

CHRONOMITE R-SERIES MIGHTY-MITE WATER HEATERS **INSTALLATION AND OPERATION INSTRUCTIONS (208-277V Models)**

(Before installation, compare electrical requirements needed for the model of heater selected)

TABLE 1 – Electrical Specifications

Model	Wattage	Total Amps	1 Φ Voltage	Circuit Breaker	
				Intermittent Duty	Continuous Duty
R-48x/208	10,000	48	208	50 amp / 2 pole	60 amp / 2 pole
R-48x/240	11,500	48	220-240	50 amp / 2 pole	60 amp / 2 pole
R-58x/208	12,050	58	208	60 amp / 2 pole	80 amp / 2 pole
R-63x/208	13,100	63	208	70 amp / 2 pole	80 amp / 2 pole
R-48x/277	13,300	48	277	50 amp / 1 pole	60 amp / 1 pole
R-58x/240	13,900	58	240	60 amp / 2 pole	80 amp / 2 pole
R-68x/208	14,150	68	208	70 amp / 2 pole	90 amp / 2 pole
R-63x/240	15,100	63	220-240	70 amp / 2 pole	80 amp / 2 pole
R-75x/208	15,600	75	208	80 amp / 2 pole	100 amp / 2 pole
R-58x/277	16,050	58	277	60 amp / 1 pole	80 amp / 1 pole
R-68x/240	16,300	68	220-240	70 amp / 2 pole	90 amp / 2 pole
R-63x/277	17,450	63	277	70 amp / 1 pole	80 amp / 1 pole
R-75x/240	18,000	75	220-240	80 amp / 2 pole	100 amp / 2 pole
R-68x/277	18,850	68	277	70 amp / 1pole	90 amp / 1pole
R-75x/277	20,750	75	277	80 amp / 1 pole	100 amp / 1 pole

x = (L)-Low Activation
(S)-Standard Activation
(H)-High Activation

R-Series MIGHTY-MITE Specifications:

Dimensions: 9-3/4" (H) x 10-1/2" x 4-1/4"
Weight: 10 LBS

Materials:

- Rugged steel housing and cover
- Celcon plastic element assembly with nichrome coils

Minimum Operating Pressure: 25 PSI
Maximum Operating Pressure: 80 PSI
Maximum Pressure: 150 PSI
No pressure relief valve needed, unless required by local code.

Maximum Operating Temperature: 160°F
Listings: UL, UPC

Mounted Unit

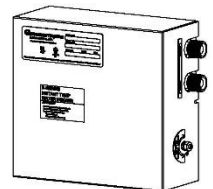
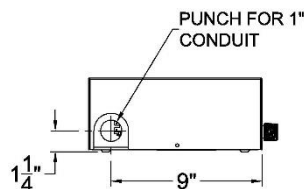
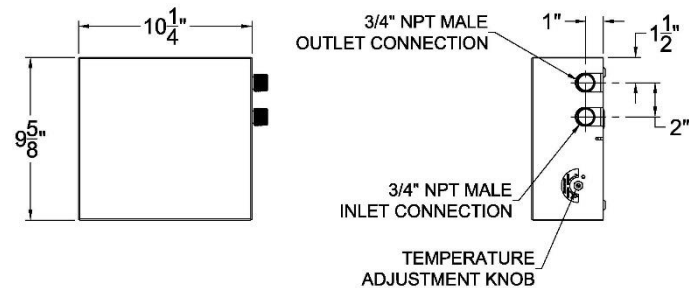


TABLE 2 – Flow Switch Activation

Flow Switch Activation	
Low Activation (L)	0.35 GPM
Standard Activation (S)	0.65 GPM
High Activation (H)	1.80 GPM

THE MANUFACTURER OF THIS WATER HEATER WILL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO FOLLOW THESE INSTALLATION AND OPERATION INSTRUCTIONS.

CAUTION: BEFORE BEGINNING THE INSTALLATION:

1. Turn off circuit breaker to avoid dangerous electrical shocks.
2. Turn off water supply.

INITIAL INSTALLATION:

1. Before installation, compare electrical requirements needed for the model of heater selected in Table 1.
2. Remove heater cover. Mount unit horizontally flush against the wall (See Fig. 1). Water connections will be either on right hand side only. If water connections are at top or bottom, heater is not in correct position. Mount with four screws through the mounting holes located on the base plate housing using molly anchors or fasteners. **CAUTION:** Heating elements may burn out if unit is not mounted with heater modules horizontally.
3. Insure placement of heater allows 5" clearance for screwdriver access to remaining 3 sides of heater to allow cover removal, and future servicing if needed. (See Fig. 1).
4. Attach electrical conduit and fittings to the 1" electrical access hole on either back or bottom of base plate. Access hole can be enlarged to next trade size if needed. Do not attaching wiring yet.
5. Connect plumbing. Use ¾ inch tapered national pipe thread at cold-water inlet and hot water outlet (See Fig. 1). Use unions and valve(s) for ease of installation and possible servicing. Use Teflon tape or pipe sealing compound. Do not apply heat to these fittings, as damage to the heater modules will occur and void warranty. Rough out plumbing with heater in place, then remove heater during soldering of connections.
6. Run water through the unit to expel all air bubbles. Cycle downstream faucet 10x to assist removing air bubbles. This will also pressurize unit. Check for leaks at all fitting joints and also inside heater.
7. If no leaks, proceed to Electrical Installation Section and Figure 2.

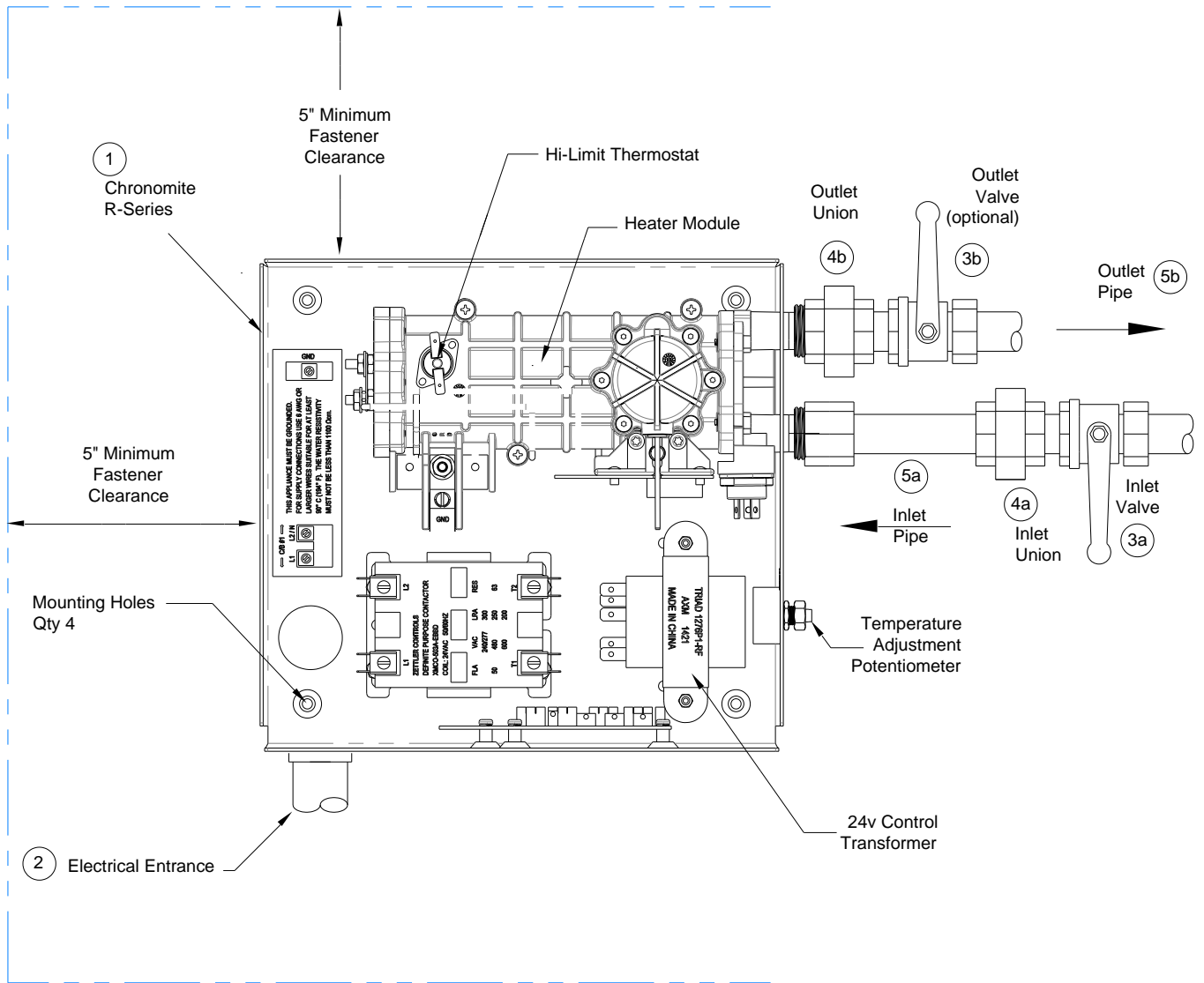


FIGURE 1 - Heater Installation

Items Needed for Installation:

Item	Part No.	Title	Qty	Description
1	R-	Chronomite MIGHTY-MITE R Series	1	See Figure 1
2		Electrical Conduit	Length as required	Enter via Top or Bottom
3a/b		Inlet / Outlet Valve – 3/4" NPT	2	Outlet Valve optional
4a/b		Inlet / Outlet Union – 3/4" NPT	2	
5a/b		Copper Inlet / Outlet pipe – 3/4"	Length as required	
6	L-212	Faucet Flow Control / Dual Thread	6	15/16" Male, 55/64" Female L-212 for (L) Low Activation Models

Items 1 and 6 are supplied

ELECTRICAL INSTALLATION:

1. Connect power supply wires appropriately sized and protected by double pole (208-240v) or single pole (277v) circuit breakers to the input terminals on the heater (hard wired) as shown in the Figure 2 wiring diagrams below. Refer to Table 1 above on Page 1 for the voltage, amp and phase ratings of the supply power.
2. Ensure wires are connected to the respective relay terminals.
3. Ensure water inlet/outlet valves are both open.
4. Turn on circuit breaker. Turn on water flow. Carefully ensure the red LED is illuminated at each circuit board module. The unit is almost ready for use. Shut off circuit breaker.
5. Install cover. Install the (4) cover mounting screws. Turn on circuit breaker. Unit is now ready for use.
6. Local plumbing and electrical codes must be followed in this installation of water heater and the accessories. Failure to comply with code requirements voids warranty.
7. Temperature adjustment potentiometer is standard equipment on (L) Low Activation and (S) Standard Activation models.

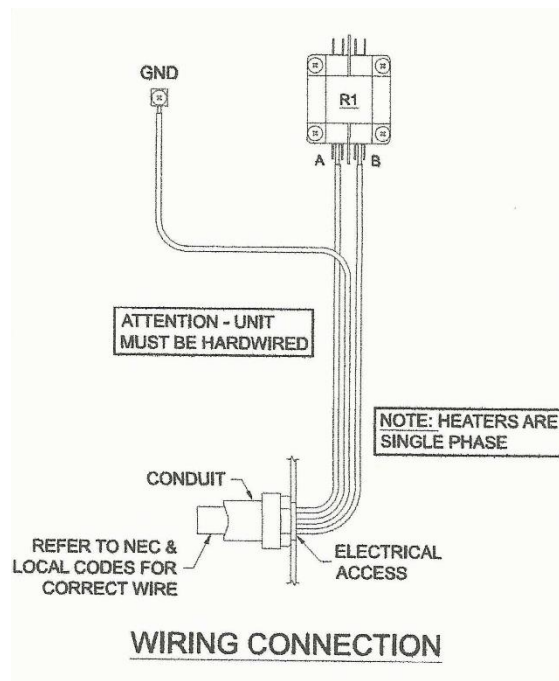
Figure 2 - Wiring Connections

208-240v Module Units

A=L1 (Black) B=L2 (Red)

277v Module Units

A=L1 (Black) B=N (Grey)



IMPORTANT NOTES: Air in the heater may cause the elements to burn out. If the water lines are serviced or drained upstream of heater, be sure to use the following start up procedure:

1. Turn off electrical supply at circuit breaker.
2. Turn on water supply.
3. Expel all air from lines and heater by cycling downstream faucet 10x.
4. Turn on electrical power supply at circuit breaker.

OPERATION INSTRUCTIONS:

- Turn the hot water faucet to activate the flow switch. See Table 2 for activation chart.
- Cold water can always be mixed when using a two handle faucet.
- The microprocessor will supply the correct amount of power (amperage and voltage) to maintain the outlet temperature at the pre-selected temperature with varying flow rates.
- Once you decrease the flow rate below the GPM activation point, the unit will deactivate.
- Periodically inspect the supply lines, connections and heater for any moisture, corrosion or other potential preventable problems.
- Prior to shutting off water valves for servicing, winterization, etc, always disconnect power from unit 1st.
- Unit is intended to heat water only, and does not provide a means of cooling if inlet temperature exceeds set point temperature of heater.

HOW THE LCH MIGHTY-MITE WORKS:

- The engineered plastic case(s) houses a series of ingeniously designed coils that instantly heats water as it flows through the vessel.
- A unique power switch automatically applies electrical current to the coils when hot water is being requested.
- The microprocessor maintains a constant output temperature at the pre-selected temperature.
- The electrical current is not applied to element when the heater is below the activation point or not in use.

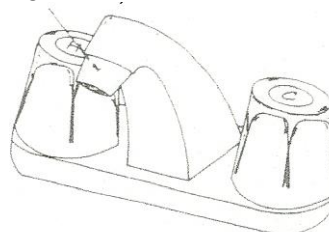
FLOW CONTROLS:

You may want to install flow control(s) in your design. The high quality Omni flow controls allow the water heating system to operate more effectively. Call factory for no charge flow controls if needed.

- Low Activation Heaters – Multi Lavatory Installation: L-212 / 0.5 GPM faucet flow control(s) assures the faucet flow rate will not exceed 0.5 GPM per faucet.
- Standard Activation Heaters – Multi Fixture Installation: A-212 / 2.0 GPM faucet flow control(s) assures the faucet flow rate will not exceed 2.0 GPM per faucet.

FIGURE 3 - Flow Control Installation
Item 6

Flow Control Models	Type	GPM
L-212	Low Flow	0.5
A-212	Standard Flow	2.0



Specifications:

Material: Chrome plated, brass housing.

Threading: Model A212 and L212 have male (outside) threads for Faucets with 15/16" female threads and 55/64" male threads. (See Parts List #6)

Note: Flow controls are adaptable to other thread configurations. Please call factory if an adapter is needed.

Temperature Adjustment Potentiometer - (L) and (S) Activation Models

The potentiometer allows the factory preset temperature of the heater to be changed in the field. The potentiometer will adjust water temperature between 70°F and 125°F provided the wattage of the heater selected is capable of producing the temperature increase at the requested flow rate. See Table 3 temperature chart for each model to determine the temperature range of the heater installed.

When using the potentiometer please use the following operation instructions:

To increase temperature:

- a. Loosen nut
- b. Using a screwdriver, turn screw in small increments clockwise (to the right)
- c. Once temperature of the water is acquired, tighten the nut

To decrease water temperature:

- a. Loosen nut
- b. Using a screwdriver, turn screw in small increments counter clockwise (to the left)
- c. Once temperature is acquired, tighten the nut

Temperature Adjustment - (H) Activation Models

The H model is factory preset for 84°F only and is designed for tepid water use. See Table 3 temperature chart for each model to determine the temperature range of the heater installed.

TABLE 3 – Temperature Rise Chart

Model	Wattage	1Φ Voltage	°F Temp Rise @	
			1.5 GPM	2.5 GPM
R-48x/208	10,000	208	45	27
R-48x/240	11,500	220-240	52	31
R-58x/208	12,050	208	55	33
R-63x/208	13,100	208	60	36
R-48x/277	13,300	277	61	36
R-58x/240	13,900	240	63	38
R-68x/208	14,150	208	64	39
R-63x/240	15,100	220-240	69	41
R-75x/208	15,600	208	71	43
R-58x/277	16,050	277	73	44
R-68x/240	16,300	220-240	74	45
R-63x/277	17,450	277	79	48
R-75x/240	18,000	220-240	82	49
R-68x/277	18,850	277	86	51
R-75x/277	20,750	277	95	57

Microprocessor limits temperature increase according to the pre-selected outlet temperature

- x = (L)-Low Activation
- (S)-Standard Activation
- (H)-High Activation

TROUBLE SHOOTING GUIDE:

Your Large Capacity MIGHTY-MITE water heater has internal user serviceable parts. Contact the factory for guidance on repair or replacement. It can be also returned to the factory for repair or replacement. Please contact factory for return authorization. If after following the Installation Instructions, your LCH MIGHTY-MITE does not heat water in accordance with this literature, please check the following:

1. **Check flow rate** – Controlling flow rate is essential to insure proper temperature rise and heater activation. Check Model for activation type (L), (S), and (H) and refer to Table 2 for flow switch activation points. Relay will engage at the activation point. If relay clicks on, proceed to step 2.
 - a. At 0.35 gpm, it will take approximately 17 seconds to fill a 12 oz. cup of water.
 - b. At 0.80 gpm, it will take approximately 7 seconds to fill a 12 oz. cup of water.
2. **Check Power LED Indicator** – If the circuit board LED does not illuminate with maximum water flow, check circuit breaker.
3. **Low Power** – Make sure of your exact voltage by using a voltmeter. You should obtain your reading off the two box lug terminals on line side of each main relay. Perform this test on each corresponding relay, one at a time. This reading should be between 208-277v for each line side of relay. Compare this reading against the voltage specified in Table 1.
4. **Low Voltage** – The percentage of reduction in voltage will result in a like reduction in temperature rise. Note: 240v models when operated at 220v will have approximately a 15% wattage decrease.
5. **Low Amperage Draw** – Check amperage draw at full water flow using an Amperage probe. Please compare your results with Table 1 to determine if the heater is operating correctly.
6. **High-Limit Thermostat** – Shut off power on circuit breaker. Remove cover. Push in reset button on module. Refer to Figure 1 for location(s).
7. **Heater Element(s)** – Shut off power on all breakers. Remove cover. Measure element resistance by using an ohmmeter or multi-meter. Obtain your reading off of one termination rod with brass nut and bottom center tap on each heater module. This reading should be between 6 and 30 ohms for each element.
8. **Length of pipe** – Length of pipe run will affect time to temperature at the faucet. This LCH heater should be mounted strategically when possible to minimize pipe length to the faucet points.
9. **Check Shut-Off Valve(s)** – Check inlet and outlet valves and make sure valve is open 100% to allow full water pressure to heater. Models require a minimum of 25 PSI.
10. **Freezing** – MIGHTY-MITE heaters cannot be installed in a location subject to freezing and must be protected. Winterize if stored in a location subject to freezing. Disconnect power and the inlet/outlet fittings. Blow air through the highest fitting to assist draining. Install RV antifreeze for protection. Failure to winterize will result in freezing and cracking. Re-commission heater start up procedure on page 5.
11. **Problems?** – Call our toll-free hot line (800) 447-4962 or (626) 937-4270.

Exclusive 12-Month Warranty

Your LC MIGHTY-MITE water heater has been engineered and built to the highest quality standards and is backed by a full, factory warranty. Every LC MIGHTY-MITE water heater is guaranteed to be free from defects in material and workmanship for a period of one (1) year from the date of purchase. The above warranty applies to original purchaser if unit is installed following Chronomite Laboratories, Inc.'s Installation Instructions provided. Chronomite Laboratories, Inc. will repair or exchange parts at the factory at no cost. This warranty is limited to repairing or replacing said products which prove to be defective upon factory inspection FOB City of Industry, CA

Exclusion of coverage from this limited warranty:

1. Chronomite is not liable under this limited warranty or otherwise if the water heater has not been installed or maintained in accordance with Chronomite's printed instructions or installed with improper installation materials. In addition, the water heater or any of its component parts have been subject to misuse, neglect, alteration or accident and the water heater has not been installed in accordance with the applicable local plumbing and or building codes and/or regulations.
2. Chronomite is not liable under this warranty if the water heater has not been continuously supplied with potable water or the water inlet temperature is above Chronomite's recommended maximum temperature. In addition, water heater experiences any water pressure or flow interruptions, normal operation inlet water pressure is outside of the published specification (UPC 2009), or exposed to any condition that causes the heater to turn on before the air is purged from the heater also known as "dry fire."
3. Chronomite is not liable if the water heater has been exposed to conditions resulting from floods, earthquakes, winds, fire, freezing, lightning or circumstances beyond Chronomite's control, or has been used for other than the intended purpose.

If violation occurs from the stated exclusions of coverage from this limited warranty or thereafter; owner, and not Chronomite or its agent/representative, is liable for and shall pay for all field charges, labor, water heater, damage or other expenses incurred in the repair or replacement of the water heater.

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