#  1971 Olds Cutlass 350c.i.d. build

#  Technical Article part 3

In this segment of our build article, we will review the choice of components used for Frank’s engine which were chosen based on the intended use / combination of the car itself as well as taking advantage of the better technology and parts durability available today.

Frank wanted a reliable, well performing, good sounding car that would see regular transportation use, be a good cruiser, and see occasional stop light action with those who needed an Oldsmobile attitude adjustment. The car was to retain the air conditioning and all other factory creature comforts but needed to get reasonable gas millage and be capable of dealing with So Cal traffic conditions. A tall order for a performance build on a forty two year old car but we were ready to tackle the challenge and so we went to work choosing the key components needed to meet the criteria.

One of the first components to consider was the camshaft type and profile. After some research, we selected a hydraulic flat tappet cam from Comp Cams with .484 lift and a split design duration with 274 degrees duration on the exhaust and 268 degrees duration on the intake. This cam is similar to the W-31 cam from Oldsmobile but with more efficient lobe designs thus the ability to make more power while being mild mannered enough for stop and go traffic use and good vacuum signal for the power brakes and transmission modulator.

Next were the oiling system components which consisted of a new 5 quart oil pan with slosh control baffles, Melling brand high volume oil pump, new chrome moly steel pump driveshaft, bolt on large volume pick up tube and screen, and modified oil filter adapter housing with bypass plugged. This modification to the oil filter housing ensures that all oil being pumped into the engine from the pan is filtered and there is no chance of debris flowing back into the engine from the pan.

Our choice for rotating assembly components included Badger brand Hyperutectic pistons of the same compression as original, single moly piston rings for better durability against detonation, ARP chrome moly assembly hardware ( rod bolts, oil pump & pickup bolts), and Clevite 77 brand main and rod bearings. This brand of bearing, specifically the main bearings, is preferred since they are fully grooved as opposed to some other brands that supply half grooved bearings. This is important as the fully grooved bearing supply a more uniform volume of oil across the entire crank journal / bearing surface which improves durability and longevity of the bottom end. With this build, we chose to reuse the original main cap bolts as they were carefully inspected and cleaned and held torque with no problem.

Next we chose a Cloyes brand true double roller timing chain set , again for durability but also for reduced friction and most important, accuracy of the timing marks. There are many different brands of timing sets out there but one has to be careful on your choice as most of these are made overseas and I have seen the timing marks off up to 6 degrees on some of these. It is critical when assembling a new engine to degree in the cam and make sure it matches up to the specs on the camshaft specification card and choosing a quality brand timing chain set such as Cloyes, Rollmaster, or Speed Pro will make your job much easier and more accurate.

We touched on the valve train in the previous article but to recap, the rocker arms were upgraded with Comp Cams roller tip rockers ( not full roller rockers ) screw in studs, and guide plates along with special length pushrods to insure the geometry of the rocker arm travel across the valve stem was correct to minimize wear of the valve guides.

Externally, the component choices included stainless steel long tube headers, Edelbrock Performer intake which Frank had polished ( looks sweet ) HEI style distributor, Holley vacuum secondary carburetor, Taylor brand 8mm low impedance plug wires, new high flow water pump, new fuel pump, new harmonic balancer, freshly re-chromed factory Olds valve covers and new stainless steel assembly hardware.

Other component and prep items included brass freeze plugs in the block and heads, new oil galley plugs, newer timing chain cover, new flexplate and bolts, and of course, fresh motor mounts. Frank prepped and cleaned all the accessory brackets and pulleys then treated them to a nice coat of high temp gloss black paint and the block / heads received three coats of gloss black engine enamel. All gaskets for this motor were either Fel Pro or Corteco which are both leading brands but Victor and Cometic as well as Detroit Gasket and Mr. Gasket make equally good products for the Olds motor.

In our next segment, we will cover final assembly and what other components of the car including the trans, wiring harness, cooling system and other components were replaced / upgraded to complete this performance build package.

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