

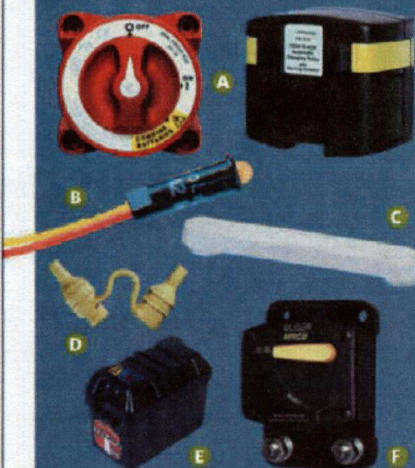


BY JOE FRIEDMAN • ILLUSTRATIONS BY TIM BARKER

# Adding a Second Battery

## PARTS

- A** Add-a-Battery Blue Sea Systems 77650, \$148
- B** Amber LED indicator Blue Sea Systems 8171, \$3
- C** Covered bus bar Blue Sea Systems 2303, \$32
- D** 2 waterproof in-line fuse holders Ancor 607013, \$10
- E** Battery box w/tiedown Tempo, \$11
- F** 80-amp circuit breaker Blue Sea Systems 7142, \$65



## SUPPLIES

- Deep-cycle battery
- 3/8" electric drill
- 1/8", 11/64" drill bits
- 1-amp fuses (2)
- Stainless-steel fasteners
- Cable cap
- 4-gauge tinned cable
- 16-gauge tinned wire
- Wire stripper
- Crimping tool
- Insulated crimp connectors
- Adhesive-lined heat-shrink tubing
- Heat gun
- Wire supports
- Cable ties

A friend's 23' cuddy came with only one battery, a cost-cutting measure by the manufacturer. But if you're using the battery for more than starting the engine—powering bilge pumps, cabin lights, wash-downs, or a stereo—your boat must have a dedicated house battery. So we added one. We could have installed the typical Off-1-2-Both battery switch but instead chose the Add-a-Battery system from Blue Sea Systems ([www.blueseasystems.com](http://www.blueseasystems.com)). This uses an automatic charging relay (ACR) that maintains batteries and puts power where you need it. I also added a remote LED at the helm to monitor the system.

## BATTERY MOUNTING

The new house battery should be a deep-cycle model. All batteries need to be in covered boxes with external strapping that allows no more than an inch of movement in any direction. Cover the positive terminals with cable caps to insulate them from possible shorts when the cover is off. Mount batteries close to the alternator but not so close to the engine that temperatures top 120°F. Never put batteries above or below a fuel tank, fuel filter, or fuel line fitting. Any metallic fuel system component within a foot of a battery must be insulated to prevent accidental grounding. Wear safety glasses when handling batteries.

## SELECTOR/ACR MOUNTING

- 1** The switch should be mounted as close to the batteries as possible, out of the elements and where it will be accessible should

there be a fire in the engine room. There must be at least 3" behind it for the cables. Secure the switch in place using bolts with locking nuts.

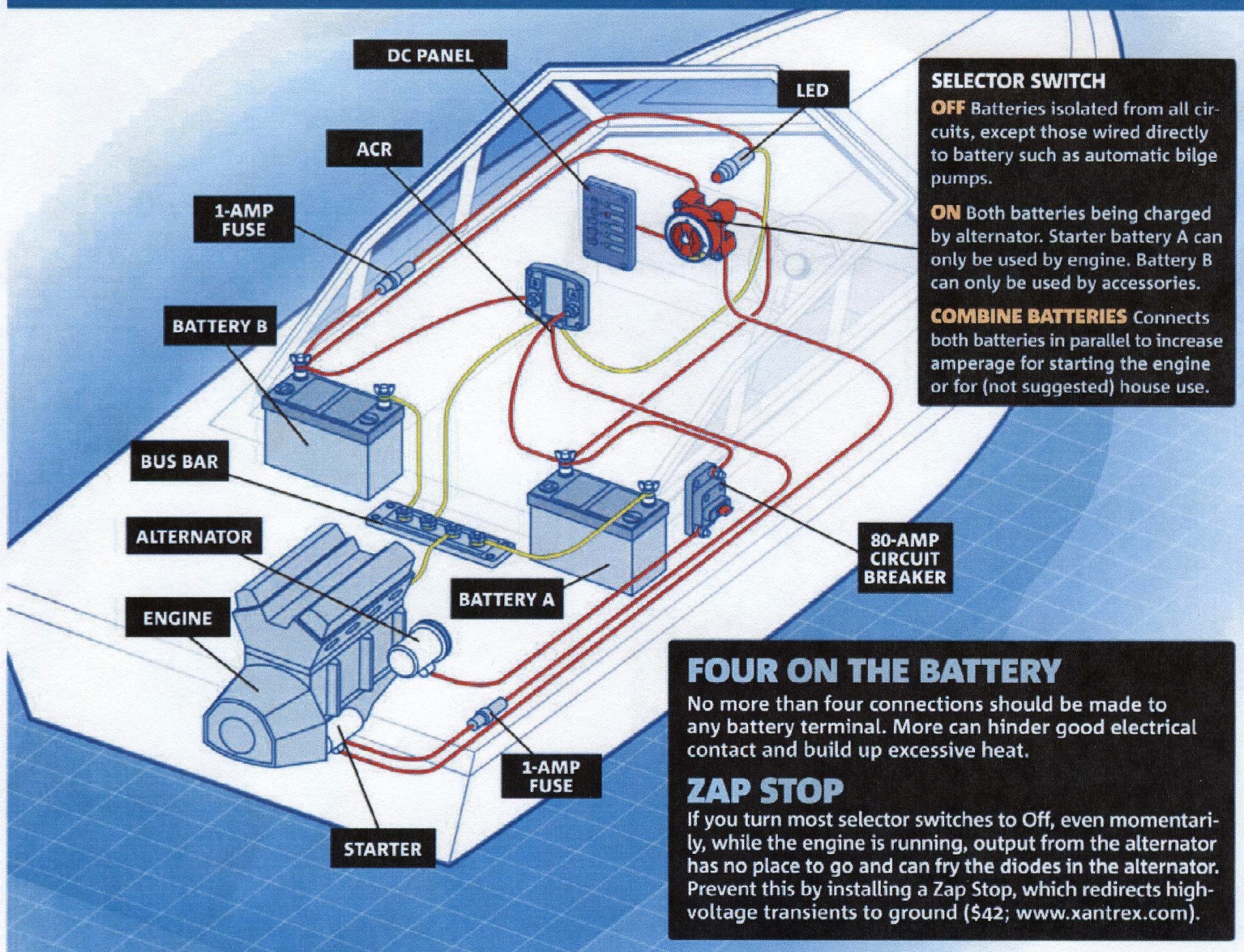
- 2** Mount the ACR in a dry, protected location near the batteries. Remove the relay cover and, using the unit as a template, drill four 1/8" pilot holes and mount with stainless-steel screws.

- 3** Install the bus bar convenient to both batteries. To mount the LED indicator at the helm, drill a 11/64" hole and push the unit in until it clicks and feels secure.

## WIRING

- 1** Before proceeding, disconnect all cables from the battery posts—first the negative, then the positive—to prevent shorts or a fire.
- 2** Check that the original starting battery is protected





with an ignition-proof 80-amp circuit breaker.

**3** Determine which battery is to be the starting battery and designate it A. The house battery is B. Using yellow (-) cable, run a length from the negative terminal of each battery to the bus bar. Run a length of the same type of cable from the bus bar to the grounding bolt on the engine. Do not connect the cables to the batteries yet.

**4** Run a red (+) cable, sheathed with split loom, from the positive post of battery A to lug A on the ACR. Run a red cable, sheathed with split loom, from the positive post of battery B to lug B on the ACR. Do not connect the cables to the batteries.

**5** Take a red cable from the positive terminal of battery A to the selector switch's upper #1 terminal. Run a red cable from the switch's lower #1 terminal to the terminal on the starter that receives the yellow with red stripe wire from the ignition switch. Do not connect cable to battery.

**6** Run a red cable from the positive terminal on battery B to the selector switch's upper #2 terminal. Run a red cable from the lower #2 terminal to the main fuse of the DC distribution panel. Do not connect the cable to the battery.

**7** Connect a 16-gauge yellow (-) wire from the bus bar to

the ACR terminal marked GND. Using a red 16-gauge wire, connect the positive terminal of battery B to 1-amp fuse and then to the LED's red wire lead. Connect a yellow 16-gauge wire from the LED's yellow wire lead to the terminal marked LED on the ACR.

**8** Connect a red wire from the ACR's terminal marked SI to a 1-amp fuse, then to the terminal on the starter that receives the yellow with red stripe wire from the ignition switch.

**9** With the selector switch in the Off position, make all the final connections. Connect the positive cables first and then the negative connections.