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HOT ROD

EVERYBODY'S AUTOMOTIVE MAGAZINE

"JR. STOCKING" 283 CHEVYS

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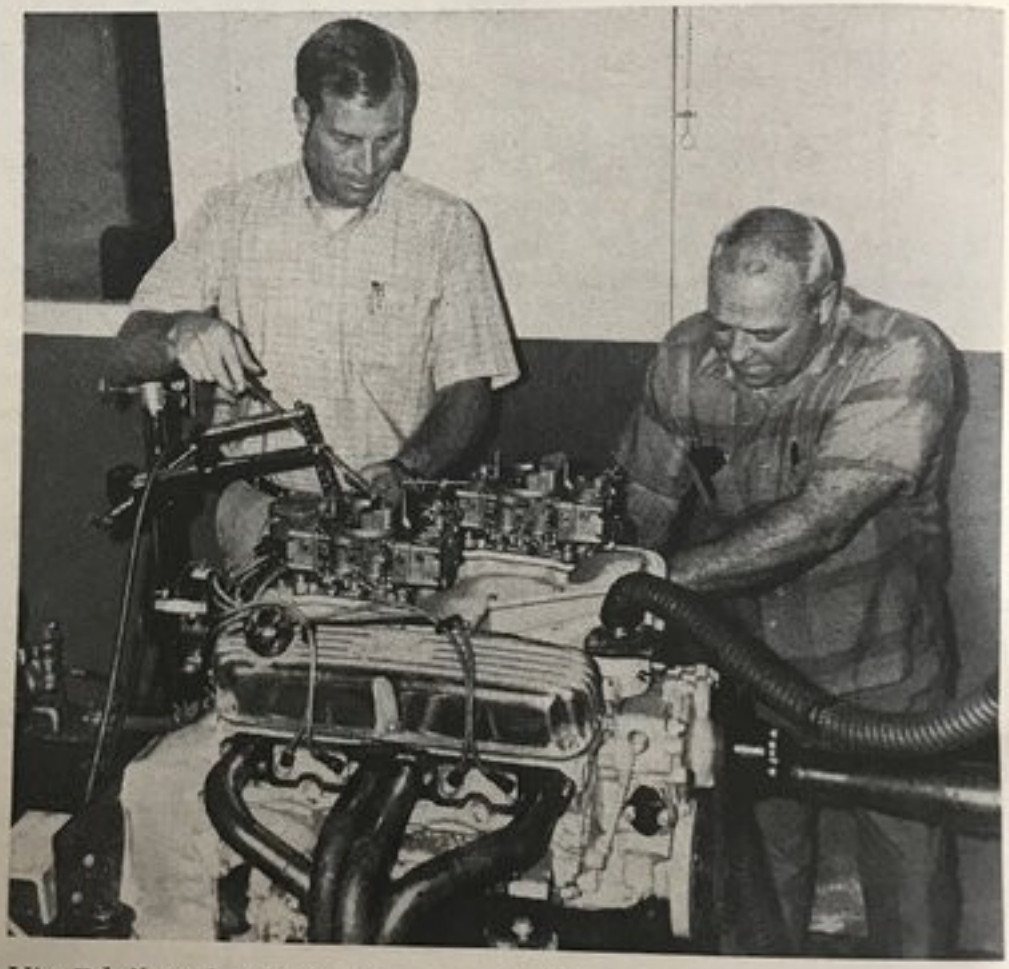
BORG-WARNER AUTOMATIC O.D.

ALL-OUT 340 MOPARS-Part II

SEPTEMBER 1969 50¢ UK 4/3 Sweden KR. 3.95 inkl. moms

HOT 70s

R Manipulatin'
PART TWO



Vic Edelbrock and engine man Bobby Meeks ready engine for our second series of tests. All engine preparation was performed by Bobby and Murray Jensen — two sharp guys.

We know we promised 500 horsepower, and we know that "close" counts only in horseshoes and artillery fire, but we did come close

• by John Dianna

Last month we started our dyno tests on Chrysler's 340 engine, and through parts interchanging and many dyno hours, we were able to produce 450 hp from a relatively stock engine. We also went on record as having said this engine could pull in excess of 500 hp. We honestly expected to tell you all about these 500-hp runs in this issue, but due to an unfortunate and unscheduled component failure, we were forced to settle for a figure of 487.

What actually happened was that the distributor driveshaft sheared at the oil pump end, and consequently the engine lost *all* oil pressure. To top things off, this occurred on a 6000 rpm run, and by the time the oil gauge reading was spotted, power was already dropping. This loss of power meant the rod bearings were about to seize from lack of lubrication. Needless to say, those involved in this project were disappointed. Although we knew the engine was pulling toward higher readings, we were also aware of the fact that the magazine operates on a strict deadline. Nevertheless, the results of our second attempt were still impressive, but we would rather have written about the factual capabilities of the engine than expected ones.

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Now let's take a look at the modifications involved to produce our 500 —13 horsepower reading. If you recall, we mentioned that the oil system was to undergo certain changes to increase oil pressure. The first step was to restrict the oil supply to the rocker shafts. This was accomplished by tapping (5/16-inch) the two existing oil holes on each side of the head surfaces. A pair of Allen-type set screws were drilled with a .070-inch bit and inserted in each threaded opening to restrict the flow. The oil pump also received attention by spacing the plunger ⅛-inch. The addition of an oil cooler completed the modifications. The results were steady 60 psi pressure readings throughout the elevated rpm ranges.

The next major change was the addition of a set of JE forged aluminum pistons. The raised-dome configuration on these slugs boosted the overall compression ratio to 11.6:1, and this also created a slight head gasket problem. Because of original design specifications, water seepage and blown head gaskets soon became a problem. Actually, the problem was very easy to solve. A new set of gaskets was fitted with .015-inch copper wire around each cylinder, and the heads torqued to 105 lbs-ft instead of the recommended 95-pound reading.

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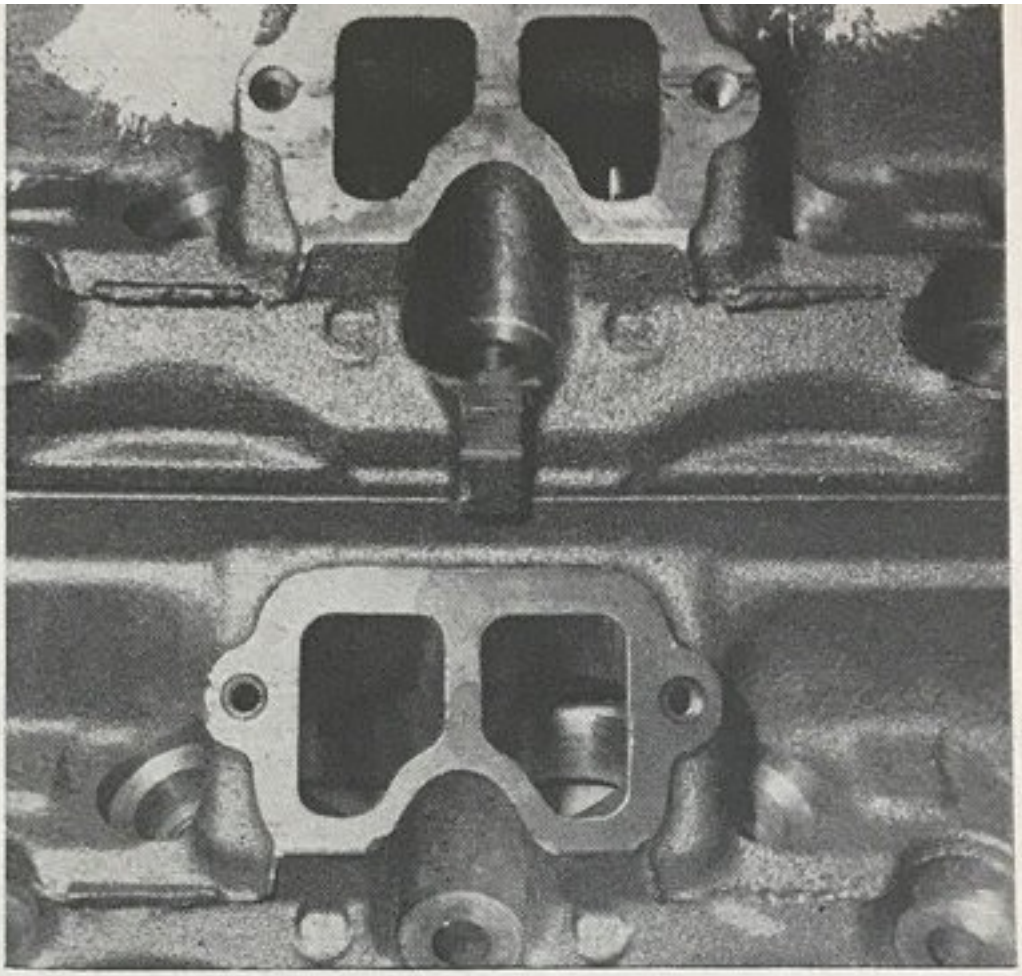
With the slightly modified engine assembled on the dyno, the first test got under way. An Edelbrock LD-4B manifold (originally designed for the 273-inch engine), with a No. 3310 Holley and a Racer Brown cam, was used for the initial run. The cam was Racer's STX-21, with a net lift of .560-inch and 306 degrees duration. This combination pulled 425 hp at 6750 rpm and fell to 414 hp at 7250 rpm. For test 2-A, the manifold was changed to the new LD-340 (made especially for the 340-inch engine), but the same No. 3310 Holley carb was retained. This parts swapping netted an 8-hp increase (430 hp) at 6500 rpm and a 4-hp boost (429 hp) at 6750 rpm. In the next series of runs, the manifold stayed, but the carb was replaced with a No. 4223 (850 cfm) Holley unit. This test shows an impressive gain in the higher rpm ranges (6750 and up) and really showed its poop at

7000 rpm. Just think: 431 hp with a single four-barrel engine! Not bad, considering many people had hinted that this engine couldn't "cut it" in the performance department; Chrysler's Bob Cahill and Dick Maxwell had no doubts from the very beginning. Perhaps that's why they keep climbing the ladder of success, and Chrysler is getting used to being in the winner's circle.

Test 4-A witnessed the addition of the STR-12, Edelbrock's new Street Tunnel Ram manifold, and a pair of No. 4224 Holley carbs. This combination pulled a strong 474 hp at 6750 rpm, and in comparison with last month's test No. 19, shows the results of the high-compression pistons, solid lifter cam, and the capabilities of the new manifold. In test 5-A, the Hedman headers were changed to No. 5272 Hookers with 10-inch extensions. As in the first series of tests, use of the Hooker headers resulted in a power decrease. However, a quick re-analysis of the header situation may clarify the matter a little. Both sets differ in that Hedman headers were originally designed for high-rpm dyno use only and feature relatively short primary pipe lengths, while the Hooker headers are designed for racing applications and contain all the necessary bends to fit within the confines of a car's fender wells. Under actual racing conditions, the longer Hooker headers should show an increase in low end performance (increased torque) and an overall power gain through the gears.

Our next test (6-A) was to install a shorter Isky cam to see how the 340 accepted it. We knew the engine had reacted to every change so far, and it seemed to like the longer camshafts. Anyway, an Isky B603 with 286 degrees duration and .448-inch lift was tested. As expected, the low end power curve was considerably increased, but over 5500 rpm the power began



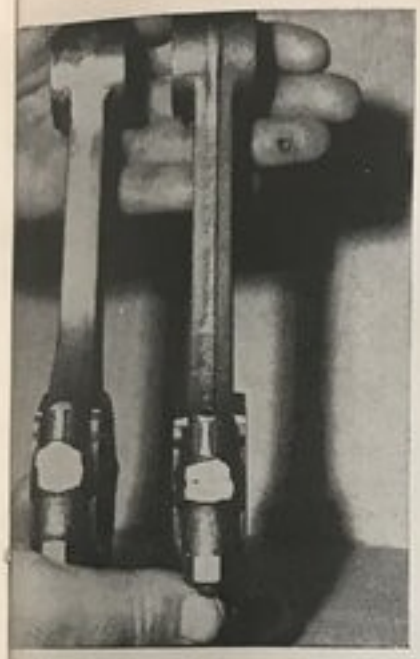
to drop. The engine definitely reacted; it needed more cam timing upstairs, and this was mainly due to the higher compression and extra breathing capabilities of the STR manifold. Now, when you stop and think about it, how often is your "street" engine cranked over 5500? So you see, with other than a complete "banzai" engine, a cam of this design could very well increase the overall performance picture of your "transportation"-type 'Cuda.

In any case, we still needed to pull the big numbers, so the cam was replaced with an Isky 550 Super Le Gerra. This 320-degree pattern sure brought the engine to life. When it was running on the dyno, you actually had to look to see if it was really a 340 Chrysler engine or just another small-block Chevy; that's how crisp it sounded! As a result of degreeing the camshaft, a 6-degree retard key was needed to position the cam near split overlap. With this combination, the intake was opening at 51 degrees BTC and closing 88 degrees ABC. The exhaust was opening 88 degrees BBC and closing 51 degrees ATC. A quick rundown on the other components used in the final test: Hedman headers, Champion N-63Y plugs, Edelbrock STR manifold with dual No. 4224 Holley carbs, Spaulding Flamethrower ignition at 37 degrees total advance, and of course, the Bob Joehnck "flowed" heads. As it turned out, test 7-A was the final dyno run for our series, but at least the results were very promising. The high reading of 487 hp came at 6750 rpm and held very steady on the dyno scale. As a note of interest, because of the unexpected failure, we were unable to compare a "like" Racer Brown cam, or for that matter actually "tune" the engine. One thing is for sure, though: Our little 340 was quick to respond to almost any change or modification and quick to show its power-producing capabilities in the rpm ranges normally associated with the small-block Chevy. Now if any of you readers are 273 MoPar engine owners, don't miss the boat; try tying a few of these 340 tricks and knot your competitors' minds. ■■

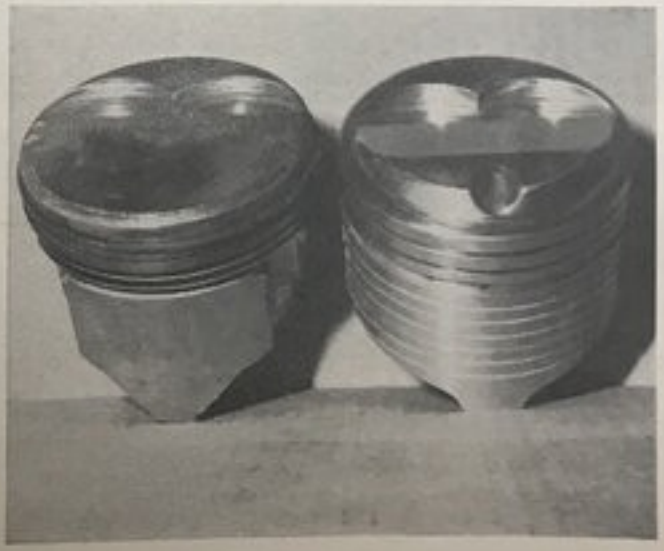
MOPAR MANIPULATIN' PART II
SECOND SERIES DYNO TESTS

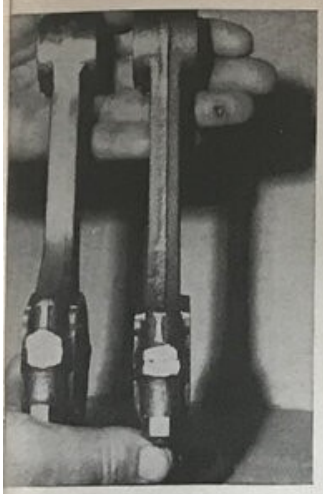
TEST / RPM	4500	5000	5500	6000	6500	6750	7000	7250
#19	333	380	412	434	444	450	431	409
#1-A	269	337	374	405	422	425	418	414
#2-A	298	352	384	406	430	429	423	420
#3-A	286	346	378	406	424	433	431	427
#4-A	321	378	416	446	467	474	466	457
#5-A	331	376	398	444	445	465	456	445
#6-A	347	384	402	420	415	410	399	387
#7-A	311	374	414	449	476	487	476	466

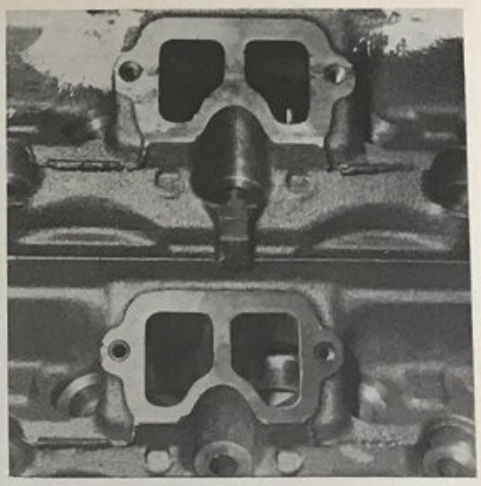
TEST #19 (Reprint from last month's series of dyno runs) — STR manifold with dual No. 4224 Holley carbs. Primary jetting #74 and .076 secondary plate for each carb. Racer Brown STX-21 cam and Flamethrower ignition. **TEST #1-A** — New engine with JE pistons and LD-4B manifold with No. 3310 Holley. #70 primary and #74 secondary jetting. Racer Brown STX-21 cam. **TEST #2-A** — Changed manifold to LD-340 with same carb and jetting. **TEST #3-A** — Changed carburetor to Holley No. 4223 with #75 primary and #78 secondary jetting. **TEST #4-A** — Changed manifold to STR-12 (Street Tunnel Ram) with dual No. 4224 Holley carbs. Jetting: #74 primary and 0.76 secondary. **TEST #5-A** — Changed Hedman headers to Hooker No. 5272 with 10-inch extensions. **TEST #6-A** — Changed cam to Iskenderian B-603. **TEST #7-A** — Changed cam to Isky No. 550 with 6-degree retarded key. STR-12 with No. 4224 Holleys, Hedman headers, Flamethrower ignition, and 37 degrees total advance.



High-performance Chrysler rods replaced the stock production units. The rod at left is the special forging. The many test cams were all checked for actual placement within the engine. Where needed, the cams were advanced or retarded with offset cam keys. As we expected, the Joehnck heads performed exceptionally well, and this performance is mainly due to increased intake charge and exhaust scavenging. Of course Bob doesn't "hog out" his heads — each is flowed with utmost accuracy. Our head-gasket problem was solved by adding .015-inch copper wire around each cylinder, and this eliminated any further problems with the JE pistons.







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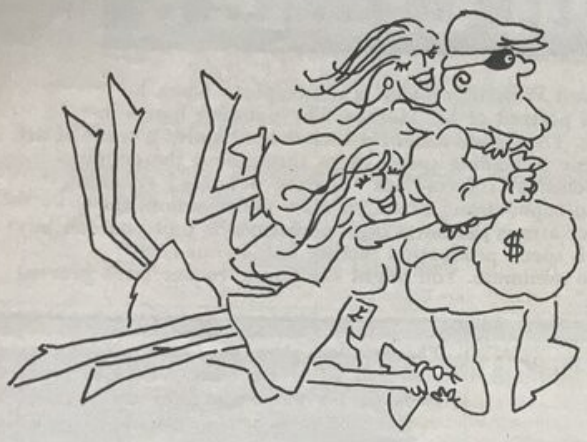

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