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How to perform an engine test

This article is about how to check the engine of an excavator, wheel-loader or any other machine with a combustion engine.

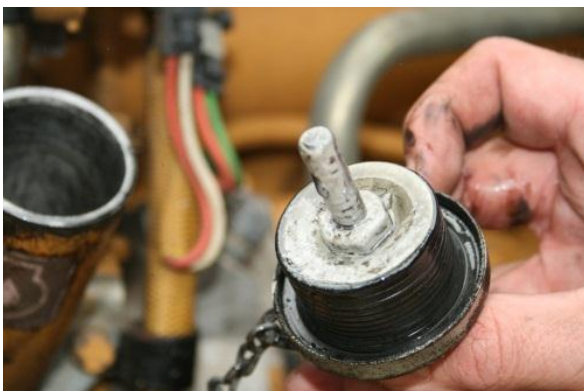
First of all, I want to say, most of the larger suppliers of used equipment are no crooks. But as the Germans say: "The Exception confirms the Rule." And what is better than hoping an engine is good? It is better to know it.

When you arrive on-site and you go to inspect a wheel loader, excavator, bulldozer or any other used construction machine with a combustion engine, we recommend the following procedure:

- Before turning the key have a look if the engine is cold. If it is warmed up already this may be a sign of starting problems with a cold engine (compression).
- Check the oil condition. New oil along with old air- and fuel filters and no other service done is a bad sign.
- Now open the cooler reservoir and have a look to coolant quality. There should not be plain water in and the coolant should be more or less clear. It should not smell for diesel and should not contain oil.
- Keep the cooler reservoir open and start engine. Watch the smoke on start. A bit grey or black smoke should disappear after max. 30sec.
- Watch into the cooler reservoir or put your hand on the opening. There should be no pressure. Now you can close it.

Now it is time to check the so called Blow-By. When an engine is running a certain amount of pressure from the combustion is bypassing pistons and piston rings and finds its way to the crankshaft case. Therefore a vent line is existing and accessible with most of the engines. (With some modern engines this hose leads back to the air inlet channel to return the gas to the engine.)

To check the Blow-By open the oil filler cap and put your hand on. It is difficult to describe the level of allowed Blow-By. However, to give you a feeling: Blow through your nose at your hand. If the level of engine wear is normal it should be less than that. Engine must run in idle!



The filler cap should not contain gray paste. This would be a sign of water in oil.

Now you can perform other machine tests like a Stall-Test or Cycle Time Test. This will warm up the engine to operating temperature. Run the engine in working speed and watch the smoke. A bit black smoke is normal under load. More black smoke occurs when the fuel is not combusted completely. Blue smoke indicates that the fuel gets mixed up with oil somewhere before burning. Unburned fuel which gets into the exhaust stream is responsible for white smoke.

After running the engine for 20 minutes you can have a look back at it. Take a flash light and watch for leaks.



If you are not sure if you can perform these tests, if you do not have time to travel, or if you just want to give this job to the experts call a company like [MEVAS](#) to get a machine inspected. The author of this article is running an appraisal business for used equipment and has many years of experience in inspecting equipment.