

V16 Restore – The New Engine Block

Chapter 2 - Discovery can be Painful

This is the second of many articles covering experience restoring a 1940 v16 Town Car. For an introduction, start with the first chapter.

Once the team removed the V16 engine, it was determined to be as severely damaged as to start with a new block. Once a new engine was located and received, we started with the issue of matching the engine serial number to the chassis number. We decided we could technically make that happen, yet the ethical issues were burdensome. Conversations with experts resulted in knowing that many cars are fitted with replacement engines.

The replacement engine serial number is 1939 V16 5290094. The original engine is 1940 5320008. Just in case the next owner wants the original engine I am considering keeping the original block. It is hard to want to keep a 700 pound chunk of iron.

The engine came with what appears to be new, never used and impossible to find, valve lifters along with new valves. The cylinders were a little rusty and recently bored to an oversize. Also included was a camshaft and a crankshaft. So a few useful extra parts are now available.

Here is a picture of a Magnaflux test. The bright spots are cracks. Some round plugs are also noticed. So that you can see the full process. I am also posting a movie of the test. RestoreCars and Mark Clayton are very good at sending updates including pictures and movies.



As mentioned, there is too much discovery to have a fixed price bid as with normal automotive work. The recommendation was to send the block to the expert cast iron repair facility, Lock –N-Stitch, in Turlock California. Their repair procedure is worth a review. See <http://www.locknstitch.com>

Fortunately the machinist programmed the entire block into a CNC machine and with that knowledge knew the entire engine configuration. The cylinder walls were also sonic tested to ensure enough material was available for any needed oversizing. The cylinder holes were measured and new pistons were ordered from Arias. Lead time at Arias was a few months. Shipping the block took a few weeks and with LOCK-N-STITCH shop backlog being a few months with added the inclusion of COVID delays we added about 4 months to the timeline.

Engine on the CNC machine:



The nine (9) engine bearings were sent to Paul's Rod and Bearing. The shop has a long relationship and good luck with Paul's. I am told the success formula comes in part from the correct percentage of silver used in the Babbitt alloy. It seems each Babbitt shop has their own alloy mix.

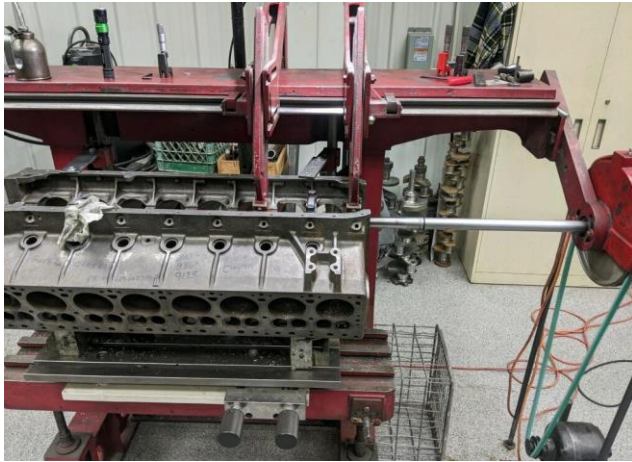
LOCK-N-STITCH informed us that they repaired 31 inches of cracks. Upon return of the engine it was again fitted to the CNC machine to correct any distortions incurred during repair. The vast percentage of cracks are plugged yet some need to be filled with brazing.

Back from crack repairs and the engine returns to CNC to check for any needed corrections.



The cylinders were slightly corrected to extend at the same angle from the crankshaft.

Align boring to correctly size the newly surfaced mains.



This document is getting a little long, so next chapter will start with boring the cylinders and grinding the crankshaft.