

REPAIRCARE

Maryland Vehicle Emissions Inspection Program
Master Certified Emissions Technicians
& Certified Emissions Repair Facilities

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Safe Operation of Diagnostic Test Equipment

Today's vehicles have highly sophisticated sensitive electronic components. Repair technicians must use extra care in diagnosing and repairing these vehicles. Personal injury and property damage may occur if recommended testing procedures are not followed using correct and properly functioning test equipment.

The new hybrid vehicles incorporate technology that requires technicians to be attentive to safety issues. In addition to a 12-volt battery for the electrical system, hybrids have a separate high-capacity battery pack to power the electric motor. Depending on the model, high-voltage lines in hybrids carry 144 volts to 650 volts. 60 volts can be fatal; for some people, it's as little as 50 volts. **High-voltage lines in hybrids are bright orange or yellow.** A few safety practices used by electricians can be used in the automotive repair shop:

- Use insulated lineman's gloves when working with high voltage.
- Stand on insulated mats when making electrical connections.
- Keep one hand in your pocket when making electrical connections. That way, if current does pass through you, injuries may not be as severe.

Other basic safety practices should be used for any type of vehicle repairs. These include:

- Verify that the correct diagnostic equipment is available. Consult the vehicle manufacturer's service and diagnostic manuals, repair guides, and technical service bulletins to determine what tools and equipment are needed for diagnosing and making repairs.
- Check the electronic leads. Make sure that the leads are of the proper electrical capacity for the equipment you are diagnosing and that they are not damaged.
- Verify that the capacity of the tool you are using matches, or exceeds the electronic specs (volts, amps, etc.) in the vehicle repair manual.

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- Note the instrument's electrical parameter limitations and verify the unit of measure (amps, milli-amps, etc.) required for each diagnostic procedure. Remember, tool settings used for one vehicle may not work on another vehicle for the same test.
- Inspect tools for frayed or exposed wires, broken cases, and proper calibration.
- Closely follow the manufacturer's procedure for conducting the diagnosis. Do not skip any steps of the procedure.
- Check vehicle settings (ignition key on, key off, etc.) before starting any tests.
- De-energize circuits whenever possible.
- Use only replacement parts that are built to original manufacturer's specifications.
- Check for properly grounded outlets, plugs, and vehicle components.
- Wear safety goggles when working on vehicles. Do not wear loose clothing or jewelry that may get caught in moving parts.
- Follow all procedural warnings, cautions, and notes described in the vehicle repair manuals to avoid personal injury or damage to the vehicle.

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