



## 4-STROKE LEAK DOWN TESTING

A Leak Down Test performed on a 4-Stroke engine is designed to check the percentage of cylinder pressure leakage. On a perfect engine leakage will be zero. (See chart below to help evaluate your results)

This test is advantageous on evaluating your engines current performance status.

Leak down tests are also invaluable in helping trouble shoot an engine not performing properly.

Leak down testers are available from most major tool suppliers. Motion Pro offers a kit specifically designed for usage on small displacement ATV engines.

To properly perform test a moisture free air supply from 70 psi to 200 psi is required.

**WARNING!** Wear eye protection to prevent eye injury from escaping gas and or foreign debris. If you do not feel confident performing this test, consult a trained mechanic.

1. All leak down tests must be performed on a cold engine.

*\*NOTE: Performing this test on a hot engine can cause internal damage to the engine.*

2. Remove spark plug.

3. Rotate crankshaft until piston is a top dead center on the compression stroke.

4. Thread the correct adaptor hose into the spark plug hole in the cylinder head. **Do not connect the hose to air supply.**

5. **CAUTION!** On some engines, the crankshaft will spin when air pressure from the tester is applied to the piston. **NEVER** leave tools attached to the crankshaft.

On engines currently installed in machines chassis, shift engine into high gear and apply the rear brake.

On engines being bench tested it is mandatory that trained professional perform the test and use necessary tooling fixture to secure crankshaft rotation.

6. Connect the tester to adequate moisture free air supply (70 to 200 psi). Do not connect to hose adaptor in engine at this time.

7. Set the gauge needle to 0 % by adjusting toe regulator knob. Check the setting by momentarily connecting the tester to the adaptor hose. This will cause the needle to swing counterclockwise and then return to 0 %. Re-perform this step until the needle returns to 0 % without readjusting the regulator.

8. Connect the tester to the adaptor hose. The needle will swing counterclockwise and then clockwise as cylinder is pressurized. When the needle stops moving, record the percentage of leakage for the cylinder.

*\*NOTE: Piston/crankshaft must be maintained at TDC position for leak down test results to be correct.*



TEST RESULTS

PERCENTAGE OF CYLINDER LEAKAGE	ENGINE CONDITION
0% - 5%	Engine is in excellent condition. Most engines built for racing have 5% or less
6% - 15%	Engine is in good condition.
16% - 25%	Engine is in poor condition. Engine will run but will be down on power.
26% - Higher	Engine is in poor condition or broken. The higher the percentage of leak down the worse condition the engine is in.

POTENTIAL LEAKAGE CAUSES

AIR ESCAPING FROM (SOURCE)	POTENTIAL CAUSE
Carburetor / Intake port	Intake Valve leaking
Exhaust system/ Exhaust port	Exhaust Valve leaking
Crank Case Breather/ Lower End	Piston Rings leaking
Radiator/ Water Jackets	Head gasket leaking



HOW FREQUENTLY SHOULD WE PERFORM LEAK DOWN TESTS?

ENGINE TYPE	TEST INTERVALS
Race Engines	Every 5 hours
Hi Performance Recreation Engines	Every 25 hours
Stock engines	Every 50 hours

It is a good idea to perform a leak down test at every valve clearance check.

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