

Indmar Products

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SERVICE PROCEDURE

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Alert: SP2015-6 Cylinder Integrity Testing

Compression Testing

1. Make sure the oil in the crankcase is of the correct viscosity and at the correct level and that the battery is correctly charged. Operate the engine until it is at normal operating temperature. Turn the ignition to the off position then remove the 8 upper or 8 lower spark plugs; whichever are most convenient.
2. Connect Diacom to the data link connector, turn on the ignition switch and establish communications between Diacom and the engine's ECM. Click on the Tests tab and enter the Compression Test Mode. The compression test mode disables spark and fuel so the compression test can be completed safely. While in the compression mode, The ECM will also allow the throttle plate to open as long as you activate the "throttle only" lockout in the control box and move the throttle handle to wide open throttle.
3. Install a compression tester in the number 1 cylinder spark plug hole. Crank the engine a minimum of 5 compression strokes and record the highest reading.
4. Repeat the test on each cylinder, cranking the engine approximately the same number of compression strokes. Make sure to record each cylinder's compression.
5. When you are finished, return the throttle handle to the neutral position and "STOP" the compression test mode before turning off the ignition. NOTE: If you disconnect the Diacom cable before stopping the Compression Test mode, the engine will not start. The Compression Test mode must be stopped before disconnecting the Diacom cable.

Compression Test – Test Results

The minimum lowest compression on any cylinder is 100 psi. The indicated compression pressures are considered within specification if the lowest reading cylinder is at least 75% of the highest reading. Multiply the highest reading by .75 to get the lowest acceptable reading. For example, if the highest reading on any cylinder was 180 psi, multiply $180 \times .75 = 135$. The lowest acceptable compression for any cylinder in this engine is 135 psi.

If one or more cylinders read low, squirt approximately one tablespoon of engine oil in the low reading cylinders. Repeat the compression pressure check on these cylinders.

Compression Test – Interpreting Compression Readings

1. If compression improves considerably with oil in the cylinders, the piston rings are suspect.
2. If compression does not improve, the valves are suspect.
3. If 2 adjacent cylinders indicate low compression pressures and squirting oil in each cylinder does not increase compression, the heads gasket may be leaking between cylinders. Engine oil or coolant in cylinders could result from this condition.

Cylinder Leakage Detection

When a cylinder produces a low reading, use of a cylinder leakage tester will be helpful in pinpointing the exact cause.

The leakage tester is inserted in the spark plug hole, the piston is brought up to top dead center on the compression stroke and compressed air is admitted.

Once the combustion chamber is pressurized, the leakage tester gauge will read the percentage of leakage. Leakage exceeding **20%** is considered excessive.

While air pressure is retained in the cylinder, listen for the hiss of escaping air. A leak at the intake valve will be heard at the throttle body. A leak at the exhaust valve can be heard at the exhaust outlet. Leakage past the piston rings will be audible in the PCV connection. If air is passing through a blown head gasket to an adjacent cylinder, the noise will be evident at the spark plug hole of the cylinder into which the air is leaking. Cracks in the cylinder block or gasket leakage into the cooling system may be detected by air bubbles in the high fill tank of the closed cooling system.