

LEAK TEST

LEAK TEST PROCEDURE

The procedure has to be done when engine operating temperature of approx. 70°C (158°F) is reached.

⚠ WARNING

Prevent burning yourself due to handling on the hot engine.

PREPARATION

Remove:

- seat
- vent tube support (if applicable)
- engine cover (if applicable)
- safety lanyard

⚠ WARNING

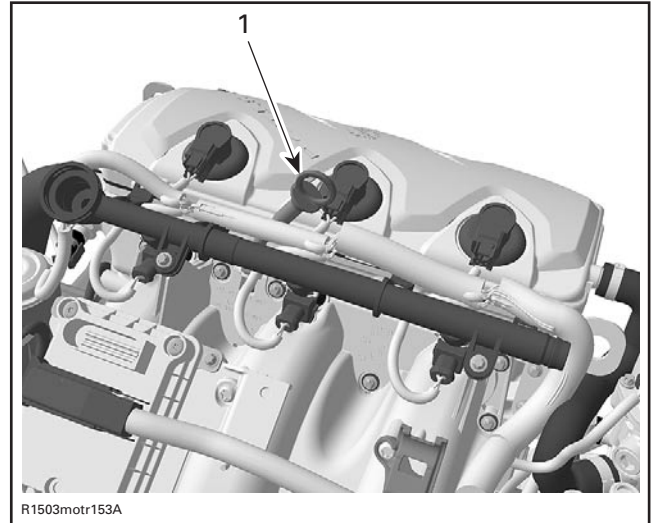
Safety lanyard must be removed to prevent engine to be cranked while fuel rail is removed to prevent fuel to be sprayed out. Fuel is flammable.

- jet pump (refer to JET PUMP in PROPULSION SYSTEM)
- coolant tank cap

⚠ WARNING

To prevent burning yourself only remove the coolant tank cap by wearing the appropriate safety equipment.

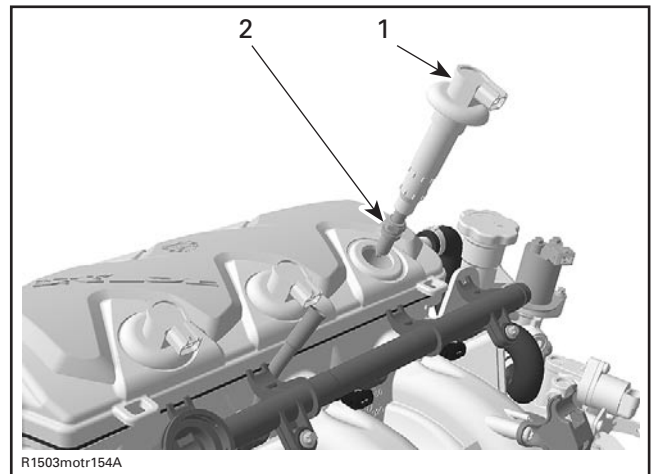
- oil dipstick



1. Oil dipstick

- Unplug ignition coil and pull it out
- spark plug from cylinder head.

NOTE: Ignition coil may be used as an extractor.

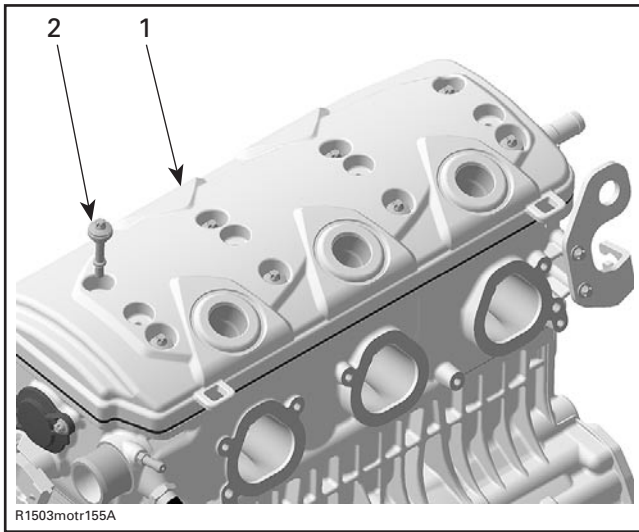


1. Ignition coil
2. Spark plug

- Remove valve cover cowl.
- Unscrew and remove valve cover.

Section 05 ENGINE (4-TEC)

Subsection 01 (LEAK TEST)



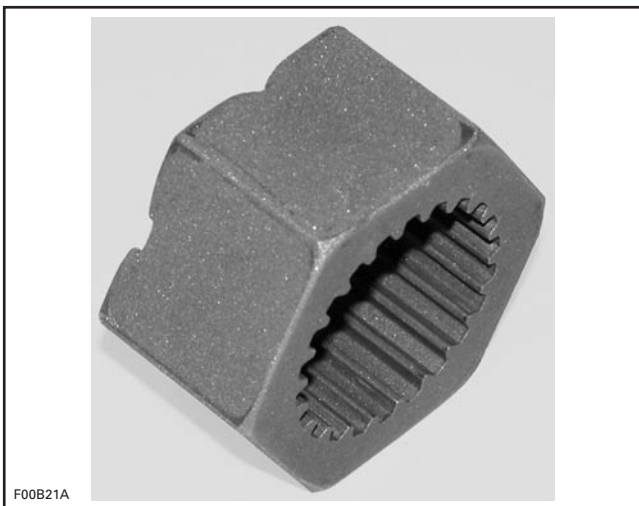
1. Valve cover
2. Valve cover screw

PROCEDURE

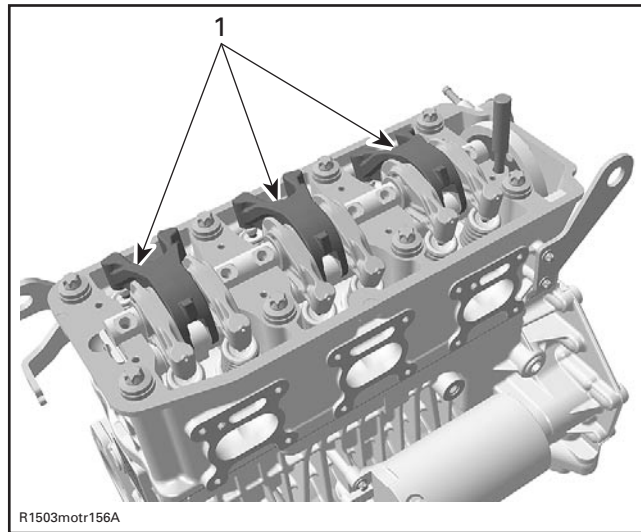
The following procedure has to be performed for each cylinder separately.

With an appropriate wrench lever, rotate crankshaft counterclockwise using drive shaft adaptor P/N 529 035 892 on GTX 4-TEC series and P/N 529 035 985 on RXP 4-TEC models until the cylinder no. 1 is at top dead center (TDC) compression stroke.

NOTE: Cylinder numbers are molded on valve cover.



DRIVE SHAFT ADAPTOR



1. Intake rocker arms

As the engine is turned over, observe the movement of intake rocker arm of the cylinder to be checked. After it completes the cycle and the intake valve closes, observe the piston. When it reaches its uppermost position that is TDC compression stroke.

Protect the hull area then position the wrench lever so that it rest against hull to prevent further crankshaft rotation.

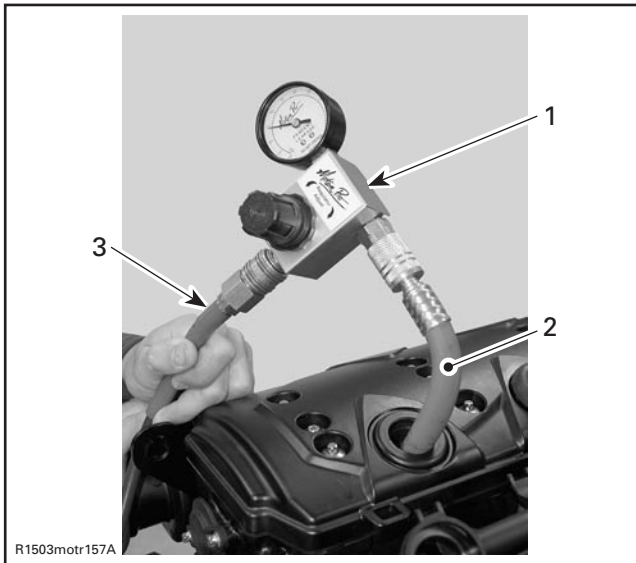
Install gauge adapter into previously cleaned spark plug hole.

Connect to adequate air supply.

NOTE: Each tester will have specific instruction on the gauge operation and required pressure.

Set needle of measuring gauge to zero.

Supply combustion chamber with air.



R1503motr157A

1. Measuring gauge
2. Adequate adapter for spark plug hole
3. Air supply

Note the amount of leaking or percentage (depending on tester).

LEAKAGE PERCENTAGE	ENGINE CONDITION
0% to 7%	Excellent condition.
8% to 15%	Fair condition; proceed with tuned up or adjustment.
16% to 30%	Poor condition; engine will run and performance might be down in some cases.
30% and higher	Very poor condition, diagnose and repair engine.

Proceed the same way with remaining cylinders.

Diagnose

Pressurize area to be tested, spray soap/water solution at the indicated location and look and/or listen for air bubbles.

- air escaping on intake port means leaking intake valve(s)
- air escaping on exhaust port means leaking exhaust valve(s)
- air bubbles out of coolant tank means leaking cylinder head gasket
- air escaping into crankcase area means excessively worn and/or broken piston rings.

INSTALLATION

NOTE: For installation use the torque values and Loctite products from the exploded views (refer to proper engine subsection).

For installation, reverse the preparation procedure.

NOTE: Prior to inserting the ignition coil in its location, apply some Molykote 111 (P/N 413 707 000) around the seal area that touches the spark plug hole. After installation, ensure the seal seats properly with the engine top surface.

General Engine Leakage

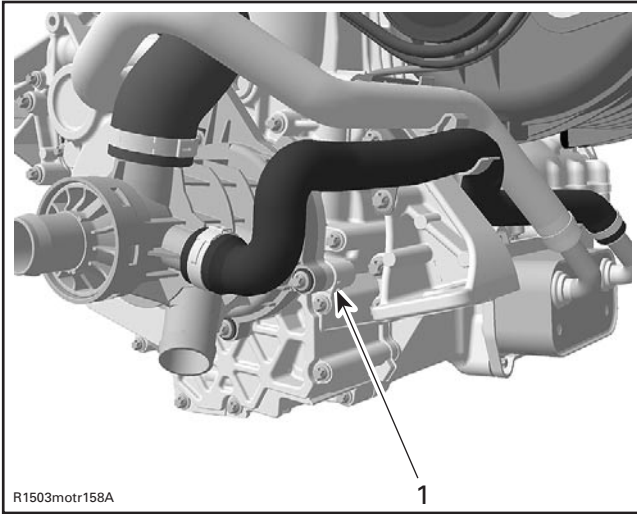
Spray soap/water solution at the indicated location and look and/or listen for air bubbles.

Paying attention to the following checkpoints:

- clamp(s) tightened
- coolant hoses
- air/oil escaping from crankcase means damaged gasket(s) and/or loosened screws (refer to ENGINE BLOCK)
- air/water escaping from cylinder/head means damaged gasket(s) and/or loosened screws (refer to CYLINDER HEAD AND VALVES)
- oily contamination on weep hole (speed sensor area) means a damaged oil seal on coolant pump shaft
- coolant escaping from weep hole means a damaged rotary seal on coolant pump shaft (refer to COOLING SYSTEM)

Section 05 ENGINE (4-TEC)

Subsection 01 (LEAK TEST)



1. Weep hole

– coolant escaping from coolant pump housing means damaged gasket(s) and/or loosened screws (refer to COOLING SYSTEM).

NOTE: For all the checkpoints mentioned above see the appropriate engine section to diagnose and repair the engine.

LEAK TEST PROCEDURE FOR INTERCOOLER

Refer to INTAKE SYSTEM.