## Hybrid Emergency Response Information

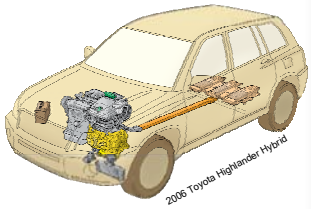
Release 1.0 (4/07) Slide 1

TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

Presentation Overview

- Hybrid Operation
- Hybrid Identification
- Hybrid Components
- Starting/Shutting Off Procedures
- Vehicle Operation
- High Voltage Safety
- Supplemental Restraint Systems
- Extrication
- Submersion
- Fire
- Spills
- Recovery/Recycling/Disposal
- First Aid
- Roadside Assistance



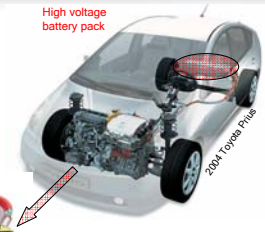

Release 1.0 (4/07) Slide 2

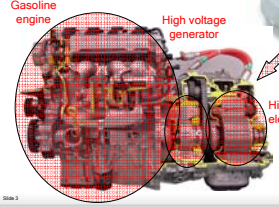
TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

Hybrid Operation

- Power sources
- Energy sources
- High voltage battery recharging
- High voltage electricity
- Running silent

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TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

TOYOTA Hybrid Models

- 2001 - 2003 PRIUS
- 2004 - PRIUS
- 2006 - HIGHLANDER
- 2007 - CAMRY

LEXUS Hybrid Models

- 2006 - RX 400h
- 2007 - GS 450h
- 2008 - LS 600h L



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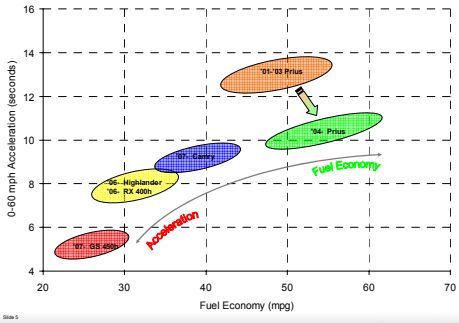
TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

Hybrid Performance Graph

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TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

Hybrid Exterior Identification

- Exterior body
- Hybrid badging


TOYOTA Hybrids:

- Identified by Hybrid Synergy Drive and Hybrid badging.

LEXUS Hybrids:

- Identified by model badge designation "**h**", and Hybrid badging


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TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

### Hybrid Interior Identification

- Conventional and hybrid interiors nearly identical
- Instrument cluster READY indicator
- kW power meter
- Shift lever position "B" for low gear

'04 Toyota Prius

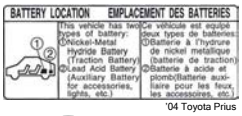
'06 Lexus RX 400h



## Hybrid Emergency Response Information

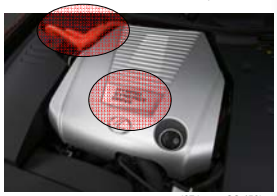
### Engine Compartment Identification

- Visible hybrid identifier
- Orange high voltage power cables
- Battery location label




'04 Toyota Prius

'04 Toyota Prius



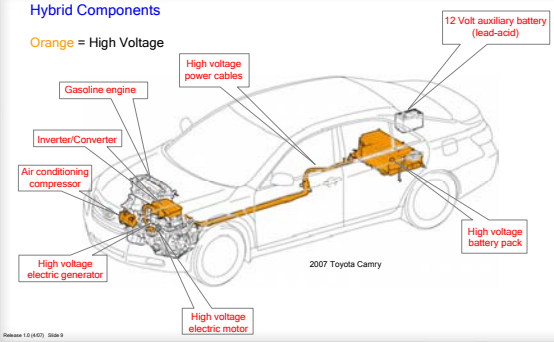
'07 Lexus GS 450h



## Hybrid Emergency Response Information

### Hybrid Components

Orange = High Voltage



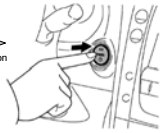
## Hybrid Emergency Response Information

### Starting/Shutting Off Procedures

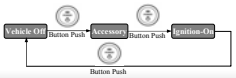
- Conventional metal cut key
- Smart key
  - Power button/no ignition switch
  - Wireless communication
  - Smart key out of sight
  - Power button push start/stop

Metal key

Bidirectional Communication



Smart key






## Hybrid Emergency Response Information

### Vehicle Operation

- READY Instrument cluster light
- Operational status

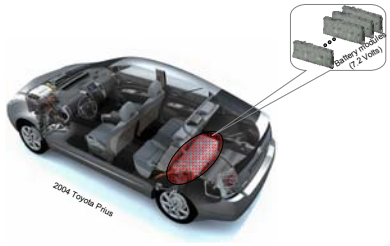
'06 Lexus RX 400h



## Hybrid Emergency Response Information

### High Voltage Safety

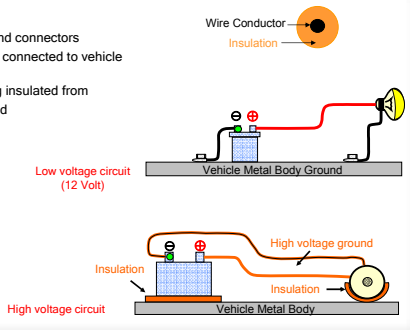
High voltage battery pack (201-288 Volts DC)



## Hybrid Emergency Response Information

### High Voltage Safety

- Insulated cables and connectors
- Low voltage wiring connected to vehicle body ground
- High voltage wiring insulated from vehicle body ground

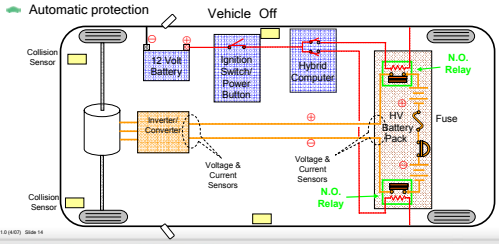





## Hybrid Emergency Response Information

### High Voltage Safety

- Hybrid vehicle high voltage circuit
  - Vehicle Off
  - Vehicle On
- Manual protection
- Automatic protection

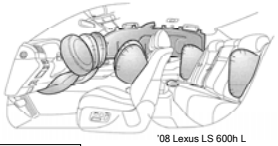





## Hybrid Emergency Response Information

### Supplemental Restraint System

SRS standard and optional equipment
- Airbag identification
- 90 second SRS reserve time
- Rear cushion airbag (optional)
- Pre-collision safety system (optional)



'08 Lexus LS 600h L

**⚠ WARNING:**
- *The SRS may remain powered for up to 90 seconds after the vehicle is shut off or disabled.*
- *To prevent serious injury or death from unintentional SRS deployment, avoid crushing, cutting or breaching the SRS components.*

Rear passenger seat cushion airbag
'08 Lexus LS 600h L

## Hybrid Emergency Response Information

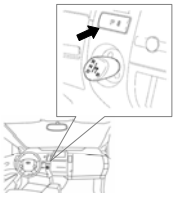
### Extrication

Immobilize the vehicle
- Chock wheels
- Set parking brake
- Shift into park

Chock wheels


Set parking brake

Shift to park



Park button
'04 Toyota Prius



TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

### Extrication

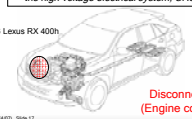
Disable the vehicle
- Shut vehicle off (READY is off)
- Remove the key to a safe distance
- Disconnect 12 Volt auxiliary battery

Shut vehicle off

Note: Alternative disabling methods vary by make/model consult ERGs.

**WARNING:**
- *The high voltage system may remain powered for up to 10 minutes after the vehicle is shut off or disabled. To prevent serious injury or death from severe burns or electric shock, avoid touching, cutting, or breaching any orange high voltage power cable or high voltage component.*
- *If none of the disabling procedures can be performed, proceed with caution as there is no assurance that the high voltage electrical system, SRS, or fuel pump are disabled.*

2006 Lexus RX 400h



Disconnect 12 Volt auxiliary battery
(Engine compartment, cargo, or trunk)

Optional active stabilizer suspension system 12 Volt battery

2007 Lexus GS450h

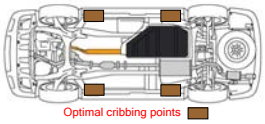


TOYOTA LEXUS Exit

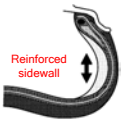
## Hybrid Emergency Response Information

### Extrication

Stabilize the vehicle
- Cribbing
- Run flat tires
- Air suspension system



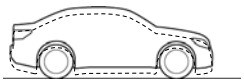
Optimal cribbing points
'06 Lexus RX 400h



Reinforced sidewall

'07 Lexus GS 450h

Tire pressure sensor with metal valve stem



Air suspension lowering
'08 Lexus LS 600h L



TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

### Extrication

Access Patients
- High voltage concerns
- Laminated side windows

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TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

### Submersion

- Extrication
  - Access patients
- Vehicle Recovery
  - Remove the vehicle from the water
  - Drain the water from the vehicle if possible
  - Follow immobilizing and disal

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TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

### Fire

- Extinguishing agent
- Initial fire attack
- Fire in the high voltage battery pack
  - Offensive fire attack
  - Defensive attack

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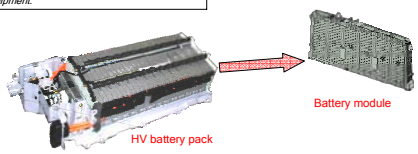
TOYOTA LEXUS Exit

## Hybrid Emergency Response Information

### Spills

- NiMH battery modules
- Personal protective equipment
- Neutralize NiMH electrolyte
- MSDS availability

**⚠ WARNING:**
*The NiMH battery electrolyte is a caustic alkaline (pH 13.5) that is damaging to human tissues. To avoid injury by coming in contact with the electrolyte, wear proper personal protective equipment.*



Battery module

HV battery pack





## Hybrid Emergency Response Information

### Recovery/Recycling/Disposal

High voltage NiMH battery pack recycling
- Toyota/Lexus dealer
- Toyota/Lexus customer assistance

United States:
Toyota (800) 331-4331
Lexus (800) 255-3987

Canada:
Toyota (888) 869-6828
Lexus (800) 265-3987

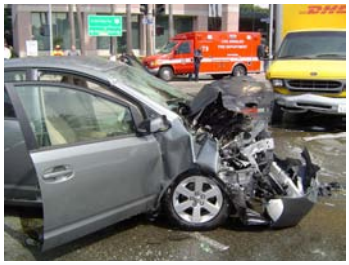





## Hybrid Emergency Response Information

### First Aid

- NiMH battery electrolyte
- Personal protective equipment
- Absorption
- Inhalation
- Ingestion



## Hybrid Emergency Response Information

### Roadside Assistance

- Towing
  - Flat bed trailer
  - Keep drive wheels off the ground
  - Various drive configurations

| | Model | Model Year | Front Wheel Drive | All Wheel Drive | Rear Wheel Drive |
|---|---|---|---|---|---|
| TOYOTA | PRIUS | '01 - '03 | Standard | | |
| | PRIUS | '04 - | Standard | | |
| | HIGHLANDER | '06 - | Available | Available | |
| | CAMRY | '07 - | Standard | | |
| LEXUS | RX 400h | '06 - | Available | Available | |
| | GS 450h | '07 - | | | Standard |
| | LS 600h L | '08 - | | Standard | |

- Jump Starting
  - Similar to non-hybrid vehicles.
  - Connect booster battery to the 12 Volt auxiliary battery.
  - 12 Volt auxiliary battery location varies.





## Hybrid Emergency Response Information

### Summary


- Hybrid identification
  - Hybrid badging
  - READY indicator
  - Orange high voltage
- High voltage safety
  - Insulated ground
  - Manual and automatic disconnects
- Extrication
  - Immobilize
  - Disable
  - Stabilize
- Fire
  - Water
- Spills
  - NiMH alkaline electrolyte
- Website
  - http://techinfo.toyota.com or http://techinfo.lexus.com
- Comments
  - email to ERG@toyota.com