

# Emergency Response Guide

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**HONDA**

*Insight*

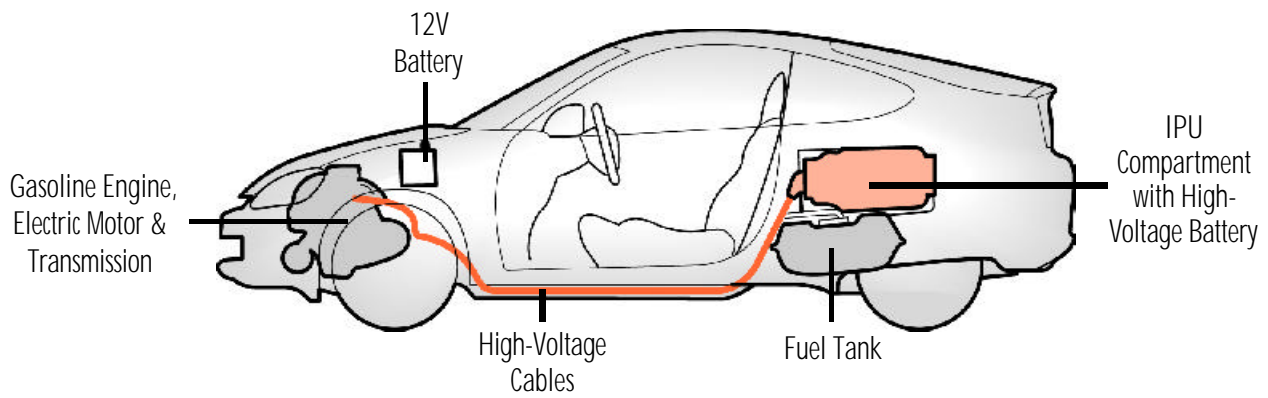
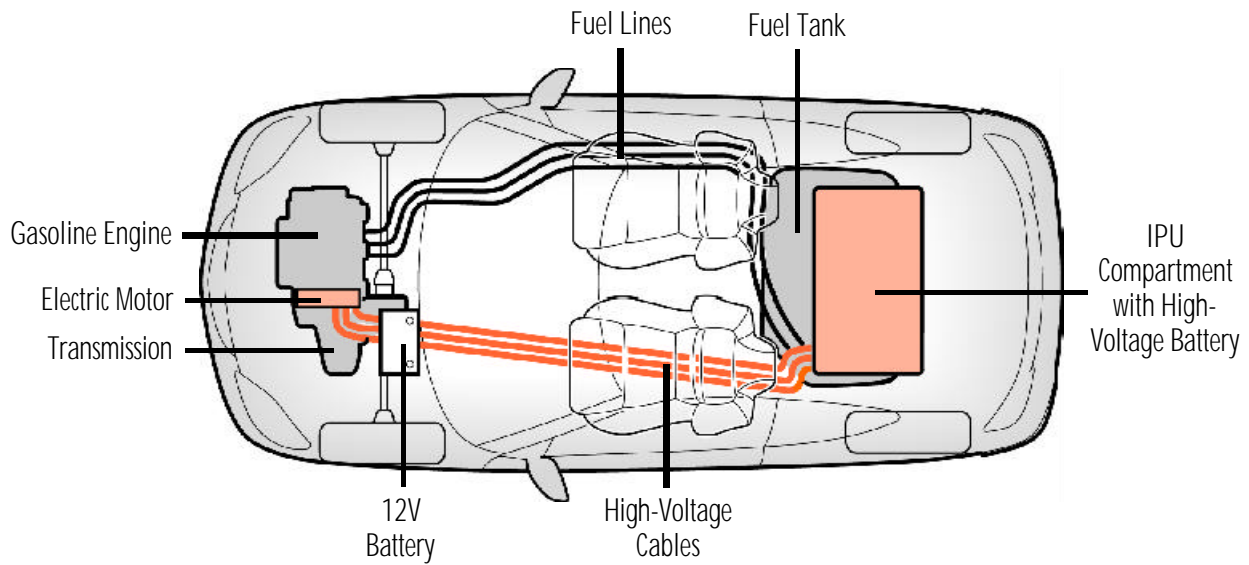


A Gasoline-Electric Hybrid

Prepared for Fire Service, Law Enforcement, Emergency Medical and Professional Towing Personnel  
By American Honda Motor Co., Inc., May 2001

# Location of Key Components

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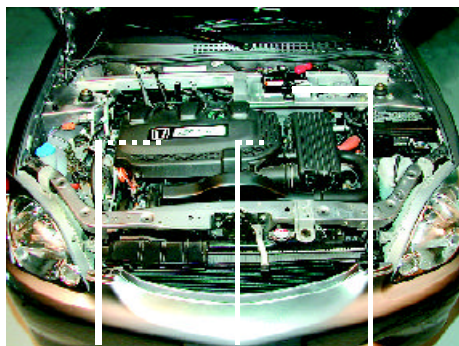


# Vehicle Description

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**GASOLINE-ELECTRIC  
HYBRID** *Insight*



Gasoline Engine    Electric Motor    12V Battery

## Type, Size, Shape & Materials

The Insight is a two-passenger gasoline-electric hybrid, the first vehicle sold in North America that utilizes both a conventional gasoline engine and a battery-powered electric motor for power. The Insight can be identified by its aerodynamic shape and rear fender skirts, as illustrated on the front cover, and by the Insight logo and the words "Gasoline-Electric Hybrid" on the rear hatch. The chassis and most components are made of aluminum, some parts are plastic, and a few are made of magnesium.

## Gasoline Engine

The Insight's main power source is a conventional 1.0 liter, 3-cylinder gasoline engine, located under the hood.

## Electric Motor

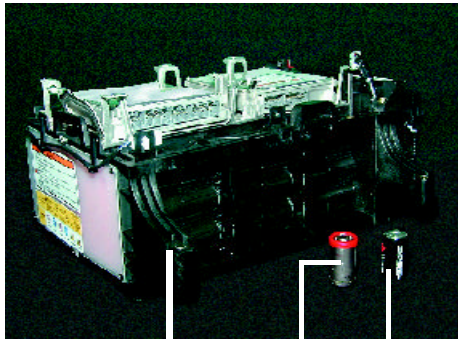
During start-up and acceleration, the gasoline engine is assisted by an ultra-thin (2.3 inch/60mm wide) electric motor, located between the engine and the transmission. During braking and deceleration, the motor acts as a generator to recharge the high-voltage battery and the 12-volt battery. Turning the ignition switch to either the Accessory (I) or the Lock (O) position turns off the gasoline engine and the electric motor.

## 12-Volt Battery

Like conventional vehicles, the Insight has a 12V battery located under the hood. In addition to powering the lights, audio and temperature-control systems, etc., this battery also powers the control systems for the high-voltage battery module.

# Vehicle Description, continued

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Battery Module      Single Cell      Conventional D Battery

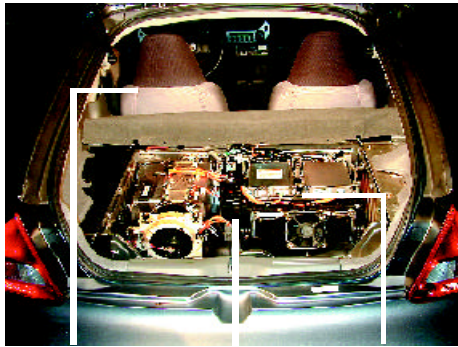
## High-Voltage Battery Module

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The electric motor is powered by a nickel-metal hydride (NiMH) battery module, consisting of 120 individual 1.2-volt cells, each about the same size as a conventional D battery. The battery is recharged by the motor, so it never needs external recharging.

Specifications include:

Weight:	48 lbs (22 kg)
Total voltage:	144 volts
Capacity:	6.5 amp-hours (AH)



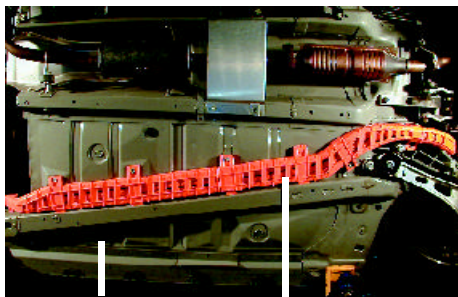
Driver's Seat      IPU Compartment with Lid Removed      Battery Module

The battery module is housed in the Intelligent Power Unit (IPU) compartment, located behind the passenger seats and shown here with the lid and cargo area carpet removed. The IPU compartment also contains various controls, cooling fans and other important components, all of which are completely isolated (insulated) from the vehicle body.

## High-Voltage Cables

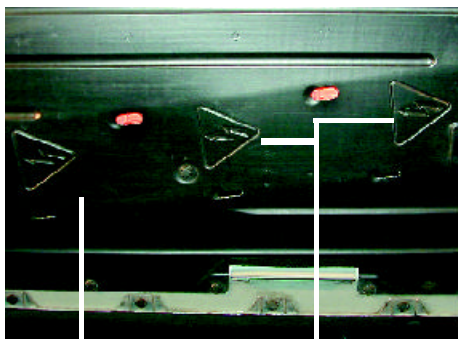
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Electrical energy is conducted between the battery module and the electric motor via three heavy-duty orange cables. The cables are routed on the left side of the vehicle under the driver's seat. As shown in the photo to the left, the cables are protected by a sturdy orange plastic shield, which is bolted to the unibody undercarriage.



Undercarriage      High Voltage Cables

The high-voltage cables are covered with smooth paneling to improve the Insight's aerodynamics and fuel efficiency. High-voltage alert symbols (⚠) are stamped into the paneling to indicate the location of the cables.



Undercarriage Cover      High-Voltage Alert Symbols

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## Airbags & Seat Belts

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The Insight is equipped with dual front airbags, three-point seat belts, and pyrotechnic seat belt tensioners. The deactivation time for the airbags' and the tensioners' backup power systems is 3 minutes.

## Hazards

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The Insight does not present any unusual hazards. The vehicle performed well in standard crash tests, and the high-voltage components were not damaged in the front, side, or rear impacts.

## Flammable Fluids

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The Insight has the same potential fire and explosion hazards as conventional gasoline-powered vehicles. Fluid capacities are:

Fuel tank:	10.6 gallons (40 liters) of gasoline
Oil:	3.2 US quarts (3 liters)
Coolant:	1.06 gallons (4 liters)

## Electric Shock Potential

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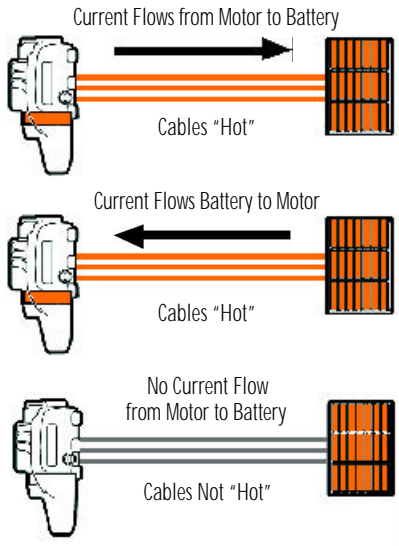


Unprotected contact with any “hot” high-voltage component can cause serious injury or death. However, receiving an electric shock is highly unlikely because:

- Contact with the high-voltage battery or other components inside the IPU compartment can only occur if the box is damaged and the contents are exposed, or the box is deliberately opened without following proper precautions.
- Contact with the electric motor can only occur after removing one or more components.
- The high-voltage cables are clearly identified and protected by a strong plastic shield.

# Hazards, continued

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In addition, the cables are potentially “hot” only when: (1) the gasoline engine is running and the electric motor is charging the high-voltage battery, or (2) the high-voltage battery is powering the electric motor. High voltage cannot flow into the cables if the motor is off and the high-voltage battery is not sending current to the motor.

## Battery Electrolyte

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Small quantities of a highly alkaline liquid electrolyte, which is corrosive to human tissues, are used in the manufacture of the high-voltage battery cells. However, in the finished cells, the electrolyte is in a non-liquid form and sealed in a metal case, so **the electrolyte cannot spill or leak**. In addition, the electrolyte is non-flammable, non-explosive, and it creates no hazardous fumes or vapors in normal operating conditions or in a fire.

# Emergency Procedures

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Based on discussions with rescue professionals, we recommend that emergency response personnel follow standard procedures developed by their own organization for assessing situations and dealing with potential hazards. Given our knowledge of the Insight, we also recommend the procedures suggested below.

## Incidents Involving Fire

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If the Insight and/or the IPU compartment becomes involved in a fire, there are no unusual hazards, and standard procedures should be followed.

# Emergency Procedures, continued

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## Submerged or Partially Submerged Vehicle

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Pull the vehicle out of the water, then follow the procedures on pages 8-11 for rescuing occupants. **There is no danger of electric shock from touching the car body or framework.**

## Rescuing Occupants

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Before attempting to rescue occupants from a damaged Insight, or move a damaged vehicle, it's important to reduce the potential for high-voltage current to flow into the cables from either the motor or the high-voltage battery.



Ignition Switch    Ignition Key

***The best method*** is to turn the ignition switch off. This simple action:

- Turns off the engine and the motor, which prevents electric current from flowing into the cables from either the motor or the high-voltage battery, and,
- Turns off power to the airbags and the seat belt tensioners.

After turning off the ignition switch, we recommend removing the key so the car cannot be inadvertently restarted.

***The second-best method*** is to remove the main fuse and disconnect the 12V battery. The advantages of this method are:

- Removing the main fuse turns off the engine and motor, which prevents electric current from flowing into the cables from the motor.
- Removing the fuse also cuts power to the airbags and the seat belt tensioners.
- Disconnecting the battery cable disables the high-voltage battery controller, which prevents electric current from flowing into the cables from the high-voltage battery.

# Emergency Procedures, continued

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The disadvantage of this method is:

- Removing the main fuse and disconnecting the battery cable both require hand tools.

***The least-desirable method*** is to turn off the battery module switch, located on top of the IPU compartment. Turning off this switch:

- Prevents electricity from flowing into the cables from the high voltage battery.

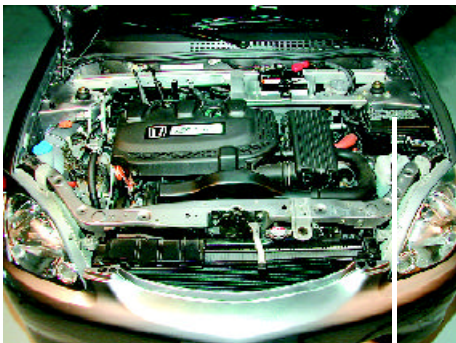
This method has several disadvantages.

- If the engine is running, the high-voltage cables will potentially be “hot.”
- This method does NOT cut power to the airbags and seat belt tensioners, so caution must be used.
- A 10mm wrench is required.

**If you cannot perform any of three methods described above, use extreme care and do not cut into the high-voltage cables or touch any damaged cables as they may potentially be “hot.”**

## How to Remove the Main Fuse & Disconnect the Battery

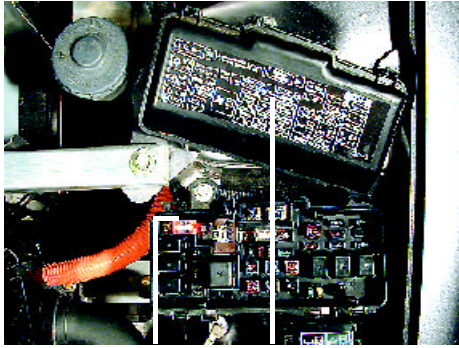
If you cannot reach the ignition key, but you can reach the under-hood fuse box:



Under-hood  
Fuse Box

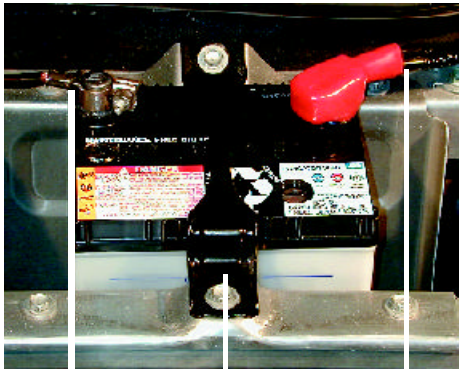
- 1. Remove the under-hood fuse box cover.** The under-hood fuse box is located in the engine compartment near the front fender on the driver's side.





Main Fuse    Under-Hood  
Fuse Box Cover

- 2. Unscrew and remove the main fuse (#1).** This will require a Phillips-head screwdriver.

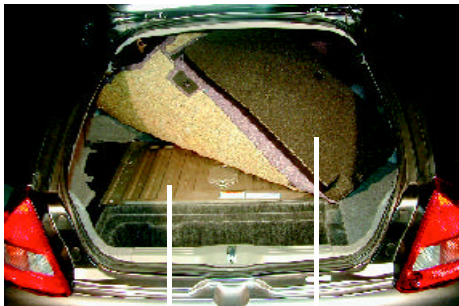


Negative Cable    12V Battery    Positive Cable

- 3. Disconnect the negative 12V battery.** Either cut the battery cable or remove the battery terminal connector. See pages 2 and 3 for battery location.

### How to Turn Off the Battery Module Switch

If you cannot reach the ignition key or the under-hood fuse box:

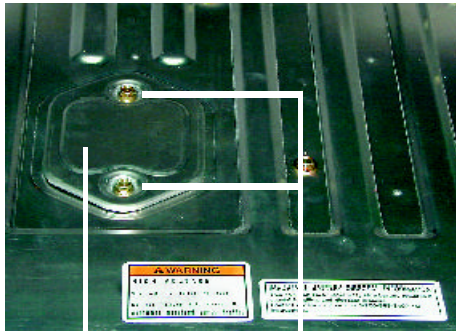


IPU Box Lid    Cargo Area Carpet

- 1. Remove the cargo area carpet.** This provides access to the lid of the IPU compartment.

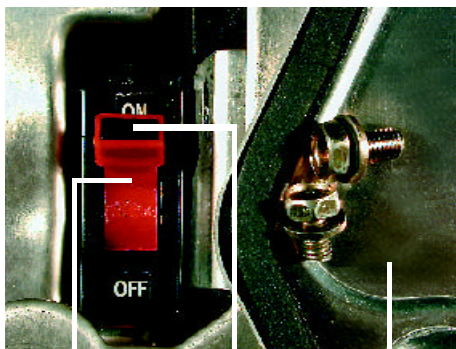
# Emergency Procedures, continued

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Battery Module Switch Cover      Bolts

- 2. Unscrew the bolts on the battery module switch cover and remove the cover.** This will require a 10mm wrench, crescent wrench, or pliers.



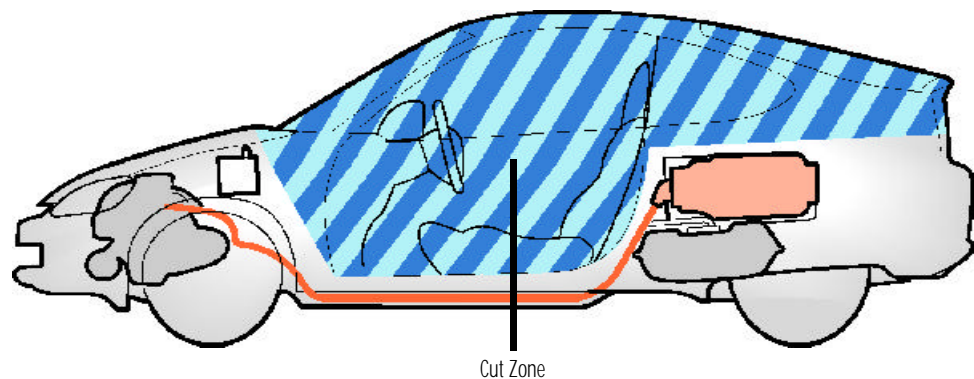
Locking Cover      Battery Module Switch On      Battery Module Switch Cover

- 3. Remove the red locking cover and turn the switch from the ON position to the Off position.**
- 4. Reattach the locking cover over the switch.** This prevents the switch from inadvertently being turned to the on position.

## Extricating Occupants

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If "Jaws of Life" type of equipment is required to remove occupants from a damaged Insight, be sure to stay within the cut zone illustrated below. Since most components, including the structural pillars, are made of aluminum, there should be no difficulty using either spreading or cutting equipment.



# Towing

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If the Insight must be moved a short distance (to the side of a road, for example), and the car is capable of rolling on the ground, the easiest way is to shift the transmission to neutral, then manually push the car.

The preferred method for transporting the Insight away from an emergency location is on a flat-bed truck. If a flat-bed is not available, wheel-lift equipment may be used, preferably with the front wheels lifted. If the rear wheels must be raised, be sure to first set the parking brake and shift the transmission to neutral.

Do not use sling-type equipment unless the vehicle has been damaged beyond repair.

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