 8” CLEARANCE ABOVE UNIT
10 ½”
MOUNTING HOLES
10”
RELAY LUGS ELECTRICAL HOOK-UP 240/208 V
L 1 L2 L1 L2
RELAY LUGS ELECTRICAL HOOK-UP 277 V
L N L N
ground
Two independent circuit breakers
4”
Outlet isolating valve- ball valve (leave open just enough to obtain adequate flow of hot water)
Inlet isolating valve- ball valve. (Always leave fully open when unit is in service.)

Figure 1

MOUNTING THE UNIT

1) This unit should be mounted as close to the point of use as possible. For example, directly beneath the sink.

   Do not install the unit above a faucet or “point of use” because the siphoning effect may drain the heater which can cause premature element burn out.

2) This unit must only be mounted in a vertical position with the **water fittings located at the bottom of the unit**. Mounting other than in the vertical position **WILL** cause element burn out and cause permanent damage to the water heater.

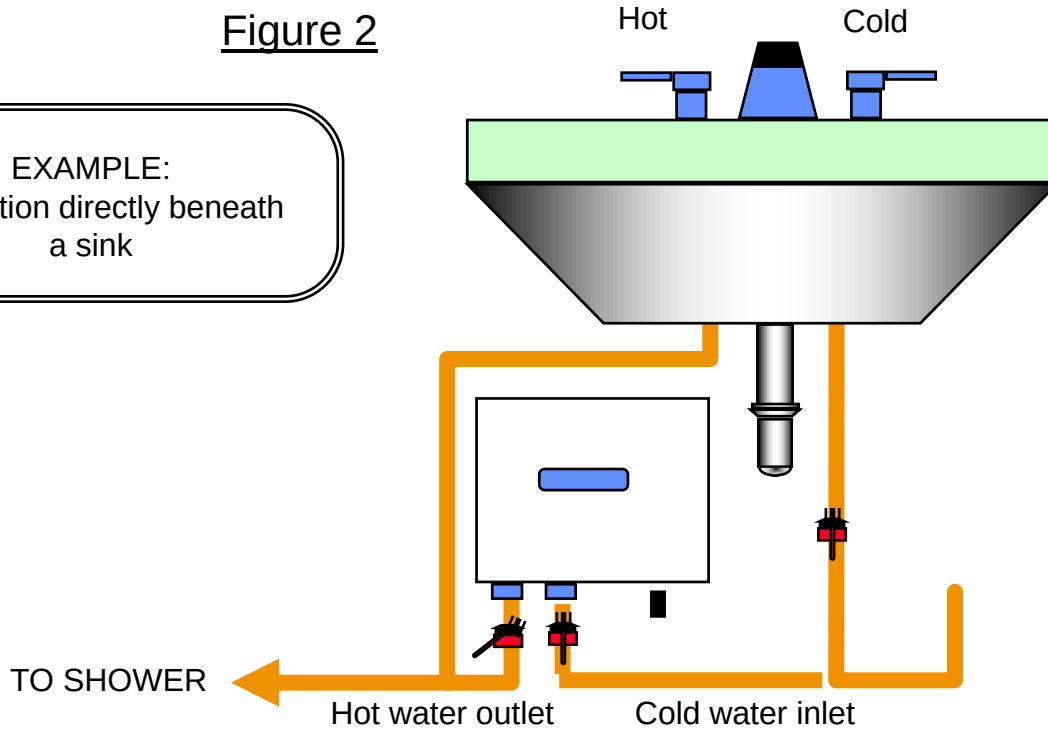
3) The cold water inlet is on the right hand side and the hot water outlet is on the left hand side. Under **NO** circumstances can these be reversed.

4) Leave a minimum of 8” above the unit for easy replacement of the element.

5) The unit should be fixed to the wall using screws in the four mounting holes at each corner of the backplate.
   NOTE: The heater should be installed below the level of all hot water outlets serviced by this heater.
   NOTE: PRESSURE AND TEMPERATURE RELIEF VALVE
   This unit is not required by UL to have a Pressure and Temperature Relief Valve (PTRV). Consult local codes to find out if one is required in your area.
   If local codes require the use of a temperature and pressure relief valve one should be installed on the hot water outlet pipe before the outlet ball valve.

Figure 2

EXAMPLE:
Installation directly beneath a sink



PLUMBING HOOK-UP

1) The unit is supplied with ¾ x 14 NPT fittings (Figure 3), which **must be used**. DO NOT SOLDER TO THE INLET OR OUTLET. DO NOT USE ANY PIPE DOPE WITH THESE FITTINGS.

2) Ensure that the pipes are correctly aligned with the inlet and outlet bosses to avoid excessive stress on the body molding of the unit.

NOTE: When soldering pipe joints remove unit from the wall. Serious damage can occur if any soldering is done while pipes are connected to the unit.

Run water through the supply pipe to remove all debris from the pipe before connecting to the unit. Failure to do so could cause damage to the flow switch.

3) Install isolating valves (full flow ball valve type) on both inlet and outlet pipes. This allows unit to be isolated for maintenance purposes. (Fig. 1)

4) When all plumbing is complete, inspect the system for water leaks at all plumbing connections. If a water leak is present, take corrective action. Fully open both inlet and outlet BALL VALVES. Run all the hot water outlets fed by this water heating unit one at a time until the water flow is continuous and free from “gulping” and all visible air pockets.

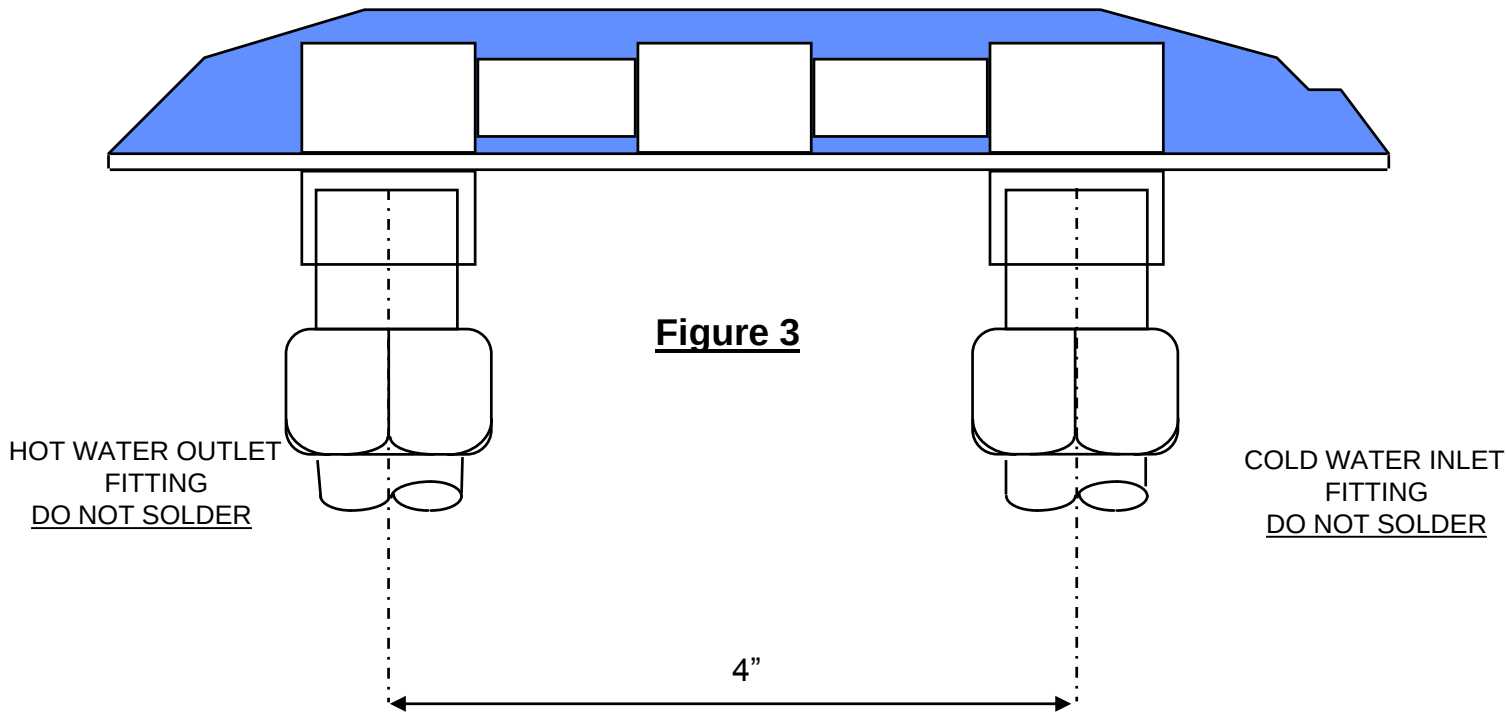


Figure 3

NOTE:
ALL MOUNTING AND PLUMBING MUST BE COMPLETE BEFORE PROCEEDING WITH ELECTRICAL HOOK-UP.

TEST THE INSTALLATION FOR WATER LEAKS BEFORE CONNECTING THE ELECTRICAL SUPPLY.

III. ELECTRICAL HOOK-UP

WARNING
BEFORE BEGINNING ANY WORK ON THE ELECTRICAL INSTALLATION, BE SURE THE SWITCH AT MAIN BREAKER PANEL IS "OFF" TO AVOID ANY DANGER OF ELECTRICAL SHOCK.

"Twin module" units are manufactured to the following specifications:

Figure 4

MODEL TYPE	OUTPUT / kW	VOLTAGE / V	AMPERAGE
EFT-19000-4-D-10	19	* 240	2 x 39 Amps
EFT-15000-4-D-10	15	* 240	2 x 32 Amps
EFT-20000-5-D-10	20	277	2 x 36 Amps
EFT-16000-5-D-10	16	277	2 x 29 Amps
SPECIAL			

* Units rated at 240 V can operate at 220 V or 208V with reduced output.
The output will vary in accordance with the following ratios:

volts	208 volts	220 volts	240 volts
output ratio	.75	.84	1.0

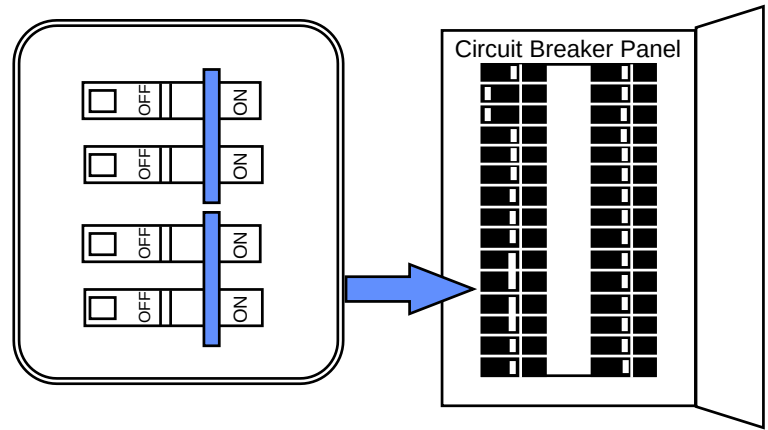
This unit must be wired on two independent circuits, using 2 SETS of UL listed 2 conductor and ground core copper wire cable of the appropriate size protected by 2 separate and independent correctly rated Double Pole breakers. (208, 220, 240 V, see Figures 4 and 5).

Wire entry into the unit must be made through the hole provided in the flange on the backplate.

The "mains" wires should be connected to the slots in the terminal block marked L1 and L2. The ground lead must be connected to the slot marked GND.
GROUND MUST BE BROUGHT TO THE "GROUND" AT THE CIRCUIT BREAKER PANEL.

Figure 5

2 Separate and independent correctly rated Double pole breakers (240/208 Volts)



DANGER
FAILURE TO GROUND THE SYSTEM MAY RESULT IN DEATH OR SERIOUS INJURY.

OPERATING THE WATER HEATING UNIT

IMPORTANT
BEFORE SWITCHING “ON” THE POWER AT THE MAIN CIRCUIT BREAKER PANEL MAKE SURE THAT THE HOT WATER CIRCUIT IS FREE OF AIR POCKETS OR PREMATURE FAILURE OF THE ELEMENT WILL OCCUR. TO DO THIS, OPEN ALL HOT WATER OUTLETS ONE AT A TIME UNTIL THE WATER FLOW IS CONTINUOUS AND FREE FROM “GULPING” AND VISIBLE AIR POCKETS.

1) Open fully both inlet and outlet valves at the unit.

2) Open any hot water outlet in the system. If the outlet is a “single lever” mixer type turn to the hottest position. Allow water to flow through the outlet until the flow is continuous and free from “gulping air”

3) Slowly close OUTLET ball valve until the water flow from the faucet just starts to reduce. NOTE: This process has two effects. One, any air in the system will be purged out. Two, the heater units will be pressurized at the supply pressure. This will prevent the elements burning when energized.(Note: Keep water flowing while carrying out the procedures outlined below.)

GO TO APPROPRIATE SECTION FOR YOUR MODEL

NOTE: For the following sections the first unit is the right hand heating module and the second unit is the left hand heating module.

“EFT” MODELS

a) Switch on the power to the first unit. The power indicator light should illuminate.
b) Switch on the power to the second unit, again the power indicator light should illuminate. Note: This light should pulse On and Off at first and after about 20 - 30 seconds it should remain illuminated.
c) Use the OUTLET ball valve to gradually reduce the water flow until the power indicator light on the second unit begins to pulsate. The water temperature should now be approximately 140° F.
d) The thermostat is now set and the water temperature will remain constant when the indicator light is pulsing.
e) Increasing water flow (above the flow rate at which the thermostatic control is no longer effective) will reduce the water temperature.

If a lower water temperature is required, turn the temperature adjustment screw(s) counter-clockwise about 1/8 of a turn (See Figure 1). Wait 15-20 seconds and check the water temperature at the fixture. Repeat this process until the desired water temperature has been achieved. If water temperature has been considerably reduced from the 140° F setting, the outlet ball valve may be slightly opened to achieve a higher rate of flow.

When the indicator lights remain illuminated the unit is emitting full power. When the indicator is pulsing, the unit is modulating the power to achieve the water temperature set by means of the water temperature adjustment screw.

ALL UNITS

In order to obtain accurate temperature control at “single lever” mixer type faucets (single spout), cold watersupply to the faucet should be restricted to give approximately the same flow rate of cold water to the faucet as the hot water exiting the unit. The simplest method of doing this is by partially closing the cold water valve under the sink.

MAXIMUM TEMPERATURE RISE CHART (^{0}F)

	FLOW RATE (GAL. PER MIN.)						
OUTPUT	0.75	1	1.25	1.5	2	2.5	3
15 kW	N/A	102	82	68	51	40	34
16 kW	N/A	109	87	73	55	44	36
19 kW	N/A	130	104	87	65	52	43
20 kW	N/A	136	109	91	68	54	45

TROUBLESHOOTING

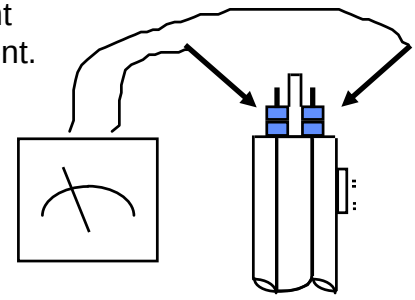
SYMPTOM: NO HEAT INDICATOR LIGHT OFF

1) ELECTRIC SUPPLY IS OFF
Turn on the main circuit breaker.

2) NO OR LOW WATER FLOW
Ensure that the minimum flow rate to switch on your heater is met.
Minimum flow rate = 0.75 gallons per minute
Also check that the inlet filter screen is clear from any debris. This is located in the brass inlet boss.

3) WATER CONNECTIONS ARE REVERSED
Cold water inlet = right side, hot water outlet = left side.

4) ELEMENT BURNED OUT
TURN OFF THE MAIN BREAKER!
Using an ohmmeter test the resistance of the heating element across the two threaded termination rods on top of the element. The resistance reading should be under 10 ohms.
If the resistance is much greater than this value, call for a replacement element.



SYMPTOM: NO HEAT OR LOW TEMPERATURE WITH INDICATOR LIGHT ON

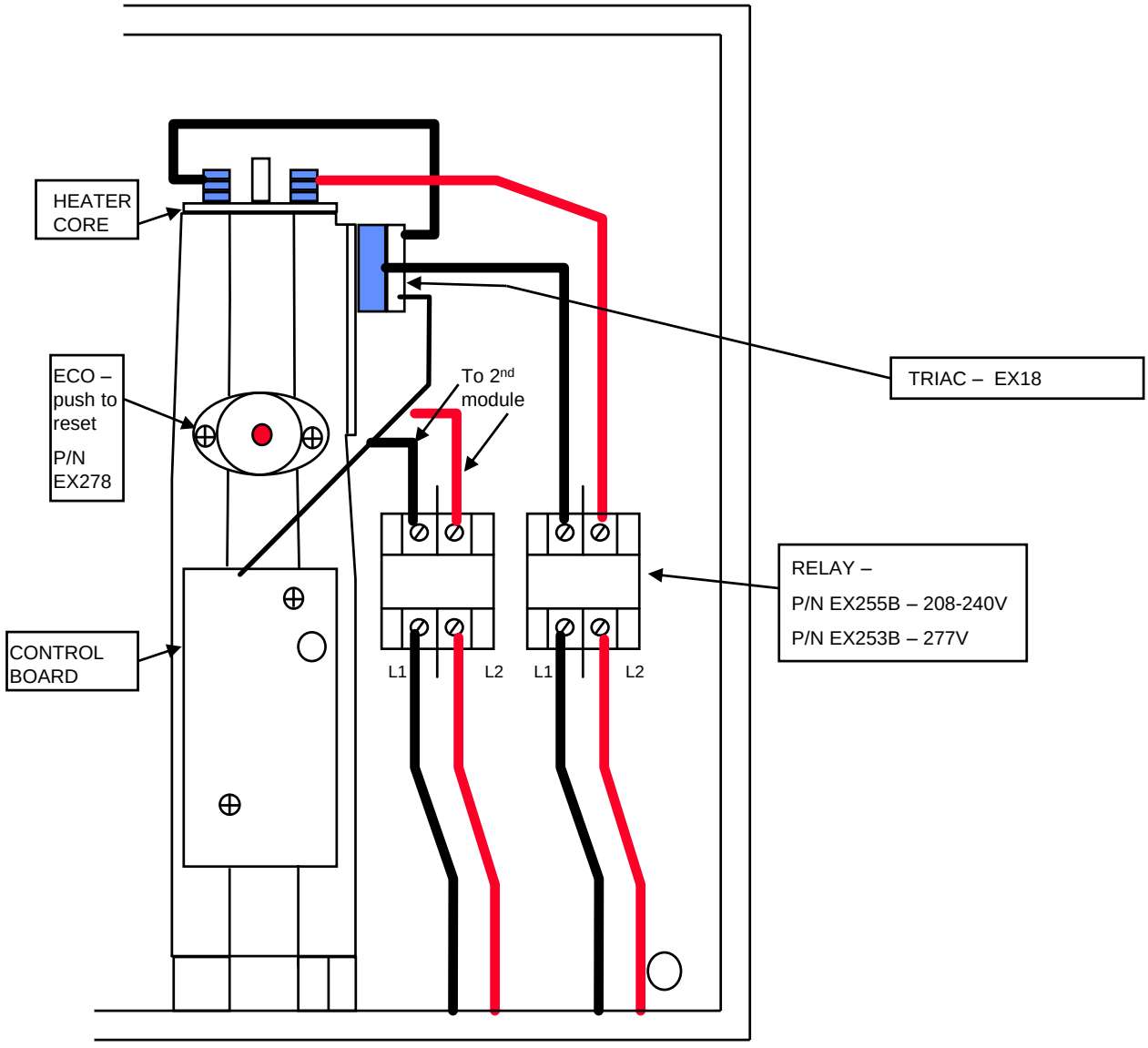
1) WATER FLOW TOO HIGH
Reduce the water flow by using an outlet ball valve. See page 5 for temperature rise at various flow rates.

2) INCORRECT POWER SUPPLY
Make sure that the unit is connected to the voltage supply specified on the rating label on the front cover of the unit and no other.

3) ELEMENT BURNED OUT
TURN OFF THE MAIN BREAKER!
Repeat the steps from paragraph 4 above.

4)THERMOSTAT ADJUSTMENT SCREW NOT TURNED UP
Turn the thermostat adjustment screw clockwise in small increments until the indicator light(s) remains on. Take care not to force the screw past it's stop position.

REPLACEMENT PARTS DIAGRAM



REPLACEMENT HEATER CORE ASSEMBLY

EX630 - 9.5 KW @ 240 V
EX770 - 7.5 KW @ 240 V
EX1050 - 5.5 KW @ 240 V
EX960 - 8.0 KW @ 277 V
EX760 - 10.0 KW @ 277 V

REPLACEMENT HEATER COIL (WIRE ONLY)

EX401 - PLEASE SPECIFY FOR WHAT KW & VOLTAGE