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Products - Frequently Asked Questions (FAQ)

How do I know if my engine has an air leak?

Many times, when an engine becomes difficult to set, with it tending to run too lean, an air leak is suspected. Please be aware that most causes of lean running are not due to air leaks in the engine. Lean running is almost always caused by an external cause, such as vibration-induced fuel foaming, trash in the fuel system and carburetor, and pinholes or cracks in the fuel lines. Sometimes the lean running is caused by too-small fuel tubing in large engines, or by insufficient fuel pressure caused by an exhaust system that does not give the fuel tank enough pressure.

An air leak is usually caused by a badly-fitting rear cover or carburetor. The usual culprit is trash that got in there during servicing, or in the case of the carburetor, when it was removed during engine installation. If the carburetor has a problem with sealing against the crankcase, the air leak will usually cause problems with idle and midrange. At full throttle, the wide-open carb is pulling as much air as possible, and any amount from a leak will be too small to affect the engine's running.

The first cure to an air leak is replacement of the rear cover gasket or the carburetor. When you install the new parts, make sure all of the metal parts of the rear cover, crankcase, or carb are absolutely clean of trash. Apply a bit of oil to coat the surfaces, and install the parts. Use model fuel on the rubber. Petroleum products will cause the rubber to deteriorate. Make sure the parts are well-seated before you tighten the bolts or screws. If your carburetor uses a drawbar to hold it, press the carburetor onto the engine while you tighten the drawbar.

A carburetor can leak air between the carb body and the throttle barrel, but this is usually confined to engines that have seen a lot of wear. An air leak here will cause idle and acceleration problems. In some cases, the fit can become so loose that the engine will continue to draw air even when the throttle is fully-closed. The cure is a new carburetor body because it's aluminum, and the throttle barrel is steel. The aluminum carb body will wear out long before the steel barrel. The rubber cover over the throttle barrel at the throttle arm is not a seal. It's there to help keep dirt out of the carb to prevent wearing out the fit between the carb body and throttle barrel.

Some people believe that their engine is leaking air through the front bearing. This is not really possible. Almost all glow engines do not use the front bearing as a seal. Even if you see a metal shield on the front of the front bearing, this is not a seal, but a cover to keep dirt out. For years, many model engines had no shield on the front bearing at all.

Some fuel leakage from the front bearing is normal. That's how the front bearing gets lubricated. The fuel that works its way through the front bearing will be thrown away by the rotation of the drive washer while the engine's running. Some of this fuel will accumulate on the engine and may even form small 'bubbles' of fuel in areas of low airflow, such as behind the needle valve. We've seen engines do this that were returned to us because of a leaking needle valve. If the needle valve leaks, it usually won't leak fuel, but suck air. You'd need a high-pressure fuel system, like pumped engines have, to cause fuel to leak out of a badly-fitting needle valve. Most fuel found on the needle valve comes from somewhere else.

The actual seal is made by a thin film of oil between the crankcase and the crankshaft forward of the carburetor, and just behind the front bearing. If the engine is run too much in dirty conditions, dirt can get into the engine and erode the crankcase forward of the carb and loosen things up. The sign of a worn fit is fuel spray from the front bearing. The fuel spray will be enough to cause the nose of the model to become wet with raw fuel. You may also be able to feel wetness on your hand if you put it next to the cylinder, behind the propeller. You don't have to get close to the prop at all to feel the fuel spray.

A bushing engine will tend to throw more fuel from the front bearing than will an engine with ball bearings.

Repair will require a new crankcase, a new crankshaft, or both.

If the cylinder head gasket is leaking, your engine won't suck air there, either. A leaking cylinder head gasket will "blow" combustion products out through the leak. This is indicated by a burn mark on the gasket, and on the top of the cylinder liner and in the gasket groove on the cylinder head. The cylinder head can develop leaks if a deformed gasket is reinstalled during service, if trash gets there during service, or the cylinder liner or cylinder head are machined badly during manufacture. The most common problem is trash.

If the cylinder head develops a leak, it can sometimes be cured with a new gasket, but sometimes the exhaust gasses that leak out will erode the cylinder head enough that it will have to be replaced, too.

Glow plug holes can also leak, and are usually caused by cross-threading a glow plug when they're replaced. The threads get damaged and eventually a leak can develop. This can sometimes be repaired with a glow plug tap, but you'll usually have to replace the cylinder head or send it off to have an insert installed to replace the threads.

A well-made engine requires no special efforts by the modeler to make sure it's sealed properly. If your engine won't run unless you use gasket compounds to seal the carburetor and rear cover, your engine has other issues, or it's been very badly made.

Please remember, that if your engine is still within the warranty period, that attempts to perform your own service may void that warranty. Please check with your engine's manufacturer.

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