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New Vehicle Extrication: Honda Insight Hybrid

Article and photos by [Jason Emery](#)

In 1999, the 2000 Honda Insight became the first hybrid available to the general consumer in the United States and set the stage for the additional hybrids available today. This two-seat, futuristic-looking model was discontinued in 2006. The redesigned Insight was released in April 2009 and has a completely new look. Because of its aerodynamic design, the look of the vehicle is very similar to the Toyota Prius (photo 1).

Vehicle Identification

Since the Insight was designed completely as a hybrid platform, its model name is a direct indicator that it is a hybrid. This alleviates the identification issue associated with the majority of hybrid models, which bear the same name as the original non-hybrid versions. The Insight's hybrid badge can be found on the right rear of the vehicle (photo 2).

The interior of the vehicle also provides clues that it is a hybrid. A charge and assist indicator (photo 3) can be found on the left side of the instrument cluster. This gauge tells the driver whether the high-voltage battery is providing power to propel the vehicle or if the battery is being charged. Additionally, the Integrated Motor Assist (IMA) logo is visible in the center of the cluster. Finally, the words "Auto Stop" (photo 4) are visible at the base of the tachometer when the vehicle is in its "ready mode." If that icon is visible, even though the vehicle's gasoline engine is shut down, it can move as soon as you remove your foot from the brake or depress the accelerator. Other indicators can also be found in the engine compartment; they include the Honda "IMA" logo on the plastic engine cowl (photo 5) and the visible orange wiring (photo 6). Unlike many other models, the orange cable is highly visible on the underside of the vehicle.



[\(1\) Click to enlarge](#)



[\(2\) Click to enlarge](#)



[\(3\) Click to enlarge](#)



[\(4\) Click to enlarge](#)



[\(5\) Click to enlarge](#)



[\(6\) Click to enlarge](#)

Hybrid Systems and Operation

The Insight uses a 100v high-voltage battery to power the hybrid system. The battery module is comprised of approximately 84 low-voltage Nickel-Metal Hydride 1.2v (Ni-MH) batteries. As is the case with other hybrids on the road today, the Ni-MH batteries used in the Insight are considered "dry cell" and do not pose a significant leak hazard if damaged. In the unlikely event that crushing damage occurs to the battery, only a few small drops of electrolyte would be released. The high-voltage battery is beneath the spare tire, which can be found beneath the rear cargo area (photo 7). This model, as with the other Honda models, is considered to be a mild or parallel hybrid. Recent modifications in the Honda hybrid propulsion system allow the system to behave more like a full hybrid in some instances. Unlike in full hybrid systems, the 2010 Honda Insight high-voltage cables are energized only when the ignition switch is on and the vehicle's engine is running.



[\(7\) Click to enlarge](#)

Response Considerations

Controlling Hazards

The standard approach to a hybrid vehicle, or any vehicle involved in an accident, is to protect the responder from being struck by the vehicle's accidentally moving forward or backward. This is especially important in the case of a hybrid, because the possibility that the vehicle's engine may be off may lull responders into a false sense of security. If the vehicle is in its "ready" mode, it could move without warning if the driver releases his foot from the brake or depresses the accelerator while the vehicle is in gear. A simple way to secure the vehicle on approach is to place wheel chocks in the front and rear of one of the tires. To further prevent the vehicle from moving, ensure that the emergency brake is engaged, the vehicle is placed in park, and the ignition is turned off.

As with all hybrid models, the simplest way to disengage the high-voltage current from flowing through the system is to shut off the ignition. This also shuts down power to the vehicle's occupant protection systems (air bags and pretensioners). In addition to front seat belt pretensioners and air bags, the 2010 Insight is equipped with side curtain bags.

After the ignition is shut down, or if the ignition cannot be reached, it is recommended that you disconnect or cut the negative 12v battery cable as well as the DC-to-DC converter cable at the positive battery terminal (photo 8). This shuts down the engine as well as the occupant protection systems and the high-voltage system controllers.



[\(8\) Click to enlarge](#)

Extrication Operations

There are no specific techniques for extrications involving the 2010 Honda Insight Hybrid. As with all hybrids, do not cut through high-voltage cables. The high-voltage cables run underneath the vehicle just inside the frame rail on the passenger's side, which is not an area typically considered a cut point. Unlike many newer models, these orange cables are plainly visible on the underside of the vehicle (photo 9). Responders should also use caution when removing a roof on this vehicle, since the inflators for the side-impact curtain air bags can be found in the "C" posts. It should be a standard procedure, prior to any cutting or spreading operations, to "pry and peek" or pull back the plastic covering to determine any occupant protection systems components or other obstacles might interfere with the extrication process.



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Summary

The guidelines for handling the 2010 Honda Insight are very similar as those for handling other hybrids on the road today. Prior to extrication operations, always look for indicators of a hybrid or other types of alternative-fueled vehicles that may impact those operations. Always abide by your department's standard operating procedures at the scene of a motor vehicle accident. Be sure to update those guidelines to address hybrid vehicles and additional types of alternative-fueled vehicles becoming available on the market. Reference available emergency responses guides provided by car manufacturers.

For a more in-depth article on hybrids and hybrid vehicle systems, consult "[Hybrid Vehicles: Separating Fact from Fiction](#)," Jason D. Emery, *Fire Engineering*, July 2009, 73-82.

If you have been involved with an incident involving hybrid or alternative fuel vehicles please contact Jason@etsrescue.com. Case studies involving specific incidents will help further educate firefighters on the proper methodology for dealing with hybrids and other alternative fueled vehicles.

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