



# **Mullen THREE**

## Emergency Response Guide



Scan code to access vehicle information

## Contents

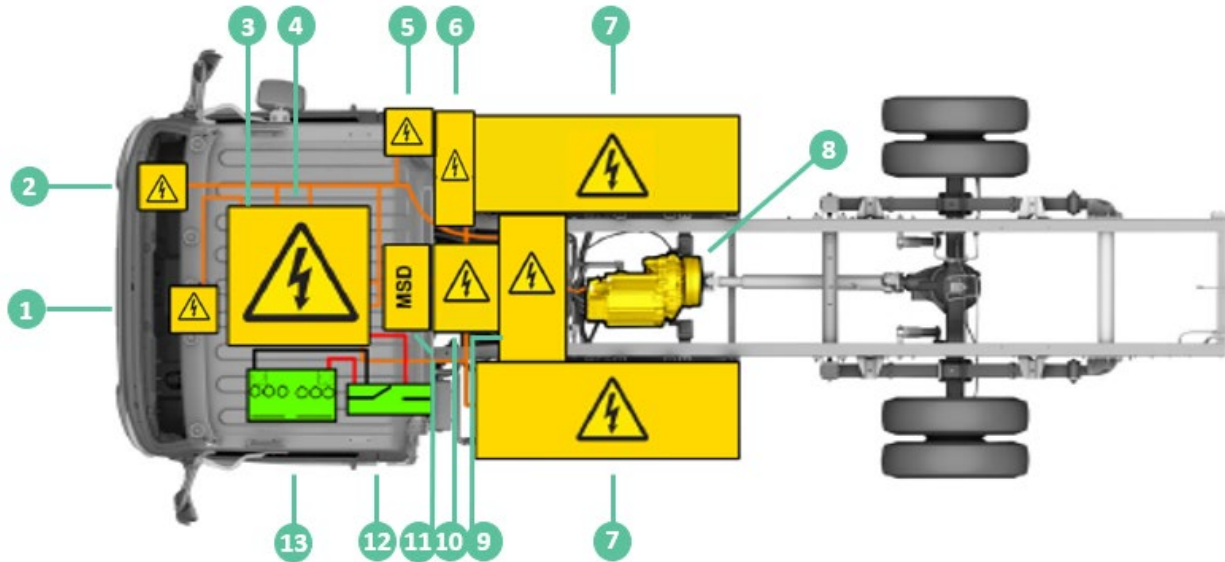
Rescue Sheet.....	2
Disabling High and Low Voltage Systems .....	3
Occupant Removal .....	5
Vehicle Badging .....	5
Stored Energy / Liquids / Gases / Solid .....	6
In Case of Fire.....	6
In Case of Submersion .....	6
Moving Damaged Vehicles .....	7
Damaged Vehicle Storage.....	7
High Volt Battery Handling & Storage .....	7
Component Index .....	7
Explanation of Pictograms .....	8
Contact Information .....	8

# 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 Heater (PTC)		7. High Voltage Battery (2 on each side)	
2. Air Conditioning Compressor (AC)		8. High Voltage Drive Motor	
3. Electro-Hydraulic Power Steering Pump (not shown – located beneath 4-in-1)		9. On Board Charger (OBC)	
4. Auxiliary Drive System (4-in-1)		10. Battery Distribution Unit (BDU)	
5. Inlet Charging Port		11. Manual Service Disconnect (MSD)	
6. High Voltage Battery Heater		12. 12-Volt Manual Battery Disconnect Switch	
		13. 12-Volt Battery	
<b>Cables</b>		12-Volt (Positive) Cables	
High Voltage Cables		12-Volt (Negative) Cables	

See Component Index section located on Page 7 for additional information.

## **NOTICE**

**THIS VEHICLE DOES NOT CONTAIN AIRBAGS.**

## **⚠ 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.**

## Disabling High and Low Voltage Systems

Disable both voltage systems by following the instructions below:

### STEP ONE:

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

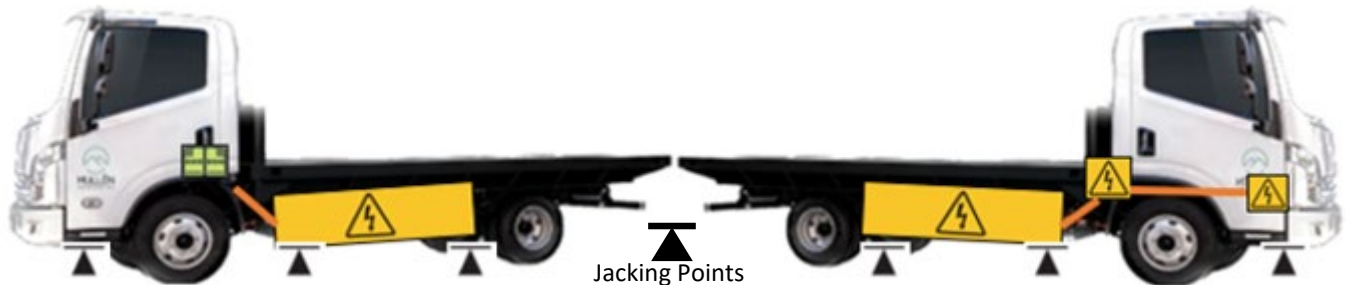
1. Confirm that the vehicle is at a standstill.
2. Ensure parking brake is securely engaged on level ground (“Park” telltale will illuminate to indicate parking brake is engaged in the driver’s cluster).
3. Vehicle must be in the Neutral (N) gear position (“N” telltale will illuminate to indicate Neutral 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: Parking Brake Engaged



Image: Telltale for engaged Parking Brake and Neutral “N” gear position



See Component Index section located on Page 2 for additional information.

### STEP TWO:

**Tilt Cab Forward to access voltage systems.**

(See below images numerically identifying the process).

Locate the cab release handles on the lower exterior of the cab, to the right of the driver’s side door.

1. Place your left hand through the stationary black cab handle.
2. Grasp the gold latch release bar towards you.
3. Simultaneously while holding the gold latch, use your right hand and push the cab release lever upwards.
4. Then use the right hand, once the cab lever is released, to pull the safety release straight towards you.
5. Make sure that when the cab is lifted, the safety latch on the torsion bar is locked into place.
6. Then pull the lock out key from clasp.
7. Insert key into keyhole to secure cab in place.

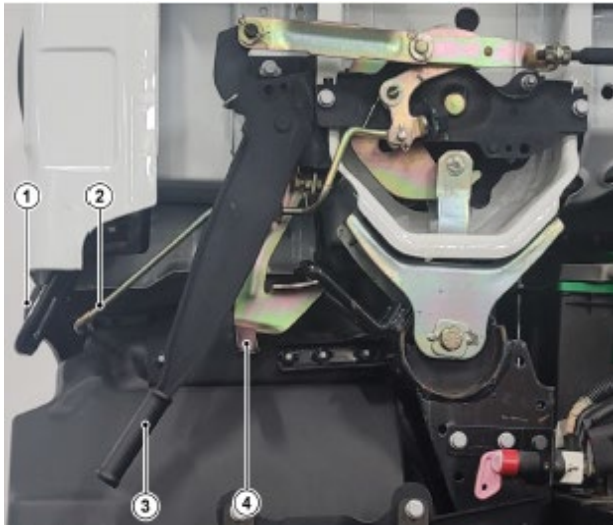


Image: Steps 1-4

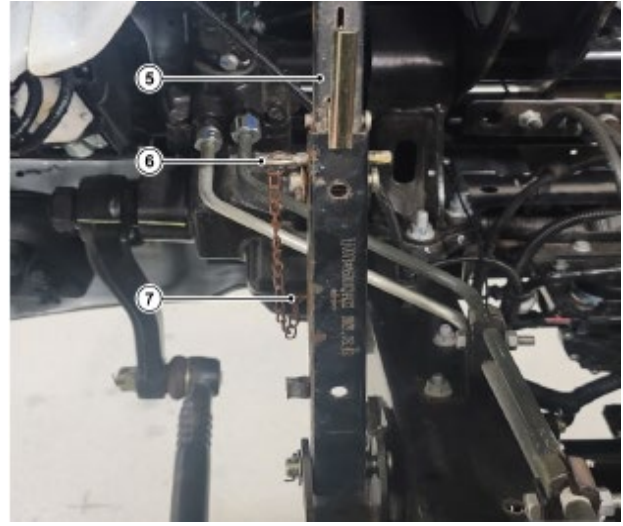


Image: Steps 5-7



Image: Lock Out Keyhole



Image: Tilt Cab Handles

## STEP THREE:

### Turn 12-Volt Master Power Switch OFF.

1. Locate the red 12-Volt Master Power Supply Handle located on the driver's side behind the cab straight up and down handle located driver's side behind the cab.
2. Turn the 12-Volt Master Power Supply Handle counterclockwise from the vertical, i.e., straight up and down position to switch from the "ON" position to the "OFF" position.
3. The Master Power Switch must be turned to the horizontal "OFF" position before disconnecting both the negative and positive battery terminals.
4. Locate the 12-Volt battery and identify the positive (red) and negative (black) terminals. The negative terminal is marked with a minus symbol and the positive is marked with a plus symbol.
5. Use an insulated wrench to loosen the nut holding the cable onto the negative terminal.
6. Remove the cable by lifting it free. Be careful not to let it touch the positive terminal or any metal part of the vehicle.
7. Repeat the same process state above to disconnect the positive terminal.

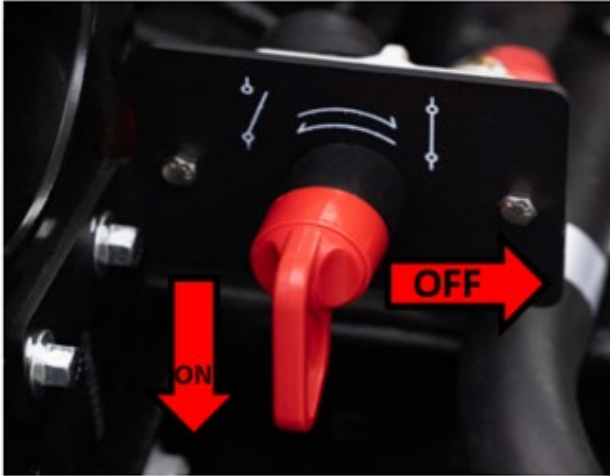


Image: 12-Volt Master Power Supply Handle



Image: 12-Volt Battery Terminals

## STEP FOUR:

### Remove MSD (Manual Service Disconnect).

1. Remove MSD. The MSD disconnect plug must be removed from the battery pack to disable the high-voltage system.
2. Located on the bottom of the MSD box, move the slide switch outwards.
3. Pull up the green handle.
4. Pull the MSD from the outlet.
5. Wait a minimum 15 minutes to allow charges to dissipate.

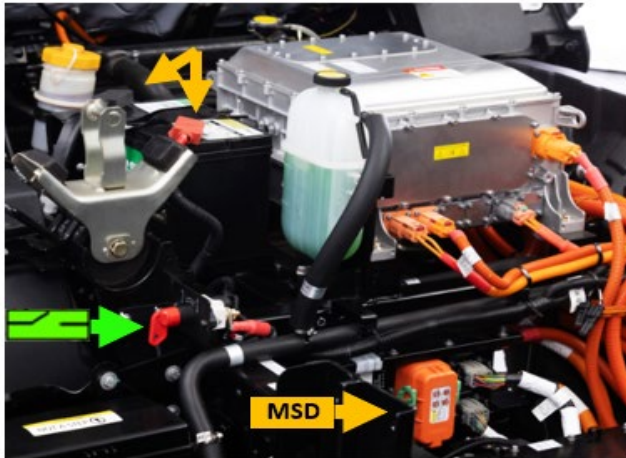


Image: 12-Volt Battery Terminals, Master Power Supply Handle & MSD



Image: MSD slide switch & green handle

## Occupant Removal

Mullen Three Low Cab Forward vehicles are equipped with two designated entry points into the cab.

- One Driver and One Passenger Door.

## Vehicle Badging

Mullen Three Low Cab Forward vehicles have a unique badge.

- The Mullen logo is located on the front the vehicle at the vertical centerline of the cab.



Image: Mullen Logo



Image: Driver Door

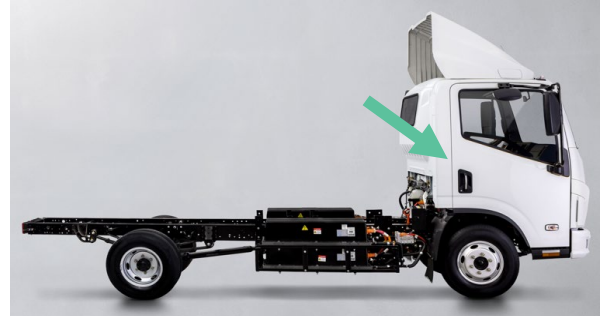


Image: Passenger Door

## Stored Energy / Liquids / Gases / Solid

							12V
							550V



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, make sure to do the following:

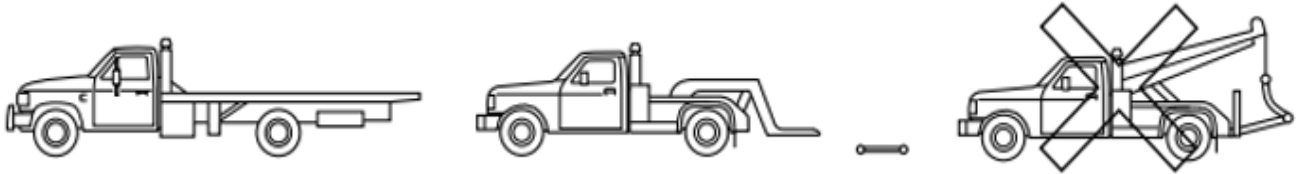
- Make sure the gear shift lever is in NEUTRAL (N) position and the parking brake is disengaged.
- Disengage high voltage components by turning high voltage master switch to OFF position.

The rear tow hook is located on the back edge of the frame on the passenger side.



### ⚠ CAUTION

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



## Damaged Vehicle Storage

- Ensure the damaged vehicle(s) remains 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 Mullen 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.
- **Electro-Hydraulic Power Steering Pump** – Extension of the power steering that supplies necessary pressure which is controlled according to the required assisting steering force.



- **Auxiliary Drive System (4 in 1)** – There are four major components in this one device: (1) the Motor Inverter; (2) the Power Steering Inverter; (3) the HV Accessory Output (PDU) and (4) The DC/DC Converter. These components charge both the high and low voltage batteries.
- **Inlet Charging Port** – An opening where the charging cable can be plugged-in to recharge the HV battery from a charge station.
- **High Voltage Battery Heater** – Regulates the battery’s temperature, ensuring it operates within an ideal range and helps prevent battery degradation in extreme climate conditions.
- **High Voltage Battery (2 on each side)** – Lithium iron phosphate composition that provides high voltage electrical storage for the vehicle.
- **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.
- **On Board Charger (OBC)** – Includes an on-board charger and EVCC (Electric Vehicle Communication Controller) that converts AC power to DC power to charge the vehicle’s high-voltage battery pack.
- **Battery Distribution Unit (BDU)** – Controls both the power on/off process and the charging process that has a significant impact on the service life, control strategy and HV safety of 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.
- **12 Volt Manual Battery Disconnect Switch** – The Red on/off switch allows you to manually disconnect and reconnect your 12-volt battery.
- **12 Volt Battery** – Lead acid composition that provides all 12-volt electrical storage for the vehicle.
- **High Voltage Cables** – These cables can be identified by their large size and orange insulated casing. Provides 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](http://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 THREE 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.

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