

P12 Hybrid System – **EMERGENCY RESPONSE GUIDE**

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FOREWORD

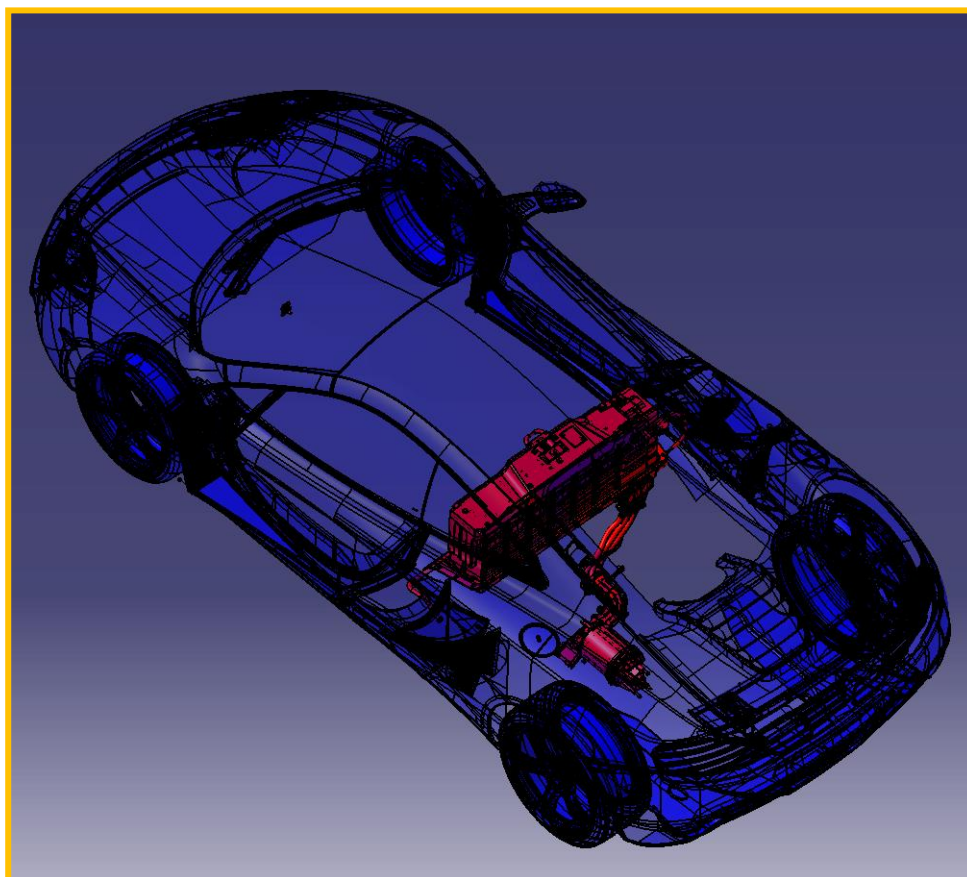
The procedures outlined in this guide are supplemental to existing emergency procedures and are not a replacement for them. The aim of this guide is to inform proving ground emergency services personnel of the hybrid system specific to McLaren Automotive, and the additional actions that must be taken in an emergency situation that are related to the Hazardous Voltage (HV) systems on the vehicle.

HYBRID VEHICLE IDENTIFICATION

Yellow and Black identification stickers are located on both the front and rear screens.



HYBRID SYSTEM LAYOUT



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HAZARDS FROM HYBRID SYSTEM

Dangers –

- Electric Shock
- Electric burn
- Arc flash
- Fire / Explosion

Safety Measures –

- Fully insulated conductors
- Closed loop system with floating HV BUS
- HV Interlock Loop (HVIL)
- Ground Fault Detection (GFD)
- More stable battery chemistry

EMERGENCY PROCEDURES

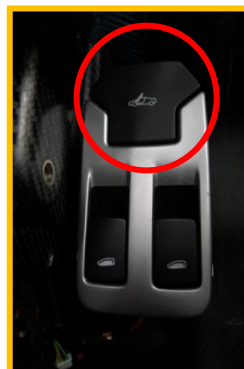
In an emergency situation, existing emergency procedures should be followed along with the additional actions detailed below to minimise the risk of injury due to the HV system in the vehicle.

Accident / Collision

1. **STABILIZE AND IMMOBILIZE THE VEHICLE** – *Chock wheels if necessary*
2. **OPEN DOOR (if possible)** – **THIS IS SAFETY CRITICAL**



Exterior door release
(**WEAR INSULATING GLOVES**)



Interior door release



Manual interior
door release pull

3. **HIT THE EMERGENCY STOP SWITCH** (circled in **RED**) – *This also kills the HV system*
4. **PRESS THE BATTERY OFF SWITCH** (circled in **GREEN**) – *This kills the 12V system*



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EMERGENCY PROCEDURES (Continued)

Then if possible and safe to do so:

- PULL THE HYBRID FUSE OUT (circled in red below) – Located in the passenger footwell



- REMOVE THE SERVICE DISCONNECT (shown below) – Located between the driver and passenger seat at the back of the tub



Vehicle Fire

- All prototype vehicles contain a plumbed in fire suppression system – please refer to vehicle manual
- Use standard operating vehicle fire fighting procedures
- Be wary of battery fires being induced by a vehicle fire

Submersion

- There is no risk of electric shock from touching the car's body or frame – in or out of the water
- Pull the vehicle out of the water and follow the "Accident / Collision" procedure above

Battery Fire / Leak

The HV battery uses Lithium Iron Phosphate cells containing electrolyte gel –

- **Harmful** if swallowed, inhaled, or absorbed through skin.
- Utilize self-contained breathing apparatus (**SCBA**) and firefighting protective clothing in a defensive mode (uphill, upwind, upstream)
- **Fire** – Use foam extinguishers or a large amount of water to remove heat from battery
- **Leak** – Eliminate all ignition sources
 - Do not touch or walk through spilled material
 - Absorb with earth, sand or other neutralizing material

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Extrication – DO NOT CUT ZONES



High Voltage Components



Airbag Locations

