

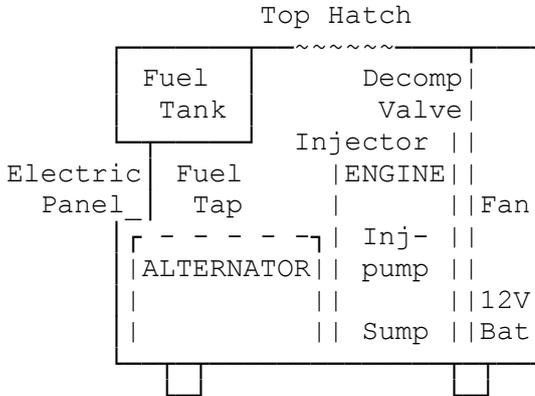
Diesel Generators

By G8MNY

(Updated Aug 13)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

Only had experience of one, a 6kW Clarke diesel generator, it weighed in at 150kg & has a 12BHP engine all in a weatherproof noise reducing box!

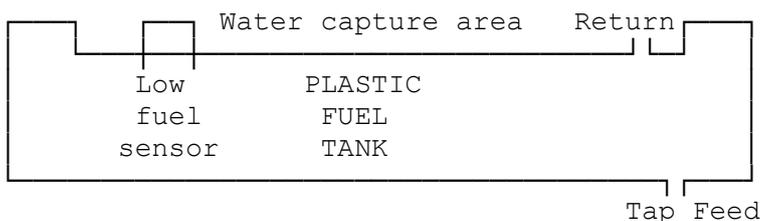


It was a little used generator that had been stored for years, initially the main problem was dead battery, on starting, we soon found rubbish in the fuel tank blocked much of the fuel line system...

Plastic tank-----Tap-----In line-----Bleed-----Electric solenoid-----Injector fuel-----Cylinder injector----unused
 on case fuel filter Screw fuel valve pump return

When this had been cleaned out & a new filter put in, all seemed well for a 9 day radio summer camp with it.

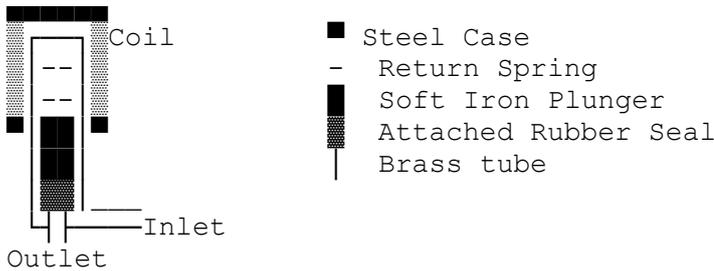
However our wet British summers soon found that water got into the fuel tank. The low fuel sensor was placed in the top of the tank in a large molded recess, this of course filled up with water on a rainy day & the only way out was straight into the tank!



Rubber seals & self taps into a thin plastic tank used by the maker are a silly idea! Draining off 2L of fuel into an empty clear drinks bottle, showed just how much water was getting into the fuel. (bottle now part of tool kit)

Diesels with hand start options, have an extra cylinder valve or open the intake valve for one full engine cycle to initially stop the high 22:1 or greater compression (decompression lever), this enables enough speed to be built up for a proper compression starting stroke.

The Solenoid Tap
 Fairly straight forward plunger device.



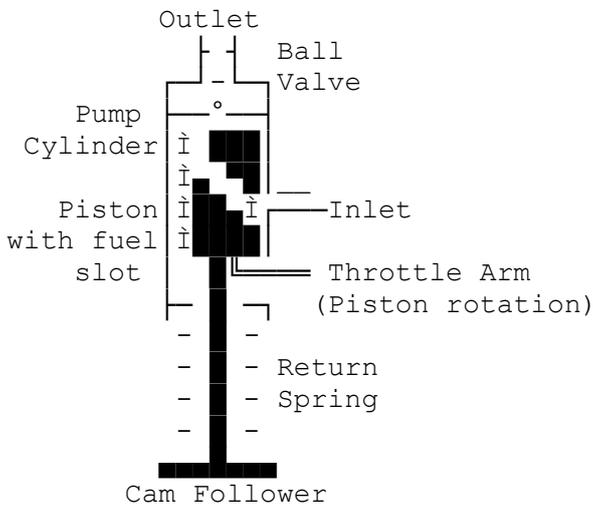
On testing one annoying problem was the electric fuel solenoid, this only operated on starting if battery > 11V or the engine was running. It was NOT open if electrics were just in the "ON" position!

Poor Battery Starting

To overcome the fuel being shut off when the battery is slightly weak on starting. Crank the engine over on decompress for several seconds before releasing the decompressor. This gets quite a bit of fuel in the cylinder, that will burn on the compression stroke even the fuel valve does shut off on the heavy compression stroke starter battery load.

The Injector Pump

This is one of the most complex parts in a diesel, it gives variable volume at very high pressure. e.g. 30 atmospheres or 450PSI at a few degrees before top dead centre of the engine cylinder's compression stroke.

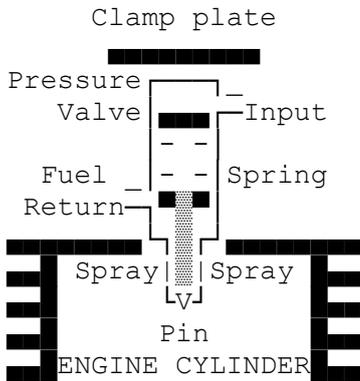


The timing cam strikes the follower & the small piston moves fuel through the ball valve until the diagonal slot aligns with the inlet port when the output is stopped.

The throttle arm is a sliding key on the piston that controls piston angle & hence the fuel volume.

The Injector

This takes the high pressure fuel pulse & injects it in an atomised form into the engine cylinder.



Difficult to draw here, the high pressure input causes the pressure valve to let fuel suddenly pass through to the microscopic spray holes. (Usually 4 of them).

Fuel that does not get through the holes is returned back to the tank when there is combustion.

WARNING: High pressure sprayed fuel is very dangerous, it will easily go through your skin or affect your eyes. So a cover must be used to test the injector action. e.g. half a clear plastic bottle!

Generator Governor

This works in a similar way to that of petrol generators. Force from spinning "Bob weights" is used to balanced against a preset speed (Hz/volts) spring & the difference used to move the throttle arm. Note that a drop in revs is needed to open the throttle!

See also my Tech bul on "Petrol Generators for /P SSB"

Why Don't U send an interesting bul?