

## 500 Horsepower Olds 455c.i.d. build

### Technical Article part 5

In this final edition of Art's build article, we will address buttoning up the externals of his engine and prepare it for installation in his 1950 Coupe.

In the last tech article, we left off with the valve train being assembled with the correct components, dialing in the rocker arm geometry. During this phase of assembly, we rotate the cam to the base circle or "backside" of each cam lobe and then install the respective lifter, pushrod, and rocker arm. The rocker adjustment nut for the roller rockers, also called a "poly lock" is tightened slowly while spinning the pushrod in two fingers until enough adjustment is made to resist spinning the pushrod. This is what we call "zero lash" and now we turn the adjustment nut one half turn tighter to achieve the proper "lifter preload" which is what is done for all hydraulic lifters when working with adjustable valvetrain. The small lock allen set screw is then snugged up and the valve train is adjusted and ready to go.

Now is when I fill the engine with oil, pouring it directly into the lifter valley which baths the cam and lifters in a generous amount of lubricant. I used the Lucas Oil "Break in Oil" which is a 10/30 grade with very high zinc and other additives to properly protect all surfaces during break in. At this point I installed the oil filter housing on the passenger side of the block and installed a new Wix brand oil filter.

Before installing the intake manifold, I rotated the motor around to exact top dead center while observing the valvetrain and installed a new adjustable timing pointer, set it to point to the proper mark on the balancer and secured in place. I use these adjustable pointers because most aftermarket balancers do not have the TDC mark in the correct location and require "indexing" with an adjustable pointer.

Now it is time to install the intake manifold. First I used high performance "Print-o-Seal" type gaskets with a sealing bead already applied to the gaskets. The gaskets were then sealed to the head surface with Gasketcinch contact cement on the entire head surface the gasket covers with the exception of around the water jacket ports. A good quality black or grey rtv is used sparingly around the water ports, taking care not to use so much as to have it compress into the water port and contaminate the cooling system or clog the radiator. Then a thick but narrow bead of black or grey rtv is applied to the two end rail areas at the front and rear of the block. Note, do not use the rubber end seals often provided in a gasket set or with the intake as these will start leaking sooner than later. One more application of the contact cement is applied to the intake manifold side of the intake gaskets, allowed to tak up slightly, then the intake is set in place. The hardware is dropped into place, in this case ARP stainless 12 point bolts, and torqued in the factory sequence to the recommended spec by ARP, in this case, 35ft. lbs.

At this point, as many of the external brackets and pulleys were installed to prepare the engine for the car and the engine removed from the assembly stand to install the rear cam plug, oil galley plugs, and new flex plate. Once these were all in place and the sealant allowed to set overnight, the flex plate bolts were torqued to spec with red Loctite on the threads and we were now ready for priming the engine with oil.

Priming the engine is done with a priming tool which is a special shaft designed to engage the oil pump drive rod normally driven by the distributor. This tool is inserted into the motor, a ½" drill attached to the shaft and the drill run in reverse ( counter clockwise rotation as the distributor turns ) while having a mechanical pressure gauge attached to the front of the engine at the oil pressure sensor port. This process helps not only circulate oil through the bearings, lifters, and valvetrain but also primes the pump and oil filter so there will be as close as possible to instant oil pressure on initial start up and break in.

Next was to install Art's MSD brand distributor and index it with the cap along with setting the initial advance, in this case at 10\* btdc. Art's 8mm plug wires were reinstalled and his new firing order of 18736542 noted on the cap to correspond with the special roller cam we installed.

At this point the engine was ready for Art to install in the car and getting it all hooked up.

Project update; Art installed the engine and also decided to go with the new MSD "Atomic" throttle body electronic fuel injection to compliment all the new technology his engine has internally and so just a couple of weeks after he picked up the engine, he had the car running and was working on dialing in the fuel injection system. As of this writing, Art also replaced the turbo 400 transmission and Gear Vendors overdrive unit with a 700r overdrive trans and the car is back in my possession for final tuning of the timing and fuel injection system

Author's note, this is one bad ass 1950 Olds that certainly puts a grin on my face when I run it around the block during testing.. Hey Art, you're gonna need some new back tires soon...lol...lol.

Grant