



Congratulations on purchasing a Performance Saw Supply cylinder kit, piston kit, crankshaft bearings and/or crankcase.

To ensure that your chain saw, cut-off saw, trimmer or blower starts and stays running for a long time you must perform the following tests before installing your new part.

In any 2-cycle engine you have two compression tests to perform, **primary** and **secondary**. Most people only do the secondary compression test. The **secondary compression test** is when you screw a compression tester into the sparkplug hole and pull the starter rope while holding the throttle wide open until the compression tester needle stops moving. This test will only tell you the condition of the upper cylinder.

The **primary compression tests** are in the lower end of the crankcase. This test consists of **vacuum and pressure tests**. All two cycle engines must be air tight to perform correctly in operation. There cannot be any air leaks or vacuum leaks.

To perform the **crankcase vacuum and pressure tests**, you will need to seal the crankcase by blocking off the exhaust port, intake port, impulse line where applicable, compression release (sometimes called a dekco valve) with a block off bolt. To do this, first loosen the muffler and insert a rubber block between the cylinder and muffler and tighten up the muffler bolts. Next loosen the carburetor bolts and insert a rubber block between the carburetor and intake and tighten up the carburetor bolts. Next remove the decompression valve, where applicable, and screw the block off bolt until it gets tight. Next remove the sparkplug and turn the engine by hand until piston reaches BDC (bottom dead center). Next screw a special piston stop that has a hole drilled all the way through with a fitting on the outer end where the hose from the hand pressure/vacuum tester connects to the outer end. Have the tester set on **pressure** and pump till you reach 7 psi. The engine can not leak no more than 1 psi per minute till it reaches 4 psi. At 4 psi it must hold 4 psi for 4 minutes. If it does not hold, you have an air leak. Take a bottle of water and soap mixture and spray suspected areas for the air leak. Suspected areas to look for are: cylinder base gasket, crank seals, (you will need to remove the flywheel and clutch to be able to access the crankshaft seals to verify if they are good or bad), around the rubber intake boot and impulse line. If you have a air leak, make sure your rubber blocks are air tight at the muffler and carburetor. Some engines instead of having a rubber intake boot will have a intake that bolts to the cylinder. If you have this kind of intake, spray water and soap mixture there as the bolts may have loosened up from vibration or intake may be cracked. When the crankcase tests good, precede to the **vacuum test**. Switch your pump to vacuum and pull a negative pressure of -7psi and the same rules applies on vacuum test. It can only leak -1 psi per minute till it reaches -4 psi and hold for four minutes. If it does not hold, you have a vacuum leak. The crankshaft seals are bad and will need replacing. Also, check the crankshaft bearings for any play. If a bearing goes bad, it will cause the seal to fail. Check to see if you can move the crankshaft up and down from either side to ensure there is no play in the crankshaft bearings. If you have any play in the bearings, they will need to be replaced.

This testing information is true for all 2-cycle engines. Before any new parts are installed, whether using OEM parts or aftermarket parts, these checks must be done or there is a good possibility the engine will fail just as it did before. **Do not just replace a piston or cylinder kit because it failed, find the reason it failed thus making sure repairs are made correctly and engine failure is not repeated.**

Other possibilities the engine could have failed are: the carburetor was improperly adjusted, improper fuel mixture, poor fuel quality, mechanical failures, such as, the bearing on the crankshaft broke from normal wear, the rod bearing needle wore and broke, loose cylinder bolts or nuts, broken cylinder, leaking gasket or gaskets, impulse line, rubber intake boot is torn, carburetor inlet screen has debris on it causing fuel starvation, fuel line has a hole in it, plugged up fuel filter causing a lean mixture, dirt ingestion due to poor maintenance, and/or a dull chain causing the engine to overheat.

A common mistake by mechanics and customers who work on 2-cycle equipment is **crankcase pulse**. Primary compression is one part of crankcase pulse, the other part of crankcase pulse is cylinder and ring condition. Crankcase pulse is necessary for the fuel pump, which is built into the carburetor, to pump fuel from the fuel tank to the carburetor for the engine to run properly. To check crankcase pulse, remove the carburetor and sparkplug, apply some 2-cycle oil into the pulse line and pull starter rope. If you have a carburetor adapter, you will need to place oil into the pulse hole and pull starter rope. Oil should pulsate inside of the impulse hose or hole. If you don't have good crankcase pulse the carburetor will not perform correctly to keep the engine running at peak performance.

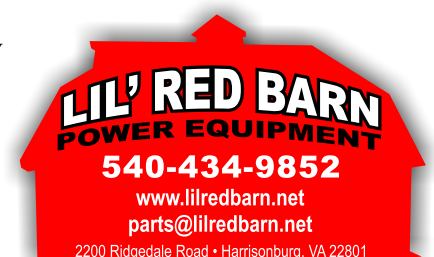
We recommend that your gas is at least 89 octane or higher (preferably no ethanol which causes a increase in cylinder temperature) and mixing oil that has a Jaso rating of FC or FD. All major manufacture's mix oil generally has a FC or FD rating. Gas should never be older than 30 days and stored in an air tight container. Never, never use outboard motor oil, as this oil is designed for water cooled engines and not for the outdoor power equipment.

Remember if your equipment is happy, you will be happy!!!

All Performance Saw Supply replacement parts carry a 30 day warranty. This warranty is for parts only that have been purchased from us.

All testing tools can be purchased from: www.lilredbarn.net

Thank you,
Lil Red Barn Power Equipment Supply
Performance Saw Supply





Lil Red Barn Power Equipment Supply Performance Saw Supply



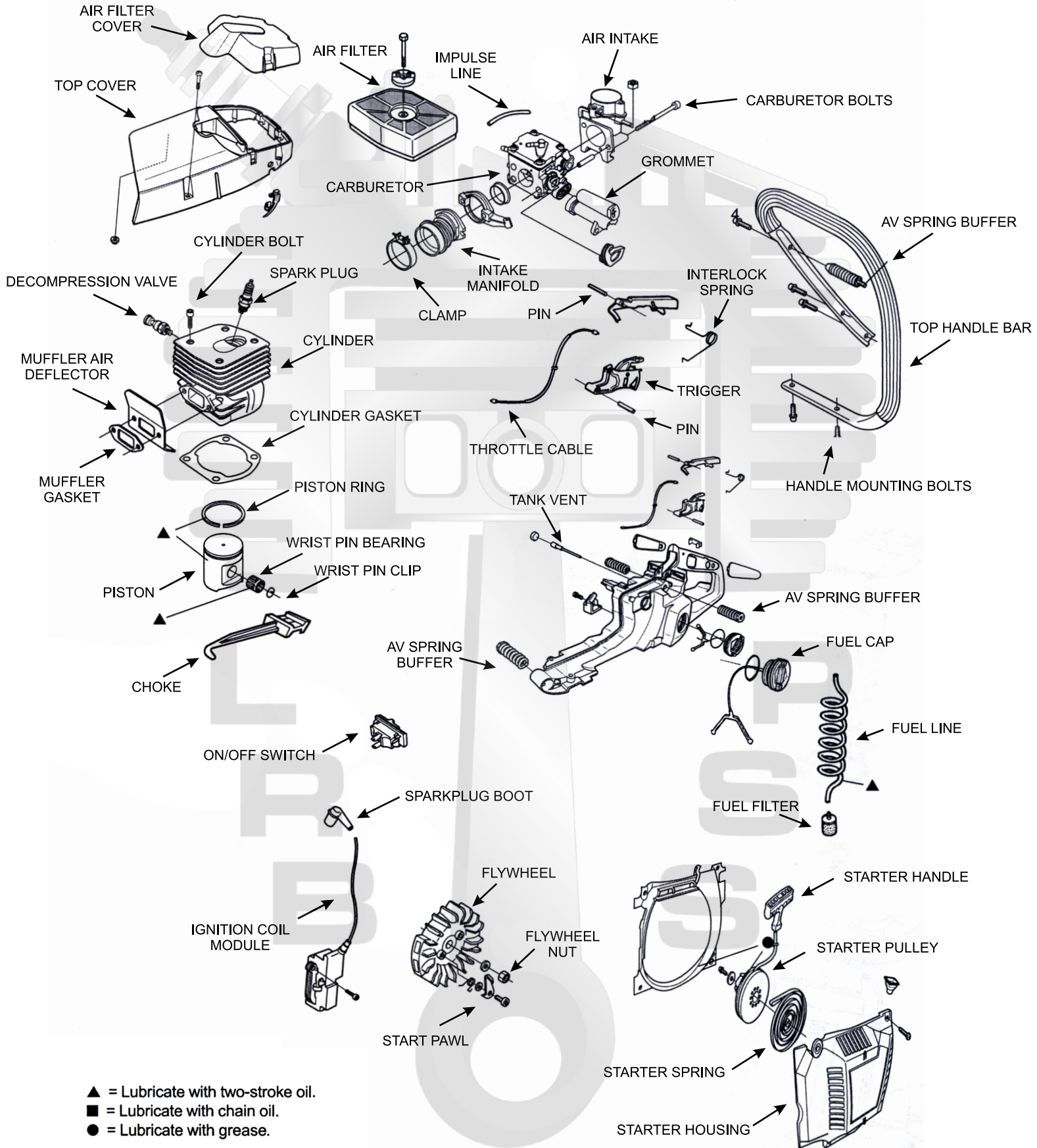
We are a service and repair shop who has many years of experience on 2-cycle engines. We are not just a replacement parts company who is a trader and buys and sells parts on the internet. These traders have no experience servicing 2-cycle engines. We test sample parts before we sell them. We also use the parts we sell in our repair and service shop. A lot of parts on the internet will fit and probably work but are of poor quality and will not last as compared to higher quality parts. We send specifications to manufactures to meet certain criteria before we buy and sell the part.

Examples of high quality parts and how they function and last:

- * A chainsaw that runs at 12,000 rpms: the piston will go up and down 200 times per second. 50 hours of running at 12,000 rpms is 36,000,000 revolutions of the engine. The piston has to completely stop 400 times a second to change direction. The piston rings seal the cylinder as they go up and down and they flex 400 times per second and must be of good quality to perform this function.
- * The fuel mixture has to be properly mixed. If the fuel mixture is old or too much oil has been added to the gasoline, it can and will stick the rings in the piston causing loss of compression and performance.
- * If the piston skirt turns brown, the fuel is old and stale, it will cause cylinder deposit's to form on the top of the piston and piston skirt. Always use new cylinder gaskets when replacing a cylinder or piston kit and if an applicable intake adapter gasket. (Your saw may use an intake boot and there will not be a gasket used.) Don't forget to check the wrist pin bearing for wear. If in doubt, replace the wrist pin bearing.
- *Piston ring functions:
 - Seals the cylinder bore and piston against high combustion temperature and gas leakage.
 - Distributes oil over the cylinder surface.
 - Transfers heat from the piston to the cylinder walls.
 - Stabilizes the piston in the cylinder bore. The piston ring gets slammed up and down between the ring lands at 400 times per second.
 - It is subject to very high burning temperatures and it constantly scraped back and forth against the cylinder walls.
- * A piston ring must be a good quality ring to do these functions in a 2 cycle engine. When installing piston rings don't roll or walk the ring onto the piston as this will distort the piston ring. This also applies to the piston ring keepers. We highly recommend that you use a piston ring compressor when installing the cylinder onto the piston. (Some saws already have a tapered cylinder bore to help install the piston into the cylinder and you will not need a piston ring compressor.)
- * To ensure that piston rings don't break on installation: Coat all bearings, cylinder and piston with a 2-stroke engine oil before installation of parts to ensure lubrication on start up of the engine.
- * After completion of the overhaul, be sure not to over speed your engine, use a tach to set the engine to proper manufactures recommended rpms.



CHAINSAW DIAGRAM



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