



With slicks at the back end, 'Mach 1' Olds understeers on tight corners. Beefed heavy duty suspension is tops for street & strip.

SPECIAL TRACK REPORT:

RAMRODDING THE MACH 1

The Motion—Markowitz Oldsmobile Racing Division goes the factory one better with a Super Street version of the 350-cube Ram Rod. Would you believe . . . 0 to 60 in the low 5's!

BY ROGER HUNTINGTON

ARE HUGE 400+ cubic inch engines on the way out in supercars? You have to wonder. The hot program in the industry right now is to develop high-performance versions of the medium-size V-8's, in the 300 to 350-cu.in. range—the new Ford tunnelport 302, Z-28 Camaro 302, Mopar's new high-performance 340 for Darts and Barracudas.

And now Oldsmobile and the Mack Markowitz-Motion Performance Oldsmobile Racing Division are in the market—in a big way. If you haven't heard they're now offering a wild "W-31" Force-Air Induction package for the 350-cu.in. V-8 in '68 F-85 and Cutlass coupes. They call it their "Ramrod 350" engine. Deliveries started in January. The package is based on the high-compression four-barrel 350 engine; but

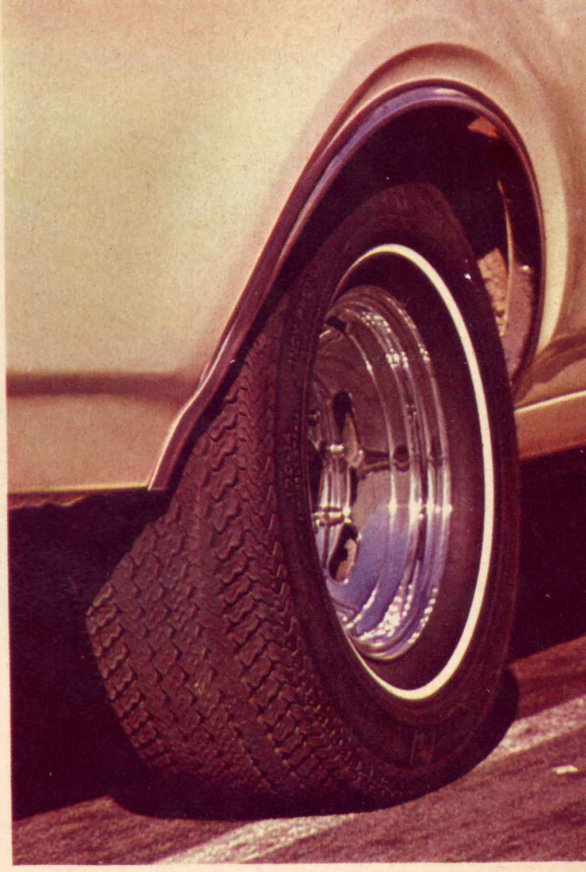
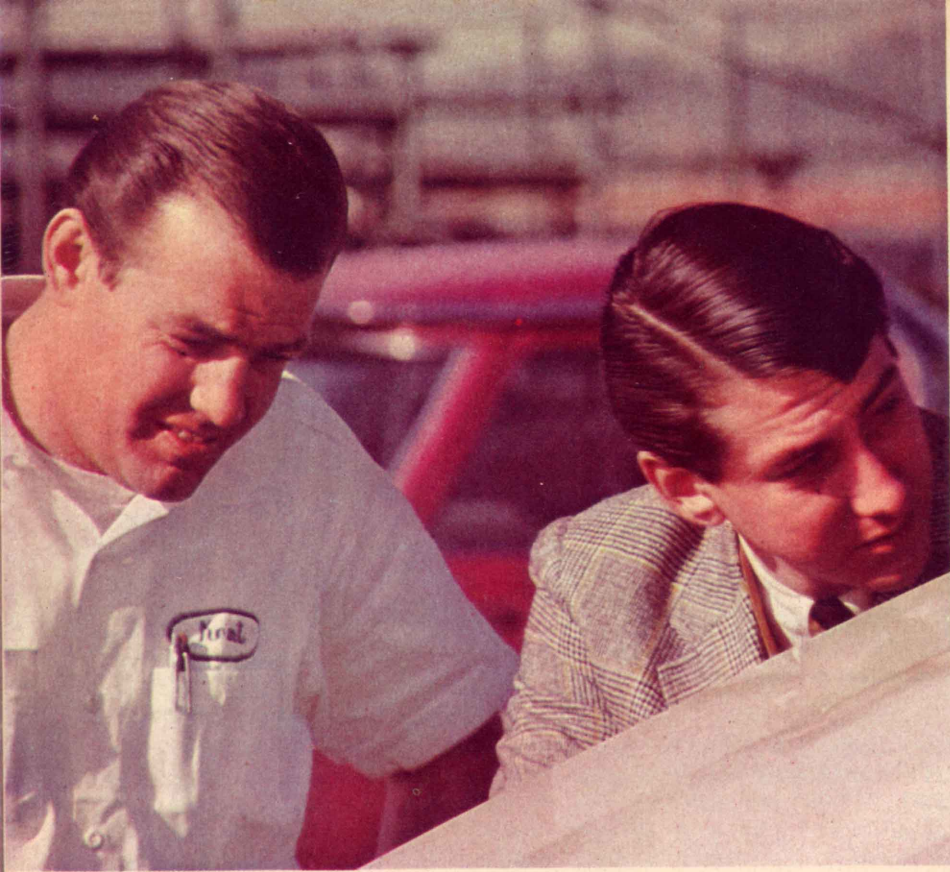
with a few well-placed goodies to raise the rating from 310 to a conservative 325 hp at 5600 rpm. And that *is* conservative. This is the most impressive car I've been in, in a long time. You can't believe there are only 350 cubies working under the hood. Performance is at least as good as the standard 400-cu.in. 4-4-2—and maybe better. Ron Garey of Newark, Ohio won the E/Stock class at the recent NHRA Winternationals with one of the early models, turning 12.90 et at 107.01 mph on the trophy run! He time-trialed at 12.79 on one run! And that's 350 cubes, gang. 'Nuff said?

The Motion-Markowitz *Mach 1* supercars (350 Ram Rod, 400 4-4-2, 455 Cutlass S & 455 Ram Lux Toronado) are custom-prepared and dyno-tuned machines that carry a full war-

ranty and can be financed. And, the real beauty-part, is that they can be fitted prior to delivery with performance options ranging from headers and traction bars to fully blueprinted motors and track-only suspensions. It's the only Oldsmobile operation of its kind in the country.

Why less cubes? If you think about it a second it makes a lot of sense. For one thing the engine is smaller and lighter, so the car has a more even front-rear weight distribution, and thus has better handling and traction. These huge 400 engines in the noses of light cars leave much to be desired. Also these smaller engines are cheaper to buy and maintain, and they use less gas. But perhaps most important, insurance rates are lower when you have less cubes and horsepower. You have to realize

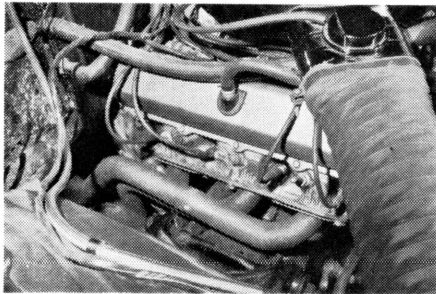
Initial testing of 'Mach 1' Cutlass S was done at Irwindale in California. Century Olds' Kent Baber had one of the first W-31 fresh air 350 Ram Rod cars. He's shown on the opposite page with Joel Rosen of the Motion-Markowitz Oldsmobile Racing Division at the test session.





Author and test driver blast down the GM Proving Grounds drag strip. It's a real mover.

that many under-25 drivers are paying 400 to 700 bucks a year to insure 400-cu.in. supercars in some states. These rates might be cut by one-third or half with a 350-cube engine. And



Tuned tube steel headers are optional (with or without Thrush mufflers) on all 'Mach I' cars.



Boss Wrench Buddy Gromus tightens down manifold on 350 mill prior to GM test runs.

if you can get the same bread-and-butter street performance with smaller cubes . . . well, why not?

But it's quite a trick to do this. Olds engineers have done a pretty fantastic job with this W-31 package. To start with they use the same ram-air induction kit as used for the W-30 option on the 4-4-2. As you know this uses large 5-inch fabric ram tubes to bring cool air from scoops under each end of the front bumper to a double-inlet air cleaner housing around the Quadrajets carburetor. These scoops under the bumper get a better bite of the air ram pressure (from the forward motion of the car) than hood scoops, which are in a lower-pressure area. Vacuum valves in the housing let in some warm air when cruising, for better response and emission control; but these pop shut right now when you punch the throttle—and it's strictly cold ram air. Also you can block the heat risers for warm weather driving or drag racing. Any way you can keep that intake air cool on its way to the cylinders it's going to help power, because the cylinders get more *weight* of fuel/air mixture on each suction stroke.

Another key to the W-31 package is the camshaft. It's basically last year's W-30 cam for the 4-4-2, with 308 degrees duration and .474 inch lift. But the timing is "retarded" 4 degr.—which means that the valves open and close 4 degr. *later*. This helps the high end, at some sacrifice in mid-range torque. Hydraulic lifters

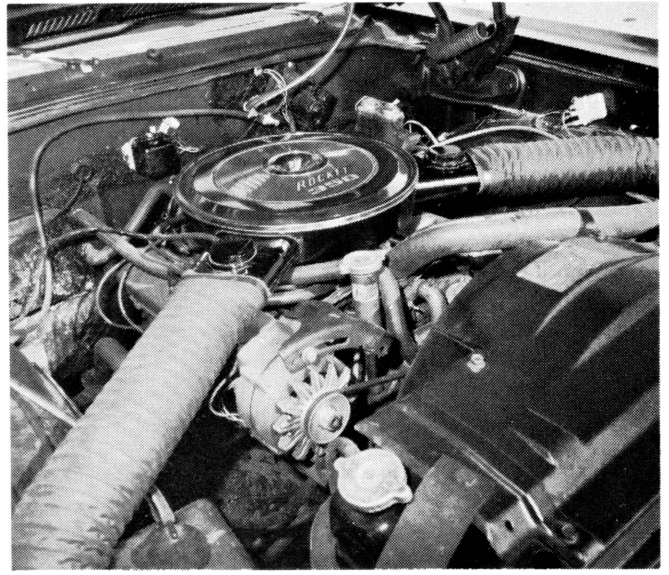
are used, of course; but in the Olds engine the spherical-joint rocker studs can be shimmed up to bring the lifter plungers out to the ends of their travel—which is just about equivalent to solid lifters. (Like you can do with ball-joint rockers on the Chev.) The W-30 valve springs and dampers are also used, giving about 214 lbs. of pressure with valve open, and are made of special heat-treated steel alloy that doesn't get "tired" and lose its tension so quickly. (This is a major cause of performance loss with many engines.) Also it's smart not to use any more spring pressure than necessary to do the job. Some high-performance engines use 250 to 300 lbs., and lose tension much quicker than these W-30 springs.

And yet this Ramrod engine has fantastic revving ability. Our *Mach I* test car's engine could turn 6300-6500 rpm *without* the rocker studs shimmed up! And the W-31 Cutlasses at the Winternationals were turning up to 7000—with 4.88 axle gears and rocker studs shimmed! I wouldn't have believed it if I hadn't seen it. But there it is. Apparently hydraulic lifters on high-performance engines are here to stay. Why use solids when you can wind like this??

The W-31 package also comes standard with special big-valve cylinder heads. These have valve diameters of 2.00 inches on intakes and 1.63 on exhausts, compared with 1.88 and 1.56 inches on the standard 350 heads. Olds engineers tried the 4-4-2 heads, with 1/16 inch larger intakes; but they didn't add anything. Breathing seems just about optimum with these heads. Flat-top pistons are used to give a nominal compression ratio of 10.50-to-1. With minimum combustion chamber cc's (60.6) and minimum .002 in. block deck clearance—legal under NHRA Stock class rules—the true compression ratio can be as high as 11.5! This is what you do when you "blueprint" an engine.

Also included in this W-31 package is a de-clutching fan (that never turns above 2000 rpm), low-restriction air filter, heavy-duty water pump, selective loose fits in the pistons and bearings, a special crankshaft vibration damper for higher revs, and a heavy-duty diaphragm-type clutch (same as used in 427 Corvettes) with a linkage stop to prevent "hanging up" on hard speed-shifts. It's strictly a "heavy-duty" package from the word go.

When fitted with the Super-Bite suspension kit and special hardened torque arm bushings (eight) car came out straight and hard.



Joel Rosen signs on the dotted line while Mack Markowitz Olds owner Ira Flesch (seated) and Sales Manager Howard Hare look on. Agency is one of the largest in the country and has carried the line since 1925. Unique 350 mill is available in F-85 and Cutlass S models.

Olds isn't kidding around with this one.

And the price isn't that rough. A modest 250 bills for the W-31 package as listed above. In addition there are several other mandatory items of equipment that go with the package that are priced extra. These include dual exhausts, and heavy-duty axle, 3.91 axle gears, heavy-duty radiator, and all-synchromesh three-speed floorshift transmission (made by Ford with Hurst linkage). These add up to 156.61 bills so the total price would be 406.61 dollars above the cost of a Cutlass with the high-compression four-barrel engine (310 hp). Plus, of course, there are all the usual options beyond this (power steering, special wheels, bucket seats, locking differential, etc.). It might also be

mentioned that 4.33 rear end gears are a factory-installed option with this package, and you can order either the wide or close-ratio Muncie four-speed floorshift trans, but there is no automatic trans option.

With a little finagling you could get into one of these cars for 3000 dollars, and maybe less than that when Olds installs the package on standard F-85 models. It's pretty hard to beat this performance at these prices.

My test car was a *Mach I* F-85 coupe. It had been set up by the Motion-Markowitz Olds-Racing Division for experimental work with the W-31 package. It had a set of the new '68 dealer-installed 4.66 rear end gears. Anti-Spin differential, and close-ratio Muncie four-speed (op-

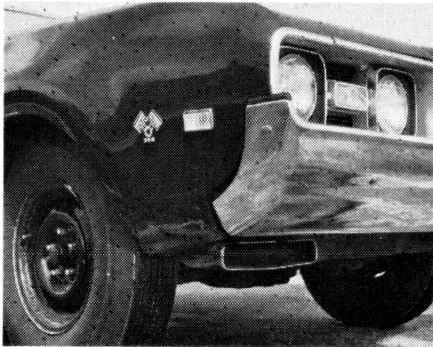
tion M-21) with the 2.20-to-1 low gear ratio. This makes a beautiful gearing combination for the drag strip—though the boys at Pomona were mostly running 4.88 gears with shimmed rocker studs that would allow 6800-7000 rpm. For the acceleration tests Joel Rosen and the boys threw on a set of 9.00-14 M&H Super Stock tires with 7-inch tread width, which are legal in the Stock classes under NHRA rules. They had the soft B.140 compound recommended for medium-size engines, and were mounted on 5-1/2 inch rims at about 15 psi pressure.

Very little was done to the engine. The people at M/P wanted us to get acceleration figures that would be representative of what the average Joe could turn with a prepared *Mach*

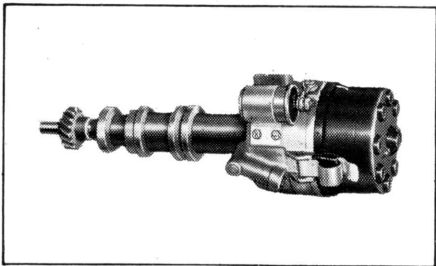




Author gets pushed back into his seat as the test driver burns out at 5500 rpm. Fifth wheel was used for accurate speed readings.



Here's the emblem that separates the men from the boys. Note wild 442 fresh air scoops.



Test car was fitted with optional M/P-Mallory custom-calibrated ignition system.

RAMRODDING THE MACH I

I ramrod. Accordingly no internal blueprinting was done. The heads were removed and milled down about .008 to bring the chamber cc's down to specs. But no grinding out of the valve seats or other porting was done. A custom-calibrated M/P-Mallory distributor was used, which has a total of 20-22 degr. of centrifugal advance at 4000 rpm engine speed. Initial spark timing was set at 15 degr. btc, giving a total of about 35-37 degr. at high speeds.

They *did* use special steel tubing exhaust headers, because most drag strip competitors do. These were O.K.

headers, made by Kustom Equipment Co. in Flint, Mich. They have recently brought out a special set for the 350 Cutlass that can be installed without chopping the frame or fender wells. Dyno tests show them to be within 6 hp of the more exotic types that require extensive cutting in the engine compartment. They sure did the job for us. Hooker headers are normally used on *Mach I* cars.

I was amazed at the performance of the car. It weighed 3550 lbs. with gas and equipment—plus another 320 lbs. for myself and our test driver. And yet we could consistently hit *106 mph* at the end of the quarter mile, by the fifth wheel. Don was shifting at 6000 to 6200 rpm. The et's varied all over the place. This is a story in itself. He was a little leery of the production clutch in the car, especially as we didn't have our recommended explosion shield or Schieper lightweight flywheel and clutch. He came out of the hole most of the time at 4200 to 4500 rpm. Under these conditions the car would bog a little after the tires caught in low gear—and et's would run 13.4 to 13.6 secs. by stopwatch.

But on just one run he threw caution to the winds, came out on the wood at 5500 rpm, burned most of the way through low gear—and the watch stopped at *13.05!!* I was shook. A few more runs might have put us in the 12's. But I wasn't anxious to push it. However, Rosen told me that driver Buddy Gromus had hand-timed a 12.85 in this same car two weeks earlier, with a Schieper clutch and aluminum flywheel! And this doesn't seem to all impossible, considering there were two of us in the car when we hit the low 13's. Also we were running in below-freezing weather, which is good for horsepower. Similar cars at the NHRA Winternationals at

Pomona, in warmer temperatures, were turning 12.8's and 12.9's.

I think it's pretty conclusive that this *Mach I* W-31 Cutlass package—with good headers, a little engine work and stiff gears—is a potential 12-second car. And that's for the E/Stock class! Something tells me that the newly-formed racing division will be selling a few of them for both street and strip drags.

I did a little slide-rule-slipping to estimate the true horsepower of the engine, based on the quarter-mile times. According to my charts, based on hundreds of car tests over a period of years where the true weight/hp ratio (determined by accelerometer test) is plotted against the speed at the end of the quarter . . . I'll estimate the output of the *Mach I* 350-cu.in. engine at right around *400 hp!* This is what it would take to get up to 106 mph in 1320 feet with a total weight of 3870 lbs. The engine couldn't do it on the dyno; but these were ideal conditions. Take it for what it's worth. I'm sure you would believe it if you could hear and feel that engine up around 6000 rpm. It's wild.

These tests were run right on the G.M. Proving Grounds at Milford, Mich. I had a fifth wheel at my disposal, so I took the opportunity to run off a few 0-60 mph runs (since it's hard to do this without a fifth wheel because of wheelspin). Our times averaged in the low 5-second bracket, maybe 5.2. I'm sure it would have been 4.8 or less with the banzai 5500-rpm starts. I can tell you that standing-start acceleration with slick-tread tires is another world from street tires. It's hard to describe that initial G-load in low gear if you haven't felt it. I'll bet this car couldn't have hardly broken 6 secs. on 0-60 time with the 4.66 gears and Wide Oval street

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MACH I continued

tires. Another gimmick we had going was the use of Air-Lift bags inside the rear coil springs. The right bag was inflated 15 psi above the left, to preload the right tire and even up the loads when engine torque tries to lift the right side in low gear. They had the pressures just about right, because the slicks left two even black streaks. The car was also fitted with the M/P Super-Bite suspension kit.

So that's Oldsmobile's new *Mach I* 350 engine (or call it the W-31 option) for '68 Cutlass coupes, and eventually most F-85 models. Prices are 200 to 400 dollars under comparably-equipped 4-4-2 models. Street performance is apparently just as good. Operating costs and insurance rates should be substantially less. This is the whole story of this new trend to smaller-inch high-performance engines. I think it's a good idea.

For the complete Mack Markowitz-Motion Performance Olds Racing Division story, data on all the cars, and performance tips and prices on all high performance factory and custom parts, send 1 dollar to cover handling and shipping costs to the Motion-Markowitz Oldsmobile Racing Division, 598 Sunrise Highway, Baldwin, L.I., N.Y. 11510. This giant publication also carries full data on blueprinting and chassis tuning Olds supercars.