MicroHeat™

SMARTER WATER HEATING

WATER HEATER
ELECTRIC TANKLESS
POINT-OF-USE OR MULTI-POINT-USE

- NEXT GENERATION MOLECULAR HEAT TECHNOLOGY
- ON-DEMAND FLOW
- ADVANCED ENERGY AND TEMPERATURE CONTROL
- FLEXIBLE, EASY, AND SPACE-SAVING INSTALLATION
- PREVENTS BACTERIA GROWTH
- TEMPERATURE ADJUSTABLE TO AVOID WATER SCALDING
- DOES NOT SCALE WHILE HEATING

INSTALLATION & OPERATION MANUAL

MH SERIES 6

CONTINUOUS FLOW ELECTRIC WATER HEATER

CFEWH SERIES 6-13 | SINGLE PHASE - USA

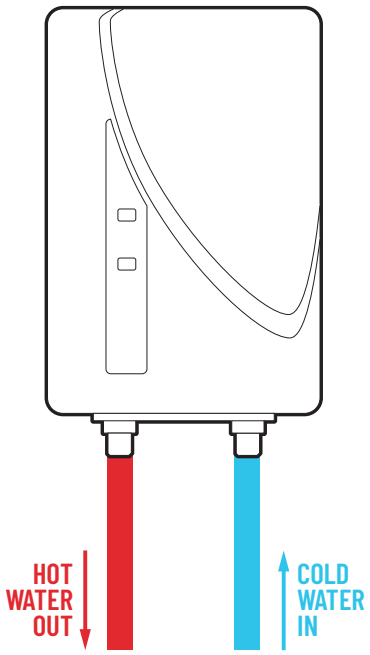
LEARN MORE AT
MICROHEAT.US/INFO
OR SCAN CODE:

CONTENTS

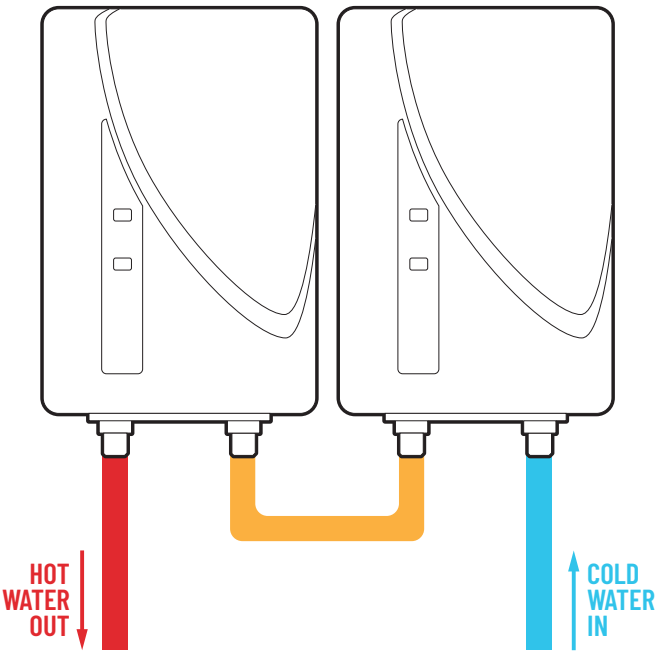
INTRODUCTION TO CFEWH

This installation manual covers the premium model of the MicroHeat Continuous Flow Electric Water Heater [CFEWH] SERIES 6-13. Units include displays showing output water temperature (settable up to 140°F, temperatures below 120°F are recommended to prevent scalding), and flow rate.

SINGLE INSTALLATION (1 unit)



TANDEM INSTALLATION (2 or more units)



VOLTAGE: The CFEWH is Single-Phase 220VAC - 240VAC LIVE-LIVE/GROUND, up to 13 kW.

SAFETY WARNING

Please ensure you read through the Pre-Installation Checklist on **Page 6** before commencing the installation of any CFEWH unit.

This equipment works on 220VAC - 240VAC. To avoid electric shock, this equipment must only be opened and installed by a licensed electrician and plumber.

BENEFITS OF CFEWH

KEY BENEFITS

DECREASED INFRASTRUCTURE COSTS

- Setting the water temperature on the unit below 120°F or less will prevent user scalding, unless otherwise specified.
- Point-of-use installation significantly reduces requirement for hot water reticulation infrastructure.

SMALL FOOTPRINT

- Facilitates point-of-use installation.
- Easy to install.

DECREASED OPERATING COSTS AND MINIMAL WATER WASTAGE

- Always operates at “optimum” power.
- Switch-on flow rate is as low as 0.39 gal/min.
- No requirement to heat water in anticipation of use.
- Stable hot water temperatures are delivered.
- Reduced water consumption due to reduced draw off.
- Hot water reticulation energy losses significantly reduced.
- Virtually maintenance-free: no scaling of heating element or element burn out.

COMPARING HOT WATER SERVICE

FEATURES	CONTINUOUS FLOW ELECTRIC WATER HEATER (CFEWH)	VS.	ELECTRIC INSTANTANEOUS WATER HEATER (EIWH)
Electrical Supply	SINGLE PHASE		SINGLE PHASE
“Optimized” Energy	YES		NO
Accurate Heated Water Temperature	YES		NO
Optimized Tandem Capability	YES		NO

“OPTIMIZED” ENERGY

“Optimized” energy is the capacity to heat water more efficiently – delivering reductions in the consumption of both energy and water.

REDUCED ENERGY CONSUMPTION

- Lower flow rate = less water volume to be heated and less energy is consumed.
- Minimal temperature adjustment required = less energy is consumed

REDUCED WATER CONSUMPTION

- Hot water temperature stability = less water is consumed.
- The lower the flow rate = less water is consumed.
- Minimal temperature adjustment required = less water is consumed.

Of course, the ideal situation would be for Electric Tankless Water Heating (EIWH) appliances to have some degree of “optimized” energy – however, most do not incorporate this.

The 100% “optimized” energy delivered by the CFEWH results in far less than the full-rated power being consumed.

INSTALLATION OPTIONS

Here are some suggested options for installation. The flexibility of the unit allows custom solutions for your needs, whether point-of-use or multi-point-use. *Please note that the location and installation of the unit is not limited to the options shown here.*

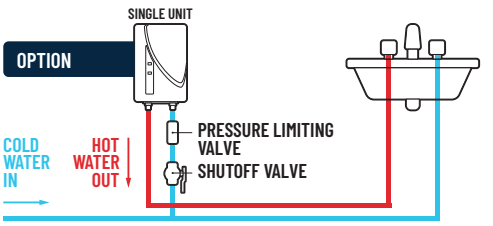
Units can be installed in tandem to double flow rates, if needed. Your needs will depend on your regional climate; refer to our flow tables for specifications.

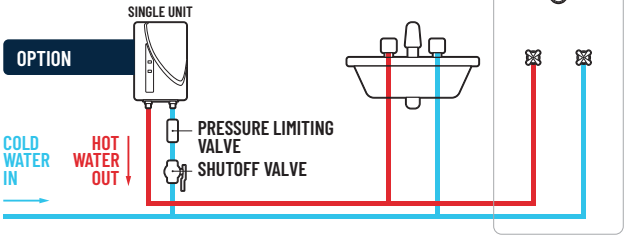
NOTE: When the CFEWH is connected to a washing machine, dishwasher, etc. with automatic on/off controlled inlet valve and for long pipe runs, a water hammer arrestor must be mounted at the outlet of the CFEWH. This will reduce the water hammer effect during the automatic turning off of the water inlet valve of these appliances.

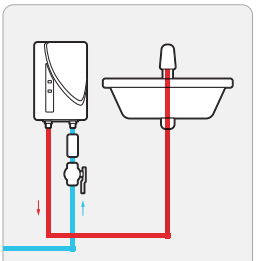
The CFEWH should be installed in a vertical position on an internal wall, or in an internal cupboard or space.

IMPORTANT: Where the ambient temperatures are likely to approach freezing, i.e., less than 41°F, the unit must be drained of water to prevent frozen water damage from occurring.

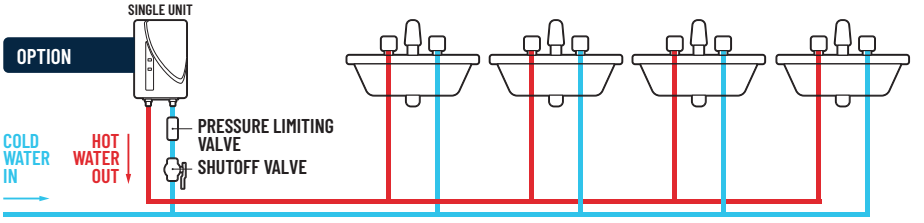
Failure to comply with the installation and operating instructions, or improper use, voids the warranty.

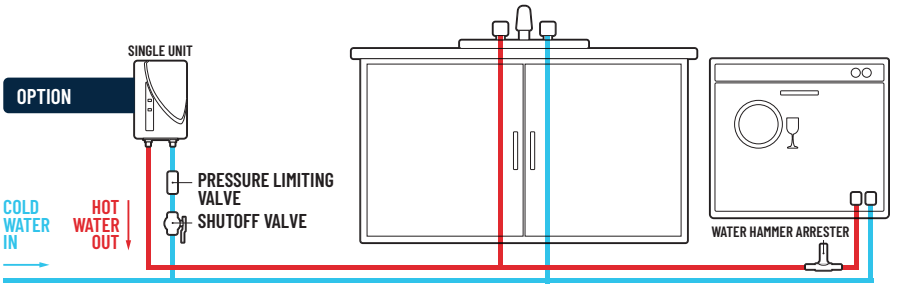


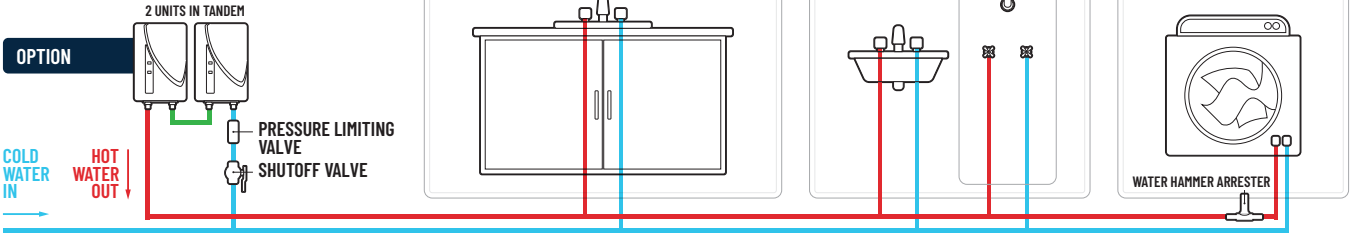




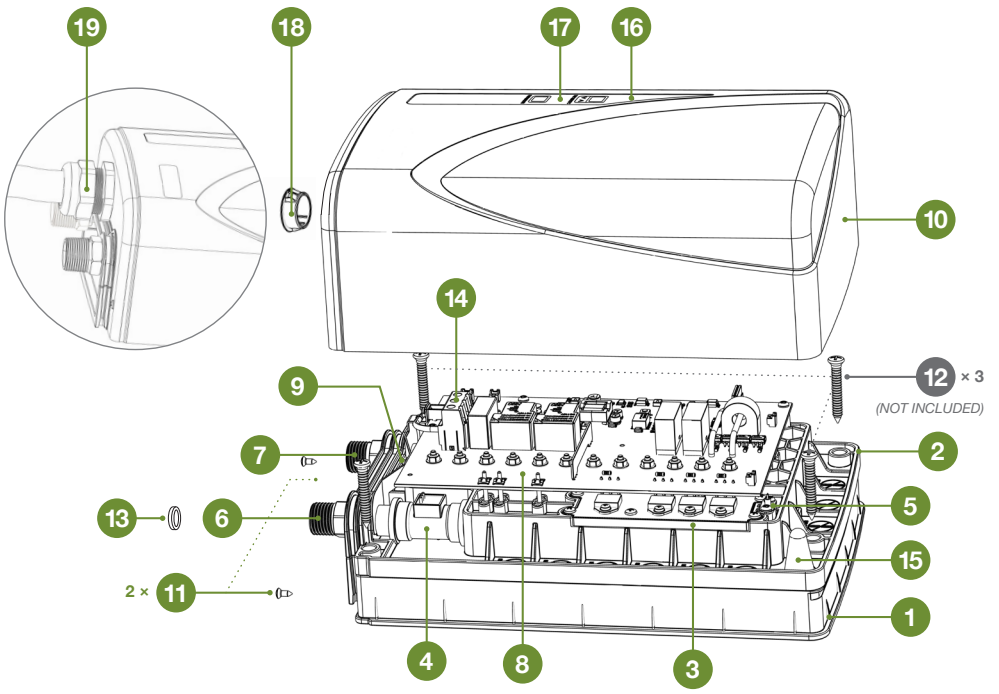
NOTE:
All options can be installed without a cold water faucet by setting the desired temperature on the unit.

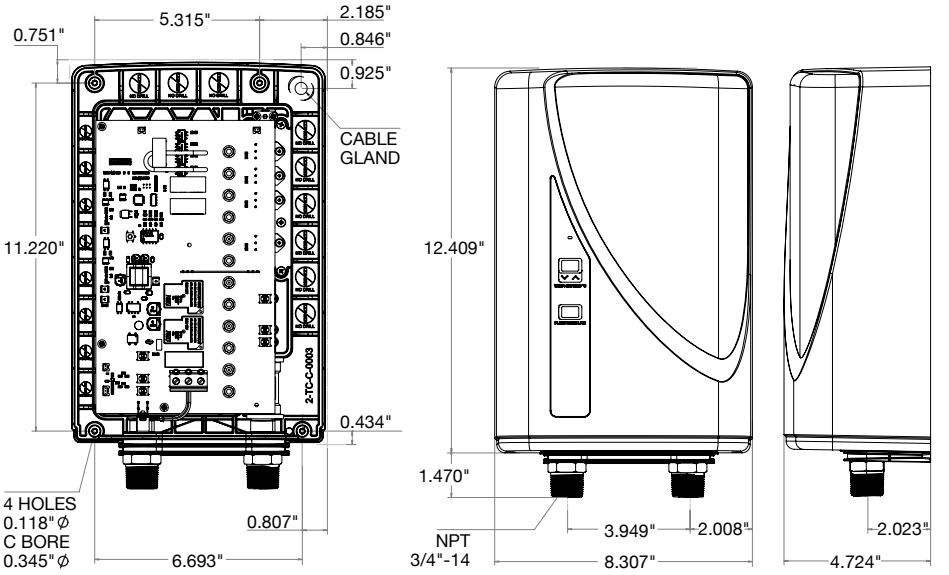






COMPONENTS AND DIMENSIONS





Dimensions measured from exterior cover *(not shown).*

NOTE: MAX SCREW HEAD DIAMETER = 5/16" | RECOMMENDED: 5/16" SCREW HEAD DIAMETER AND 2 1/2" LENGTH.

PARTS

1. Chassis
2. Top Cover
3. Heat Sink
4. Flow Rate Sensor
5. Temperature Sensor, Receptacle, Cable and Plug Assembly
6. ¾" NPT Inlet Water Connection
7. ¾" NPT Outlet Water Connection
8. Printed Circuit Board Assembly (PCBA) V7.4
9. Earth Locking Mechanism
10. SERIES 6-13 Exterior Cover (Premium)
11. Exterior Cover Screws x 2: Pan Phillips Head Self-Tapping Screw (included separately in small satchel)
12. Wall Mounting Screws **(NOT INCLUDED)**
13. Inlet Filter
14. PCBA Terminal Block
15. Electric Mains Supply Cable Gland
16. RED/GREEN LED: (GREEN Ready/RED Error)
17. Flow Rate/Temperature Setting Display
18. Exterior Cover Plug
19. Exterior Cover Hole

THE FOLLOWING ARE NOT SHOWN HERE. SEE PAGE 9.

19. Display PCBA, Cable and Plug (LED Indicator)
20. PCBA Reset Button

PCBA = PRINTED CIRCUIT BOARD ASSEMBLY

SPECIFICATIONS

All specifications, stated operational flow rates, and output water temperatures are valid within the range of water conductivity:

- 80µS/cm to 1300µS/cm + 15% at 68°F (µS–microSiemens)
- 1.25kΩ-cm to 7.7kΩ-cm + 15% at 68°F

NOTE: Water conductivity may be less than 80µS/cm. Reduce flow rate to achieve comfortable water temperature. Water conductivity greater than 1300µS/cm + 15% will generate an error condition. In this circumstance, the appliance will shut down safely without damage.

	SINGLE PHASE — CFEWH SERIES 6			
	SINGLE INSTALLATION (1 UNIT)		TANDEM INSTALLATION (2 UNITS)	
ELECTRICAL CONNECTION				
Rated Power (kW)	13 kW		2 x 13 kW = 26 kW	
Voltage (VAC)	220 - 240VAC		220 - 240VAC	
Rated AMPS	59 - 54 AMPS		108 (2 x 54 A Hard Wired Circuits Required)	
Frequency (Hz)	50 / 60 Hz		50 / 60 Hz	
Electrical Connection	Live / Live / Ground		Live / Live / Ground	
Min. Recommended Circuit Breaker Size	55 AMPS		2 x 55 AMPS	
Min. Recommended Wire Size	6 AWG		2 x 6 AWG	
OPERATING PARAMETERS				
Switch-on Flow Rate	0.39 gal/min		0.39 gal/min	
System Type	Continuous Flow Electric Water Heater (CFEWH) Hot Water Market Segment — Electric Instantaneous/Tankless			
Max. Rated Operating Line Pressure	8 bar / 0.8 MPa / 116 Psi — Pressure limiting valve must be installed at inlet side of unit			
Min. Operating Pressure	1.5 bar / 0.15 Mpa / 22 Psi			
Dimensions	Height 11.62" x Width 8.29" x Depth 4.92" (without extension cover)			
Heating Method	Optimized Direct Energy Transfer — Full Digitally Controlled Water Heating			
Nominal Capacity (gallons)	0.1 gallons		2 x 0.1 gallons	
STANDARDS				
Electrical Safety	UL 499 Ed 14			
EMC	FCC			
IP Rating	IP25			
HOT WATER FLOW RATES (related to incoming water temperature which varies during summer and winter and set output temperatures)				
INCOMING WATER TEMPERATURE	**OUT TEMP 104°F**	**OUT TEMP 122°F**	**OUT TEMP 104°F**	**OUT TEMP 122°F**
50°F	1.61 gal/min	1.21 gal/min	3.22 gal/min	2.42 gal/min
59°F	1.93 gal/min	1.38 gal/min	3.86 gal/min	2.76 gal/min
68°F	2.42 gal/min	1.61 gal/min	4.84 gal/min	3.22 gal/min
77°F	3.23 gal/min	1.93 gal/min	6.46 gal/min	3.86 gal/min
86°F	4.84 gal/min	2.42 gal/min	9.68 gal/min	4.84 gal/min

PRE-INSTALLATION CHECKLIST

Please read through this section before commencing installation to ensure you are familiar with all of the component parts and the fitting procedure.

THIS UNIT MUST BE INSTALLED BY:

- ☐ **A LICENSED ELECTRICIAN** to ensure installation conforms to all current electrical wiring codes and safety standards.
- ☐ **A LICENSED PLUMBER** to ensure installation conforms to all current plumbing codes and safety standards.

OTHER SPECIFICATIONS:

IP RATING

☐ The unit is rated as IP25. The unit must be installed inside a dwelling or construction and should not be exposed to splashing water, rain or any circumstance that will allow water to enter the outside cover.

MAXIMUM RATED OPERATING WATER PRESSURE

☐ The maximum operating water pressure is 0.8 MPa / 8 bar / 116 PSI.

AMBIENT TEMPERATURE

☐ The unit is intended for internal installation and should not be installed in an environment where there is a possibility of the ambient temperature dropping below 41°F.

WATER RESISTIVITY

☐ To ensure optimal operation, the resistivity of the incoming cold water supply should not be less than 1.25kΩ-cm, and should not be greater than 7.7kΩ-cm. If the unit is operated with water conductivities outside of this range, it will not function as specified.

☐ The CFEWH should preferably be installed in a vertical position on an internal wall, or in an internal cupboard or space. If the safety rules or the instructions outlined in this manual are not followed correctly, the unit may not operate properly, and could cause damage to property, serious bodily injury, and/or death.

MicroHeat, nor its Distributors, will be liable for any damages due to failure to comply with the installation and operating instructions outlined in this manual or through improper use. Improper use includes the use of this unit to heat any liquid — other than potable water — within the conductivity range specified in this manual.

⚠ WARNING:

This appliance can be set from 60°F up to 140°F in 1°F increments. Water temperatures greater than 120°F can cause scalding. Care should be taken with children and people with limited sensory, physical, and/or mental capability.

⚠ IMPORTANT:

Failure to comply with the installation and operating instructions, or improper use, voids the warranty. Never remove the unit cover unless the electricity is turned off at the isolation switch or switchboard. To reduce the risk of electric shock or injury to persons or property, please follow the installation instructions carefully.

Where the ambient temperatures are likely to approach freezing, i.e., less than 41°F, the unit must be drained of water to prevent frozen water damage occurring.

For supply connections, use 6AWG or larger wires suitable for at least 167°F.

For use on an individual branch circuit only.

⚠ IMPORTANT:

Supply this appliance only from a grounded system. A green terminal (or a wire connector marked “G”, “GR”, “GROUND”, OR “GROUNDING”) is provided for wiring the appliance. To reduce the risk of electric shock, connect this terminal or connector to the grounding terminal of the electric service or supply panel with a continuous copper wire in accordance with the electrical installation code.

CAUTION: DO NOT INSTALL IN A BATH ENCLOSURE OR SHOWER STALL, OR CONNECT TO A SALT-REGENERATED WATER SOFTENER OR A WATER SUPPLY OF SALT WATER.

Failure to comply with the installation and operating instructions, or improper use, voids the warranty.

INSTALLATION OVERVIEW

STEP 1
Pages 8-10

ELECTRICAL INSTALLATION **BY A LICENSED ELECTRICIAN ONLY**

The unit is to be connected with fixed wired power (Live 1 and Live 2) and a ground wire (Ground Earth). Once active wires are connected to the unit, the unit must be mounted into position and tested for connectivity.

STEP 2
Page 11

PLUMBING INSTALLATION **BY A LICENSED PLUMBER ONLY**

The unit hot water outlet is connected to a hot water plumbing fixture, and the cold water inlet is connected to the cold water source. Additional equipment (not included) is required for safety standards, such as pressure limiting valves, shutoff valves, water hammer arresters, etc., as shown on **Page 3**.

STEP 3
Pages 12-15

PREPARATION AND USAGE BY THE CONSUMER

The unit is to be flushed, primed, tested, temperature set, and used by the consumer.

- Preparation for Use
- Optimized Energy Usage
- Operating the CFEWH
- Diagnostics and Error Descriptions

AFTER DIVERSITY MAXIMUM DEMAND

As per National Electrical Code (NEC), the current in a circuit must not exceed the current rating of the circuit protective device and this, in turn, must not exceed the current carrying capacity of the circuit conductors. Necessarily in this context, both Diversity Factor and Demand Factor should be taken into account when calculating the electrical load on the electrical supply.

NATIONAL ELECTRICAL CODE (NEC): ARTICLE 220 BRANCH-CIRCUIT, FEEDER, AND SERVICE LOAD CALCULATIONS
220.1 Scope. This article provides requirements for calculating branch-circuit, feeder, and service loads. Part I provides general requirements for calculation methods. Part II provides calculation methods for branch-circuit loads. Parts III and IV provide calculation methods for feeder and service loads. Part V provides calculation methods for farm loads.

DIVERSITY FACTOR
Diversity Factor is the ratio of the sum of the individual maximum demands of the various subdivisions of a system (or part of a system) to the maximum demand of the whole system (or part of the system) under consideration. Diversity is usually more than one.
Diversity Factor = sum of total demands ÷ maximum demand on feeder.

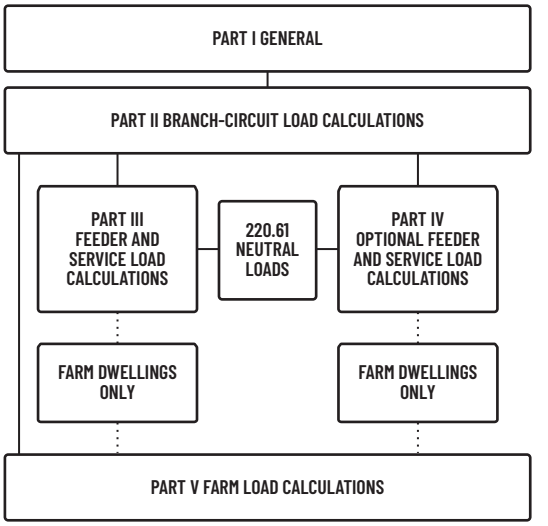


Fig. 220.1
Branch-Circuit, Feeder, and Service Load Calculation Methods

DEMAND FACTOR
Demand Factor is the ratio of the sum of the maximum demand of a system (or part of a system) to the total connected load on the system (or part of the system) under consideration. Demand Factor is always less than one.

Although feeder conductors should have an ampacity sufficient to carry the load, the ampacity needs not always be equal to the total of all loads on connected branch-circuits.

A study of the National Electrical Code (NEC) will show that a Demand Factor may be applied to the total load. The Demand Factor permits a feeder ampacity to be less than 100 percent of all the branch-circuit loads connected to it.

PRELIMINARY INFORMATION

In accordance with the wiring rules, National Electrical Code (NEC), or NFPA 70, the Live / Live / Ground electrical supply connections Live (L1), Live (L2) and Ground (Earth ⏚) (LLG) must be **permanently connected** to the 14 Terminal Block mounted on the PCBA as shown (see **Fig. 1**). Electrical connections should be made as instructed, using appropriate UL listed strain relief devices.

IMPORTANT: This unit is classified as a Class I Bare Element Water Heater. The appliance must be correctly connected to the mains earth.

In order to prevent a hazardous circumstance occurring due to the inadvertent resetting of the thermal cutout, the electrical supply to this appliance must not be supplied through an external switching device, such as a timer – nor can it be connected to a circuit that is regularly switched on and off by the electricity supply utility.

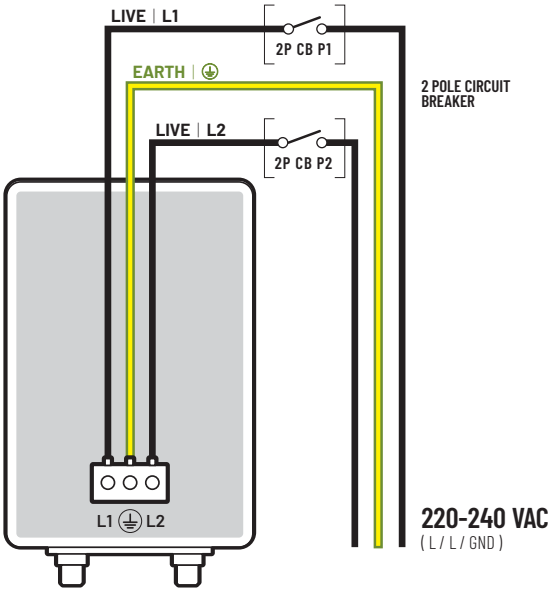
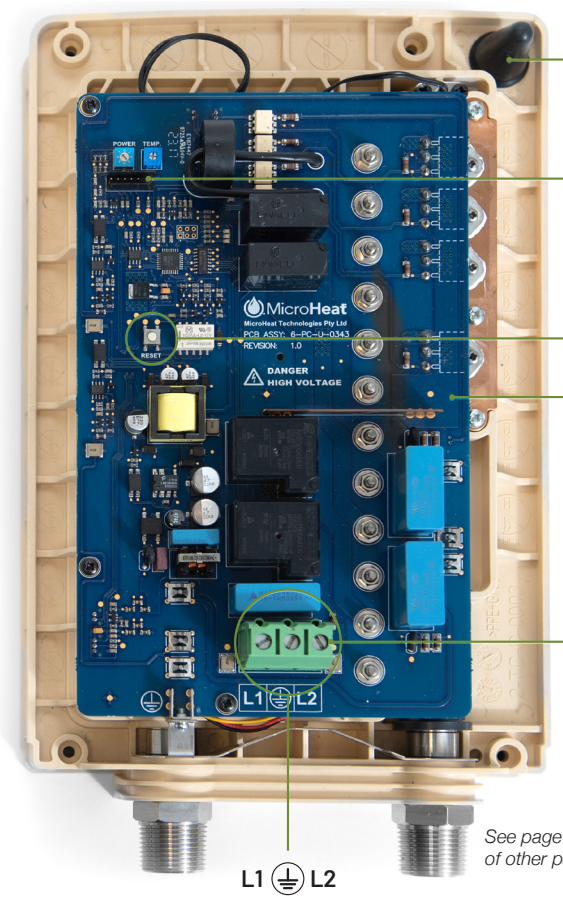


Fig. 1
Electrical Connection Diagram



See page 4 for identification of other parts of the unit.

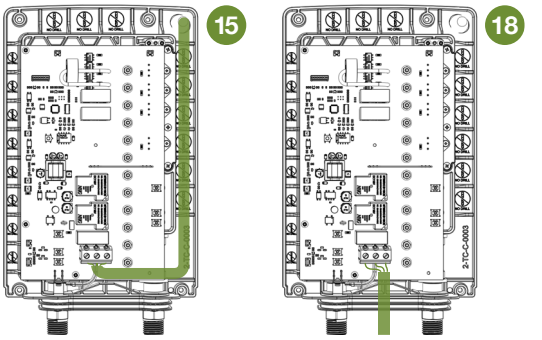
TANDEM INSTALLATION
With tandem installations, both units must be fitted with their own respective circuit breaker and isolation switch.

The appliance must be connected to the mains supply with fixed wiring.

It is recommended that an appropriate mains isolation switch be installed in-line with the fixed wiring electrical supply.

The appliance must be installed on a branch circuit with a protective device rated at 55 Amps.

Bring the Live / Live / Ground supply through the 15 Electric Mains Supply Cable Gland (**OPTION 1**) or through the 19 Exterior Cover Hole (**OPTION 2**) as shown below.



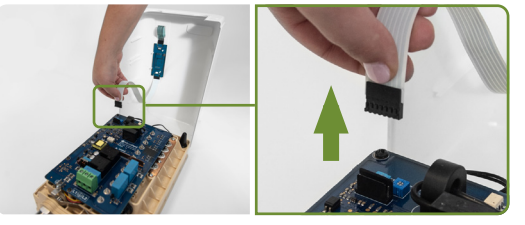
OPTION 1 **OPTION 2**

- The LIVE wire (1) must be connected to the **L1** terminal.
- The LIVE wire (2) must be connected to the **L2** terminal.
- The EARTH wire (**GREEN**/**YELLOW**) must be connected to the ⏚ terminal.

STEPS FOR INSTALLATION

1. Find a clean, flat surface and place the unit on its back. Using both your thumbs and forefingers, grip the 10 Exterior Cover firmly along the bottom of the unit, and push the cover slowly up to separate it from the 1 Chassis of the unit.

2. Carefully remove the 19 Display PCBA/LED Plug and Cable connecting either the Display PCBA or Indicator LED on the outside of the 10 Exterior Cover to the 8 PCBA. Set aside for reconnection during electrical installation.



STEPS FOR INSTALLATION *(cont.)*

3. Ensure the circuit breaker and the isolation switch (if installed) supplying the 220 - 240VAC electrical mains to the CFEWH are turned OFF.

4. Electricity supply cable installation:
   - **OPTION 1**: cable must be brought through the electric gland, and then the CFEWH can be mounted. The cable enters from the rear of the unit.
   - **OPTION 2**: cable must be brought through the hole in the 10 Exterior Cover, and then the CFEWH can be mounted. The cable enters through the front of the 10 Exterior Cover of the unit. If using this option, an appropriate UL listed strain relief device must be used.

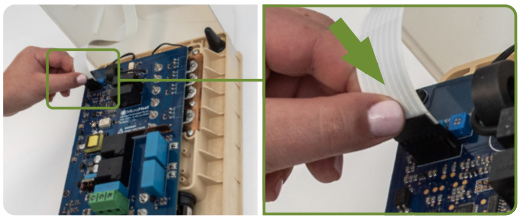
5. Mount the unit onto the wall using four 12 Mounting Screws. Reference the *SCREW HOLE MOUNTING TEMPLATE* (provided separately from this manual, see **Fig. 1**), making sure to only mount the unit through the screw hole mounts on the unit (see **Fig. 2**) to avoid damaging the unit, **VOIDING THE WARRANTY**.

   Any screw head larger than the maximum diameter of 5/16" will damage the mounting base and crack the body, **VOIDING THE WARRANTY**.

   The unit should be mounted onto a solid internal wall or in an internal cupboard or space capable of continuously supporting a minimum weight of 22 lbs, preferably in the vertical position.

   When mounting the unit onto a rough surface (i.e., a brick wall or similar), a backing board should be mounted to the wall first. The unit can then be mounted onto the backing board. This will allow the 10 Exterior Cover to be properly fitted to the unit.

6. Carefully replace the plug and cable connecting the 19 Display PCBA/LED Indicator to the 8 PCBA.



7. Switch ON the circuit breaker and isolation switch supplying the electric mains power to the unit and check if the unit is turned ON.

8. Place the 10 Exterior Cover back onto the unit and use the 11 Exterior Cover Screws to secure it in place.

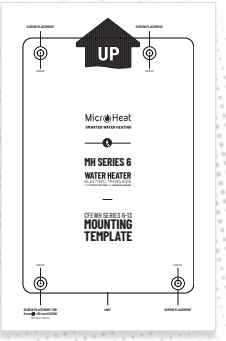


Fig. 1
SCREW HOLE MOUNTING TEMPLATE
(provided separately from this manual)

IMPORTANT: When mounting the unit, do not drill where it is marked with "NO DRILL" warnings, the sides of the unit, nor the 15 Cable Gland Fitting Hole.

Holes drilled within these areas will render the unit inoperable, irreparable, and **WILL VOID THE WARRANTY.**

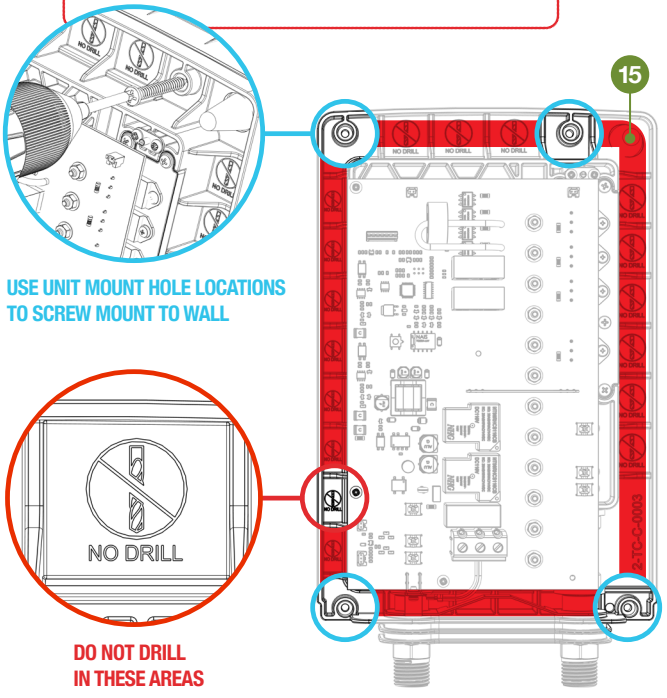


Fig. 2
Mounting Hole Locations for Mounting Screws

END OF SECTION

The unit is a closed outlet water heater and is intended to operate at the pressure of the water mains, where the flow of water is controlled by one or more faucets/ valves in the outlet line.

The unit can be installed into any type of commercial or residential construction as per the current plumbing standards.

However, it is **mandatory for a water pressure limiting valve and a shutoff valve to be connected in series** with the unit's 6 Cold Water Inlet Connection.

- The unit maximum rated operating line pressure is 0.8 MPa / 8 bar / 116 PSI.
- The unit minimum operating pressure is atmospheric pressure.
- The installation of a pressure limiting valve – a mandatory requirement – ensures that excess water pressure applied, as result of water hammer and/ or other circumstances, does not stress the appliance unduly.
- The inlet water pressure limiting valve must be rated at 0.5 MPa / 5.0 bar / 72.5 psi.
- The shutoff valve installed must not be a non-return type valve.
- Inlet and outlet piping must be maximum 3/4", minimum 20" pipe length.
- If the water heater is supplying a dishwasher/washing machine, a water hammer arrestor must be installed on the outlet side of the water heater.

STEPS FOR INSTALLATION

1. Switch **OFF** the circuit breaker and isolation switch supplying the electric mains power to the unit for plumbing installation.

2. Connect the water pressure limiting valve (5.0 bar / 72.5 psi / 500 kpa) and shutoff valve.

3. Connect the water supply via the shutoff valve and pressure limiting valve to the unit to the 6 Inlet Water Connection. The 6 Inlet and 7 Outlet Water Connections are both ¾" NPT. NOTE: Flush the cold water line before connecting to the unit.

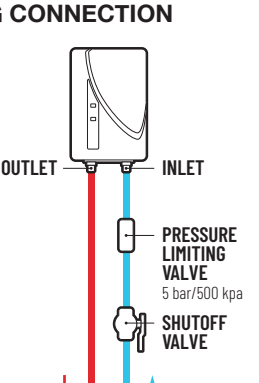
4. Connect the hot water from the 7 Outlet Water Connection.

5. Run water through the unit without power to ensure there are no leaks.

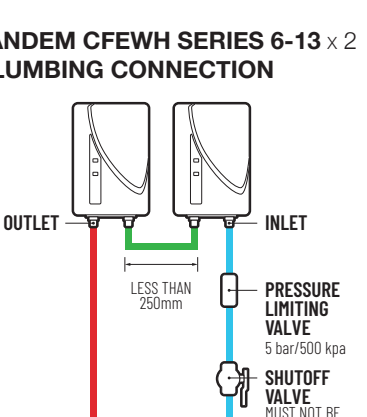
6. Switch **ON** the circuit breaker and isolation switch supplying the electric mains power to the unit for plumbing installation.

If the LED is slow flashing **GREEN**, the unit is in standby mode and is ready for use. Turning hot water on will initiate the heating process and hot water should exit from of the point-of-use water outlet. The LED will illuminate as fast flashing **GREEN**. See **Page 15** for full list of light indicator signals.

SINGLE CFEWH SERIES 6-13 PLUMBING CONNECTION



TANDEM CFEWH SERIES 6-13 x 2 **PLUMBING CONNECTION**



IMPORTANT:
MicroHeat, nor its Distributors, will be liable for any damages through failure to comply with the installation and operating instructions outlined in this manual – specifically in this instance where the specified water pressure limiting valve and shutoff valve type, as indicated, must be installed with this unit.

END OF SECTION

PREPARATION FOR USE

After installation, this two-step procedure must be followed.

STEP 1: FLUSH

- Flushing is required to clear the unit of plumbing debris that may have collected in the piping during installation.
- This is done with the electric power supply turned off.
- Flush water through the unit.
- Flushing should be allowed to continue for one to two minutes.
- After flushing, remove the 13 Inlet Filter from the cold water inlet, clean any debris due to installation and flushing, and refit. (see **Fig. 1**)

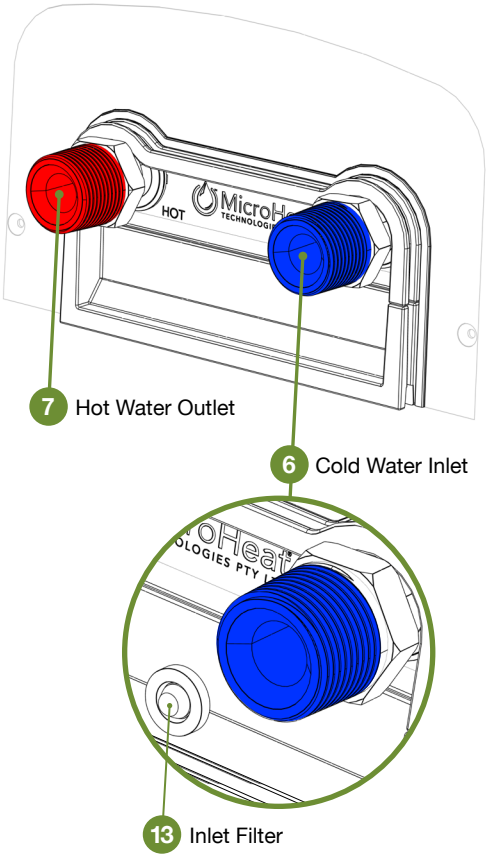
STEP 2: PRIME

The unit must be primed – this is required only once – priming will happen after initial installation.

(Priming is **only** required when the electricity supply to the unit has been turned off/removed from the unit – for example, after a power failure or an isolation switch OFF condition.)

Priming is required to set the unit up environmentally to ensure that the heating ramp-up time from start during normal operation will be as short as possible, without incurring power overshoot.

Once primed, the unit will ramp-up to the optimized power required at the time without overshoot.



See Component Diagrams on Page 4 for Full Parts Key.

Fig. 1

NOTE: *Power overshoot typically results from the maximum power input required to get a heat exchanger up to working temperature as quickly as possible.* ***However, as the unit does not incorporate a heat exchanger, this initial power 'kick' is not required at start up.***

- Turn the electricity supply on – check for the 16 LED slow flashing **GREEN**. The unit is now in stand-by mode.
- Turn on the hot water faucet to a flow rate greater than 0.39 gpm (the unit will start heating – check for 16 LED fast flashing **GREEN**), and allow the unit to run for about three minutes.

  NOTE: Depending on the initial flow rate during priming, the unit will not start heating until approximately 0.3 gallons of water has cycled through the unit. This is to ensure that any air in the system has been flushed. Heating will have started once the 16 LED is fast flashing **GREEN**. This will happen whenever the electrical mains power is turned off to the system and ensures optimum performance.

THE UNIT IS NOW PRIMED AND READY FOR USE!

OPTIMIZED ENERGY USAGE

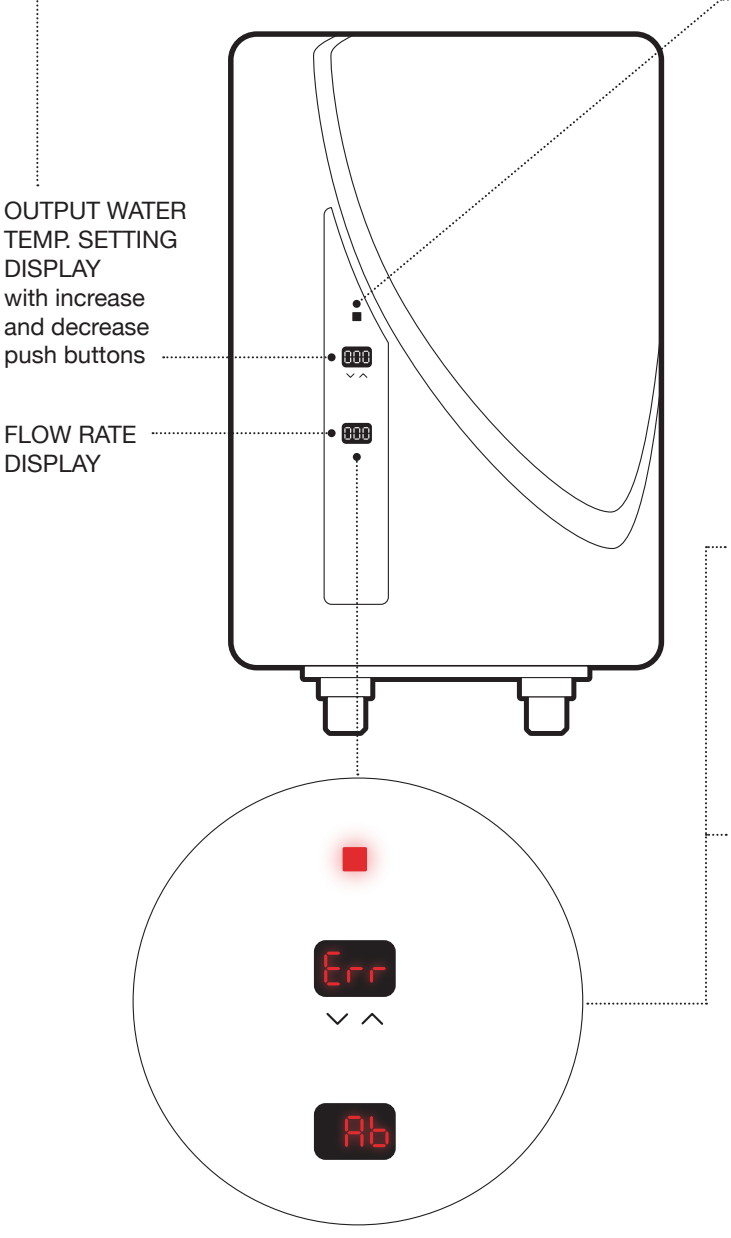
The table below shows the flow rate in gallons per minute (gpm), related to deliverable output water temperature (°F) and optimized electrical energy usage (kW). The table shows you the results that can be achieved by varying the water flow and temperature. The optimum operational capability of the unit is reached at full-rated power.

53°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	117	111	106	102	98	95	92	89	87	84	80	78
OPTIMIZED ENERGY USAGE (kW)	4.2	5.6	7.0	8.4	9.8	11.2	12.6	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
62°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	122	120	115	111	107	104	101	98	96	93	89	87
OPTIMIZED ENERGY USAGE (kW)	3.7	4.9	6.1	7.3	8.5	9.8	11.0	12.2	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
71°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	122	122	122	120	116	113	110	107	105	102	98	96
OPTIMIZED ENERGY USAGE (kW)	3.1	4.2	5.2	6.3	7.3	8.4	9.4	10.5	11.5	12.6	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
80°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	122	122	122	122	122	122	119	116	114	111	107	105
OPTIMIZED ENERGY USAGE (kW)	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7	9.6	10.5	11.3	12.2	13.0	13.0	13.0	13.0	13.0	13.0	13.0
89°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	120	116	114
OPTIMIZED ENERGY USAGE (kW)	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.0	13.0	13.0
98°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122
OPTIMIZED ENERGY USAGE (kW)	1.6	2.1	2.6	3.1	3.7	4.2	4.7	5.2	5.8	6.3	6.8	7.3	7.9	8.4	8.9	9.4	10.5	11.5	12.6
107°F INPUT WATER TEMPERATURE																			
WARM WATER FLOW RATE (gpm)	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.2
OUTPUT WATER TEMP (°F)	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122
OPTIMIZED ENERGY USAGE (kW)	1.0	1.4	1.7	2.1	2.4	2.8	3.1	3.5	3.8	4.2	4.5	4.9	5.2	5.6	5.9	6.3	7.0	7.7	8.4

CFEWH PREMIUM MODEL

The unit will automatically begin operating when you turn on a hot water tap, and water is flowing faster than 0.39 gpm. The heated water temperature can be varied or set manually by using the decrease and increase push buttons. Temperature can be set between a minimum of 68°F and the maximum factory set temperature of 140°F (temperatures below 120°F are recommended to prevent scalding).

The display also shows water flow rate in gallons per minute (gpm). The minimum flow rate that can be displayed is 0.01 gpm and the maximum displayed is 9.99 gpm.



CFEWH PREMIUM - 16 LED INDICATOR LIGHT

The 16 LED indicator on the 10 Exterior Cover indicates the operational status of the unit.

LED INDICATOR NOT ILLUMINATED:
No electricity is being supplied to the unit.

SLOW FLASHING GREEN:
Standby mode, waiting for water to be turned on.

FAST FLASHING GREEN:
The unit is operating and water is being heated.

FLASHING RED / THEN GREEN:
The unit is self-diagnosing an error that it will attempt to resolve. When the error has been resolved, the LED will return to slow or fast flashing **GREEN**. "Err" will be shown in the OUTPUT WATER TEMPERATURE SETTING DISPLAY and the error code (starting with "A") will be in the FLOW RATE DISPLAY. See next page for the full list of error codes.

RED CONTINUOUSLY ON:
IRRESOLVABLE / MECHANICAL LOCKOUT ERROR
"Err" will be shown in the OUTPUT WATER TEMPERATURE SETTING DISPLAY and the error code (starting with "F") will be in the FLOW RATE DISPLAY. See page 16 for full list of error codes.

For any additional service questions, contact our customer service at support@microheat.us.

DIAGNOSTICS AND ERROR DESCRIPTIONS

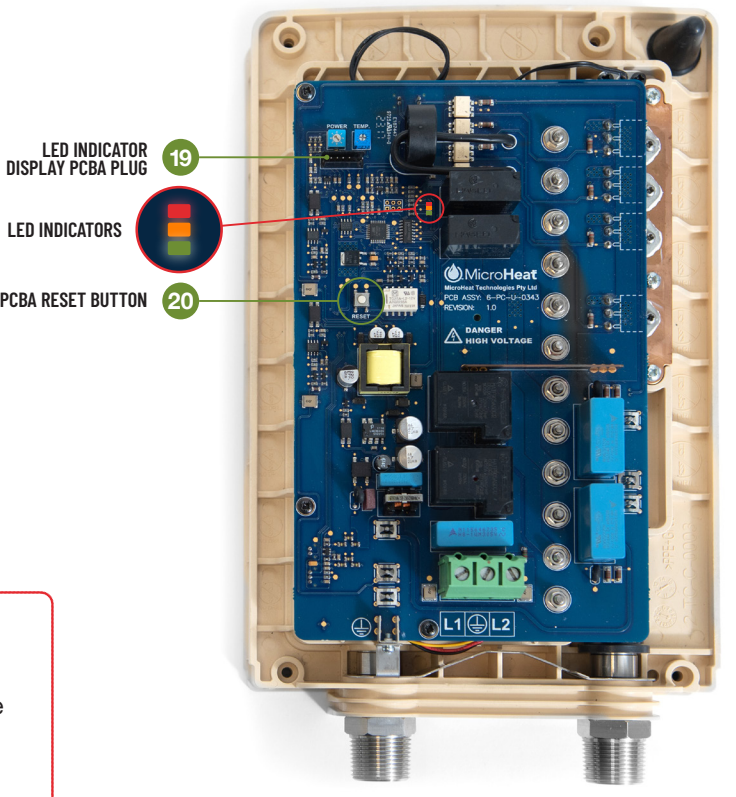
LED DISPLAY	ERROR CODE	ERROR DESCRIPTION / CAUSE	ERROR TYPE
No Color	--	Not powered	No Error
GREEN Slow Flashing	--	Normal operation: STANDBY	No Error
GREEN Fast Flashing	--	Normal operation: HEATING	No Error
ORANGE	--	In priming mode	No Error
RED Flashing	A0	Water conductivity too low	Blocking/Resolving
RED Flashing	A4	Operating temperature too low	Blocking/Resolving
RED Flashing	A5	Operating temperature too high	Blocking/Resolving
RED Flashing	A6	Outlet water temperature 41°F above set point	Blocking/Resolving
RED Flashing	A7	Inlet cold water input sensor open circuit	Blocking/Resolving
RED Flashing	A8	Inlet cold water input sensor short circuit	Blocking/Resolving
RED Flashing	A9	Outlet cold water input sensor open circuit	Blocking/Resolving
RED Flashing	AA	Outlet cold water input sensor short circuit	Blocking/Resolving
RED Flashing	AC	AC mains electrical supply failure	Blocking/Resolving
RED	FA	High temperature limit exceeded >158°F	Mechanical Lockout
RED	Fb	Water conductivity too high	Mechanical Lockout
RED	FC	Earth leakage detection	Mechanical Lockout
RED	Fd	CPU watch dog timer error	Mechanical Lockout
RED	FE	Temperature controller error (A6 error more than 5 times in one operation)	Mechanical Lockout
RED	FF	Unknown failure	Mechanical Lockout

MAINTENANCE

MANUAL INTERVENTION

IMPORTANT: The MANUAL INTERVENTION procedure must only be performed by a licensed professional.

An IRRESOLVABLE / MECHANICAL LOCKOUT ERROR may be resolved by resetting the unit by pressing the 20 PCBA RESET Button. This can be done by following these steps:



1. Remove the 10 Exterior Cover and unplug the connecting cable from the 19 PCBA Plug.

   The three LED indicators on the PCBA will be illuminated when the unit is in standby, running or in error mode.

2. Depress the 20 PCBA Reset Button mounted on the 8 PCBA.

   If the error has been successfully reset, the **GREEN** LED on the PCBA will start to flash slowly, indicating the unit is now in standby mode.

> **IMPORTANT:** If the **RED** LED remains either flashing or illuminated, an error condition is still present. There are NO user-serviceable parts inside the housing, so no further action can be taken. **CALL A QUALIFIED SERVICE TECHNICIAN OR INSTALLER FOR ASSISTANCE.**

3. Reconnect the connecting cable from the 19 PCBA Plug and replace the 10 Exterior Cover.

MAINTENANCE

The unit is designed to provide long and reliable service. Actual life expectancy will vary with water quality and use. The unit itself does not require any regular maintenance.

However, to ensure consistent water flow, it is recommended to periodically remove scale and dirt that may build up in the 13 Inlet Filter, the faucet, or in the shower head.

> **IMPORTANT:** Other than the 13 Inlet Filter, the unit does not contain any user-serviceable parts. In case of malfunction, a trained service agent, licensed plumber or electrician is required.

LIMITED WARRANTY FOR MH SERIES 6

LIMITED WARRANTY FOR MICROHEAT TECHNOLOGIES PTY LTD CONTINUOUS FLOW ELECTRIC HOT WATER HEATER (CFEWH) SERIES.

For the MicroHeat Technologies Pty Ltd Continuous Flow Electric Water Heater SERIES ("CFEWH"), MicroHeat US will replace the CFEWH, which falls within the Warranty Periods and Territory specified below, subject to the warranty conditions and the warranty exclusions. Limited Warranty Period within the Territory (United States) is 2 years from the date of purchase by the consumer. You are entitled to a replacement for a major failure. It is the responsibility of the consumer to provide proof of purchase within the Territory.

WARRANTY CONDITIONS

1. This warranty is applicable only for CFEWH appliances.
2. The CFEWH must be installed in accordance with the MicroHeat CFEWH Installation Instructions, to be supplied with the CFEWH water heater, and in accordance with all relevant statutory and local requirements of the Country or State in which the CFEWH is installed.
3. Where a CFEWH is replaced under warranty, the balance of the original warranty period will remain effective. The CFEWH does not carry a new warranty.
4. Where a CFEWH is replaced under warranty, MicroHeat will provide replacement at its expense. Customer is responsible for return of CFEWH to place of purchase when replacement is permitted under this warranty.
5. The warranty only applies to the CFEWH and therefore does not cover any plumbing or electrical parts supplied by others and not an integral part of the CFEWH, e.g., pressure limiting valve; tempering valves; isolation valves; shut off valves; electrical switches; electrical cabling; pumps or fuse.
6. The benefits of this warranty are the sole warranties made by MicroHeat. ALL OTHER WARRANTIES, RIGHTS, AND REMEDIES OF THE CONSUMER ARE EXCLUDED EXCEPT TO THE EXTENT REQUIRED TO BE PROVIDED UNDER APPLICABLE FEDERAL OR STATE LAW. ANY REQUIRED IMPLIED WARRANTIES ARE LIMITED TO A 2 YEAR DURATION.
7. The CFEWH must be sized to supply the hot water in accordance with the guidelines in the MicroHeat CFEWH literature.

PROCEDURE FOR HONORING WARRANTY

1. To initiate a claim for a warranty against defects, the consumer shall return product to place of purchase for replacement. For additional product information consumer may contact:

MicroHeat US / JVIS USA LLC
52048 Shelby Pkwy
Shelby Charter Township, MI 48315

WARRANTY EXCLUSIONS

Replacement will be carried out as set out in the MicroHeat warranty. However, the following exclusions may cause the MicroHeat warranty to become void:

1. Accidental damage to the CFEWH or any component, including: acts of God; failure due to misuse, abuse, fire or flood damage; incorrect installation; damage as the result of transportation, removal or storage; faulty attempts to repair the CFEWH.
2. Where the complaint is related to circumstances where there is no flow of hot water due to faulty plumbing; where water leaks are related to plumbing and not the CFEWH or CFEWH components; where there is a failure of electricity or water supplies; where the supply of electricity or water does not comply with relevant standards.
3. Where the CFEWH or CFEWH component has failed directly or indirectly as a result of excessive water pressure in excess of 8 bar; incorrect pressure limiting valves; incorrect tempering valve settings; temperature input in excess of 60°C /140°F and/or excessive thermal input; blocked outlet; corrosive atmosphere; foreign matter in the water supply; or ice formation in the pipe work to or from the CFEWH water heater.
4. Where the CFEWH is located in a position that does not comply with the MicroHeat CFEWH Installation Instructions or relevant statutory requirements.
5. Replacement of the CFEWH due to the effects of either corrosive water or water with a high chloride or low pH level caused by unnatural circumstances or when the CFEWH has been connected to a water supply with water conductivity levels that are outside the range of water conductivity outlined in the Installation Instruction Manual.

This warranty excludes any and all claims for damage to furniture, carpets, walls, foundations, or any other consequential loss either directly or indirectly due to leakage from the water heater, or due to leakage from fittings and/or pipe work of metal, plastic or other materials caused by water temperature, workmanship, or other.

MAINTENANCE HISTORY
(SERVICE TYPE AND DATE)

MicroHeat

SMARTER WATER HEATING

MH SERIES 6

CONTINUOUS FLOW ELECTRIC WATER HEATER
CFEWH SERIES 6-13 | SINGLE PHASE - USA

MANUFACTURED BY:
MicroHeat Technologies Pty Ltd.
20 Pickering Road,
Mulgrave VIC 3170
Australia

DISTRIBUTED BY:
JVIS USA, LCC
52048 Shelby Parkway
Shelby Charter Township, MI 48315

Please contact our customer service at:
support@microheat.us

US Patent No. US 7,050,706 B2
Intl PCT Patent No. W003/016791

US72214019

AUSTRALIAN MADE AND OWNED