Why is it So Expensive to Rebuild a Studebaker Engine?

by Ted Jensen

A recently rebuilt 245 for the 4WD in the background.

The short answer is, "It isn't," when compared to the cost of rebuilding a modern engine.

I live in New York State and the biggest problem here is there are fewer and fewer machine shops that will work on older engines. They have set up for new multi-metal blocks and heads and are not willing to make the change for our older engines. The good news is if one is willing to look there are some old time shops to take up the challenge.

In my shop I build them all, Studebaker and otherwise. I just finished an older John Deere and International tractor and have shipped Studebaker long blocks, short blocks and complete engines nationally and internationally with success using the following guidelines.

Let's look at what it takes to build a Studebaker engine that has not been opened for 50 years or more. Often these engines have been unprotected in a field, woods or a corner somewhere not very well preserved and the pistons are stuck to the cylinder walls. The worst case scenario means the pistons must be broken just to get them out. The best case is the engine is just worn out and nothing is stuck.

A Commander 8 crankshaft installed ready for rebuild.

If the engine turns over and there are no stuck valves, removing the oil pan may reveal a messy surprise in the bottom of the pan. This surprise is a "gray goo" and is a combination of metal from the engine parts, and dirt and carbon from years of using non-detergent oil. I once pulled the dipstick of a Commander engine that read full of oil. Pulling the drain plug allowed no oil to flow. There was so much "GOO" in the bottom of the pan it had to be removed with a putty knife. This "goo" is not just in the oil pan; it is everywhere in the block and covers all the parts that would normally see residue from splashing oil. These deposits like their home and do not move easily. It takes a lot of time. I sent a block to a place that claimed they could remove this material by just placing the block in a high pressure heated washer. It worked fine but there was still enough foreign material left that washing by hand was necessary especially to clean out the oil bores.

Next, it is good to pull the soft or expansion plugs from the block. Recently, I worked on a block for a Champion engine. When the soft plugs were removed, the answer to the customer's question of overheating was answered. There was so much rust and residue in this block that there was no room left for water. Even the passages in the head were full of thick mud. Now if you thought the oil mixed "goo" was hard to remove, the mud in the water jacket is worse. With no room in and around the cylinder walls to put a scraper, a wire must be used that will fit, to stir and wash the area clean. Soap does not work. Only moving water and something to stir the thick mixture with will remove it. A high pressure washer works very well. When all is clean, nice new soft plugs need to be installed with a good sealer to prevent leaks.

Over the years, there has been a lot of controversy over hardened valve seats. My observation has been that most of the engines that I've worked on had one or more previous valve jobs. At least this applies to the six cylinder engines. For some reason, the V8s have a better reputation. I made a decision a few years ago to install hardened seats at least in all exhaust ports. The old style non-detergent oil was not always beneficial to the moving parts of an engine; the valve guides did not wear so well and were often a reason for excessive oil consumption. New valve guides and valves make for a very nice seal where it counts.

When an engine is stuck, often the pistons need to be broken to be removed. If the engine turns freely, usually the cylinder walls are tapered, scored or pitted, and it is

necessary to bore the cylinders to a larger size. I worked on an engine once for a customer who could not get it to turn over after he had overhauled it. The explanation was that he did not want to install larger pistons so he used a ball peen hammer to expand the size of the pistons. He then installed .010 oversized rings to take up the slack in the worn cylinder. New pistons and rings for the newly sized cylinder are the answer for a rebuild.

Older engines have many warm-up cycles. Some have even been overheated, which means the deck should always be checked for square and the head should be resurfaced for a good gasket seal.

Some argue this point, but I like to use chrome rings on a rebuilt engine. Studebaker used cast iron rings on all but the high output and heavy duty truck engines. If installed correctly and run-in is proper, chrome rings will seat forming a tight seal and long wear life.

Another by-product of non-detergent oil, or at the very least few oil changes during engine life, is a worn crankshaft. Studebaker used steel when making crankshafts, something adherents to other marques only wished for. This made Studebaker crankshafts very strong. The lack of lubrication or increased dirt due to infrequent oil changes wears the steel and often causes a need for crankshaft re-sizing and undersize bearings.

A recently rebuilt Studebaker OHV converted with 185 crank and pistons.

Sometimes the gears of an oil pump wear out, and can wear to the point of having too much clearance, causing low oil pressure. A kit with new gears is always advisable. I have noticed some oil pump kits do not come with a cover plate. If one replaces the gears and there is wearing on the cover plate, the new gears may not be enough. Over the years, I have placed the cover plates in a machine vise and resurfaced them to give a flat true surface of a new plate. It really makes a difference.

Additionally, there are stories about fiber gears on the camshaft failing. More than once, I have tried to remove the gear of a Studebaker camshaft, and, using the correct puller, the gear crumbled. Perhaps it has to do with age but using a new gear is always recommended.

It is easy to look at the lifters and say they are fine. Not everyone knows that the bottom of a lifter is ground in such a way as to cause it to rotate when the camshaft pushes it up. Over years of running and few oil changes, or poor oil, the lifters will flatten. Some have indentations where the camshaft stopped turning them and just moved them up and down. This is hard on the camshaft as well. There are shops that will regrind the bottom of a lifter for proper rotation. The good news is there are lots of new lifters available for the Champion flat and overhead engines as well as the V8s. This is not true of the Commander engines. Whether one uses new or reground lifters, you should always place a new lifter surface on the camshaft. Be sure to use the proper additive with your oil to preserve camshaft life.

Oil leaks will always be a part of Studebaker ownership. One thing I have noticed, the late gasket sets contain new material for better sealing. I recommend using the latest manufactured material, as it seems to have a better front felt for tighter fit to the pulley hub.

What else could there be to a rebuild? One should consider replacing the water pump. Remember, the old one could be at least 50 years old. It has the job of circulating the water to keep this new engine cool. The thermostat is a very necessary part of the life of your engine. Engines do not like to run cold and the thermostat will do a good job of regulating a proper temperature.

You don't want to forget the carburetor. Have it rebuilt for the best mixture results. Under the carburetor is the manifold for both exhaust and intake. If your engine was an oil burner, a recommendation is to have the exhaust manifold cleaned, and the heat riser valve repaired. Often, in the older engines, the heat riser flapper is stuck in one position, preventing the exhaust gasses from keeping the intake part of the manifold warm for proper mixture temperature. The flathead Champion engines have a steel plate that holds the heat riser in place. It is usually warped, the spring gone and the gasket leaks. Heat riser kits and parts are available. When servicing this part of the manifold, the bolts will often snap off, requiring drilling and retapping the threads. Sometimes, it becomes necessary to install HeliCoil threads in order to reinstall the plate that holds the parts to the manifold. If you have ever replaced an exhaust pipe on your car when the bolts snapped, you understand the difficulty of drilling and retapping a threaded hole.

Another item often overlooked on Studebaker engines is the distributor. Over the years, Studebaker used sev-

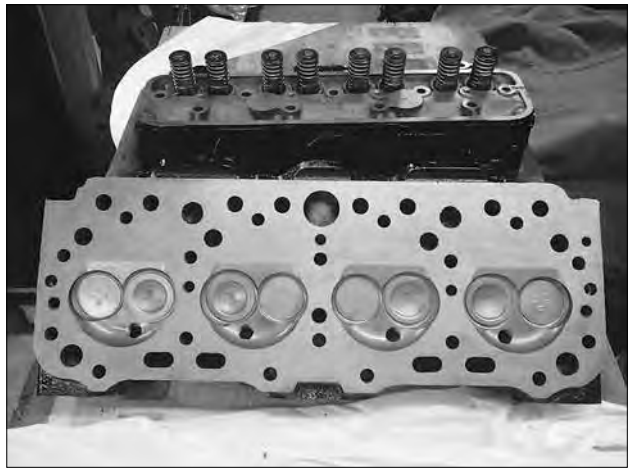

photo by Zane Leek

Finished V8 head.

photo by Zane Leek

Nice three angle valve grind for good seal.

eral different brands of distributor; some seem to give better overall life than others, but all seem to have their wear points. Placing your distributor in a good distributor machine will show if there is a need for repair. Others will need new mechanical weights, and even others will need springs for the weights, and often need a replacement shaft. The pegs where the mechanical weights are attached can be worn so badly that the worn weights do not swing freely or they swing up instead of out. All of this can cause your newly rebuilt engine to run poorly. There are several Studebaker Drivers Club vendors that offer distributor service and/or new distributors. Some sell the Pertronix electronic system for your distributor to replace the points. Personally, I do this as often as a customer will allow, and always on my personal vehicles.

In summary if you want your Studebaker engine to run for a long time trouble-free you will want to rebuild it and not overhaul it. You need new parts fitted properly, and use a good quality oil with a product that ads the proper amount of zinc and phosphorus, to minimize the wear to the camshaft and lifters. Change the oil and filter regularly. Keep the antifreeze at the right strength and, since you may not run your engine every day, use a good water pump lube.

People ask me, "Who will rebuild my Studebaker engine?" Of course I tell them I will do it. I rebuilt my first one in 1961. However, if you follow the ads in *Turning Wheels* and other Studebaker internet forums, you will find there are several vendors and hobbyist who will help you. They are located in places that are convenient to nearly every region of our club. It never hurts to get recommendations for a rebuilder. I will always recommend a Studebaker club member because they seem to always give more value for your dollar and the dollar amount seems to always be less. If you have questions, write me at studepickups@optonline.net.

photo by Zane Leek

Clean, perfectly polished valve face.