

Ample Power Company



AC Wiring Example

Introduction

Drawing AT9610291 shows wiring for a relatively simple, (and imaginary) electrical system. Power is available from either an on-board generator of about 6500 Watts, or from a 30 Amp shore power connection. When neither of those sources are available, AC power can be provided by an inverter.

Schematic Walk Through

Ship/shore power selection is done with a two-position switch. Since the generator is rated for 54 Amps, the switch must be rated at least for 54 Amps . . . 60 Amps is a standard rating. Immediately following the ship/shore switch is a main breaker, also rated for 60 Amps.

Remember, breakers are present to protect wires from burning in the event of a short circuit. If the circuit is protected with a 60 Amp breaker, wires following the breaker must be capable of carrying the 60 Amps. Refer to the wire gauge tables presented earlier to determine proper wires sizes.

The power is split after it leaves the main breaker to feed the inverter/charger circuit, and a distribution panel serving such loads as a jacuzzi.

Output from the inverter goes to another set of breakers which distribute power to the water heater and other appliances.

Note that the neutral and safety wires are terminated on separate buses which serve to collect and connect green and white wires from on-board appliances. These wires should never be internally connected.

Inverter Transfer Switch

Most inverter/charger combinations have an internal relay that either switches AC power through the inverter, or switches inverter power onto the output wires. The relay is typically rated at 30 Amps . . . most inverters include an internal circuit breaker so that the transfer relay won't be overloaded.

Inverter Breakers

Circuit Breaker 2, and CB3 are used in the inverter circuits. CB2 permits all power going to the inverter and beyond to be turned off . . . sort of a 'inverter main breaker'. Opening CB2, of course, shuts off power to the charger circuits inside the inverter/charger.

On the output side of the inverter/charger is CB3. It permits all the circuits beyond the inverter/charger to be shut off at once. This is useful if you're going to leave for awhile and don't want a utility power failure to cause the inverter to kick in and try to drive the water heater.

Why is the water heater wired to the inverter anyway? While not normally run from the inverter, it's very possible to run a water heater from an inverter if the batteries are also being charged by a high output alternator.

It's Your Choice

As usual, there are many choices to be made about how the AC system should be wired. Lifestyle impacts the AC system just as it does the DC system. Sometimes the choices are too confusing, and it takes an expert to make them clear. Whatever you do, just don't omit the jacuzzi!

