



Using top materials for the tubing and lining, and using adhesive to increase adherence to the wire, Phillips connectors make a tight seal that reduces chance of corrosion buildup.

way connection is that it happens more frequently at the tractor side. Regulations for the SAE J560 do not call for a watertight connection, and with many connectors being constructed in different sizes for compatibility purposes, it leaves a considerable gap between the plug and socket connection, where contaminants easily enter.

According to top fleet maintenance experts, the 7-way connection on the tractor side is disconnected and cleaned 99% less than the trailer 7-way union. Combine the gap in the connection and no proper maintenance with the inevitable water intrusion, and you have a recipe for corrosion. Phillips developed a new socket/plug hybrid, the QCMS2, that is semi-hardwired to the tractor, creating a complete seal at the 7-way connection. By removing the socket from the union, the QCMS2 mates directly with Phillips Sta-Dry QCS or QCS2 (Quick-Change Socket) harness boot (standard on most tractor OEMs), so there is no break or gap where moisture can enter.

See through insulation

Wherever wires are connected throughout the vehicle, moisture and subsequent corrosion can do damage to electrical systems. A sealed electrical system is vital. Phillips says its Sta-Dry terminal connectors make permanent repairs that prevent wire corrosion, reducing maintenance events and the costs associated with them. Using top materials

Power Inverters: The most commonly asked questions

Power inverters—the devices that convert standard battery (DC) power to AC household power—are becoming more commonplace in the trucking industry.

According to Steve Carlson, OEM sales manager for Xantrex, inverter sales have risen sharply since early 2012, and the company expects this trend to continue in the next few years.

"Fleets know that drivers love them, as they provide an extra measure of creature comfort that helps with driver retention," Carlson says. "But, they can be nervous about inverters and their potential to damage the truck's electrical system. One size does not fit all, and inverter quality varies greatly."



What size should fleets buy?

"Fleets should do a survey on truck size and power usage and understand how drivers will use an inverter—what items drivers want powered and what items will be used at the same time," says Carlson. "That will help 'right size' the inverter for their operation."

As an example, Carlson says drivers will often run a microwave, TV and laptop all at the same time. "A microwave might be rated at 1,000 watts, a TV at 250, and a laptop at 95. Add them up to see how much continuous power they'll need and then add 20%. So, in this case, 1,600 watts. Next, round up to find an inverter that meets those power needs. Xantrex, for example, offers an 1,800-watt unit, and that's what we would recommend."



While determining continuous power is an important consideration, so is "surge power."

"Whenever a driver powers up any device, the initial load is more—and sometimes double—what the continuous power requirement is," Carlson says. "So, an 1,800-watt inverter can handle a short 3,600-watt power surge requirement. Some inverters on the market can handle only a few milliseconds of surge before the power draw shuts down the inverter. Others can last five seconds or more, and that's what you should look for."



What type of inverter should fleets buy: sine or modified sine wave?

"For those running sensitive electronics (like CPAP machines) or products that are plugged into their own chargers—a drill or a toothbrush—sine wave is the preferred choice," says Carlson. "Since sine wave is the same power as what you get at home, the voltage is consi-

ceptacles for as long as they want, plus they can recharge and top off the batteries. The more shore power is used, the better, as it prolongs the life (by 20% to 30%) of the batteries. This happens by keeping batteries fully charged, offsetting parasitic loads, and reducing the number of cycles."

According to Carlson, most installations use the inverter off the truck's starting batteries, and quality inverters will have a low voltage disconnect (LVD) to shut down when voltage drops to 11.7 volts. This ensures the truck will have enough juice to start.

"Check on the LVD feature of your trucks before you buy an inverter," cautions Carlson. "Many inverters on the market will run the batteries down to 10.5 volts, which will let drivers run electrical devices longer in the cab and sleeper. However, your drivers won't then be able to start the truck unless the truck comes equipped with its own LVD."

"Another option is to run two dedicated deep-cycle batteries and connect them to the inverter. Deep-cycle batteries were designed to be drawn down to a 50% state of charge, or 10.5 volts. That will give your drivers double to triple the amount of continuous power to run hotel loads."



What is the Purpose of an Inverter if I already have a Fuel-Fired APU?

The addition of an inverter to a truck electrical system will reduce hours of use on a diesel-fired APU (assuming that the APU does not already have shore power compatibility). "And, it will reduce maintenance costs and increase APU life," says Carlson. "An inverter can be used for hotel loads in the cab as long as environmental conditions do not require air conditioning. When those conditions happen, just power up the APU."

With this set-up, the APU would turn on only if the batteries dropped to a low level. Once the batteries are charged, the APU can shut off again. "This significant reduction in APU run time means a quick payback on the cost of the inverter," says Carlson. //



Technician training will be needed

Grote Industries, a supplier of lighting and electrical systems for heavy-duty trucks and trailers, suggests it will be critical for fleets to have solid technician training programs in place to quickly bring new technicians up-to-speed on maintaining these systems. The company recalls the last labor crunch to hit trucking in the late '90s, which had a dramatic impact on many fleets' abilities to attract and retain over-the-road drivers. The next labor shortage, the company believes, is sure to be felt in the area of maintenance, as well as drivers. Many fleets already are struggling to find and keep good technicians as the country's economy continues to recover.

With lighting and electrical components consistently ranking as fleets' most frequently serviced vehicle components,



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