

Component Procedures: Compression Check

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Component Procedures: Compression Check

Parts and Labor (itype_189)

Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Test	Ignition System > Compression, Test	B	3.1	0.0

Engine Compression Test (Article 12032)

Special Tools

EN-39313 - Spark Plug Port Adapter

For equivalent regional tools, refer to Special Tools .

A compression pressure test of the engine cylinders determines the condition of the piston rings, the valves and the head gaskets.

- Run the engine until it reaches normal operating temperature. The battery must be at or near full charge. You may wish to connect a battery charger for the duration of the test to maintain an adequate battery level.
- Turn the engine OFF.
- Remove the intake manifold cover . Refer to Intake Manifold Cover Replacement - Front and Intake Manifold Cover Replacement - Rear .
- Remove the ignition coils and spark plugs from all cylinders. Refer to Ignition Coil Replacement - Bank 1 and Ignition Coil Replacement - Bank 2 .
- Connect the GDS2 to the vehicle and select "Compression Test". Enabling the Compression Test will disable the fuel pump , fuel injectors , and spark. The throttle body is opened to a Wide Open Throttle (WOT) position. The GDS2 will also automatically control the cranking procedure for many applications. If cranking control is not available use a remote start switch in place of the Starter Relay to control cranking.
- Measure the engine compression, using the following procedure:
 - Thread the EN-39313 - adapter into the spark plug hole.
 - Thread the compression gauge into the EN-39313 - adapter .
 - Enable cranking via the GDS2 or remote start switch. Record the reading after the cranking cycle completes.
 - When the compression measurement is normal, the compression builds up quickly and evenly to the specified compression on each cylinder.
 - Repeat the compression test for each cylinder.
 - Compare the compression readings from all of the cylinders.
 - The lowest reading should not be less than 70 percent of the highest reading.
 - No cylinder reading should be less than 965 kPa (140 psi).
 - The following are indicators of potential problems:
 - When low compression is caused by the piston rings, compression is low on the first stroke and tends to build up on the following strokes, but does not reach normal. Compression improves considerably with the addition of oil to the cylinder. Use approximately 3 squirts of oil from a plunger-type oiler into the cylinder and replace the gauge and measure again.
 - When low compression is caused by the valves, the measurement is low on the first stroke and does not build up even with the addition of oil.
 - Leaking head gaskets will provide the same results as worn valves but engine coolant may be identified in the crankcase . In addition, a leaking head gasket will give low readings on paired cylinders.
- Disconnect GDS2 diagnostic tool or remote start switch.
- Install the spark plugs. Refer to Gas Engine Ignition Spark Plug Replacement .
- Install the ignition coils and spark plugs from all cylinders. Refer to Ignition Coil Replacement - Bank 1 and Ignition Coil Replacement - Bank 2 .
- Install the intake manifold cover. Refer to Intake Manifold Cover Replacement - Front and Intake Manifold Cover Replacement - Rear .