



Drive Motor Inverters

Refer to the authorized original equipment service manual for detailed installation instructions. If you do not have the experience, proper tools or manuals, please seek the services of a qualified technician.



Replacement Time:

<2.5 hrs

COMMON SYMPTOMS

- Diagnostic Trouble Codes set
- System warning lights illuminated
- A/C cuts off intermittently
- Inconsistent charging rate for 12-volt auxiliary battery
- Repeated 12-volt auxiliary battery failure
- Internal combustion engine stalls
- Vehicle does not transition into electric drive mode.
- Gas engine runs excessively
- Vehicle goes into a “limp home” mode
- High-voltage battery not charging properly

BEFORE YOU INSTALL

- Due to the complexity of this unit, we recommend that only professional repair technicians with proper training and equipment replace drive motor inverters.
- Before you install, please be aware that the inverter is very heavy. Two people are required when handling the inverter to avoid personal injury or damage to surrounding parts. Failure to follow these instructions can result in serious personal injury.

BEST MAINTENANCE PRACTICES

- Proper cooling is required to prevent inverter assembly damage caused by excessive heat. Make sure the inverter cooling system is operating as designed.
- Pump failure can be diagnosed by removing the cap of the expansion tank and checking for circulating fluid
- Check coolant level at the inverter cooling system reservoir periodically and replace with the correct coolant type and ratio at the proper intervals as specified by the O.E. Manufacturer.
- The inverter cooling system has hoses running to and from the reservoir, radiator and transaxle. Check the condition of these hoses. Replace hoses if deteriorated.



SKILL LEVEL:

Service Technician

A

ASE L3 Certified or equivalent

TIPS

- Always wear safety glasses, Class “O” gloves rated @ 1,000 volts and leather outer protectors over the gloves. Gloves must be certified and expiration date must be current. Always remove jewelry and use insulated hand tools. Other forms of personal protective equipment such as an insulated safety hook, goggles, face shield, apron and shoes should be considered.
- Follow the O.E. Manufacturer’s approved procedures for disabling and enabling the high-voltage system to avoid serious personal injury or death. The high-voltage service disconnect plug must be removed and the 12-volt auxiliary battery must be disconnected. Some vehicles will have a service disconnect switch that must be toggled off. If removing the service plug, place it in a safe location to prevent reconnection while servicing the vehicle.
- After disconnecting the service disconnect plug or toggling the service disconnect switch off, wait at least 5 to 10 minutes before touching any high-voltage cable, connector or terminal. This time is necessary for the high-voltage system to discharge. After waiting the prescribed amount of time, use a CAT III digital multi-meter to measure voltage at the terminals on the high-voltage battery. Battery voltage should be below 30 V DC before beginning drive motor inverter service work.
- Depending on application, some inverters will need the cover removed to expose the high-voltage 2-phase connections to the high-voltage battery and the 3-phase connections to the motor generators. The cover has a high-voltage interlock connector that completes the interlock circuit for safety.
- Before removing the inverter, make sure the READY light is off and the key fob is stored away from the vehicle.
- Make sure that the interlock connector integrated into the inverter cover is fully engaged when reinstalling.
- Some interlock connectors have a locking lever to ensure the interlock connector is fully engaged. Trouble codes will set if the interlock connector is not fully engaged and secured by the locking lever.
- Ensure the hybrid high-voltage system service disconnect plug is fully engaged and latched properly. Some vehicles have a switch that must be toggled on and secured. Trouble codes may set if service plug or switch is not properly secured.
- Certain vehicle systems may need to be initialized after 12-volt auxiliary battery is reconnected. Refer to initialization procedures found in the O.E. service manual.
- The use of incorrect refrigerant can cause the inverter to trigger the interlock system. This will prevent the vehicle from going into “Ready” mode. Please refer to a service manual when servicing the AC system.
- The airbox will need to be removed for access to the inverter connectors and hose attachments on most applications.
- Use care when removing fasteners that retain the high-voltage cable terminal ends.
- Ensure high-voltage cable terminal ends are in good condition and the weather pack connector seal is in good condition.
- Blow compressed air through the inverter coolant pipes to remove any coolant. Some wires have a security latch that must be undone first.
- Some inverters have two bleed screws for the cooling system; one to bleed the air from the inverter cooling system and another to bleed the air from the transaxle cooling system.

GOT QUESTIONS ABOUT THIS PART?

CALL 888-280-8324 (Monday-Friday)