

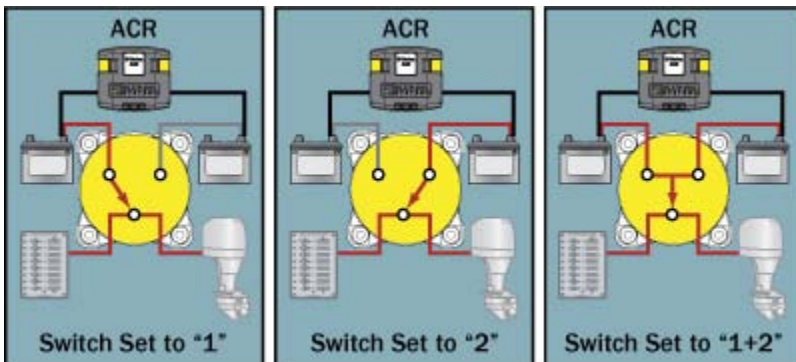
Application Brief: Adding a Secondary Battery, Battery Switch, and Automatic Charging Relay (ACR)

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This is the first application brief in a series that describes the refit of the electrical system on a Harborcraft runabout. The boat is used as a mark boat and support tender for evening and weekend sailboat racing. When the boat arrived at Blue Sea Systems, it was equipped with one battery, no battery switch, and a dual circuit AC shore charger (one of the charging circuits was stored out of the way). The boat is fitted with anchor lights, running lights, radio, depth meter, horn, and wipers.

A boat with such a small House load may not be an obvious candidate for a two battery bank system. This boat is almost always under engine power, so the alternator continuously charges the battery, and when the boat is parked in its slip, the on-board AC charger is always connected to shore power. However, there are advantages for a second battery. There is always the risk of running down the battery. With a dead battery, the engine can't be started, and the radio can't be used to call for help. Furthermore, the local bay is subject to high tides and strong winds that could drive a disabled boat far from home and into dangerous situations. The addition of a second battery is a valuable safety feature.

Because House loads are small on this boat, and because the existing wire harness is set up for a single power source, a Blue Sea Systems' m-Series Selector Battery Switch (6007) was installed. The Selector switch connects battery 1 for starting, battery 2 for running, or batteries 1 and 2 to all loads through a common circuit in the event of an emergency. Alternatively, when a second battery and ACR are installed in a boat of this size, an m-Series Dual Circuit Plus™ Battery Switch (6011) can be installed. Then, one battery is used for engine starting, one battery is used to power devices and equipment, and the Start and House circuits are isolated.



Selector switch operation

Blue Sea Systems' 120 Amp SI ACR (7610) was installed allowing both batteries to be charged when the engine is running. Because the on-board AC charger has dual outputs—each of the on-board AC charging outputs is connected to one of the batteries—the ACR is only necessary for charging from the engine alternator. The picture below right shows the new installation. The ACR is behind the battery switch. The ACR and battery switch are installed close to the batteries. The shore power connection is to the right of the batteries. The charger is located behind the shore power cord outlet.



Before



After

