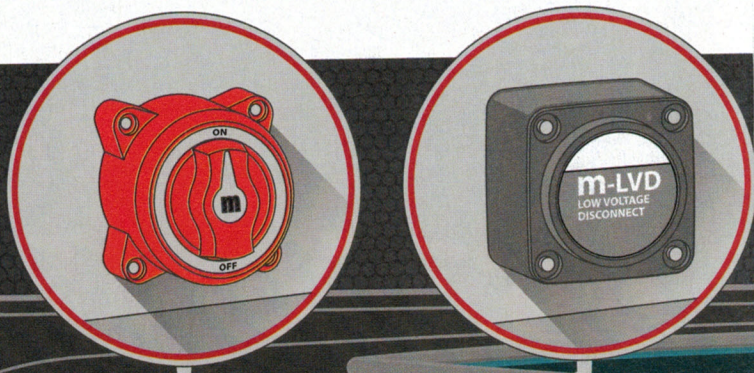
WEEKEND WORKBOOK

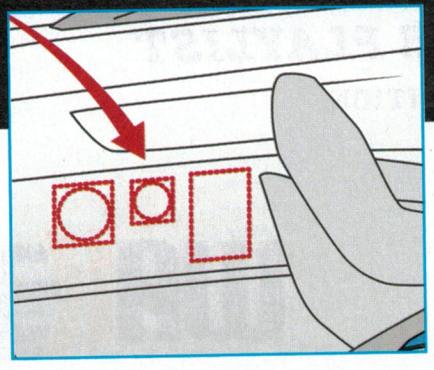
Install a Low-Voltage Protection System

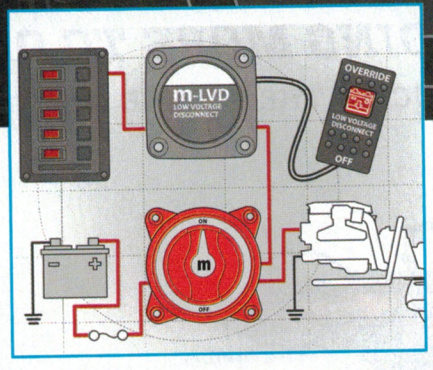
BLUE SEA SYSTEMS' M-LVD HELPS PRESERVE YOUR STARTING BATTERY.

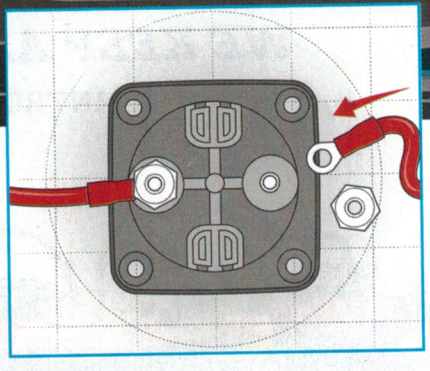
Many runabouts have just a single battery that's called upon to power multiple 12-volt components as well as start the engine. The trouble is, a stereo playing all day while you relax at the sandbar or a baitwell pump left on inadvertently can deplete the battery, leaving you with insufficient juice to start the engine.

Blue Sea Systems' m-LVD (Low Voltage Disconnect) is a "smart switch" that prevents dead starting batteries by disconnecting non-essential circuits before the voltage reaches a critically low level. While the m-LVD is not designed to replace the main battery's on/off switch, you can also use it to shut off the accessory circuit. The m-LVD also allows you to override the auto shut-off. Before you get started, turn off the battery switch and disconnect both the positive and negative battery cables. — *Jim Hendricks*





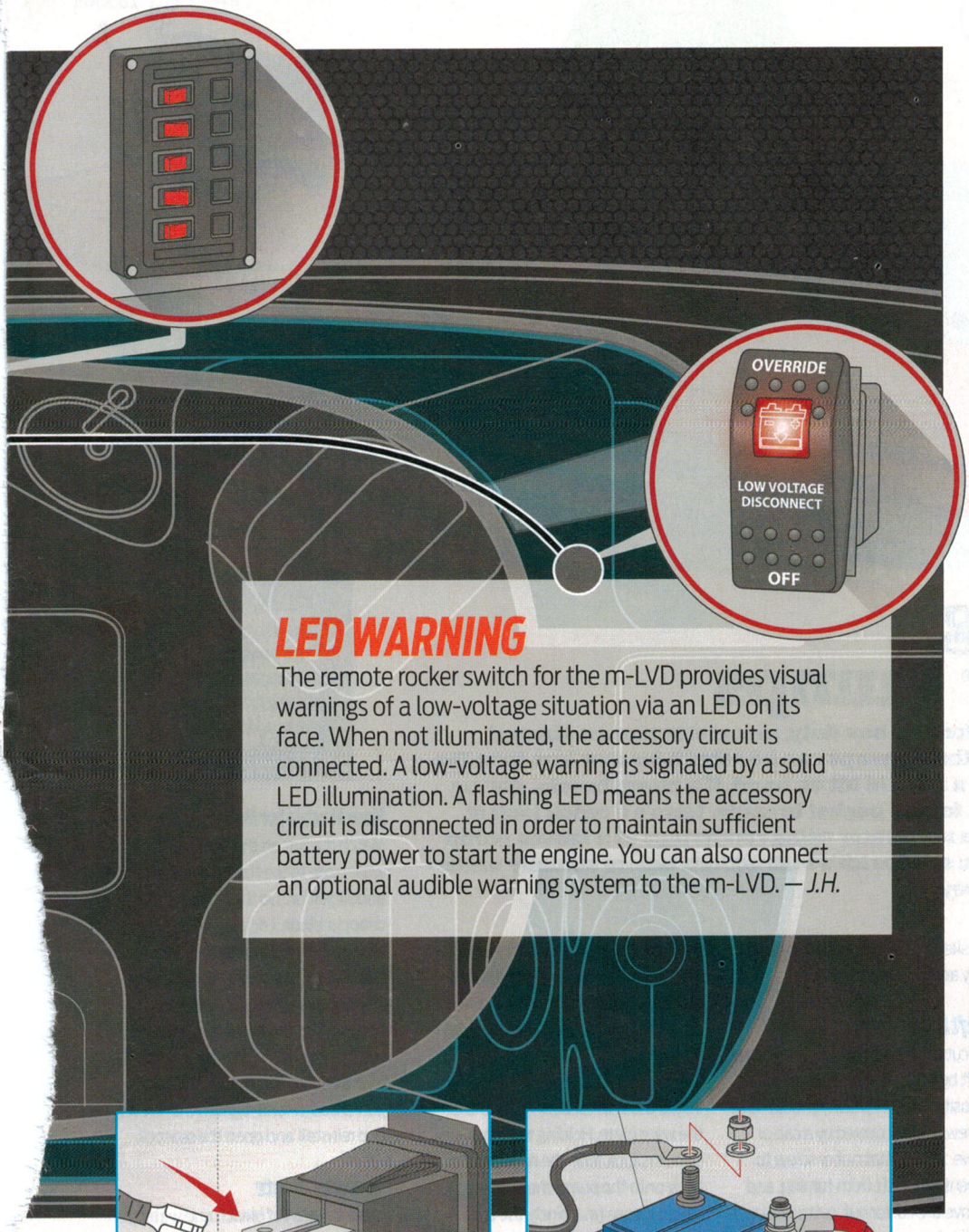




1 SELECT A LOCATION Blue Sea Systems' m-LVD main module is designed for a surface-mount installation. To minimize the required wire size, choose a location close to the battery's on/off switch where you can securely through-bolt the m-LVD. With a maximum rating of 65 amps, the module occupies a 2¾-inch square footprint. Also select the location for the remote-control rocker switch. Make sure there is nothing obstructing your ability to route wires and cables between the m-LVD, battery switch, rocker switch, negative bus bar and accessory distribution panel.

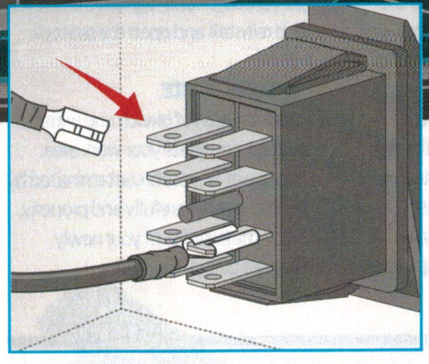
2 ROUTE THE WIRES Run the cables and wires between the locations for the battery switch, m-LVD, remote rocker switch, negative bus bar and accessory distribution panel as shown in the installation diagram. Use the Blue Sea Systems Circuit Wizard (circuitwizard.bluesea.com) to determine the appropriate cable size (per American Boat and Yacht Council standards) to connect wires and cables. Also use the Circuit Wizard to determine the rating (based on cable length and amp draw) for a fuse between the battery switch and m-LVD.

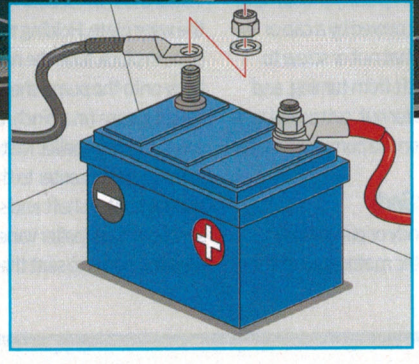
3 CONNECT THE M-LVD Remove the snap-on back cover of the m-LVD and connect to lug A the cable leading to the battery switch and a fused wire leading to the remote rocker switch. Connect to lug B the cable leading to the accessory distribution panel. Tighten the lug nuts to no more than 60 inch-pounds of torque. Connect the wires to spade connectors No. 2 and No. 4 leading to the remote rocker switch. Connect spade connector No. 1 to the wire leading to the negative bus bar with a 10-amp in-line fuse. Snap the cover back on and mount the m-LVD.



LED WARNING

The remote rocker switch for the m-LVD provides visual warnings of a low-voltage situation via an LED on its face. When not illuminated, the accessory circuit is connected. A low-voltage warning is signaled by a solid LED illumination. A flashing LED means the accessory circuit is disconnected in order to maintain sufficient battery power to start the engine. You can also connect an optional audible warning system to the m-LVD. — *J.H.*





4 INSTALL THE ROCKER SWITCH If you have an open spot on your dash panel of rocker switches, this Carling-style switch will snap into place. Connect the wires from the m-LVD to the appropriate spade connectors on the back of the switch as outlined in the installation manual. You will need to split the line from lug A on the m-LVD to connect to two points on the back of the switch (spade connectors No. 3 and No. 8), then connect a line from the common negative bus bar to spade connector No. 1 on the back of the remote switch.

5 RECONNECT THE BATTERY Reconnect and tighten the battery cables and turn the battery switch to "on." No illuminated LED on the front of the rocker means the battery has sufficient power to start the engine (see "LED Warning"). Turn on each accessory to make sure each has power. Also start the engine (make sure it has cooling water) to ensure the starting circuit is operating. Once you are confident everything works properly, bundle and secure the wires and cables with plastic wire tires along their entire runs.

ILLUSTRATIONS: TIM BARKER

GETTING STARTED

SKILL LEVEL

TIME TO COMPLETE

4 HOURS

TOOLS AND SUPPLIES

- Blue Sea Systems' 7635 m-LVD (Low Voltage Disconnect; $70.15, pbsboatstore.com)
- Marine-grade tinned wire and cable (lengths and gauges depend on the boat size and installation)
- Crimp-on cable terminals (match cable gauge)
- Crimp-on female spade connectors (match wire gauge)
- Shrink tubing (match wire and cable gauge)
- Diagonal cutters
- Wire strippers
- Crimping tool
- Power drill and bits
- Screwdriver set
- Box/open-end wrench set
- Electrician's snake (for running wires and cables)
- Spool of cord (for pulling wires and cables)
- Wire ties

QUICK TIP

The Ancor Marine heavy-cable crimper ($79.99, westmarine.com) lets you crimp on your own terminals and make custom cables to length. Use marine-grade tinned-copper cable and finish each terminal crimp with shrink tubing.