



**NOTICE: Always refer to the appropriate Vehicle Service Manual when troubleshooting electrical problems. See all GENERAL INSTRUCTIONS WARNINGS AND PRECAUTIONS**



**SEVCON PowerpaK**

**Diagnostic LED**

This is mounted between the connectors on the front of the controller, It serves as a simple diagnostic tool as explained below:

Number of Flashes	Fault Description
Constant illumination	No fault, normal condition
LED extinguished	Internal controller fault
1	Personality out of range
2	Illegal start condition or illegal steer switch inputs
3	MOSFET Short Circuit
4	Contactora fault or Motor Open-Circuit
5	Not used
6	Accelerator, Steer Pot or Speed Probe wire fault
7	Low or High battery voltage or BDI cut-out operating
8	Over Temperature
9	Contactora coil s/c
10	Encoder Fault
12	CAN bus fault

**Fault Messages and LED status / number of flashes**

The fault messages are displayed on Calibrator, Display, and PowerpaK LED. The format for the faults shown on the display is as follows:

Fxxyyy

x = Fault level (5 being the highest priority faults)

y = Fault number within that level

Display Message	Calibrator Message	Led	Description and how to clear	Check...
Hours counter	OK (lowest priority)	on	Traction operational and OK	No action required.
F01004	BDI Cutout	7F	BDI enabled and cut-out action initiated.	Battery charged.
F01005	Thermal Cutback	8F	Traction heatsink above 75C. Allow controller to cool.	Heatsinking, mounting, Surfaces clean, fan req.
F01008	Encoder Fault	10F	Speed encoder faulty or not connected, but configured on Digital i/p 6 config (Skt B pin 7)	Check speed encoder connection / functionality
F02000 (wire-off)	Accelerator Fault	6F	Accel. Pedal pressed at power up, or wire off. Recycle FS1 and Direction.	Accel. wiring. Accel Zero & Full Personalities.
F02001 (power-up)			Direction or FS1 switch at power up. Recycle Directions or both.	
F04003	Sequence Fault	2F	Two directions selected together. Recycle both Directions and FS1	Dir and FS1 in neutral and Dir / FS1 wiring.
F04004	2 Direction Fault	2F	Dir. Switch selected > 2 seconds after FS1. Recycle FS1 and Dir.	Direction switch wiring.
F04005	SRO Fault	2F	Drive selected and no seat switch. Recycle Dir and FS1 switch	Dir first then FS1, FS1 and Dir. Switch wiring.
F04006	Seat Fault	2F	Inch switch at power up, both inch switches selected, or inching attempted with seat switch or Dir / FS1 selected. Recycle inch switches.	Seat switch, closed, seat wiring.
F04007	Inch Fault	2F	Battery < low battery personality. Recycle FS1 or Direction switch	Inch switch in neutral at power up, only 1 selected, Seat / Dir / FS1 switches open.
F04009	Battery Low	7F	Battery < High battery personality. Recycle FS1 or Direction switch	Correct battery voltage, Discharged battery.
F04010	Battery High	7F	Capacitor Voltage > High battery personality. Recycle FS1 or Direction Switch	Correct battery voltage. Loose or missing B+ to controller.
F04013	Capacitor High	7F	Pers Error	Reset personalities out of range (displayed as ----.-).
F04011	Pers Error	1F	One or more personalities have been corrupted.	Check all personalities then recycle key switch.
F04012	CRC Error	1F	A contactora coil s/c or miswired. Recycle Key switch	Coil s/c, Drive connected directly to B+ve, wiring.
F05000	Coil s/c	9F	MOSFET s/c Recycle FS1 or Direction	A / F1 F2 / B- power wiring, MOSFETs s/c.
F05006 (drive)	Mosfet s/c	3F	Battery Positive on controller before expected	Check line contactor, shorted motor cables to B+
F05009 (power-up)			Line Contactora did not close	
F05008	Line Contactora Welded	4F	Line contactora did not close after key on or main line fuse is blown	Check line contactora and / or main fuse
F05046	Line Contactora did not close	4F		
Various internal controller power up messages (highest priority)	Various internal controller power up messages (highest priority)	off	If any of these messages are displayed then the controller has failed one of the internal power-up checks.	Contact Sevcon.