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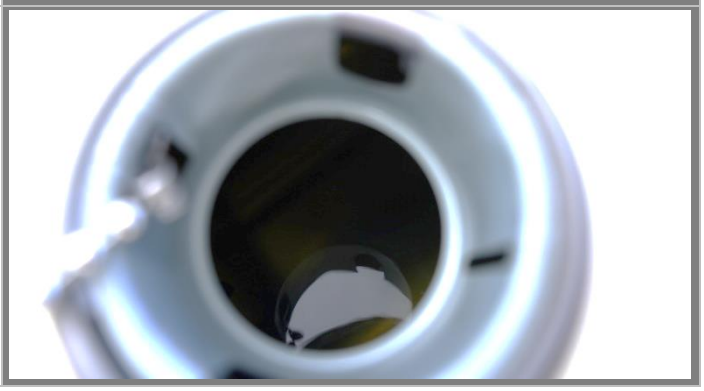
Troubleshooting Guide for Petrol Engines

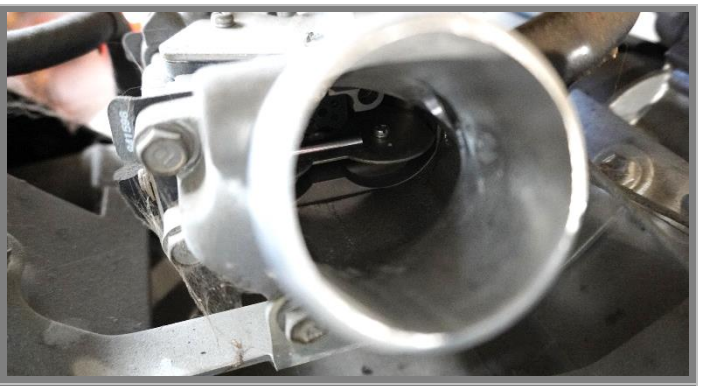
The best way to protect an engine used infrequently is to ensure all fuel is drained from the tank when the job is finished. When petrol evaporates, it leaves a varnish that is difficult to remove, and which will clog carburetors.

If a problem arises, the following troubleshooting tips will help in finding the fault.

What to check if engine is not starting

1. **FUEL**

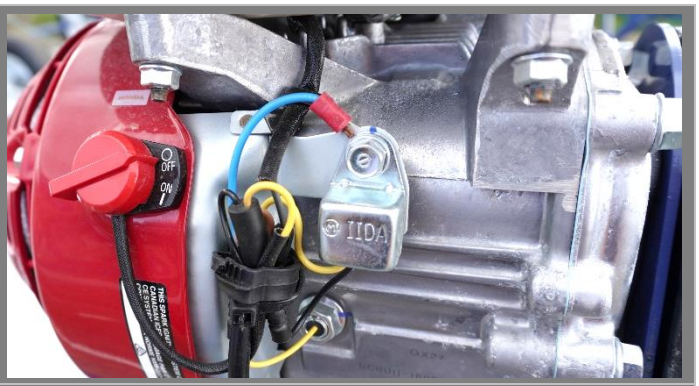
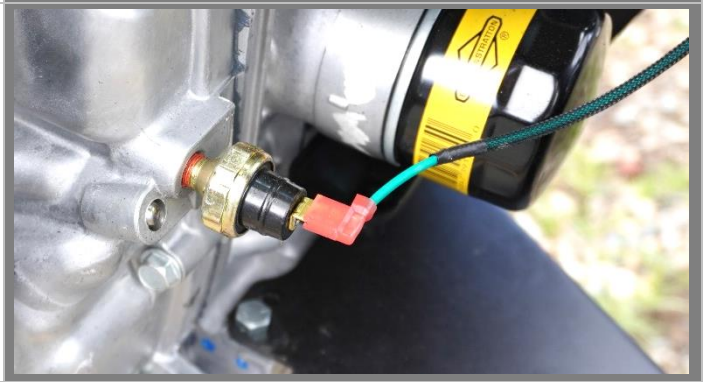
Empty fuel tank	
Fuel not turned on	
Blocked filter or pipe	
Stale fuel	

Blocked carburetor	
Blocked jet	

After checking fuel tank & fuel tap, check fuel is getting to carburetor by removing fuel line. If the carburetor is fitted with a needle & float, it could be jammed in the closed position.
To check for fuel starvation, remove air filter & pour a small quantity of fuel down the carburetor throat. The engine should fire when cranked over.
An engine that has been sitting idle with stale fuel in the tank or where the fuel has evaporated away could have a blocked fuel system. Fuel varnish will block filters, needle valve seats and main jets. A commercial carburetor and throttle body cleaner works well for cleaning these areas. Often, a blockage in the main jet can be removed by sealing the intake with a flap of rubber and cranking the engine a few times.
Pay attention to choke and throttle butterfly valves. The throttle can become stuck in the closed position after sitting idle for some time.

2. SPARK

Emergency stop switch activated	
Ignition not turned on	

Short in ignition cut-off wire	
Short in ignition lead	
Low oil alert switch in operation	
Defective or damaged spark plug	
Defective ignition coil	

Spark plug will not spark under compression	
Incorrect spark plug gap	

Remove spark plug and place against cylinder head with lead attached. A blue spark should be visible at the gap when the engine is cranked over. If no spark is present, check all leads, including low oil level and ignition stop leads for shorting. Replace spark plug with another that is known to be working properly and check again. Modern solid state ignition systems have no breaker points, and the coils rarely fail. But if no other cause is found, this could be the problem.

3. COMPRESSION

Stuck valve	
Spark plug loose	

Chipped valve, valve seat, loose valve seat insert	
Incorrect valve clearance or valve riding open	
Blown head gasket	
Stuck or broken piston rings	
Excessive wear in cylinder or piston	

Dry cylinder walls (no oil)	

While checking for other faults it will quickly become apparent if an engine lacks compression as it will turn over too easily.
On a well-used engine, wear is a likely culprit but internal damage such as a scored cylinder wall could also occur.
Engines, especially side-valve configurations, can suffer from stuck valves if they sit idle with one valve held open. As a precaution, after the engine has stopped rotate the flywheel forward against compression to ensure both valves are shut.
A blown head gasket usually can be heard hissing as the engine is cranked over, while leakage through the valves is more difficult to diagnose.
Any sign of gas being blown back through the intake points to a poor inlet valve, while sucking through the exhaust (felt by placing a hand over the exhaust while cranking the engine) points toward the exhaust valve being the culprit.
A leaking valve can be caused by carbon stuck to the valve seat or a pitted, chipped or bent valve.
Sometimes valve seat inserts become loose, allowing compression to escape. Fix by centre-punching the block around the edge of the insert.