SPORT HYBRID i-MMD (intelligent Multi-Mode Drive)

Your SPORT HYBRID i-MMD vehicle uses both an electric motor and a gasoline engine as propulsion sources, with the electric motor receiving electricity from an internal High Voltage battery and/or internal generator. The High Voltage battery is charged from the generator driven by the engine or regenerative braking.

When driving, your vehicle is propelled exclusively by the electric motor, exclusively by the gasoline engine, or by a combination of the two. The system selects which propulsion source is most appropriate and automatically switches to it.

● **Energy efficiency**

As with a gasoline-powered vehicle, hybrid vehicle fuel efficiency and driving range is most impacted by your driving style. Aggressive acceleration and high-speed driving can easily trigger the system to switch the propulsion source to the gasoline-powered engine.
In addition, heavy climate control system use negatively affects vehicle range and efficiency. Either of these use patterns will more quickly reduce the High Voltage battery's state of charge.

● **Battery types**

There are two types of batteries used in this vehicle; a standard 12-volt battery that powers the airbags, the interior and exterior lights, and other standard 12-volt systems; and a high voltage battery that is used to power the propulsion motor and recharge the 12-volt battery.

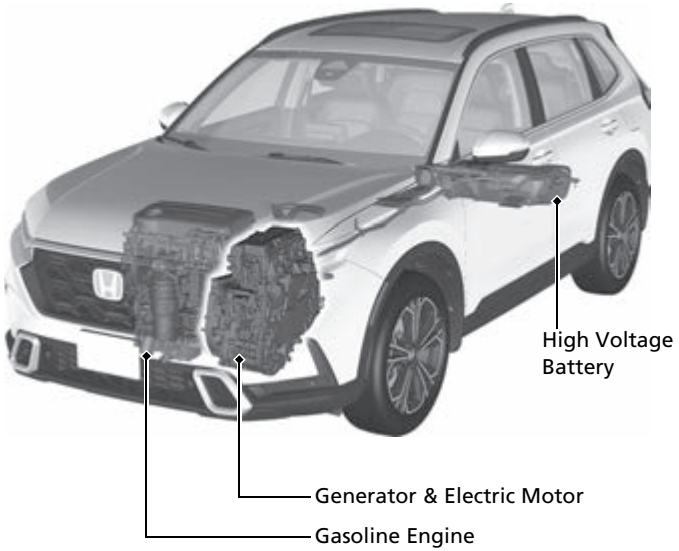
SPORT HYBRID i-MMD SYSTEM MAIN COMPONENTS

Gasoline Engine– Runs the generator and under certain conditions, drives the wheels directly.

Generator– Starts the engine and generates electric power when driven by the gasoline engine to supply electricity to power the electric motor and/or to charge the High Voltage battery.

Electric Motor– Provides propulsion to drive the wheels in conjunction with the gasoline engine in certain conditions and provides electricity to the High Voltage battery through regenerative braking.

High Voltage Battery– Provides electrical storage and serves as a power source for the electric motor.
Learning about the High Voltage battery's characteristics will help you get the best handling and maximize the range of your electric vehicle. P. 491



● **Sounds Unique to the SPORT HYBRID i-MMD System**
When you first start driving this vehicle, you will likely hear some unfamiliar sounds, particularly when you turn on the power system, or while you are driving or accelerating from a stop. Some of these sounds are unique to this vehicle's powertrain, fuel, and climate control systems; others are similar to sounds generated by conventional automobiles that typically are masked by louder noises absent from a vehicle of this design. These sounds are not a cause for concern, and you will soon recognize them as normal and thus be able to detect any new or unusual noise should one develop.

After shutting off the engine, you may hear certain noises coming from the vehicle. Here's the lowdown:
● **Noise from Under Vehicle:** This noise is caused by the vacuum pump inside the fuel evaporation leakage check module (ELCM). Depending on conditions, the pump will come on for about **15 minutes** about **5 to 10 hours** after engine shutoff. This noise is just normal vehicle operation and doesn't indicate a vehicle problem.

2WD models

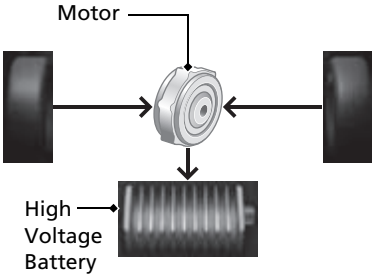
Operating mode	Electric Vehicle (EV)	Hybrid (HV)	Engine (Direct Drive)	Regeneration
Driving state	Stopped or driven at low speeds: • Only the electric motor provides propulsion to the wheels.	Driven in high-load conditions (e.g., when accelerating, going uphill): • The Electric Motor provides propulsion to the wheels. • The gasoline engine drives the generator, supplying electricity to the electric motor for added propulsion or to the High Voltage battery for charging.	Driven in high-speed, low-load conditions: • The gasoline engine provides propulsion to the wheels. • The High Voltage battery supplies electricity to the electric motor for added propulsion. • The electric motor provides electricity to the High Voltage battery through regenerative braking.	The accelerator pedal is released and the vehicle is decelerating. • The electric motor provides electricity to the High Voltage battery through regenerative braking.
Power Flow Monitor				
Electric motor	Stopped/Running	Running	Generating/Running	Regenerating
Generator	Stopped	Generating	No Output	Stopped/No Output
Engine	Stopped	Running	Running	Stopped/No Output
High Voltage battery	Discharge	Charging/Discharge	Charging/Discharge	Charging

AWD models

Operating mode	Electric Vehicle (EV)	Hybrid (HV)	Engine (Direct Drive)	Regeneration
Driving state	Stopped or driven at low speeds: • Only the electric motor provides propulsion to the wheels.	Driven in high-load conditions (e.g., when accelerating, going uphill): • The Electric Motor provides propulsion to the wheels. • The gasoline engine drives the generator, supplying electricity to the electric motor for added propulsion or to the High Voltage battery for charging.	Driven in high-speed, low-load conditions: • The gasoline engine provides propulsion to the wheels. • The High Voltage battery supplies electricity to the electric motor for added propulsion. • The electric motor provides electricity to the High Voltage battery through regenerative braking.	The accelerator pedal is released and the vehicle is decelerating. • The electric motor provides electricity to the High Voltage battery through regenerative braking.
Power Flow Monitor				
Electric motor	Stopped/Running	Running	Generating/Running	Regenerating
Generator	Stopped	Generating	No Output	Stopped/No Output
Engine	Stopped	Running	Running	Stopped/No Output
High Voltage battery	Discharge	Charging/Discharge	Charging/Discharge	Charging

● **Regenerative Energy and Regenerative Braking**

When regenerative braking is in operation



When decelerating without the accelerator being depressed or the brake pedal being applied, or while driving downhill, the electric motor acts as a generator that recovers a portion of the electrical energy that was used to accelerate the vehicle. This regenerative braking slows the vehicle in a manner similar to engine braking in a gasoline-powered vehicle. You can control the rate of deceleration by using the deceleration paddle selector.

● **Auto Engine Stop/Start**

Your vehicle's gasoline engine automatically stops running during vehicle operation or restarts while the vehicle is stationary when it is appropriate.

In the following cases, however, auto engine stop may not activate.

- The vehicle momentarily needs additional power for aggressive acceleration, or driving uphill or at high speed.
- The climate control system is in heavy use.
- The High Voltage battery temperature is high or low.
- The High Voltage battery is too low on charge.

Predictive Eco Assist*

Predictive Eco Assist helps you drive more economically to your destination during navigation route guidance.
It predicts how much the high voltage battery can be charged by regenerative braking when driving downhill on the way to the destination, and operates in EV mode as much as possible.

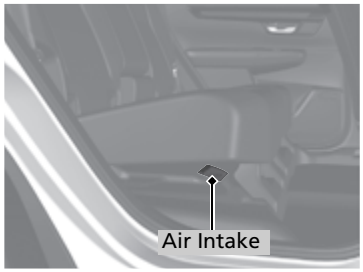
If there are any stops on the way to the destination, it works more effectively if they are set as waypoints.
If you leave the suggested navigation route, Predictive Eco Assist may not function in a way that is suitable for your route.
You can turn Predictive Eco Assist on and off in Vehicle Settings using the audio/information screen.

➔ **Customized Features** P. 376

* Not available on all models

Safety Precautions

Do not cover the air intake.



If the air intake is obstructed during vehicle operation, the High Voltage battery can become too hot. To protect the battery, the system may start to limit the battery's output and cause the power system and 12-volt battery charging system indicators to come on.

Do not touch the High Voltage system

Attempting to take a High Voltage system component apart or disconnect one of its wires can cause severe electrical shock. Make sure that any maintenance or repairs to the High Voltage system are performed by a Honda dealer.

If a crash occurs

● Be careful of electric shock hazard.

▶If a severe crash damages your vehicle's High Voltage system, there is a possibility of electrical shock due to exposed High Voltage components or wires. If this happens, do not touch any of the High Voltage system components or any of its orange wires.

● Avoid contact with High Voltage battery fluid.

▶The High Voltage battery contains a flammable electrolyte that could leak as a result of a severe crash. Avoid skin or eye contact with the electrolyte as it is corrosive. If you accidentally come into contact with the electrolyte, rinse the exposed skin or flush your eyes with copious amounts of water for at least five minutes, and seek medical attention immediately.

● Use a fire extinguisher for an electrical fire.

▶Attempting to extinguish an electrical fire with even a small quantity of water, from a garden hose for instance, can be dangerous.

● Any time the vehicle is damaged in a crash, have it repaired by a dealer.

Emergency Shutdown System for the High Voltage System

If the vehicle is involved in a crash, the emergency shutdown system will activate depending on the severity of the impact. When the system activates, the High Voltage system automatically shuts down, and the vehicle can no longer move under its own power. To return the High Voltage system back to normal operation, consult a dealer.

Honda collects and recycles High Voltage batteries used in its vehicles – consult a dealer for more information.