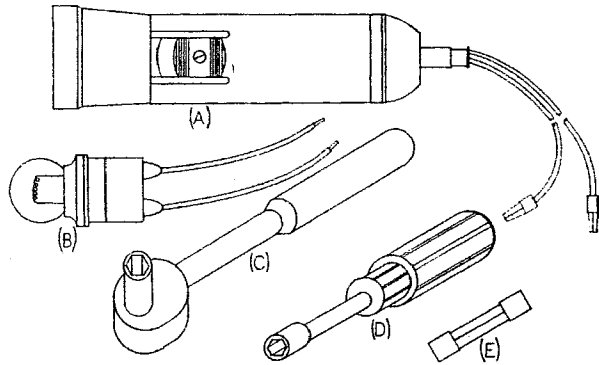




## TROUBLE SHOOTING

WHEN ALL ELSE FAILS, READ THE DIRECTIONS!



Suggested special equipment: (A) Continuity tester. (B) Test light 120V, small clear bulb. (C) 1/4" drive ratchet with 3/8" socket. (D) 1/4" nut runner for power supply. (E) Spare fuses and gaskets.

### IS SYSTEM WIRED CORRECTLY?

**AUTOMAG Zone Valves** are "Normally Open"(powered closed) and operate with **24 volts DC**.

**TEST WIRING:** Turn down all thermostats. Heating system should be off (demand circulation systems). Place **IRON NAIL** at the end of each valve stem. **NAILS** should be held in place by magnetism. A weak magnetic pull indicates that the valve is stuck open. Turn thermostats up one at a time. Appropriate nail should fall off the valve stem. The heating system should come on. If the system does not check out O.K., recheck wiring very carefully. Make sure that each thermostat is wired to the correct, matching zone valve. Valves should be magnetized only when zone is not calling for heat(thermostat is satisfied).

**NO MAGNETISM:** When checking for magnetic pull if none of the valves show signs of magnetism, check fuse. If fuse is blown, (a) Turn of power, (b) Disconnect "W" return conductor from each valve from "W" terminal block. (c) With thermostats turned down, make sure there is no continuity between each "W" return conductor and "R" terminal block. Repeat with thermostats turned up. Correct wiring as required.

Before reconnecting wires, **CHECK RECTIFIER.** With "W" wires disconnected and low voltage fuse removed, check for continuity between input(AC) leads of rectifier. Reverse continuity tester leads and check again. If light lights up in either case, replace rectifier.

**ALTERNATE RECTIFIER CHECK:** With "W" thermostat wires disconnected from power supply, and with power on, replace low voltage fuse. If fuse blows immediately, replace rectifier.

**SILICON RECTIFIERS** are very reliable when properly used. However, a massive short in the system or sparking across the rectifier output, can destroy a rectifier. Occasionally, lightning will destroy a rectifier.

**THERMOSTAT CHECK:** With thermostat turned up (calling for heat) there should be continuity between "R & B" terminals only. With thermostat turned down(satisfied) there should be continuity between "R & W" only.

**TRANSFORMERS** may be checked with test light. With power on, 24 VDC output will cause bulb to glow dimly. Bulb will light brightly with 120 VAC input. **NEVER** "spark" a transformer.

**OTHER POSSIBILITIES:** (a) Occasionally, a rectifier with an internal short will produce about 12 VDC (half wave). Check voltage with DC voltmeter.

(b) Extra long thermostat wires and/or too light a gage(lighter than 18) and/or too many zones on a single conductor can cause excessive voltage drop. Voltage at valve should be 20 VDC minimum.

(c) Is thermostat screwed on wall too tightly.

(d) **HEATING SYSTEM STAYS ON WITH ALL THERMOSTATS SATISFIED**(turned down). Disconnect all "B" thermostat wires from "B" terminal block. Reconnect one at a time until system comes on, thus isolating faulty circuit. Correct the short by replacing the shorted conductor wire. If heating system stays on with all "B" thermostat wires disconnected, look for trouble in boiler wiring.

### MECHANICAL CHECK LIST

(a) **NO HEAT CAUSES:** Air in line? Zone valve installed backwards? Manual valve left closed? Frozen pipe? Massive obstruction in line? Is circulator operating?

(b) **OVERHEATING:** Foreign matter in valve? Valve stem damaged, marked, or squeezed? Zone valve locked tight with leak sealer? Circulating pump more powerful than valve rating? Split in loop? Each zone must start as one line and return as one line, or cross-feed can cause overheating.

A light tap on the base can sometimes free a stuck valve. **NEVER** tap the stem or handle it with any tool!