SURE POWER INDUSTRIES, INC.

180070E

MODEL 135000 SERIES LOW VOLTAGE DISCONNECT (LVD) INSTALLATION INSTRUCTIONS

1. Determine which loads are to be switched by the model 135000 SERIES LVD.

2. Disconnect battery or batteries following vehicle manufacturer's procedure.

3. Mount the LVD in a convenient location near the batteries or in cab or sleeper cabin, or storage area, if applicable. If the LVD is mounted in the battery box, a corrosion inhibitor should be applied to ALL of the terminals and electrical connections after the installation is complete.

4. GROUND CONNECTION: Using a 14 gauge wire, connect the LVD GROUND terminal to a good chassis ground or directly to battery negative (-). For best results, connect the GROUND terminal directly to battery negative (-) if at all possible. GROUND must be connected, otherwise, possible damage to the LVD may occur.

5. V IN CONNECTION: Using 8 gauge wire, connect the V IN terminal directly to battery positive (+). Use of a 50-amp circuit breaker is recommended in this battery line. Install the breaker near the battery.

6. V OUT CONNECTION: Using 8-gauge wire, connect the V OUT terminal to the loads to be disconnected by the LVD. It is recommended that the loads to be disconnected be protected by a fuse or circuit breaker. For example if the loads to be disconnected are Class 8 truck sleeper cab loads, each load or each load branch should have its own fuse or circuit breaker protection. If the loads to be disconnected are newly installed loads it is recommended that a fuse block be installed between the LVD and the loads. If the loads to be disconnected are existing loads, a fuse block may already be installed. In either case the switched output (V OUT) of the LVD should connect to the power input of the fuse distribution block. (See connection diagram.)

7. SENSE CONNECTION: Connect SENSE to battery positive (+) using 14 GA wire. The LVD uses the sense connection as the voltage reference point and any voltage loss in this connection will cause the LVD to disconnect prematurely. If the connection to V IN is of sufficient gauge wire and does not have significant voltage losses, SENSE can be connected directly to V IN. SENSE must be connected for operation.

8. START/TEST CONNECTION: (OPTIONAL) The START OVERRIDE function is an override which will prevent the LVD from disconnecting during starting. Normal starting conditions will cause the battery voltage to drop slightly. However, cold weather starting can cause the battery voltage to drop to 10V or less. If, prior to starting, the LVD is connecting the loads and it is not desirable for the loads to be disconnected during starting (for example a satellite or computer system which will require reprogramming), START OVERRIDE will prevent load disconnect during starting and for approximately one minute after starting if the engine does not start and the battery voltage does not rise above the existing set point. To achieve this function, connect the START OVERRIDE terminal to the start position of the key switch or to the coil terminal of the starter or pilot solenoid. If this function is desired any time the key switch is on, connect the START OVERRIDE to the ignition/run position of the key switch. Now, any time the key switch is on, the LVD will connect the loads.

9. MANUAL OVERRIDE (O/R): (OPTIONAL) MANUAL OVERRIDE is similar to START OVERRIDE but will either keep the unit on all of the time or off all of the time. To manually connect the loads, connect O/R to a positive voltage. To disconnect the loads, connect O/R to ground (See connection diagram). A typical use for the MANUAL OVERRIDE OFF would be for vehicle storage. It is recommended that the MANUAL OVERRIDE ON function not be made readily available unless absolutely necessary. Overriding the disconnect function will defeat the purpose of the LVD. The OVERRIDE ON function was designed primarily for emergency use only.
10. ALARM CONNECTION: (OPTIONAL) this connection is used for a remotely located alarm which draws a maximum of 20mA. This output gives a warning indicating that the loads will be disconnected in approximately one minute. When the (+) side of the alarm is connected to V IN, the alarm will be triggered indefinitely while in the disconnect mode. When the (+) side of the alarm is connected to V OUT, the alarm

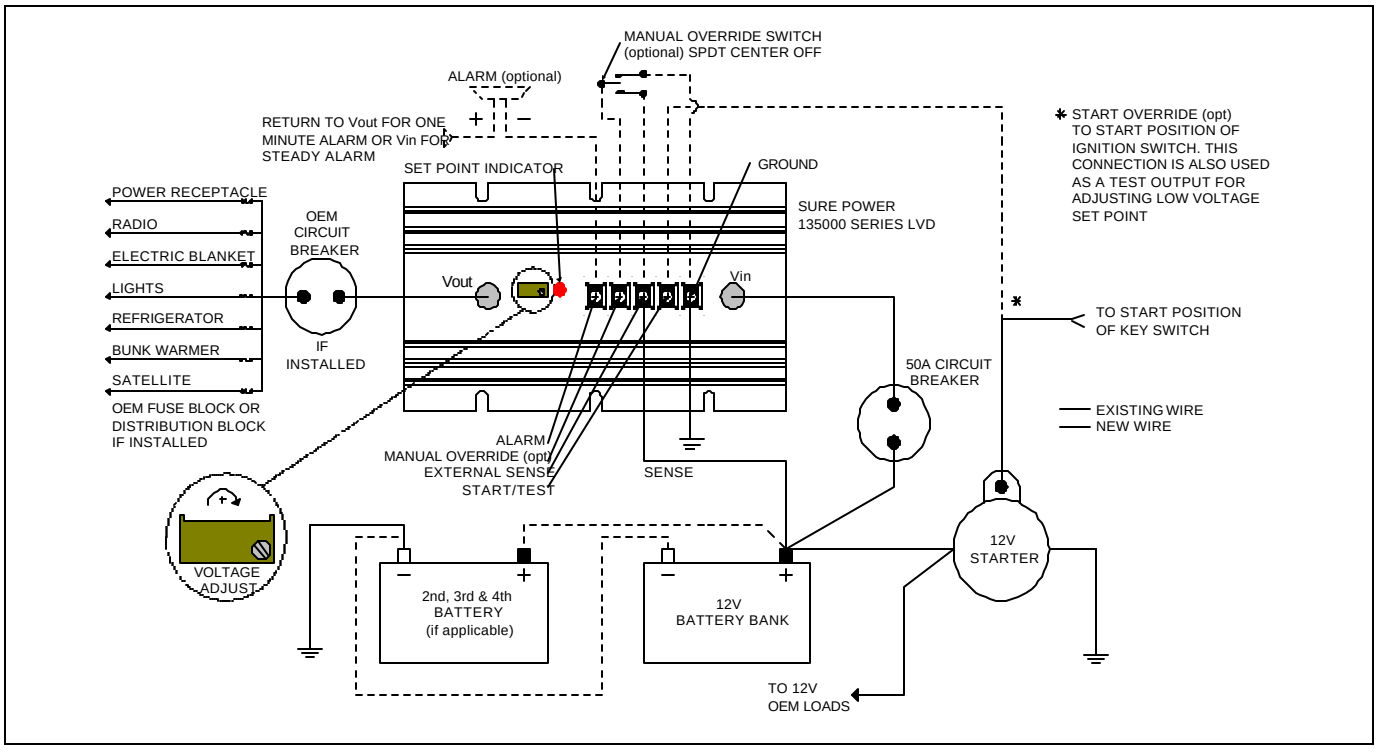
will be triggered for approximately one minute (See connection diagram).

SET POINT VERIFICATION OR ADJUSTMENT

Setting the LOW VOLTAGE DISCONNECT SET POINT: **DO NOT ADJUST SET POINT UNLESS ABSOLUTELY NECESSARY.** The LVD is factory set to disconnect at 12.3V (Model 135000) or 11.8V (Model 135001) or 12.1V (Model 135002) and reconnect at 13.0V. The reset point is not adjustable, however the disconnect set point is adjustable from 11.0 to 12.5V DC. Due to a delay of approximately one-minute, it is difficult to adjust the set point by monitoring the V OUT terminal. Therefore a SET POINT INDICATOR LIGHT has been made available.

1. While the LVD is connecting loads the SET POINT INDICATOR LIGHT is off.
2. While the LVD is disconnecting loads the SET POINT INDICATOR LIGHT is on.
3. Connect a voltmeter between SENSE and GROUND.
4. Turn on voltmeter and set to 20V DC setting.
5. To verify set point turn the LVD on by momentarily jumping O/R to V IN.
6. Slowly decrease battery voltage by applying loads or a carbon pile. Observe the SET POINT INDICATOR LIGHT.
7. When the SET POINT INDICATOR LIGHT switches from off to on, the reading displayed on the voltmeter is the set point.
8. Repeat steps 5-7 if necessary. To adjust set point, rotate potentiometer clockwise to increase voltage. Each full turn will adjust the voltage approximately 0.1V.

CONNECTION DIAGRAM



10189 SW Avery Street · Tualatin Oregon 97062 · Tel (503) 692-5360 · Fax (503) 692.9091 · www.surepower.com