

EV Challenges from the 'SSP' Perspective

Safety Service
Patrol

Courtesy Patrol

Roadside Safety
Services



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EV Traffic Incident Management Challenges include;

- ✓ Electric Vehicle (EV) ... "Disabled"
- ✓ Electric Vehicle (EV) ... "Collision"
- ✓ Electric Vehicle (EV) ... "Submersion"
- ✓ Electric Vehicle (EV) ... "Fire"

EV Terminology That Operators Should Know include;

- ERG
- Rescue Card/Sheet
- ICE
- Badging
- UHSS/ Boron
- Last Mile Delivery
- Robo-Taxi
- Class 4 & Class 8 BEVs
- Skateboard
- Lithium Ion Chemistry
- Stranded Energy
- Thermal Run-away
- Off-Gassing



Photo: Jack Roberts

Emergency Response Guides (ERGs) & Rescue Sheets



TESLA

INFORMATION FOR FIRST AND SECOND RESPONDERS

EMERGENCY RESPONSE GUIDE

TESLA MODEL 3 ELECTRIC


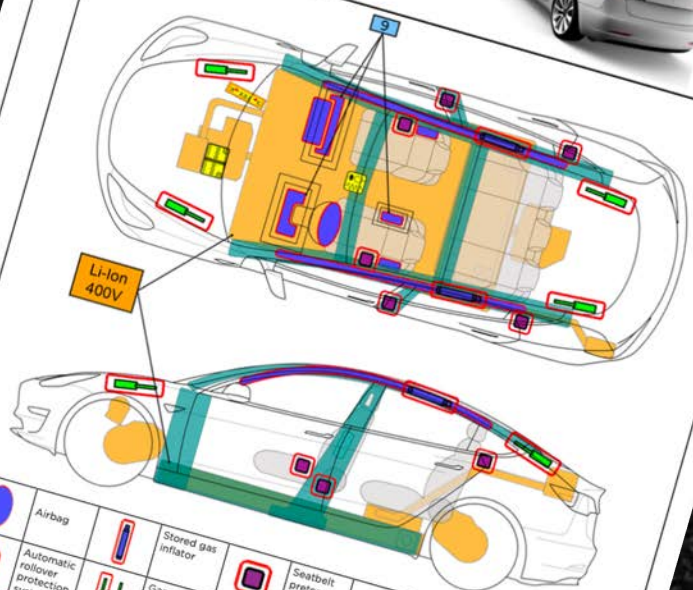
LI-ION

001

TESLA

TESLA MODEL 3
From 2020—Present

	Airbag		Stored gas inflator		Seatbelt pretensioner		SRS Control Unit		Pedestrian protection active system
	Automatic rollover protection system		Gas strut/pre-loaded spring		High strength zone		Zone requiring special attention		Safety valve
	Battery low voltage		Ultra capacitor low voltage		Fuel tank		Gas tank		Ultra capacitor, high voltage
	High voltage battery pack		High voltage power cable/component		High voltage disconnect		Fuse box disabling high voltage system		
	Cable cut								

TESLA MODEL 3 From 2020 — Present

ID No. _____

TESLA-202012-003

Version No. 01

Floorpan-mounted Lithium Ion HV Battery



shown: VW ID. 4

1st & 2nd Responder
7-Step
Lock Out/Tag Out
Protocol for
Hybrids, Plug-ins,
& EVs

xEV Lock Out/Tag Out

- 1) Identify as xEV
 - 2) Stabilize vehicle
 - 3) Access Interior
 - 4) 'Park' & 'E' Brake
 - 5) Ignition OFF
 - 6) Dash Indicators Out
 - 7) 12-v Battery
- Shutdown?

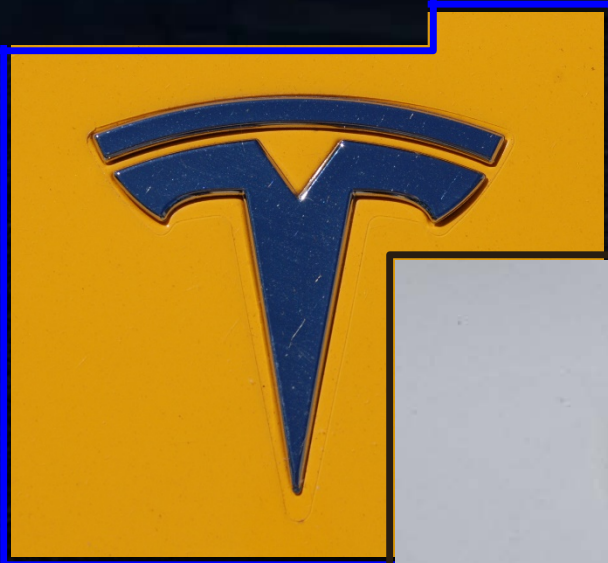
EV 'Badging'



VOLT



ALL-ELECTRIC



ID. 4



1) IDENTIFY



Four(4) EVs from Same Manufacturer (Tesla) & Each Have Different Emergency Protocols

SSP EV Service Call examples;

- ✓ Dead Battery- 12v or HV
- ✓ Flat Tire-
- ✓ Vehicle Lockout-
- ✓ Debris Entanglement-

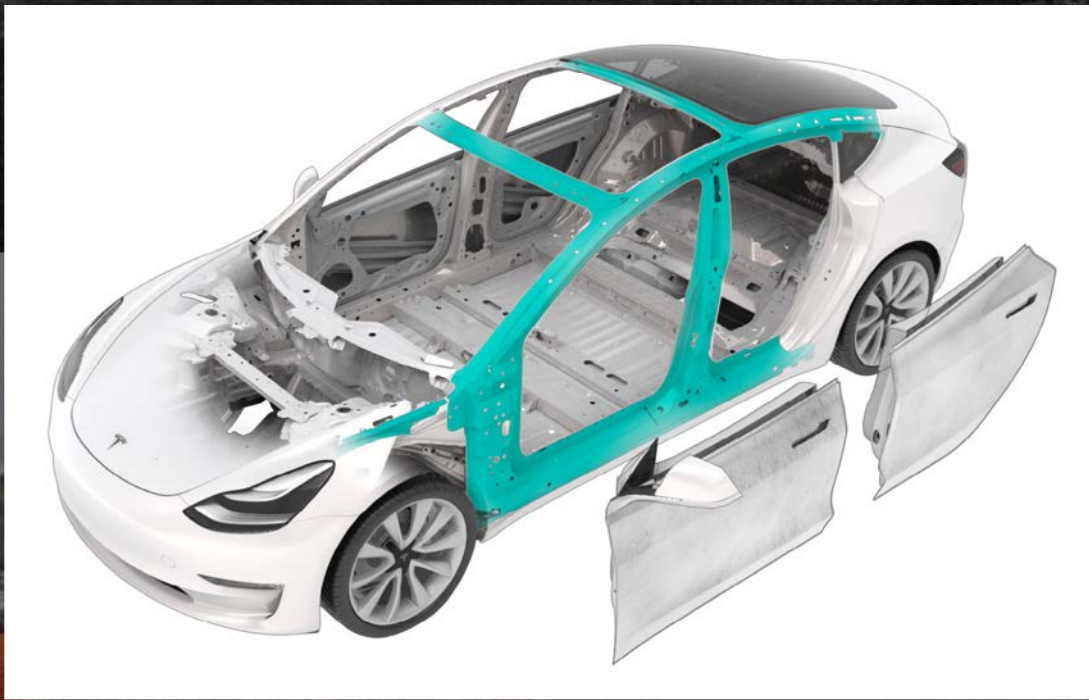


Electric Vehicle ... “Collision”

✓ Body Damage Only

✓ HV Battery Damaged





Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped With High-Voltage Batteries (Towing and Recovery Operators and Vehicle Storage Facilities)

www.NHTSA.gov



“Special” Considerations:
EV Towing & Recovery

**Interim Guidance for Electric and Hybrid-Electric Vehicles
Equipped With High-Voltage Batteries
(Towing and Recovery Operators and Vehicle Storage Facilities)**

Electric and Hybrid-Electric Vehicle Considerations

- In the event of damage, fire, or flooding involving an electric vehicle (EV) or hybrid-electric vehicle (HEV):
 - Always assume the high-voltage (HV) battery and associated components are energized and fully charged.
 - Exposed electrical components, wires, and HV batteries present potential HV shock hazards.
 - Venting/off-gassing HV battery vapors are potentially toxic and flammable.
 - Physical damage to the vehicle or HV battery may result in immediate or delayed release of toxic and/or flammable gases and fire.
 - A HV battery in a flooded vehicle may have high voltage and short circuits that can shock and cause fires.

• DETERMINE IF THE VEHICLE IS AN ELECTRIC OR HYBRID-ELECTRIC VEHICLE, and if it is, advise Dispatch and all responders that an electric or hybrid-electric vehicle is involved.

- Be alert. There is a potential for delayed fire with damaged lithium-ion batteries.
- Consult with the responding fire department to determine the actions it took.
- If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping, or hissing noises from the battery compartment, call 911.
- Notify an authorized service center or vehicle manufacturer representative as soon as possible as there may be additional steps necessary you or they can take to secure and discharge, handle, and store the HV battery and vehicle.
- Notify the storage facility of your actions and the actions the Emergency Responders told you that they took.

If you are properly trained and equipped, which includes using personal protective equipment, then consider the following:

RECOVERING/TRANSPORTING VEHICLE

- Call an authorized service center or vehicle manufacturer representative to determine additional steps that you should take to safely recover or transport the vehicle.
- Always approach vehicle from the sides to stay out of potential travel path. It may be difficult to determine if the vehicle is running due to lack of engine noise.
- Place vehicle in Park, set the parking brake, turn off the vehicle, activate hazard lights, and remove keys to a distance of at least 16 feet from the vehicle until loading the vehicle for transport.
- Refer to vehicle manufacturer representative to determine additional steps that you should take to safely recover or transport the vehicle.
- Avoid contact with orange high-voltage cabling and areas identified as high-voltage risk by warning labels.

STORING VEHICLE

- Do not store a severely damaged vehicle with a lithium-ion battery inside a structure or within 50 feet of any structure, vehicle, or combustibles.
- Ensure that passenger and cargo compartments remain ventilated.
- Prior to placing and while located in storage area/tow lot, continue to inspect vehicle for leaking fluids, sparks, smoke, flames, gurgling, or bubbling sounds from the HV battery and call 911 if any of these are detected.
- Maintain clear access to stored vehicles for monitoring and emergency response if needed.

U.S. Department of Transportation
National Highway Traffic Safety Administration

ROADSIDE ASSISTANCE

Tesla Roadside Assistance is available to you, 24 hours a day, 365 days a year, throughout the United States and Canada for the duration of your warranty period. To contact Roadside Assistance, call 1-877-79TESLA (1-877-798-3752).

Advise the representative of the vehicle identification number (VIN), license plate number, mileage, your location, and the nature of the problem. The VIN is on the upper dashboard on the driver's side of your vehicle and is visible through the windshield.

For a complete description of the terms and conditions of the Tesla Roadside Assistance Program, refer to the policy that was provided to you by Tesla when you purchased Model S.

It is your responsibility to provide vehicle transporters with instructions on how to transport Model S.

INSTRUCTIONS FOR TRANSPORTERS

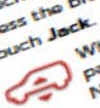


Use a Flatbed Only

Use a flatbed trailer only, unless otherwise specified by Tesla. Do not transport Model S with the tires directly on the ground. To transport Model S, follow the instructions exactly as described. Damage caused by transporting Model S is not covered by the warranty.

Disable Self-Leveling (air suspension vehicles only)

- If Model S is equipped with Active Air Suspension, it automatically self-levels, even when power is off. To prevent damage, you must use the touchscreen to activate Jack mode, which disables self-leveling:
1. Touch **CONTROLS** on the bottom left of the touchscreen.
 2. Press the brake pedal, then touch **Controls > Driving > Very High** to maximize height.
 3. Touch **Jack**.



When Jack mode is active, Model S displays this indicator light on the instrument panel, along with a message telling you that active suspension is disabled.

NOTE: Jack mode cancels when Model S is driven over 4.5 mph (7 km/h).

CAUTION: Failure to activate Jack mode on a Model S equipped with active air suspension can result in the vehicle becoming loose during transport, which may cause significant damage.

Activate Tow Mode

Model S may automatically shift into Park when it detects the driver leaving the vehicle, even if it has previously been shifted into Neutral. To keep Model S in Neutral (which disengages the parking brake), you must use the touchscreen to activate Tow mode:

1. Shift into Park.
2. Press the brake pedal, then on the touchscreen, touch **Controls > E-Brake & Power Off > Tow Mode**.



When Tow mode is active, Model S displays this indicator light on the instrument panel, along with a message telling you that Model S is shifted into Park.

NOTE: Tow mode cancels when Model S is shifted into Park.

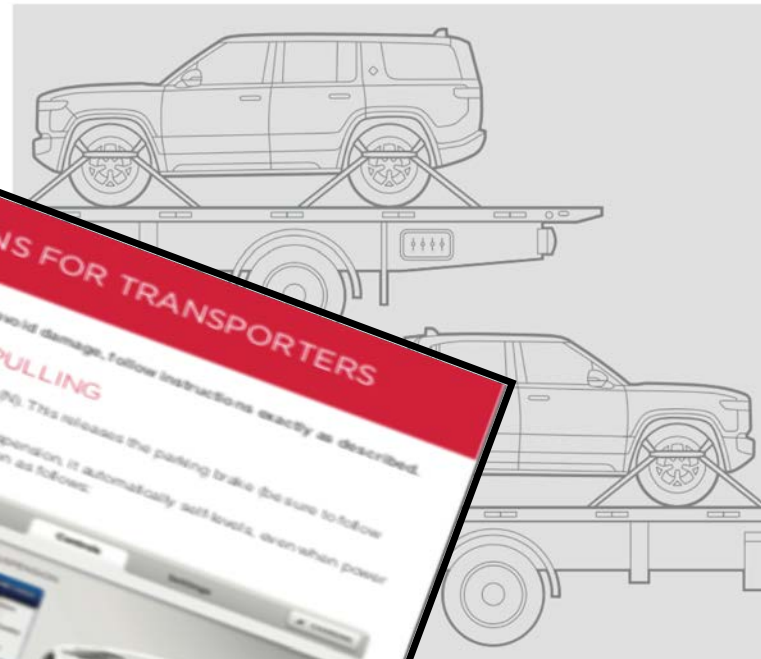
CAUTION: If the electrical system is not working, and you therefore cannot release the parking brake, attempt to quickly start the 12V battery. For instructions, call the parking brake on the previous page. If a situation occurs where you cannot disengage the parking brake, so, always check the dolly manufacturer's specifications and recommended load capacity.

Call 1-877-79TESLA (1-877-798-3752)

EV "Tow Mode" or "Transport Mode"

R1T + R1S

Tow Operator Guide



INSTRUCTIONS FOR TRANSPORTERS

Use a flatbed trailer only. Do not tow! To avoid damage, follow instructions exactly as described.

PREPARE MODEL S FOR PULLING

1. Press the brake pedal and shift into Neutral (N). This releases the parking brake (be sure to follow step 3 to keep Model S in Neutral).
2. If your Model S is equipped with Active Air Suspension, use the touchscreen to set the suspension as follows: Touch **CONTROLS** on the bottom left of the touchscreen.

Press the brake pedal, then touch **VERY HIGH** to maximize height.

Touch **JACK** to disable self-leveling.



When JACK mode is active, Model S alerts you by displaying this indicator light along with a message telling you that active suspension is disabled.

NOTE: JACK mode cancels automatically when Model S is driven over 4.5 mph (7 km/h).

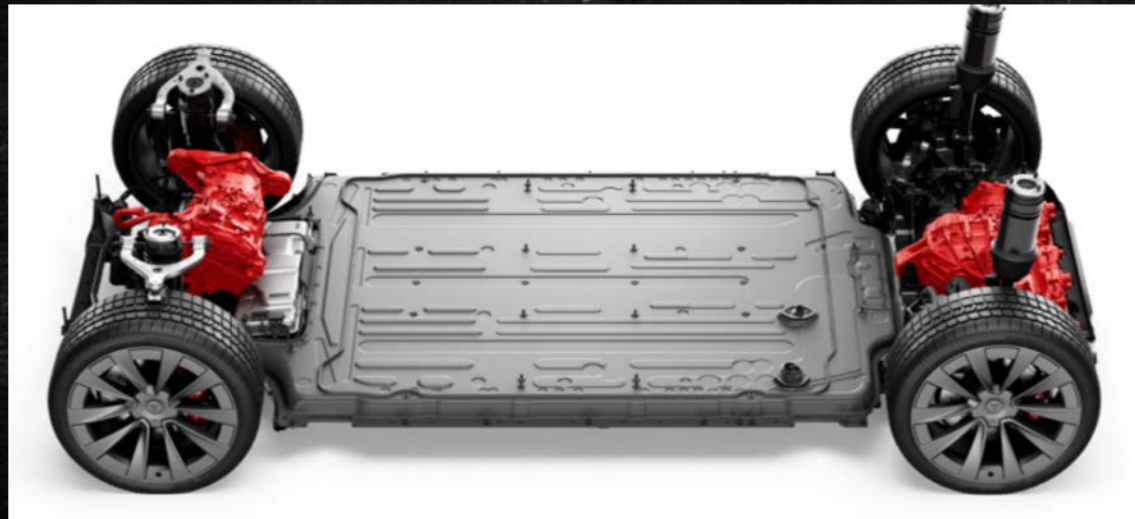
3. To keep the gear in Neutral, power Model S off manually by touching **CONTROLS > E-BRAKE & POWER OFF > POWER OFF**. If you don't power off manually, Model S automatically shifts into Park when you open the door.

EV Submersion



Electric Vehicle ... “Fire”

- ✓ Vehicle/Passenger Compartment Fire
- ✓ Lithium-Ion HV Battery Fire



Safety Risks to Emergency Responders from Lithium-Ion
Battery Fires in Electric Vehicles



Safety Report

NTSB/SR-20/01
PB2020-101011



National
Transportation
Safety Board

NTSB Safety Report:

Safety Risks to
Emergency Responders from
Lithium-Ion Battery Fires
in Electric Vehicles

Google search: [NTSB/SR-20/01](#)



Tesla Model S Fire

June 29, 2021 8:55pm

Lower Merion Township, PA



Images: Gladwyn FD

"Two supply lines were laid and firefighters used two handlines ...

Copious amounts of water were poured on the vehicle for over 2 hours..."

Gladwyne (PA) FD



Woodlands TX firefighters
worked close to
4 hours at incident



Firefighters used over
23,000 gallons of water
to put out the flames.

Spring, TX April 17, 2021 9:07 pm

Image: NTSB

“Lift & Tilt” Fire Suppression Technique



Water “Tub” Fire Suppression Technique



Lake Forest, CA Crash & Fire

August 2017



Tesla Model X: 82-mph crash into garage

Battery fire re-ignited multiple times including while being loaded onto tow truck.

Approximately 27,000 gallons of water used to combat just the vehicle fire

Lake Forest, CA August, 2017



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