

TROUBLESHOOTING CHART

LED CODE	PROGRAMMER LCD DISPLAY	EXPLANATION	POSSIBLE CAUSE
1,1	HW FAILSAFE	Self-test or watchdog fault.	1. Controller defective.
1,2	THROTTLE FAULT 1	Wiper signal out of range (pot low fault).	1. Throttle input wire open. 2. Throttle input wire shorted to B+ or B-. 3. Throttle pot defective.
1,3	SPEED SENSOR FAULT	No pulses from sensor.	1. Speed sensor not connected. 2. Speed sensor defective.
1,4	HPD	High Pedal Disable fault.	1. Improper sequence of direction and throttle inputs.
1,5	MOTOR STALL	Motor stall at current.	1. Slope too steep for vehicle weight. 2. Mechanically locked motor. 3. EM brake wiring failure. 4. Speed sensor defective.
2,1	LOW BATTERY VOLTAGE	Low battery voltage.	1. Battery voltage < undervoltage cutback threshold. 2. Corroded battery terminal. 3. Loose battery or controller terminal.
2,2	OVERVOLTAGE	Overvoltage.	1. Battery voltage > overvoltage shutdown threshold. 2. Vehicle operating with charger attached. 3. Battery disconnected during regen braking.
2,3	THERMAL CUTBACK	Over-/undertemperature cutback.	1. Temperature > 85°C or < -25°C. 2. Excessive load on vehicle. 3. Improper mounting of controller 4. Operation in extreme environments.
2,4	MAIN DRIVER ON	Main contactor coil held low.	1. Main contactor missing or wire to coil open. 2. Controller defective.
2,5	AUX COIL FAULT	Missing aux (brake, relay) coil.	1. Aux coil open or not connected.
3,1	MAIN DRIVER OFF	Main contactor driver held high.	1. Main contactor coil shorted. 2. Controller defective.
3,2	MAIN WELDED	Main contactor welded.	1. Main contactor stuck closed. 2. Main contactor driver shorted.
3,3	PRECHARGE FAULT	Internal voltage too low at startup.	1. External short, or leakage path to B- on external B+ connection. 2. Controller defective.
3,4	FIELD MISSING	Field winding fault.	1. Motor field wiring loose. 2. Motor field wiring open.
3,5	AUX DRIVER OFF	Aux (brake, relay) driver held high.	1. Aux coil shorted. 2. Controller defective.
4,1	CURRENT SENSE FAULT	Armature or field current sensor fault.	1. Controller defective.
4,2	DRIVER OVERCURRENT	Contactor driver or aux driver overcurrent.	1. Contactor or aux coil shorted.
4,3	M- SHORTED	Internal M- short to B-.	1. Controller defective.
4,4	AUX RELAY DNC	Aux relay did not close.	1. Aux relay missing or wire to coil open.

TROUBLESHOOTING CHART, cont'd			
LED CODE	PROGRAMMER LCD DISPLAY	EXPLANATION	POSSIBLE CAUSE
4,5	WELDED AUX RELAY	Welded aux relay.	1. Aux relay stuck closed. 2. Aux relay shorted.
5,1	KEY SWITCH SRO	SRO fault.	1. Keyswitch not off at power-up. 2. Keyswitch shorted.
5,2	MAIN COIL OPEN	Missing main contactor.	1. Main contactor coil open or not connected.
5,3	AUX DRIVER ON	Aux (EM brake or WalkAway™ relay) driver coil held low.	1. Aux output short to ground. 2. Controller defective.
5,4	CIRCUIT BRKR OPEN	Circuit breaker or fuse open in WalkAway™ circuit.	1. Breaker/fuse tripped or open. 2. Breaker/fuse defective. 3. Relay/fuse sense line broken.
5,5	MAIN DROPOUT	Main contactor open.	1. Main contactor defective.

LED DIAGNOSTICS

A built-in Status LED is visible through a window in the label on top of the controller. When the controller detects a fault, the Status LED flashes the 2-digit fault code. The code is flashed continuously until the fault is corrected. For example, code “3,2”—welded main contactor—appears as:

□ □ □ □ □	□ □ □ □ □	□ □ □ □ □	etc.
(3 , 2)	(3 , 2)	(3 , 2)	

The codes are listed in the Troubleshooting Chart. Only one fault is indicated at a time, and faults are not queued up. If multiple faults are active simultaneously, the code of the highest priority fault is flashed. After all faults have been cleared, the code of the last active fault will continue to flash for one minute. This feature is designed to help service personnel identify intermittent faults when no programmer is available.

These same fault codes will also be flashed by the external fault LED (connected to Pin 22), if one is included in the system.