

# ELECTRIC INSTANTANEOUS

# TANKLESS WATER HEATER

“THREE PHASE THERMOSTATIC”

## INSTALLATION GUIDE AND OWNERS MANUAL

MODEL(S) COVERED: EFT-18000-2-T-10  
EFT-18000-6-T-10  
EFT-24000-2-T-10  
EFT-24000-6-T-10  
EFT-28000-4-T-10  
EFT-32000-6-T-10

### 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

This “Three Phase Thermostatic” water heating unit is specifically designed to take in cold or pre-heated water and heat it to temperatures suitable for commercial washing, sluicing or processing, up to a maximum temperature of 180° F (82° deg. C). To obtain optimum performance and energy savings, this unit should be located as near as possible to the point of use. This unit must only be installed in a vertical position with the inlet and outlet at the bottom. The power is activated by individual electronic flow switches located in each of the three heating modules. These will be damaged by excessive heat, do not solder any pipes that are in contact with the heater. Also ensure pipes are clear of installation debris before connecting the water heating unit, otherwise the flow switches could jam in the “on” position. This unit must be connected to its own individual electric circuit protected by a suitably rated three pole breaker. The maximum voltage which can be applied across any heating module is 277 volts. It is recommended that a Pressure Relief Valve be installed as close as possible to the heater outlet of the unit ( per code).

This unit is supplied with compression rings and nuts suitable for direct coupling to standard 1/2 “ ( 5/8 “ outside diameter ) copper or plastic piping. 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).

**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.**

### 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 for further information.

### WARNING

Failure to ground the system may result in death or serious injury.

## MOUNTING THE UNIT

- 1) This unit should be mounted as close to the point of use as possible.
- 2) This unit must only be mounted in the 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.
- 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 elements.
- 5) This unit should be fixed to the wall using screws in the four mounting holes at each corner of the backplate.
- 6) The unit should be installed in the plumbing system in such a way that there is no tendency for the unit to be starved of water: for example: by an excessive draw-off of cold water just before the unit. Also do not fit an unrestricted hot water draw-off point below the heater as this will tend to empty the heater by siphoning.
- 7) It is possible that drawing off water at comparatively high rates of flow elsewhere in the building at the same time that the heater is working, could cause premature element failure. Care should be taken not to starve the unit of water. To prevent this from happening, open fully the main valve of the incoming water supply to the building and throttle back the control valves to the other water outlets.

### NOTE

ALL MOUNTING AND PLUMBING MUST BE COMPLETE BEFORE YOU PROCEED WITH ELECTRICAL HOOK-UP.

TEST THE INSTALLATION FOR LEAKS BEFORE CONNECTING THE ELECTRICAL SUPPLY.

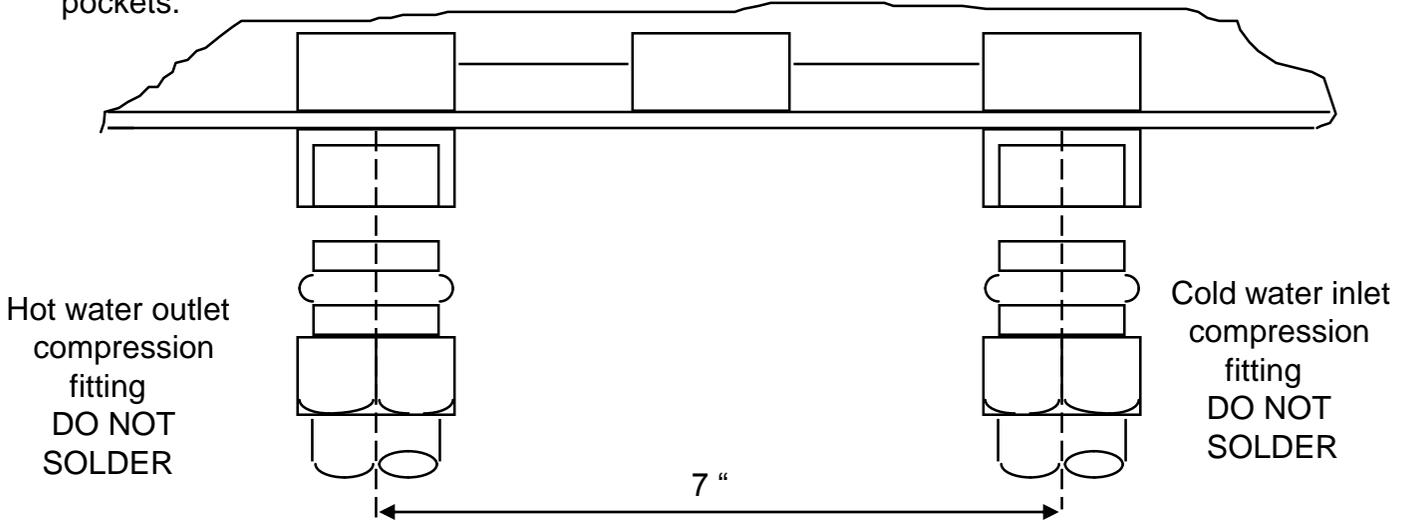
# PLUMBING HOOK-UP

- 1) This unit is supplied with compression fittings, USE THESE; DO NOT USE TAPERED THREADED PIPE FITTINGS AND DO NOT SOLDER PIPE TO THE INLET OR OUTLET.
- 2) Ensure that the pipes are correctly aligned with the inlet and outlet bosses in order to avoid excessive stress on the heater 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 the unit to be isolated for maintenance purposes.
- 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. If a water leak is at a compression fitting, slowly tighten the compression nut until the water leak stops. Fully open both inlet and outlet ball valves. Run all 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.



## NOTE

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TEST THE INSTALLATION FOR LEAKS BEFORE CONNECTING THE ELECTRICAL SUPPLY.

# ELECTRICAL HOOK-UP

## WARNING

WATER HEATING UNITS EQUIPPED FOR ONE VOLTAGE ONLY: CHECK THE RATING PLATE ON THE FRONT OF THE UNIT. DO NOT USE THIS WATER HEATER WITH ANY VOLTAGE OTHER THAN THE ONE SHOWN ON THE MODEL RATING PLATE. FAILURE TO DO SO CAN RESULT IN DEATH, SERIOUS BODILY INJURY, OR PROPERTY DAMAGE. IF YOU HAVE ANY QUESTIONS OR DOUBTS CONSULT YOUR ELECTRIC COMPANY.

This unit must have its own independent circuit using five wires; three live, one neutral and one ground of the appropriate rating protected by the correctly rated three pole breaker

## RATINGS OF “ EFT” THREE PHASE MODELS

MODEL	RATING(KW)	VOLTAGE(V)	CURRENT PER PHASE	TEMPERATURE RISE IN DEGREES						
				1.5GPM	2.0GPM	2.5GPM	3.0GPM	3.5GPM	4.0GPM	5.0GPM
*EFT-18000-T-10	18	208/120	50A/PHASE	82	61	49	41	35	32	25
*EFT-24000-T-10	24	208/120	67A/PHASE	0	82	65	54	47	43	34
*EFT-18000-T-10	18	277	21.7A/PHASE	82	61	49	41	35	32	25
*EFT-24000-T-10	24	277	28.9A/PHASE	0	82	65	54	47	43	34
*EFT-32000-T-10	32	277	38.5A/PHASE	0	0	87	73	62	58	45
*EFT-28000-T-10	28	240	40A/PHASE	128	90	72	65	55	47	38

IF THE UNIT IS CONNECTED TO 460/265 THREE PHASE SYSTEM THE ABOVE OUTPUTS WILL BE REDUCED BY 8.5%

\* UNIT MAY BE CONNECTED TO A 208V POWER SUPPLY, ABOVE OUTPUTS WILL BE REDUCED BY 25%

## IMPORTANT

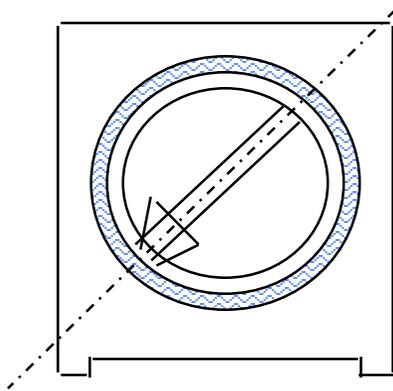
BEFORE SWITCHING “ON” THE POWER AT THE MAIN CIRCUIT BREAKER PANEL MAKE SURE THAT THE HOT WATER CIRCUIT IS FREE OF AIR POCKETS OR PREMATURE FAILURE OF THE ELEMENT WILL OCCUR. TO DO THIS OPEN ALL HOT WATER OUTLETS ONE AT A TIME FOR A MINUTE OR TWO UNTIL THE WATER FLOW IS CONTINUOUS AND FREE FROM “GULPING”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

# Operating the water heating unit

## IMPORTANT

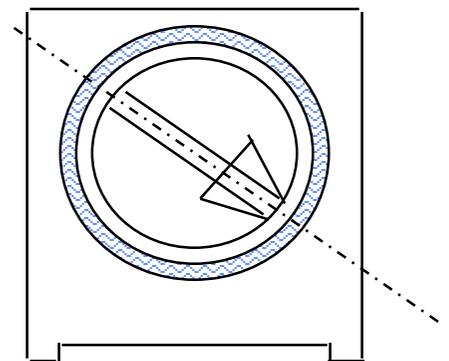
Before switching “on” the power at the main circuit breaker panel make sure that the hot water circuit is free of air pockets or premature failure of the heating element will occur. To do this open all hot water faucets one at a time for a minute or two until the water flow is continuous and free from “gulping” and from visible air pockets.

- 1) With inlet and outlet BALL VALVES fully open, turn on a hot water outlet.
- 2) Run for 1 minute.
- 3) Switch on electric supply at circuit breaker panel.
- 4) The power indicator light should now illuminate (see Fig. 1), pulsing at first. Allow 40 seconds for the indicator lights to remain illuminated, the unit is now operating at full power.  
NOTE: At this point water temperature may not be hot.
- 5) Using the OUTLET BALL VALVE slowly reduce water flow until desired water temperature is achieved at hot water outlet.  
NOTE: The water temperature is regulated by the flow through the heater. The lower the flow the higher the water temperature and vice versa.



MINIMUM SETTING

THE TEMPERATURE CONTROLLING POTENTIOMETER IS A PRECISION COMPONENT. ADJUST GENTLY AND DO NOT TURN BEYOND THE MIN. AND MAX. STOP POINTS



MAXIMUM SETTING

- 6) Turn the water temperature adjustment screw on the first module counter clockwise 1/8 of a turn, wait for 10-15 seconds and see if the indicator light begins to pulse. If the indicator does not, turn another 1/8 of a turn, wait and again see if the lamp begins to pulse. Repeat until the light is pulsing regularly which indicates that the temperature has stabilized at the set temperature. Repeat with modules two and three. Check that the outlet temperature

# OPERATING THE WATER HEATER

## WARNING

HOUSEHOLDS WITH SMALL CHILDREN OR ELDERLY PERSONS MAY REQUIRE WATER TEMPERATURES OF 125°F(52°C) OR LOWER TO PREVENT ACCIDENTAL SCALDING FROM CONTACT WITH THE WATER

- 1) Completely open both the inlet and outlet valves at the unit.
- 2) Open all hot water outlets serviced by this unit. If the outlet is a mixer type adjust to the hottest position. Run flow until flow is continuous at all the outlets. When the flow is continuous at all serviced outlets, proceed to the next step.
- 3) Switch on electric supply at the circuit breaker panel. The indicator light on the unit should now illuminate.
- 4) Using the outlet BALL VALVE, slowly reduce the water flow until the desired water temperature is achieved at the hot water outlet. This should be 120°F(49°C) to 140°F(60°C) without mixing with cold water.
- 5) Turn the temperature adjustment screw counter clockwise about 1/8 of a turn. After 10-15 seconds, the power indicator light should be pulsing. If it does not, turn the screw counter-clockwise another 1/8 of a turn. Wait 10-15 seconds for the indicator light to begin pulsing. Repeat process until the indicator light is pulsing regularly. This indicates that the water temperature has stabilized at the set temperature. Check that the temperature is what is required. The thermostat is now set and the water temperature will remain constant when the indicator light is pulsing.
- 6) Check the performance of the flow switch by opening and closing the faucet a few times.

THE POWER INDICATOR LIGHT SHOULD ONLY ILLUMINATE WHEN WATER IS FLOWING THROUGH THE UNIT.

NOTE: An EFT-9500-S-10 (9.5 kw) unit at 240v will deliver 1 gallon per minute at 65°F(18°C) rise in temperature. For example, with an incoming water temperature of 55°F(13°C) the unit will produce 1 gallon per minute at 120°F(49°C)

A flow rate of 1 gallon per minute will fill a 1 gallon “milk” container in 60 seconds.

- 7) For accurate water temperature control a mixer type faucet(single spout), the cold water supply 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 achieving this is by partially closing the cold water valve under the sink.
- 8) It is possible that drawing off cold water at comparatively high rates of flow elsewhere in the building at the same time that the unit is working, could starve the unit of cold water. Care should be taken to avoid this from occurring as premature element failure may result. Completely open the main valve on the cold supply to the building and throttle back the control valves to the other cold water outlets.

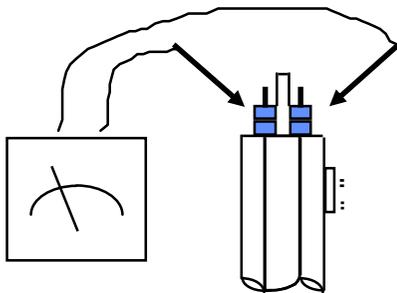
## SYMPTOM

## POSSIBLE CAUSE

## SOLUTION

<b>NO HEAT - INDICATOR LIGHT OFF</b>	A) ELECTRICAL SUPPLY OFF	TURN ON MAIN MAIN CIRCUIT BREAKER
	B) NO OR LOW WATER FLOW	MINIMUM WATER FLOW TO TURN ON UNIT IS 0.7 GALLON PER MINUTE. INCREASE FLOW TO AT LEAST THIS LEVEL.
	C) WATER CONNECTION REVERSED	COLD WATER INLET-RIGHT SIDE. HOT WATER OUTLET - LEFT SIDE. REFER TO FIG. 1
	D) ELEMENT BURNED OUT	<p>1) <b><u>TURN MAIN BREAKER OFF</u></b></p> <p>2) USING OHMMETER TEST RESISTENCE OF THE HEATING ELEMENT AT TWO TERMINATION RODS ON THE TOP OF ELEMENT. SEE FIGURE BELOW.</p> <p>3) OHMMETER SHOULD READAS FOLLOWS:</p> <ul style="list-style-type: none"> <li>- 6-7 OHMS</li> <li>- 7-8 OHMS</li> <li>- 10-11 OHMS</li> </ul> <p>IF RESISTENCE OF THE ELEMENT IS MUCH GREATER THAN THESE READINGS - CALL TECHNICAL SUPPORT.</p>

<b>NO HAET OR LOW TEMPERATURE INDICATOR LIGHT ON</b>	A) WATER FLOW TOO HIGH	REDUCE WATER FLOW BY USING OUTLET BALL VALVE. SEE "RATINGS OF UNITS" TABLE P- FOR TEMPERATURE RISE @ 1 GPM.
	B) 110 VOLT POWER SUPPLY INSTEAD OF 240 VOLTS	UNIT MUST BE CONNECTED TO 240 VOLT POWER POWER SUPPLY. SEE SECTION III - ELECTRICAL HOOK-UP.
	C) ELEMENT BURNED OUT	<p>1) <b><u>TURN MAIN BREAKER OFF</u></b></p> <p>2) USING OHMMETER TEST RESISTENCE OF THE</p>



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# REPLACEMENT PARTS DIAGRAM

## HEATER CORE ASSEMBLY

FOR	EFT-18000-T-10,	277V	EX1280
	EFT-18000-T-10	208V	EX770
	EFT-24000-T-10,	277V	EX960
	EFT-24000-T-10	208V	EX560
	EFT-32000-T-10	277V	EX720
	EFT-28000-T-10	240V	EX630

