



DIAGNOSTIC FOCUS

EV AND HYBRID VEHICLES 101

Both EVs and Hybrids rely heavily on electronic control systems, making scan tools essential for diagnostics. Common service tasks include battery health checks, resolver initialization (motor position sensors), and cooling system bleeding. High-voltage systems demand strict safety protocols, such as avoiding contact with high-voltage orange cables and using lockout/tagout procedures. As EV and Hybrid technology continues to evolve, diagnostic coverage also needs to evolve.

ELECTRIC VEHICLES (EV'S)

EVs are essentially “batteries on wheels,” powered by large high-voltage battery packs (typically 300–400V) and electric motors. These batteries often form part of the vehicle’s structure and require specialized lifting equipment due to their weight. Key components include:

- High-voltage battery and cooling/heating systems
- Voltage converters for 12V accessories
- Regenerative braking systems
- Onboard charger controllers for home or fast charging

Battery temperature management is critical for performance and longevity, using air or liquid cooling systems that can also provide heating in cold climates.





HYBRID VEHICLES

Hybrids combine a smaller battery with an internal combustion engine and use them in combination to increase fuel economy. Common configurations include:

- Parallel hybrids: Gas and electric motors share a transmission.
- Series hybrids: Electric motor drives the vehicle; engine charges the battery only.
- Plug-in hybrids (PHEVs): Larger batteries for extended electric range.

While hybrids share many components with EVs, they operate on a smaller scale.

WANT MORE INFORMATION?



Complete EV & Hybrid Coverage Guide

Watch a training session



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