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Running in large rebuilt Diesel engines

HOW TO BRAKE IN A DIESEL ENGINE?

Every engine is slightly different from one to another, therefore the break-in procedure can vary ever-so-slightly from one to the next. The way is to inform you at the engine manufacturers for the best run-in procedure.

In theory, the best way run- in a diesel engine is to fit it on a dyno so that each parameter like power, RPM, and load can be closely monitored and controlled. Unfortunately, not everyone has a dyno at their disposal. Running in an engine can be done without a dyno, there are procedures available which allow a diesel engine to be broken in without being installed onto a dynamometer.

Best practice: Using "Running-in" procedure

- Only idle a freshly rebuilt or new diesel engine for the first 10 min and checked for leaks immediately after.
- After initial run, fit the engine to the machine, equipment, or truck, and run/used with a 30% load slowly increasing to 50% and up to 50% of the max rpm. but make sure sufficient load is applied to the engine. This step should continue for roughly 2 to 3 hours/100-150 miles. Finally, the machine, equipment or truck should be used with “normal” loads at 75%-80% of the max RPM available for a day or two to complete the procedure.
- High RPMs should always be avoided during the break-in process as it can cause unwanted engine damage.
- A useful aid is to fill up the engine with "running-in" oil, during the above procedure. It will help a lot to allow the parts to break-in to each other. Do not forget to replace the oil filters and running-in oil, with new oil filters and normal engine oil, at the end of the run-in procedure.
- An engine that has been correctly run-in results in the internal parts being fully adapted to each other. This is required to avoid oil being burned during the combustion cycle.

Bad practise: Idling a rebuild engine for several hours without load.

- For piston rings to be able to run-in to the liner, certain internal combustion pressures are required for them to work normally. These pressures are only achieved when an engine is under load at some variable rpms. The required combustion pressures are never achieved when the engine is idling and without a load on the engine.
- At a fixed rmp and without load, the parts are only sliding over each other. This and good quality oils that have very good friction inhibitors, do not allow the parts to adapt to each other. The parts sliding only cause the polishing of the parts.
- Internal parts that have not run-in, do not correctly adapt to each other, resulting in oil passing between the liner and the piston rings. Causing abnormal quantities of oil being allowed past the piston rings and so being burned during engine operation

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