



Mullen ONE

Emergency Response Guide



Contents

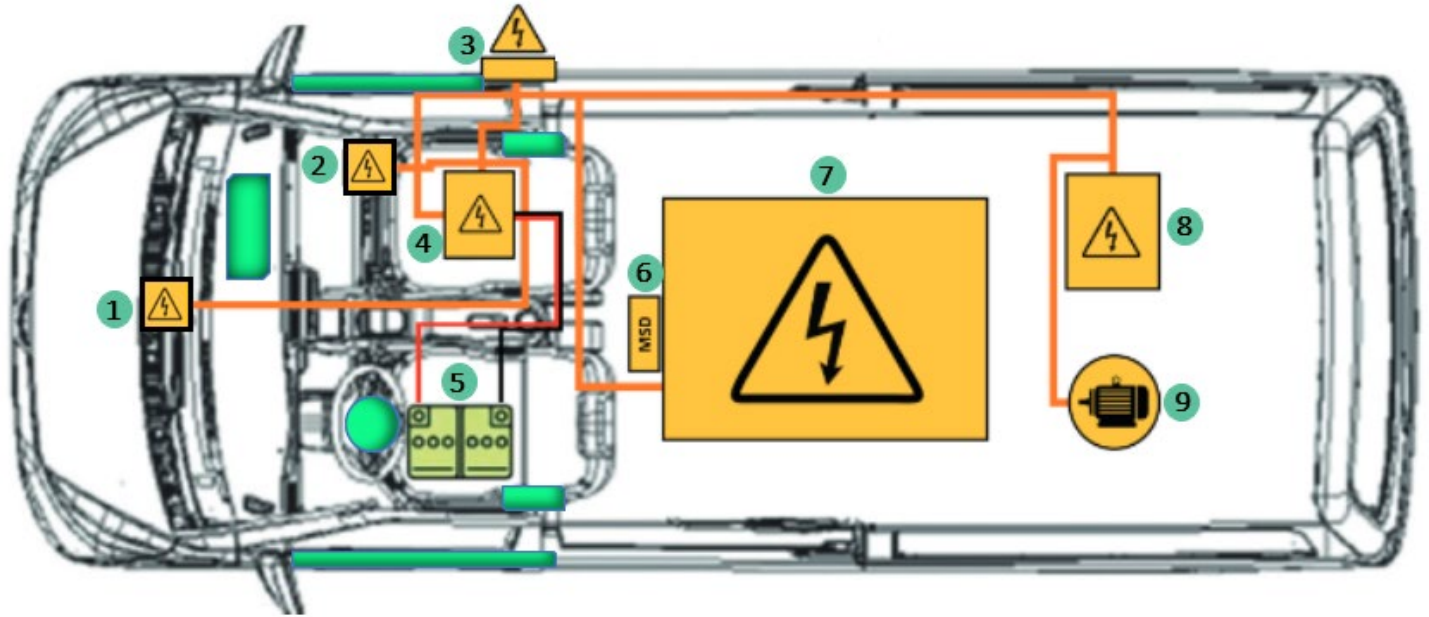
Rescue Sheet.....	2
High and Low Voltage Battery Hazards	3
Disabling High and Low Voltage Systems	4
Occupant Removal	6
Stored Energy / Liquids / Gases / Solid	7
In Case of Fire.....	7
In Case of Submersion	7
Moving Damaged Vehicles	7
Damaged Vehicle Storage	8
High Volt Battery Handling & Storage	8
Component Index	8
Explanation of Pictograms	9
Contact Information	9

Rescue Sheet

Mullen Automotive, Inc. (Mullen) electric vehicles use an electric motor for power and the electricity required to power this electric motor is stored in a high voltage battery pack. Lack of engine noise does not mean the vehicle is off. Silent movement or instant restart capability exists until the vehicle is fully shut down using the Manual Service Disconnect (MSD). When approaching an electric vehicle of this nature in a fire, rescue, or recovery situation, follow this industry standard rule: **Always assume the high voltage system is live!**

⚠ DANGER

ELECTRIC VEHICLES DAMAGED IN A CRASH MAY HAVE COMPROMISED HIGH AND/OR LOW VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE EXTREME CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS, THEN ISOLATE THE HIGH VOLTAGE SYSTEM AS DIRECTED BELOW. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.



1. Positive Temperature Coefficient (PTC) Heater		6. Manual Service Disconnect (MSD)	
2. Air Conditioning Compressor		7. High Voltage Battery	
3. Inlet Charging Port		8. Motor Control Unit (MCU)	
4. Triple Auxiliary Drive System (3-in-1)		9. High Voltage Drive Motor	
5. 12-Volt Battery		Airbags	
Cables		12-Volt (Positive) Cables	
High Voltage Cables		12-Volt (Negative) Cables	

⚠ CAUTION

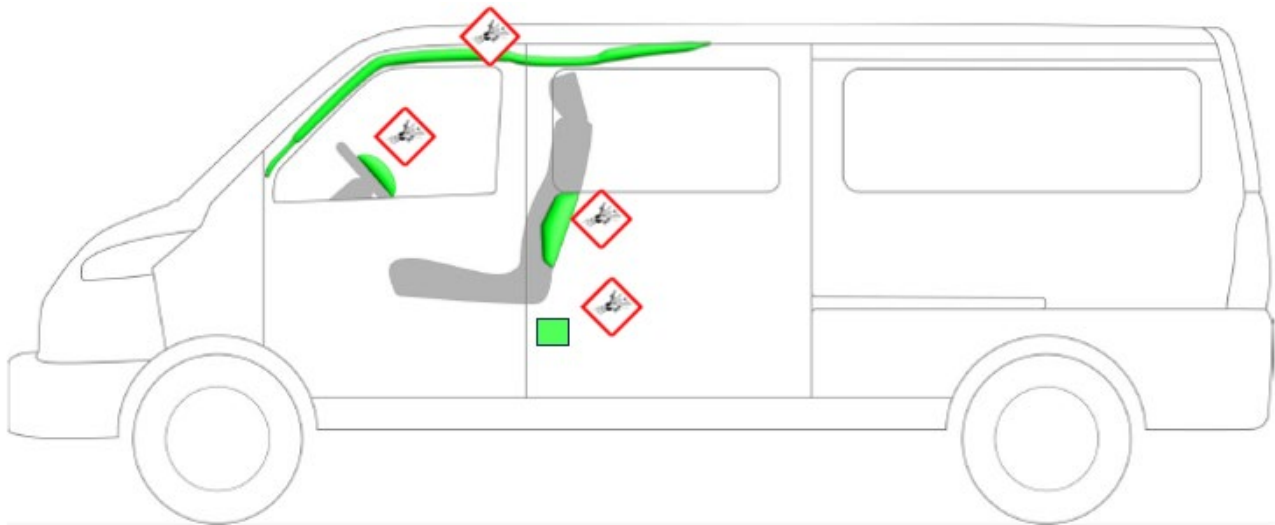
THIS VEHICLE IS NOT EQUIPPED WITH “PARK” ON THE GEAR SELECTOR. YOU MUST ALWAYS ENGAGE THE PARKING BRAKE LOCATED TO THE RIGHT OF THE DRIVER’S SEAT.

⚠ CAUTION

THIS VEHICLE IS EQUIPPED WITH PYROTECHNIC PASSIVE SAFETY RESTRAINTS (AIRBAG/SEATBELT).

Locations as follows:

- Driver's Side
 - Steering Wheel
 - Seat Side (outboard)
 - Curtain
 - Seatbelt Pretensioner
- Passenger Side (only with passenger seating position)
 - Instrument Panel
 - Seat Side (outboard)
 - Curtain
 - Seatbelt Pretensioner



High and Low Voltage Battery Hazards

- Removing the MSD from the vehicle does not dissipate voltage inside the battery, the battery pack remains live and dangerous. This may also be true for the high-voltage components discussed below.
- There is no way to instantaneously discharge the energy that is stored inside of a battery pack when a vehicle is in an accident.
- High-voltage battery packs damaged in a traffic accident may emit toxic irritants to eyes, skin, and lungs as well as emitting combustible gases. Always wear personal protective equipment (PPE) and self-contained breathing apparatus when working near a damaged electric vehicle.
- Avoid working on a damaged electric vehicle in a confined area, such as a tunnel or garage. Move the vehicle or ventilate the work area if possible. Ventilate the interior of a damaged vehicle by opening windows or doors if possible.
- All high-voltage wires and harnesses are wrapped in orange insulation. Treat every battery pack and high-voltage (orange) cable as if they are “hot”. Never cut a high-voltage (orange) cable or cut into a battery pack.
- When the 12-volt (low-voltage) cables are cut at the battery, the high-voltage system will be disabled due to low-voltage actuating the high-voltage contactors inside the high-voltage battery pack.
- The high-voltage battery cells contain a base electrolyte consisting of lithium hexafluorophosphate

and organic solvents as the dominant active ingredient, absorbed in special polymeric film. The electrolyte will not leak from the battery under most conditions. However, if the battery is crushed, it is possible for a small amount of electrolyte to leak. Use proper clean-up procedures, followed by flushing the impacted area with large amounts of water to clean up any leaked material.

DANGER

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

Disabling High and Low Voltage Systems

Disable both low and high voltage electrical systems by following the instructions below:

STEP ONE:

Turn OFF the vehicle and remove the key from the ignition.

1. Confirm that the vehicle is at a standstill.
2. Ensure parking brake is securely engaged on level ground (“Park” telltale **P**) will illuminate to indicate parking brake is engaged in the driver’s cluster).
3. Vehicle must be in the Neutral (N) gear position (“N” telltale **N**) will illuminate to indicate Neutral gear position is engaged in the driver’s cluster).
4. Turn the key in the ignition to the “OFF” position and remove the key from the ignition.
5. Position wheel and tire chocks to prevent rolling or shifting of the vehicle.



Image: Dash Cluster in Neutral with Parking Brake engaged.



Image: Parking Brake located Right of driver's seat.



Image: Tire chocks.

STEP TWO:

Access and disable low voltage electrical system located under the driver seat.

1. Lift the fore/aft lever and position the seat midway on its track.
2. Lift the recliner lever and bring the seat back forward and down fully.
3. Locate the seat latches at the front base of the seat.
4. Push in the orange tab while lifting on the seat latch until it is unfastened. The seat has two latches.
5. Flip the seat backward and ensure that it is secured, prior to accessing the 12-Volt battery.
6. Disconnect both the Positive and Negative terminals from the 12-Volt battery and insulate them from accidental contact.



Image: (1) Fore/aft Lever. (2) Recliner Lever



Image: Latch secured



Image: Latch unsecured

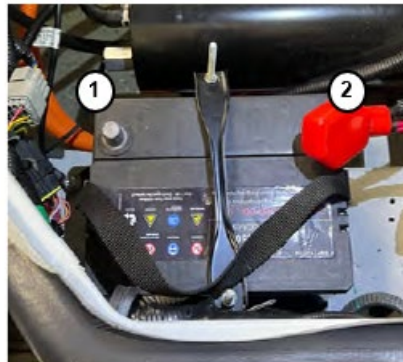


Image: (1) Negative Terminal. (2) Positive Terminal

STEP THREE:

The MSD plug must be removed to disable the high-voltage system.

1. Locate the MSD plug on the front side of the high-voltage battery between the driver's seat and mobile office console or passenger's seat.
2. Pull out the orange trigger, also known as the Connector Position Assurance located on the bottom of the MSD.
3. Pull the black locking lever up to expose the release tab (1).
4. Press and hold the release tab inward (2).
5. Rotate the black locking lever up (3).
6. Pull straight out on the body of the MSD to remove it (4).
7. Wait a minimum 15 minutes to allow charges to dissipate.





Image: MSD (Manual Service Disconnect).



Image: MSD located on the front side of the high-voltage battery, next to HV cables.

Occupant Removal

This vehicle is equipped with five designated entry points.

1. Driver Door
2. Driver Side Cargo Door
3. Passenger Door
4. Passenger Side Cargo Door
5. Cargo Door

Vehicle Badging

Mullen One Cargo Van's have a unique badge.

- The Mullen logo is located on the front the vehicle below the hood and on the rear cargo door above the license plate.



Stored Energy / Liquids / Gases / Solid

	  	12V
	     	400V



Coolant leaking inside the battery pack can become unstable and possibly a risk for a fire. Check the battery pack temperature using a thermal imaging camera.

In Case of Fire

If the vehicle is on fire, use a Class ABC powder-type extinguisher to contain and smother the flames.

- While not ideal, water can be used in copious amounts to extinguish the flames. The cooling and smothering effects of water flushing the affected article is still beneficial for minimizing the severity of the event.
- Note that water can cause some degree of arcing/shorting across exposed battery cells and terminals; it can also react with the electrolyte from the battery cells to generate combustible gases and other byproducts such as hydrofluoric acid.

In Case of Submersion

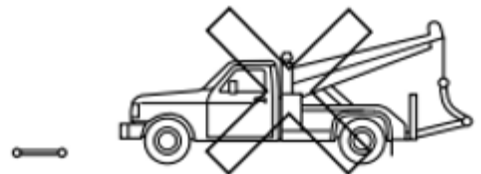
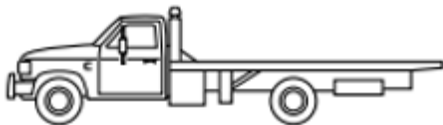
If the vehicle is submerged in water, varying degrees of arcing/shorting within the battery will take place.

- Do not remove the vehicle until you are sure the high voltage battery is completely discharged.
- A submerged high voltage battery may produce a fizzing or bubbling reaction to the water.
- If fizzing or bubbling is observed, the high voltage battery is not fully discharged.

Moving Damaged Vehicles

If the vehicle becomes disabled and requires towing, please do the following:

- Make sure the gear selector dial is in NEUTRAL (N) position and the parking brake is disengaged.
- Disengage high voltage components by removing the MSD and disconnecting the 12-volt battery.



CAUTION

WHEN TOWING THE VEHICLE, USE A FLATBED TRAILER OR TOW FROM THE FRONT WHEELS. TOWING FROM THE REAR WHEELS CAN DAMAGE THE VEHICLE.

Damaged Vehicle Storage

- Ensure the damaged vehicles remain in an open area instead of inside a garage or other enclosed building.
- Do not store a severely damaged vehicle with a lithium iron phosphate battery within 50 feet of any occupied structure or vehicle.
- Make sure the passenger and cargo compartments remain ventilated.
- Regularly inspect damaged vehicles for fluid leaks, sparks, smoke, flames, gurgling or bubbling sounds from the high voltage battery and call 911 if any of these are detected.

High Volt Battery Handling & Storage

Handling:

- Do not open or disassemble the batteries.
- Do not mix batteries of varying size or chemicals.
- Do not connect the positive and negative battery terminals with conductive material.

Storage:









- Batteries should be stored in a well-ventilated area with sufficient clearance between batteries and walls.
- Store the batteries in a cool area (below 30°C) away from moisture.
- Keep the batteries away from sources of heat and open flames.

Component Index

The following provides a description and basic function of the vehicle's electronic system components:

- **Positive Temperature Coefficient (PTC)** – A PTC heater provides the heat source in an electric vehicle and is safer and more reliable than a traditional heater.
- **Air Conditioning Compressor** – This component can affect the high voltage interlock circuit if/when the high voltage cable supplying the component with power is disconnected.
- **Inlet Charging Port** – An opening where the charging cable can be plugged-in to recharge the HV battery from a charge station.
- **Auxiliary Drive System (3 in 1)** – There are three major components in this one device: (1) the On-Board Charger (OBC). (2) the Power Distribution Unit (PDU) and (3) the DC-to-DC Converter. These components can be controlled independently through CAN or analog inputs to power vehicle devices, as well as charge both the high and low voltage batteries.
- **12 Volt Battery** – Lead acid composition that provides all 12-volt electrical storage for the vehicle.
- **Manual Service Disconnect (MSD)** – Uses a two-stage release tab. When removed, this component provides a way to safely disconnect the high voltage battery from related components.
- **High Voltage Battery** – Lithium iron phosphate composition that provides high voltage electrical storage for the vehicle.
- **Motor Control Unit (MCU)** – Converts high voltage battery pack (DC) current to (AC) current to power the high voltage drive motor.
- **High Voltage Drive Motor** – This motor is a liquid cooled, 3-phase AC, permanent magnet synchronous motor. This component converts electrical energy from the high voltage battery to mechanical energy that is delivered to the rear wheels via the rear axle.
- **High Voltage Cables** – These cables can be identified by their large size and orange insulated casing. Provide high voltage connections between the various high voltage components on this vehicle described here.
- **12 Volt Cables** – Provides a path for electricity to flow to various low-voltage electrical components from the 12-volt system including items like: windshield wipers, headlights, taillights, radio, etc.

Explanation of Pictograms

	Battery Technology		Flammable		Corrosive		Toxic
	High Voltage		Explosive		Injury Risk		Infrared

Contact Information

Please visit us at www.mullenusa.com or call Mullen's Customer Solutions Team at (248) 988-4498.

Scan code to access vehicle information. This label is located inside the charge port door and inside the glove box.



These instructions are applicable to Mullen ONE vehicles. Certain devices, facilities or functions introduced in these instructions may not be installed on your vehicle due to different vehicle configurations. Mullen reserves the right to modify any and all information shown without notification. Options subject to change.

Strikingly Different™

