

Starting an Engine after Years of Storage

The engine has been sitting for xx years. You don't hit an engine like that with a starter motor and promptly try to do compression checks. The engine has no oil anywhere except the bottom of the pan, and almost assuredly has rust on the ferrous parts. Those are things like a camshaft, crankshafts, bores, rings, etc.

Considering how easy it is to pull the head, I'd pull the head. That way I can see how the bores look and judge how my rings and such are to know if I'm going to have to rebuild it, or if I can get away with it.

I'd try turning the engine with a wrench on the crankshaft pulley. That's the only way I'd turn the engine, by hand. Use gentle force. Does it move at all, or is it frozen solid?

If it moves at all, I'd immediately get oil down along the rings by simply dribbling some there (hence the niceness of having the head off). This will greatly reduce the damage rust particles will do and reduce the chances of breaking a ring when it catches on the ridges in the bore from the rings sitting there for so long.

If it doesn't move at all, then I go on to white vinegar. Nice stuff. Pour it in the cylinder bores, and let it dissolve the rust. It may take a couple of hours, or a couple of days. It depends on how bad the rust is. Just keep checking the engine until it finally turns. Sop it up (again, nicer with the head off) once the engine turns, and oil thins to float the rust particles. Examine how badly the bore is damaged and determine if you can live with the damage or if you must rebuild the engine.

Lets assume we've finally got the engine free, and that you can live with the damage in the bores. With the head still off, I'd spend some time cranking the engine over by hand. I'm not trying to build up pressure, I'm trying to get oil circulating and onto bearing parts. I prefer to do this by hand so I can feel things like the scraping of a galled bearing.

I also will probably have pulled the lifter covers so I could jam all the valves open, eliminating the load on the cam faces. They are probably dry and rusty. Spinning them against the lifters will result in damage to the cam.

After a while I'll stop cranking by hand (unspecified time, but usually until my arm gets good and tired). I want to see signs of oil flow though! Once I'm convinced the oil pump is indeed moving oil, I'd use the starter motor to spin it faster, and see if I can get oil pressure now.

Got pressure? Good, keep cranking. This gets the oil into/onto all those areas that are dry and probably rusty, or at least have rust particles floating around on them, without putting a load on them like compression or valve springs do. It also takes one heck of a long time to get oil into and through completely bone-dry passages. I like to crank an engine for something on the lines of half an hour on the starter motor. Yes, that means breaks to cool the starter down, as well as recharging the battery. Fine by me!

Only after all this would I start allowing valves, one at a time, to ride against the camshaft. Again, I'd spin by hand to feel for anything. I'm not going to simply pull the camshaft if I feel galling, but I'm certainly going to note which valves induced it for future reference. Only after all the valves are riding on the camshaft, going up and down properly, with oil pressure being sustained, would I put the head back on. Plugs installed to give me compression, so I can listen for interesting crankshaft sounds against compression. Then, and only then, I do a compression test. I also wouldn't get worked up yet if a reading were low. Stuck rings are quite likely in this engine due to the years it's spent sitting. I'd simply note the low compression.

Now is when I'd consider trying to start the engine. Once I've got it running (ignoring the blue smoke) I'd be listening very closely for evil engine sounds.

About now I'd change the oil again. I don't like rust floating around in the oil, especially with the filtration system the N uses. I'd very seriously contemplate using a flush. But that would be predicated on how much sludge I found on things while I was in there. The flush has a fair chance of helping to loosen up the potentially stuck rings. Dump again, but this time I would probably use good old Marvel Mystery Oil. For whatever reason, the darn stuff seems to work well.

I work the tractor gently, with increasing loads as I verify that things are working adequately. It would be a while before this machine saw something as harsh as plowing with me.



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