



Commercial Electric Troubleshooting Tables

NATURE OF TROUBLE	POSSIBLE CAUSES	SERVICE
No Hot Water	Manual switch turned off Blown service panel fuse or breaker High limit switch tripped Thermostat faulty Faulty contactors (open) One or both transformer fuses are blown Thermostat out of calibration Improper wiring a. Shorted or loose wiring b. Undersized service wire	Turn to ON Replace or reset Manually reset ECO button Check and replace Check and replace Check and replace Check and replace Check and rewire Rewire per wiring diagram
Not Enough Hot Water	Thermostat set too low Faulty element(s) Faulty Contactors (open) Faulty fuse on fuse block Improper or loose wiring Improper heating elements Scale formation on heating elements Thermostat not flush with tank Poor grounding of tank Heater is undersized Damaged dip tube (ELDs only)	Increase thermostat Check for open or grounded elements and replace Check and replace Check and replace Rewire per wiring diagram Check and tighten Check wattage/voltage to rating plate and replace Check elements; clean or replace Position thermostat so back touches the tank. Make sure cavity insulation covers thermostat Check grounding and tighten Resize and compare Check and replace
Water too hot	Thermostat setting too high Thermostat out of calibration Thermostat not flush with tank Faulty contactors (closed)	Lower thermostat setting Check and replace Position thermostat so back touches the tank Check contactors and replace
Blows fuses and / or trips breaker	One or more elements are grounded Loose terminal screws on heating element(s) Faulty contactors Undersized heater	Check and replace Check and tighten Check contactors and replace Resize and compare
Slow hot water recovery	Heating elements too small Faulty contactors Fuses on fuse block are blown	Check wattage and replace Check contactors and replace Check fuses and replace



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Noisy water heater	Scale build-up on elements High watt density elements in the heater Contactors are 'chattering'	Remove, clean or replace Install low watt density elements Check for foreign material in the contactors. Check for broken or weak spring
Excessive relief valve operation	Excessive water pressure (just a little water from the T&P) Excessive temperature (a whole bunch of water from the T&P)	Install proper expansion tank on cold side Check for open or closed system. Install thermal expansion tank Check thermostat; lower setting or replace. Thermostat not flush with tank Check contactors to see if two or more are closed.
Rusty or black water	Scale formation on elements Anode rod dissolved Excessive sediment build-up	Clean or replace elements Check anode rod and replace Try to drain tank; replace tank if sediment build up is excessive
Water heater is leaking (Caution: Do not confuse normal T&P operation as a leaking tank. If the puddle dries up, then look for a T&P problem.)	Cold in or hot out joints T&P valve Heating elements, anode rod and gaskets Inner tank has a pin hole	Check joint and repair Check valve and replace Check, tighten and replace Replace water heater (When diagnosing a leaker - you will notice a puddle of water on the floor, next to the heater, that will not go away.)



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Multi-Stages, Series and Parallel Installation

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Not Enough Hot Water	Thermostats set too low Faulty element(s) Faulty Contactors (open) Faulty fuse on fuse block Improper or loose wiring Improper heating elements Poor grounding of tank Heater is undersized	Increase thermostat setting Check for open or grounded elements and replace Check and replace Check and replace Rewire per wiring diagram Check and tighten Check wattage/voltage to rating plate and replace Check grounding and tighten Resize and compare
Water too hot	Thermostat setting too high Thermostat out of calibration Faulty contactors (closed)	Lower thermostat setting Check and replace Check contactors and replace
Blows fuses and / or trips breaker	One or more elements are grounded Loose terminal screws on heating element(s) Faulty contactors Undersized heater	Check and replace Check and tighten Check contactors and replace Resize and compare