

## The Power Installation Dilemma

**TECH DOCTOR™**

**What to do, or what not to do. That is the question.**

By Don Wilson

Many electrical products are channeled to the end user in one of two primary ways. It is either sold to and installed by the manufacturer, or sold to a retailer where an end user (or service center) purchases it for aftermarket installation. There are also power enthusiasts who dare to install themselves. There are pros and cons to each option, so how to choose?

### **Q: How about OEM installations?**

**TECH DOCTOR:** Whether you're dealing with a boat, RV, commercial truck, utility truck, ambulance, or even a military vehicle, optioning an inverter is generally available at the OEM level. One major benefit of the OEM install is that the consumer is able to take full advantage of the manufacturer's detailed engineering work that has been built into the production process. From the electrical supplier offering applications support, to the OEM's electrical engineers specifying the best cable size, to the design staff ensuring proper compartment size and cooling, going the manufacturing route provides a highly professional, relatively safe, and efficient installation from concept through production. In addition, the OEM brings solid knowledge of the installation, which allows for outstanding customer support as needed after the sale. These installations are specified and part of a process that delivers production consistency.

On the challenging side, OEMs sometimes offer multiple choices e.g. power level, wave form, charging capability etc. for a power inverter. The customer is faced with multiple options to choose from, which requires knowledge of how the electrical system will be used, prior to ordering. Those who don't know often opt for the "biggest/best", which usually translates to higher cost.

### **Q: What about qualified service centers?**

**TECH DOCTOR:** The term "Qualified Installer" always make me uneasy. I always wonder: "Qualified by whom?" My wife may ask me to change the fluids in her car, which infers she has qualified me as capable of performing this job. However, does her qualification guarantee we're not going to end up with gear oil in the crankcase? Is she able to appropriately and accurately qualify my capabilities to do this job? I took the car to our dealership and got the job done right.

Case in point, if you need an inverter installed after the vehicle has been built, it is imperative that you find a service center that either has a good reputation, specializes in inverter installs, or has a stamp of approval from the vehicle manufacturer -- or better yet, all three. Make absolutely sure that the resource you are considering is qualified to do the work.

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Another big surprise: realize that every service center install differs from the one before. There may be the temptation by the crew to use similar components for different installations. For instance, if you're having a 3000W inverter installed, and the last vehicle they worked on had a 2000W inverter, will they use the left over parts from one, for the next? What size battery cable is being used? Will they use the same cable for both installations, regardless of a difference in cable lengths? These concerns plague my mind and my inbox.

### **Q: What about the amateur electrician? Can't I just install it myself?**

**TECH DOCTOR:** The first thing I have to say about amateur electrical upgrades is to refer once again to the 'gear oil in the crankcase' scenario. If you plan on doing an inverter installation yourself, first candidly assess your skills, knowledge and experience. Where do you stand on a scale of 1-10 as far as proven qualifications are concerned, and then subtract two points for safety. If you're not an 8 or higher, please back away slowly and put multi-meter down.

In all seriousness, electricity is dangerous! If you're working on a 12-volt lighter plug or a 300W inverter for the laptop, well then knock yourself out! But please ... for larger inverters that require hard-wiring, fusing, voltage-drop calculations, and knowledge of UL standards and the National Electrical Code for AC and DC systems, I cannot stress enough how important it is to get it right the first time. I've seen way too many faulty installations that result in property damage and injury to be apathetic in this recommendation.

### **Always, Safety First!**

Ultimately, the bottom line is SAFETY.

The OEM install may not be the most cost-friendly, but that slight increase in cost translates to system insurance for longer reliability and safety.

The service center/dealer install is acceptable, so long as the staff is knowledgeable and competent in installing complex electronics.

By all means, please totally avoid self-installations unless you are skilled and knowledgeable about the requirements for performing these specific types of installations and have studied the operation/install guide.

Good luck in your next electronics purchase...and may you make the right choice for you on your installation!