2-STROKE PRESSURE TESTING

What is 2-Stroke pressure testing? Pressure testing of a 2-stroke engine is a test performed on the engine to be sure that it has no air leaks. An air leak in a 2-stroke engine will cause a lean condition in the engines air/fuel mixture. A lean condition can result in serious engine damage; seizures, detonation, piston melt down, radiator over heating, etc…

Special note; There is absolutely no way to be sure that your engine is FREE from air leaks without successfully performing the following test.

To properly perform the following test a few special tools are required. They are listed below and illustrated in the attached drawing. Tools needed: Exhaust flange block-off plate, rubber gasket, (spigot style exhaust models require round rubber freeze plugs to block off exhaust), round aluminum intake plug with hose nipple, vacuum hose, brass "T", 0-15 psi gauge, air bladder type pump (like used to test blood pressure), solid intake plug (for multi cylinders).

- To test engine; cylinder, head, reed cage and intake manifold must be installed and torqued (to OEM specifications) to the proper specification. Spark plug must also be installed. Carburetor and exhaust system cannot be installed on the engine until after the engine passes the pressure test.
- A steel or aluminum plate must be bolted to the exhaust flange on the cylinder, using a rubber gasket to ensure a proper seal. For spigot mount style cylinders (Banshee) without a bolt on exhaust flange it will be necessary to plug the exhaust port with an expandable rubber freeze plug. On multi-cylinder model machines it is necessary to plug ***all*** cylinder exhaust ports in unison.
- Plugging the intake tract is easily accomplished by inserting a piece of round aluminum approximately the same diameter as your carburetor into the intake manifold. The aluminum plug needs to be secured. Plug must have a hole drilled through the center with a nipple type fitting attached to it. On multi-cylinder models a solid aluminum plug should be installed in each remaining cylinder.
- To accurately measure pressure loss, it is necessary to use a marked air pressure gauge. (See the attached illustration). A 0-15 psi gauge is ideal, attached to a brass "T" with vacuum lines of approximately 12" attached to each side. One line will attach to the engine (aluminum plug) the other will attach to the air pump.
- With all testing equipment installed onto engine, pressurize 2-stroke with 6 lbs. of pressure. The engine must hold 6 lbs of pressure for 6 minutes without losing any air. **NOTE: Do not fill 2-Stroke cavity with more than 6 psi. Of pressure. Seal damage may occur.**
- If gauge shows a loss of pressure, it means you have a leak. If a leak is detected it must be located, the problem corrected and then the engine must be retested until it passes.
- To locate an air leak on your 2-stroke engine start by squirting obvious locations for a possible leak with a soapy water solution (Windex, 409, etc.). When soapy water comes in contact with a leak the leaking area will generally bubble, to show its locale.
- After engine has passed the pressure test. Resume assembly of the engine and begin the break-in process.
- ***If you do not feel comfortable performing this test on your engine or do not have the resources it is strongly recommended that you consult a professional.***

HELPFUL HINTS FOR TROUBLE SHOOTING

- Successfully performing a pressure test on your 2-Stroke engine is one of the main information baselines needed in acquiring the necessary knowledge to build a solid foundation. This test can be a key piece of data in both the tuning and reliability process of your engine.
- Possible leak areas include; base gasket, reed gaskets, intake manifold, main seals, head gasket, and center case gasket.
- When looking for a leak in an engine it is advisable to do in quiet. Some leaks that are hard to see can sometimes be heard. You will hear a whistle or hissing sound.
- Suzuki LT 250/500 models occasionally will leak around the power valve assembly and into the transmission cavity. To verify this, a soapy solution must be sprayed at power valve holder outer and inner o-ring junction. If leakage around power valve o-ring is confirmed, it should be repaired. If not repaired it will not cause an engine seizure but can cause pressure to displace transmission oil under hard riding conditions.
  To continue pressure test when power valve o-ring has not been repaired but is leaking. It is necessary to pinch off the transmission breather hose. You will be pressurizing the transmission cavity as well as the 2-stroke cavity.
- Always perform pressure test with radiator cap removed. If engine has air leaking into water system leaving the radiator cap on will hide symptoms
- If your engine has an unexplained failure, it is wise to perform a pressure test on the engine before you disassemble it. Although rare some engines for a variety of reasons can develop and air leak during operation. Pressure testing the engine before disassembly can lead to valuable clues in correcting your problems.
- *GENERAL INFORMATION:* Any ATV/motorcycle repair or performance shop in the world that claims to work on these engines professionally should be able to perform the before mentioned pressure test. Though their method may vary the end result should be the same. **If any company or business does not understand or is unwilling to perform this test a person should think long and hard about letting that business or individual touch their equipment.**
  The general fee charged to perform the pressure test only should be under $ 50.00. That price generally would not include engine assembly or repair of an air leak if necessary.

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