

# 480-Volt Trainline Jumper Cables

By Martin McDonough

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*With the arrival of 480V and 27-pin communications trainline cables on privately owned railroad cars — mandatory on cars which elect to travel on Amtrak since 1990 — came a few problems, all attributable to human error. These errors, however, have the very real potential of leading to costly repairs.*

*Here are a few case scenarios.*

## Case Number 1

After your car has been set off or perhaps coupled to another car, you notice that the 480V receptacle covers have been propped open with a rock, a stick, or perhaps a piece of wood or other material. What has happened to cause this?

In the process of moving your car, someone was in a big hurry and couldn't wait for an electrician — it happens! — to disconnect your jumper cables. A trainman reached in and turned the angle cock on the brake pipe of the car to which yours was coupled. Next he propped open your 480v trainline receptacle covers with whatever you found and then gave the engineer the highball to move. In the process, the cables were pulled from your 480v receptacles.

If it looks like this has happened to your car, take a close look at each of your 480v receptacles (it doesn't hurt to check both ends of the car) and check the following:

- Are the contacts bent or pulled out?
- Is the pigtail rubber flat against the receptacle?
- Are your receptacles cracked or broken? (A cracked receptacle is going to allow water to enter.)

- Are the brackets that hold the 480V receptacles bent or the welds broken?

As you can see, the potential for a lot of damage can be the end result of someone in a hurry.

## Case Number 2

Your car is switched out. The electrician or carman disconnects your 480V cables and your 27-pin communications trainline cable. However, they are not secured properly. Instead, cables are placed over the coupler operating lever or perhaps through the stirrups, if your car is so equipped.

There is a possibility that you could be looking at a costly cable repair here. As the car is being switched, it is going to cross over switch points and frogs (at least one set for sure). If by chance one of your cables drops from the operating lever or slips out of the stirrup, it can land in a switch point or frog and be jammed in the process. The result is going to be a badly mangled cable. If you are on your car while it is being switched, check to see where your cables are before the switch is made. If necessary, stop the switch crew from moving the car until your cables are properly secured. While you may have to secure them yourself, this is not a big deal and may end up saving you money.

## Case Number 3

An attempt to plug the 27-pin communications trainline into the receptacle on your car results in a cable that will not seat. What's wrong here?

Someone has applied a 27-pin locomotive receptacle to your car by mistake. A 27-pin jumper passenger car cable will not seat in this type of connection.

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#### **Case Number 4**

The electrician or carman connects the 480V jumper cables on one side of your car. He turns on the power and the car's electrical system functions properly.

But that brings up a question: what about disconnected cables, are disconnected 480V cables dangerous? You bet. Don't ever assume that they are not energized; your best bet — and the safest one, always — is for you to avoid disconnected 480V cables.

Once again, short cuts can lead to injury — yours!

#### **Case Number 5**

The electrician or carman tries to shove the 480V cable from the adjacent car into the 480V receptacle on your car, but the cable will not seat. What's the deal with that?

Inside the receptacle the pigtail rubber is probably rolled up, stopping the cable from being fully inserted.

Connect up an ordinary hair dryer and blow hot air into the receptacle. The hot air will heat the rubber and you may be able to reach in and press the rubber flat.

Incidentally, all PV owners should carry a hair dryer with them on their car as a part of the car's standard equipment, especially if your car is equipped with a water system that has a dump valve as a safety feature.

Shortly after Amfleet I cars first began to arrive on the scene in 1975, the East experienced the long and bitter winter of 1975-76. During the course of the winter, we learned that Amfleet I water tanks were equipped with a dump valve that activated when the air temperature reached a certain point if the cars were left off power for a long time. The dump valves worked great, but a problem arose when the power was plugged in: the valves would not reseal.

To reseal the valves, we discovered that hot air from a hair dryer worked just fine.

#### **Case Number 6**

Permanent 480V cables installed on a car calls for a hanging bracket to be welded on the car end. The bracket enables you to hang up the

cable, thereby keeping it clear of the truck, stirrups, switch points, and frogs.

A word of caution, however. When you hang a cable on the bracket, make sure the head of the cable is pointing down. It is a common mistake to leave the head of a receptacle pointing up. Now it is vulnerable to rain and snow. In cold weather, the rain and snow will freeze, causing you problems.

Get out the hair dryer!