

INVERTERS

The Converters (chargers) described in the last section essentially convert 120 VAC to 12 plus volts DC. An inverter is just the opposite it converts, 12 volts DC from a battery to 120 VAC to run appliances in your RV. It draws amp/hours from the battery system to power the things we would like when we do not have shore power. Some of our appliances work directly from the batteries i.e. water heater, furnace, refrigerator, lights, radio, etc. (some of them with a little help from the propane). Things we would like to have that cannot be run from DC include, hair dryer, coffee maker, toaster, microwave, TV, Hi-fi stereo, computer, vacuum cleaner, satellite TV, small battery chargers for phones and I-pods. Large motor homes usually include combination Converter/Inverter units that provide several kilowatts of AC power as well as a computer controlled charger. Some of these include multiple large 4D or 8D batteries that can easily power large microwave units. These are built in with all the needed wiring and control circuits available. Several of the appliances are already connected to the Inverter through multiple use receptacles, that are also shore powered, when it is available. Adding this capability to a trailer or motor home, after the fact, would be an extremely difficult and expensive undertaking which I do not usually recommend.

If you are almost never going to dry camp (boondock) and are always going to stay in Campgrounds with electric then you have no need for an Inverter. Even if most of the time you overnight in a campground but you occasionally do a WalMart or a Cracker Barrel then an inverter could be handy.

Most inverters under 300 watts can be plugged into a cigarette lighter, have a single AC output receptacle and a cooling fan (for the higher rated units) which only operates when the unit gets too hot. When you get above 400 watts you are going to be drawing currents in excess of 30 amps which cannot be reliably handled by a cigar lighter plug. In this case you will have to run suitable size wires (Reference 1) directly from the battery to the Inverter .

Typical costs for non-sinewave inverters are as follows:

300 watts (\$40-\$60): For household appliances, TVs (up to 27"), VCR, desktop computers, other mobile office equipment. Most of these connect via a 12-Volt cigar lighter plug.

600 watts (\$100-\$120): For household appliances, large screen TVs, 5-amp power tools, computers, and printers. Most such inverters are connected directly to the 12-volt battery and have three or more grounded outlets for powering several products at the same time.

1750 watts (\$199-\$380): For household appliances, larger power tools, microwave ovens, toasters, and hair dryers. All of these inverters are designed for direct connection to the battery network and can generally supply 1500 watts of continuous power.

3000 watts (\$395-\$750): With output power generally rated at 2500 watts for continuous load, these inverters can power virtually all household appliances and office equipment. For loads of this magnitude, special wiring and battery banks will be required.

Usually Inverters provide a modified sine wave output voltage will works fine with most TV's, computers and small heat type appliances. True sine wave inverters can cost two to five times

as much as the square wave units. These could be required for fax machines, laser printers, equipment with variable speed motors, plasma displays, some gaming systems and high end audio/video systems. Carefully check out what you want to run before making an inverter purchase.

Because of the wiring problems and multiple locations of the 120 volt AC appliances you might want to run, I usually recommend several small inverters located near the 12 volt sources. Be sure and check your wire sizes for the current capability required. If the appliance is 10 to 20 feet from a DC voltage source make the 12 volt feed lines short and run an extension cord for the 110 volt AC lines (they only have to handle 1/10 of the current). You can easily replace a 12 volt cigarette lighter with a cover plate and binding posts for connecting the larger inverters (if the existing wire is large enough). The larger units come with multiple AC sockets so you can set one up in the front of the rig to run a computer and the TV. A good location would be under the front couch where you will have a very short wire run to the batteries.