



To prevent personal injury or death, read all safety instructions in the "Safety Information" section of *Engine Diagnostics Manual* EGES-350 before doing form procedures.

1. Look up the VIN on ISIS[®] for build date, engine hp, engine serial number, ECM calibration, and transmission.
2. See Performance Specifications for EFRC.
3. Use Performance Specifications to fill in the specifications needed for some tests.
4. Detailed information on these procedures can be found in *Engine Diagnostics Manual* EGES-350.
5. Do all tests in sequence unless directed otherwise. It is not necessary to complete the rest of the form after the problem has been found and corrected.

- ☐ Check all fluid levels
- ☐ Inspect electrical connectors
- ☐ Inspect air filter minder
- ☐ Inspect for exhaust damage

	Quantity	Quality
Fuel		
Oil		
Coolant		

- ☐ Open VIN session with EST. (Verify ECM software matches vehicle. Ensure ECM calibration is current.)

- If ECM software does not match, reprogram the ECM.
- If any DTCs are set, correct fault before continuing.

☐ Use EST to run KOEO Standard test

- If any DTCs are set, correct fault code before continuing.

- ☐ Open Sensor Compare session with EST.
- ☐ Run Continuous Monitor test.
- ☐ Verify EBP and MAP match and are in KOEO specification.
- ☐ Verify FRP and BARO are in KOEO specification.
- ☐ Verify Accelerator Pedal travels from 0% to 99%.
- ☐ Verify EBP tube is intact and not restricted.

- If any results are out of specification, see Section 7 in EGES-350.

Note: Engine coolant temperature must be above 70 °C (158 °F).

- Use EST to run KOER Standard test

- If any DTCs are set, correct fault code before continuing.

- ☐ Use EST to run Air Management Test.
- ☐ Monitor EGR valve position using EST

- Correct problem causing messages or DTCs before continuing

- Measure fuel pressure at the secondary fuel filter housing test port.

- If fuel pressure is low or slow to build, replace both fuel filters. Test again.
- If fuel pressure remains low, do Test 7.3 - Fuel Inlet Restriction.
- If fuel pressure is in specification, continue to next test.
- If fuel pressure is low, restrict return fuel line and test pressure.
- If fuel pressure builds, the Pressure Regulator Housing is suspect.
- If fuel pressure is still low after restricting return fuel line, fuel pump and fuel lines are suspect. Inspect and repair as required.

1] Use EST to monitor fuel rail pressure and engine speed.

- If fuel rail pressure is not in specification, do Hard Start and No Start diagnostic tests 7-10 (side 1).
- If fuel rail pressure is in specification, continue to next test.

Note: Test is only valid if engine starts and achieves high idle.

- ☐ Measure fuel inlet restriction at the Fuel Restriction Test Cap.
- ☐ Start engine and accelerate to high idle. Record results.

- If restriction is above specification, check lines between tank and pump for blockage.

- ❑ Connect fuel gauge to fuel filter housing test port.
- ❑ Open RoadPerformance session using EST.
- ❑ Verify coolant temperature is above 70 °C (158 °F).
- ❑ Setup EST to record a snapshot from 0 mph to 60 mph.
Playback the snapshot and record results.
- ❑ Run engine at 0-60 mph, full throttle. Record max. results.

Note: Data should be collected at full load, rated speed.

- If not in specification, refer to Section 7 in EGES-350 for diagnostic troubleshooting procedures.
- If all measurements are in specification, the engine does not have a performance problem. **Do not continue with remaining performance tests.**

Note: Engine coolant temperature must be above 70 °C (158 °F).

☐ Measure at oil fill tube with crankcase pressure test adapter.

- ☐ Clamp off crankcase breather hose.
- ☐ Measure at high idle and no load.

10. Injector Disable

- Use EST to run injector disable diagnostics to identify suspect cylinders.

- If any cylinder is suspect, do Manual Compression Test.

- ☐ Disconnect CKP or CMP sensor to disable engine starting
- ☐ Remove left bank glow plug and install Compression Test Adapter and Cylinder Compression Gauge. Test cylinders individually.
- ☐ Turn ignition switch to ON. Crank no more than 4 times.
- ☐ Record pressure.
- ☐ Reinstall glow plug using Glow Plug Installer Sleeve and Glow Plug Socket.
- ☐ Repeat procedure for all remaining cylinders.

- If pressure difference is within 10 percent of each other, continue to next test.
- If pressure difference is greater than 10 percent of each other, contact International® Technical Services at 1-800-336-4500 to start a case file.

- ☐ Set parking brake and apply service brake.
- ☐ Put transmission in drive.
- ☐ Push accelerator to the floor. Time and monitor tachometer until tachometer stops moving.
- ☐ Record rpm and time. Continue to next test.

- ☐ Check hoses and piping for damage or incorrect fit.
- ☐ Measure restriction at high idle, no load.

- ☐ Inspect exhaust system.
- ☐ Use EST to monitor EBP at high idle, no load.

- If pressure is above specification, remove turbo outlet exhaust pipe and test again.
- If pressure is good with pipe removed, correct problem from turbocharger to tail pipe.
- If EBP is still high with turbo outlet exhaust pipe removed, repair or replace turbocharger.