Fire Apparatus & Emergency Equipment

Stabilization Equipment for Vehicles with Start/Stop Technology

09/06/2013

By Carl J. Haddon

Although great for the consumer, hybrid start/stop technology can be potentially deadly for the rescuer at the scene of a motor vehicle accident (MVA).

Background

For those unfamiliar with start/stop technology, it is a fuel-saving feature that uses the hybrid electric motor to propel the vehicle from a standing stop until the gas-/fuel-powered engine takes over. When these vehicles come to a stop at a traffic signal, for example, the gas/fuel engine shuts down, and the vehicles sit silently (no traditional idling) until the accelerator is depressed and the electric motor initiates vehicle motion.

When these vehicles are involved in an accident, they often present a unique set of challenges for emergency personnel because we never really know if they are "silent live" or not. In conventionally powered vehicles, this question is a "no-brainer" because it is typically easy to tell if the engine is running or not.

(1) The Cog Step is a reversible step chock. It can be used conventionally as a standard step chock and it can be inverted to use the cog system. (Photo courtesy of Turtle Plastics.)

This same scenario holds true for plug-in electric powered vehicles. Following an accident, the vehicle sits silently, but we never know for sure if it can still lurch forward or backward as we size up our scene. After an accident, it invariably seems that unconscious or stunned drivers come to their senses and naturally try to move their extremities. When that movement includes moving their right feet to the accelerator pedal, we can have a real problem.

Securing the Vehicle

What tools do we carry to safely secure the vehicle while we work to disable the electrical systems on these start/stop vehicles-wheel chocks, step chocks, a police patrol car? I actually like the patrol car idea the best; however, it's not always practical. One of my biggest concerns is a firefighter having to get down on the ground to apply these marginally effective adjuncts. Vehicle characteristics such as ground effects, lower ground clearance, and larger wheels make the initial stabilization of these types of vehicles all the more challenging.

Searching for a Solution

I went searching for an answer to this question. I found a couple of items that could do the trick. One of these is unfortunately still in its prototype stage. Simply stated, it's a cordless-drill-powered type of step chock that starts out flat, can be easily slid into position, and then activated to immobilize the vehicle.

The other product I found is a new release by Turtle Plastics. Known as its Cog Step, it is a new variation on the company's stalwart plastic step chocks. The Cog Step concept is based on the old cog railway systems still in use in some parts of this country. The Cog Step is a reversible step chock. It can be used conventionally as a standard step chock and it can be inverted to use the cog system. Basically, the Cog Step is used with a single integral wedge, whereby it can eliminate the need for other cribbing in many circumstances. The user positions the Cog Step as needed, with the cog wedge in close proximity to where it is needed to effect stabilization. As rescuers unweight the side of the vehicle, as they would to place a standard step chock, they introduce the Cog Step in much the same way. The exception is that the cog wedge is already in place. A flathead ax can be used to strike the backside of the cog wedge to advance it higher.

(2) The user positions the Cog Step as needed, with the cog wedge in close proximity to where it is needed to effect stabilization. As rescuers unweight the side of the vehicle, as they would to place a standard step chock, they introduce the Cog Step in much the same way. *(Photo by author.)*

Applying to Hybrids

Getting back to the issue with the start/stop vehicles, the Cog Step can also be quickly deployed at the front and rear of most vehicles, typically in line with the tires, where possible. The combination of the incline of the cogged ramp and the wedge effectively creates a system that captures and secures the vehicle should it try to inadvertently lurch while personnel work to disable the electrical system.

Tom Norton, president of Turtle Plastics, says, "Our new Cog Step system is actually a multitool that can be used for a number of different applications. We're pleased that it can

also be used for the silent hybrids and electric cars to help keep firefighters and other rescuers safe while they work to disable the electrical systems."

Some good news about the start/stop technology is that most automakers employ safeguards in these cars, wherein when the vehicle is involved in an accident that involves air bag deployment, the electrical system is automatically disabled as well.

It is important for all field personnel to remember that we can never assume that these types of vehicles are electrically disabled, even with air bag deployment. Additionally, remember that the start/stop system typically has a separate battery responsible for the start/stop feature. I'm told by top automaker engineers that this secondary start/stop battery is wholly independent of the 12-volt and high-voltage systems. The big question is: Is that a good thing or a bad thing when it comes to providing vehicle rescue for these types of cars at an accident scene?

Start/stop features are one of many emerging technologies that should make us routinely rethink and reevaluate how we size up our vehicle rescue scenes. Pay very close attention to those new vehicle systems and features that can and will inadvertently challenge our ability to keep ourselves and our crews safe while on today's extrication scenes.

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