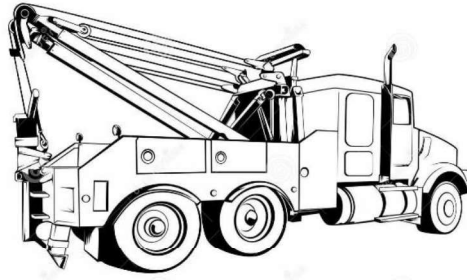


## Towing Instructions



**WARNING:** Shutdown the HV system before towing electric commercial vehicles for ANY distance. HV Shutdown should never be performed by anyone that has not been trained and certified.



**WARNING:** After an accident, follow the first responder's manual special instructions for towing.



**WARNING:** Both axle shafts must be removed from the drive axle housing to ensure the propulsion motor will not rotor during the towing process. Otherwise, it may generate unsafe voltage even with the HV bus shutdown.



**Note:** Only follow the shutdown procedures found in Dana's manuals for this electric chassis.

## Towing Procedure

1. With the high voltage system shutdown, block the front and back of at least one of the vehicles tires so the truck cannot move during this procedure.
2. Starting on the driver's side, place a drip pan under the end of the drive axle wheel hub to catch the lube.
3. With an impact gun, remove the axle shaft nuts, washers and tapered dowels if used.
4. Remove the axle shaft from the drive axle housing.
5. Note: Do not use a chisel or any other wedge device to loosen the shaft. Chisels and wedges will damage the flange of the wheel hub.
6. Wipe the end of the wheel hub to remove any oil.
7. Install a wheel end cover over the axle shaft studs.
8. Reinstall the wheel end fasteners and tighten in a crisscross pattern. Do not over tighten.
9. Repeat steps 2-7 on the passenger's side of the drive axle.

## Jump Starting Introduction

Jump starting a vehicle is not a recommended practice due to the various LV battery installations and electrical options. However, if your LV battery is discharged (dead), you may be able to start it by using energy from a good LV battery in another vehicle. This is termed jump starting. Be sure to follow the precautions and instructions below.

## LV Charging Reminders

- Wear safety glasses.
- Keep all batteries away from children.
- Never reverse LV battery poles.
- Never attempt to place the vehicle in motion with LV batteries disconnected.
- Keep the LV battery clean and dry.
- Look for any signs of damage. Replace damaged 12 V LV batteries according to the battery manufacturer's guidelines.
- Do not coat LV battery terminals with an improper grease. Use petroleum jelly or commercially available, noncorrosive, nonconducting terminal coatings.



**WARNING:** Thaw frozen LV batteries before charging them. Remove all the filler caps before charging.



**WARNING:** Charger cables must be connected positive to positive (+ to +) and negative to negative (- to -). If connected improperly, LV batteries could explode. Failure to comply may result in personal injury, death, equipment, or property damage.



**WARNING:** Always ensure the LV battery charger is OFF before connecting or disconnecting the cable clamps. To reduce the danger of explosions and resulting death or personal injury, do not connect or disconnect charger cables while the charger is operating.



**WARNING:** Never use a fast charger as a booster to start the system. This can seriously damage sensitive electronic components such as relays, radio, as well as the LV battery charger. Fast charging a LV battery is dangerous and should only be attempted by a competent mechanic with the proper equipment.



**WARNING:** LV batteries contain acid that can burn and gasses that can explode. Ignoring safety procedures may result in death, personal injury, equipment, or property damage.



**WARNING:** Never jump start a LV battery near fire, flames, or electrical sparks. LV batteries generate explosive gases that could explode. Keep sparks, flame, and lighted cigarettes away from LV batteries. Failure to comply may result in death, personal injury, equipment, or property damage.



**WARNING:** Never remove or tamper with LV battery caps. Ignoring this could allow LV battery acid to contact the eyes, skin, fabrics, or painted surfaces. Failure to comply may result in death, personal injury, equipment, or property damage. Be careful that metal tools (or any metal in contact with the positive terminal) do not contact the positive battery terminal and any other metal on the vehicle at the same time. Remove metal jewelry and avoid leaning over the LV battery.



**CAUTION:** Using higher voltage booster for the LV batteries will cause expensive damage to sensitive electronic components such as relays, sensors, and control units. Failure to comply may result in equipment damage. Improper use of jumper cables or not following these procedures can damage the electrical system or cause serious damage to both vehicles.

# Jump Start Instructions



**WARNING:** Heed all warnings and instructions from the jumper cable manufacturer. Failure to comply may result in personal injury, death and equipment or property damage.



**NOTE:** Review the warranty policy before performing any maintenance procedures. An extended warranty may be voided if unauthorized maintenance is performed during this period.



**CAUTION:** Do not modify or improperly repair the vehicles electrical system or electric powertrain. All electrical repairs should be performed by an authorized dealer. Improper repair or modifications will void your warranty and/or cause serious damage to your vehicle



**WARNING:** When jump starting using a booster LV battery, it is best to jump start with an equivalently powered vehicle. Verify that the booster vehicle's LV battery has the same volt and CCA specifications as the dead LV battery before attempting to jump start. Failure to comply may cause an explosion resulting in death, personal injury, equipment, or property damage

## Jump Starting Instructions

To jump start your EV system with a booster battery, the instructions and precautions below must be followed. Jump-starting provides power to the LV system for the electrical systems to operate. The electrical systems must be operating to allow the HV battery pack to be charged. Jump starting does not charge the HV battery pack. The HV battery pack must be charged before the vehicle can be driven.

Ensure that the LV battery disconnect switch is in the connected position and all LV cables are secure before attempting to jump start the vehicle.

## Preparing the Vehicles

1. Remove any jewelry that may come in contact with the battery terminals.
2. Select a jumper cable that is long enough to attach to both vehicles in a way that ensures neither vehicle touches each other.
3. Position the two vehicles together, but do not allow them to touch.
4. Turn OFF all lights, heater, radio, and any other accessory on both vehicles.
5. Set the parking brakes by pulling out on the parking brake switch located on the dash.
6. Shift into park position
7. If either vehicle is equipped with battery disconnects ensure they are in the "OFF" position prior to connecting the two vehicles.

## Connect the LV Batteries

8. Attach one end of a jumper cable to the positive (+) terminal of the discharged (dead) battery. This will have a large red + or P on the battery case, post, or clamp.
9. Attach the other end of the same cable to the positive (+) terminal of the good (booster) battery.
10. Attach the remaining jumper cable FIRST to the negative (-) terminal (black or N) of the good battery.
11. Attach the other end of the negative cable to a bare metal part not bolted to the engine block.

Note: Always connect positive (+) to positive (+) and negative (-) to negative (-).

12. If either vehicle is equipped with battery disconnects, ensure that they are in the "ON" position.
13. Start the vehicle that has the good battery first, and run the vehicle for 5 minutes.
14. Start the vehicle that has the discharged (dead) battery. If you do not get a "Ready" indication of the HMI screen, contact the nearest authorized dealer.

## Jump Start Instructions

### Removing Jumper Cables



**WARNING:** When disconnecting jumper cables, ensure they are not caught in any moving parts under the hood. Failure to comply may result in death, personal injury, equipment or property damage.

1. Perform steps 4 through 1 in reverse. Ensure the negative cable is removed from the vehicle with the discharged battery first. During these steps, keep the vehicles running.