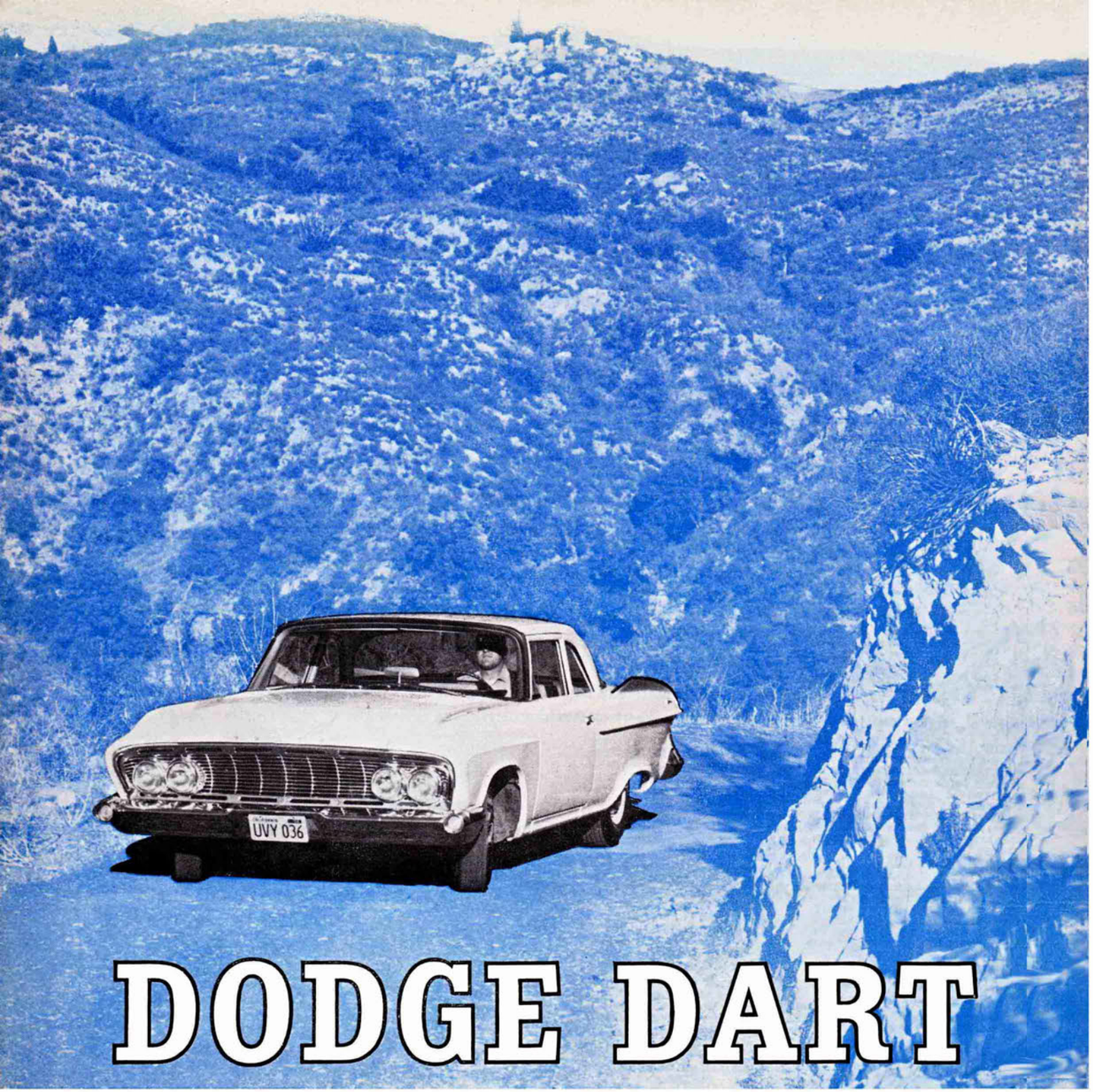

DODGE DART

RAPID AUTOMATIC

A smooth idling, high torque V8 with automatic transmission gives a winning performance on the highway or on the strip

By RAY BROCK

Reading through NHRA's bi-weekly paper National Dragster in recent months, we have noticed that Dodge Dart pops up quite frequently as a winner in the Super Stock Automatic class. With so many car buyers today showing a preference for automatic transmissions but also definitely interested in sparkling performance, the Dart seemed a likely car for us to investigate. We expressed our desires to Dodge's Public Relations department and a few weeks later, had just what we asked for.

We were loaned a 1961 Dart Seneca two-door sedan, the lowest priced Dodge. It had just three extras on the whole car; a Ram-Inducted 383-inch V8, a 3-speed Torqueflite automatic transmission and a Sure-Grip limited slip differential. This gave us what we thought would be the best package to test at the local drag strip with the exception of the standard 3.23 rear axle ratio. We had plans to change ratios however. Even though we chose the lightest model Dart built, we had a surprise in store when we rolled it onto the platform scales at the Pomona, California, ¼-mile strip. With a full tank of fuel (20 gallons) and spare tire but nothing else in the car, it weighed 3920 pounds.

Darts use the same basic chassis as Plymouth so are slightly smaller in overall length, wheelbase and weight than top line Dodge Polara models. The Dart is 209½ inches long, bumper to bumper, or 17½ feet. The wheelbase is 118 inches, front wheel tread is 61.5 inches and the rear tread is 60.2 inches. Width is just a little over 6 feet, 6 inches. As in 1960, Dart uses Chrysler's version of unitized body construction which consists of a true unit from the firewall back, but a half-frame that fastens to the car underbody and sticks out ahead of the firewall like a conventional frame to hold front suspension, engine, radiator and sheet metal. Thus, Dart enjoys some of the advantages of unitized construction such as fewer rattles but also has the advantage of easy front end sheet metal repair which usually costs considerably more on a car with 100% unitized construction.

Suspension is unchanged from 1960 and this is to Dart's advantage because the well proven torsion bar front and semi-elliptical leaf rear arrangement is, in our opinion, tops in the industry and will require something pretty sensational to better it. Control arms up front operate in a conventional manner with unequal length between top and bottom to maintain constant tread. The torsion bar forward end fits in a socket in the lower control arm with the rear in an adjustable arm beneath the car. A rubber bushed strut anchors between the front crossmember and the outer end of the lower control arm to provide fore and aft location.

The adjustable feature of the torsion bars permits the front of the car to be adjusted for car leveling or as the younger set was quick to discover, makes it a simple matter to lower the front of the car for customizing reasons. Whether for leveling or customizing effect, the front wheels must be realigned after changing the bar settings to ensure proper handling and tire wear.

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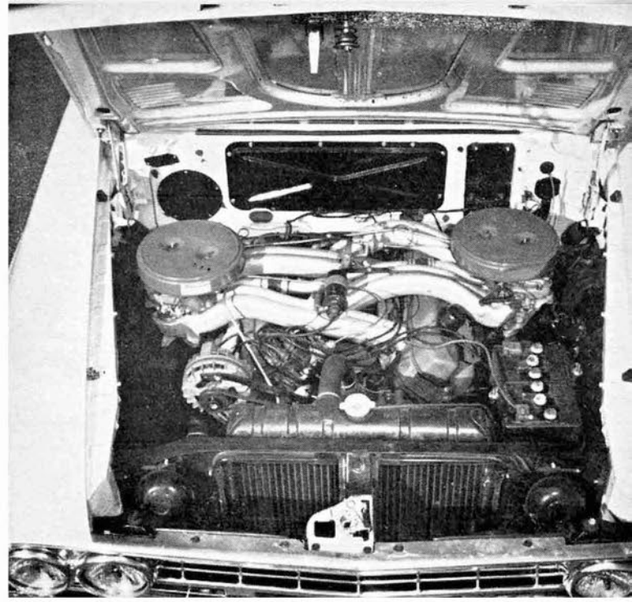
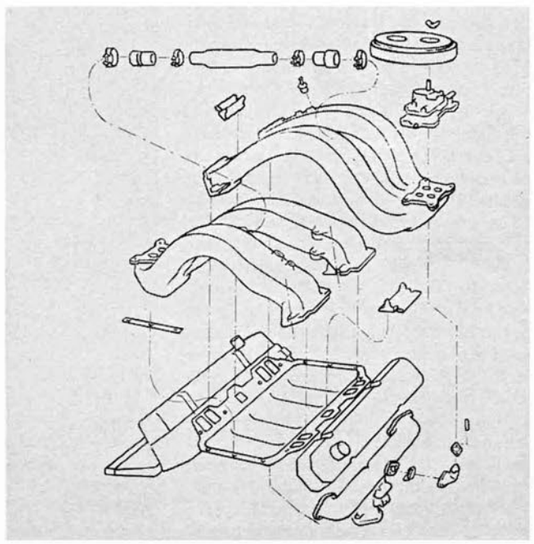




Photos by Eric Rickman

TOP — Cast aluminum Ram Induction manifolding for the 330 hp engine feeds fuel-air charge from a four-barrel carburetor on each side of the compartment to opposite cylinders. Alternator replaces d.c. generator for all 1961 Dodges.

CENTER — All front end sheet metal is bolt-on, so easy to repair. From the firewall back, Dart is unit construction.

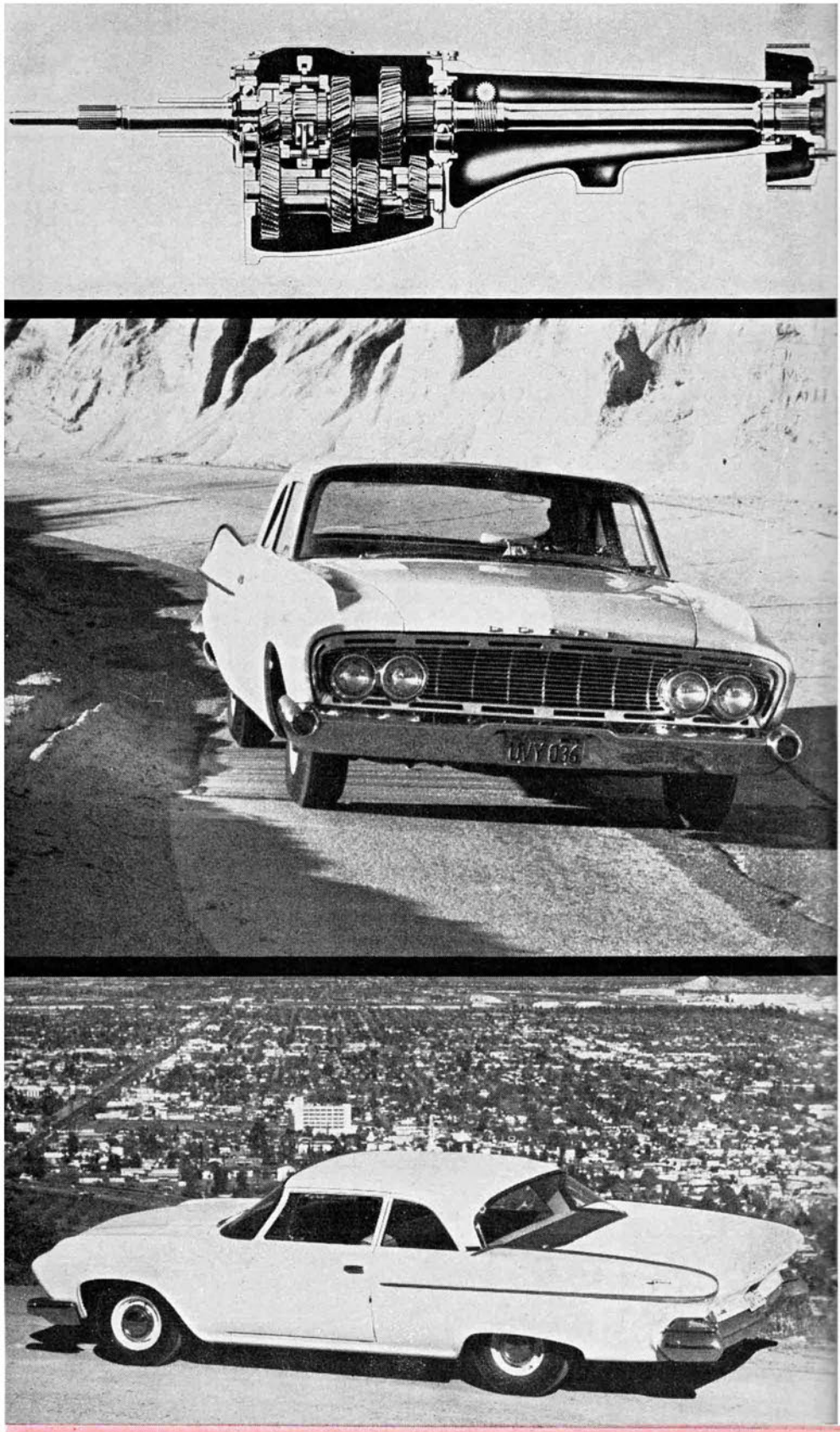
BOTTOM — Line drawing shows components that make up the elaborate but very productive Ram Induction system used by Dart. Tube between intake sections gives balanced vacuum; heat piped from exhaust manifold aids fuel vaporization.

The rear suspension is another well-proven arrangement with semi-elliptical leaf springs parallel to the car's centerline. A Chrysler idea originally introduced in 1957 gives these leaf springs an entirely different action from most leaf springs, however. By bracketing the rear axle housing about one-third of the way back from the front of the spring, the front spring section has very little action and the rear two-thirds handles almost all of the springing for the rear of the car. The stiff front third therefore acts more like a radius rod than a spring to prevent "squat" on hard acceleration and excess "dive" on hard braking. Traction devices used on the drag strip by most cars with leaf springs are not needed for Dart. Even with stock shock absorbers, there is no rear wheel hop due to spring wrap.

Our test car was equipped with regular production torsion bars, springs and shocks and they worked out very well under all conditions. For a heavier model with additional weight-adding extras, optional suspension components could be ordered to provide better handling for high speed driving. There has never been much effort made to publicize heavy-duty suspension components by the factory and probably many Dart salesmen are unaware they exist, but they are available.

We have grown quite accustomed to power steering and power brakes in recent years, both on our own personal car and also on most test cars, so we had to start all over again when we began driving the Dart test car. Steering effort was not a problem except when parking in a tight spot but the slower ratio did require some getting used to. The overall gear ratio between driver and the wheels on the Dart is 30 to 1 whereas Dart's optional power steering ratio is 19 to 1. Five and a half turns of the wheel are required to turn from lock-to-lock while the power steering requires only 3½ turns. Once we got back in shape at twisting the wheel, we experienced no problems even on winding mountain roads at fast speeds.

The same re-adjustment period for the conventional brakes; a short time behind the wheel and the absence of power brakes was not noticed. Standard production brakes for the Dart Seneca have a total of 184 square inches of lining area with 11-inch diameter drums 2 inches wide front and rear. Rapid stops at the end of the ¼-mile could be made without any undue concern but a definite fade could be felt just before turning off to the return road. Dart wagon models have 2½-inch wide front drums and an extra 23 square inches of lining so would be an improve-



TOP — New heavy-duty three-speed transmission has broader, stronger gears than past units with 2.55 first and 1.49 second. Taxi ratios of 3.02 and 1.76 are also available. CENTER — Dart handling and ride are both top notch. With the optional 383-inch V8 engine and automatic transmission, total car weight including full tank of fuel was 3920. BOTTOM — Workmanship and materials were good although our Seneca test car was the most inexpensive model Dodge builds. The Seneca wheelbase is 118 inches, overall car length just 17½ feet.

ment, but better yet, 12-inch brakes used by Chrysler models can be ordered as an option with a total of 251 square inches of lining area. This brake option costs approximately $30 but is a good investment for anybody who travels at high speed.

Driving the Dart and working on it for several weeks while we tried to improve its performance at the drags, we found it to be an enjoyable car, even without all the power extras we have become accustomed to in recent years. Despite it being the cheapest model Dodge, we thought the interior and exterior trim and finish very good, although naturally not overly endowed with chrome and fancy fabrics. Seat comfort was very good and the only complaint we had with vision was when we parked the car next to a brick building and made the mistake of thinking the hump of the front fenders approximated the edge of the car. A slight scrape on the bumper tip resulted from our error.

Ride and handling are very good in the Dart. With other automotive magazines in the same building as us at Petersen Publishing Company, there are usually several of the latest Detroit offerings in the parking lot at this time of the year and we often trade cars with our colleagues in the evening. Traveling the same 20 mile route to and from the office each day, we know the bumps and dips quite well. Our Dart test car would negotiate these bumps and especially the dips better than any other '61 model we've driven with the exception of little brother Lancer. Any bump-absorbing difference between these two is slight.

Without power extras to clutter up the engine compartment, our test car was very easy to work on. With crossover intake manifolding, the carburetor for each bank of cylinders is right next to the opposite fender where the top cover can quickly be pulled off for jet changes without stretching over a hot engine. Parts aren't dropped so easily either. The ignition is mounted on the front of the block where it is easy to remove or look into. Spark plugs are not as easy to reach and are impossible to change unless the engine is stone cold because you must dive under the intake manifold and around the exhaust manifold to get the job done. With a cold engine and a magnetic spark-plug socket, we managed a complete plug change in less than 15 minutes, good speed on almost any engine. With a hot engine, we wouldn't try it for less than $50 a plug.

The Dart is available in either six cylinder or eight cylinder engine series. The six is a 225-inch slant-block engine rated at 145 horsepower while the basic V8 is a 318 cubic incher rated at 230 horsepower. An optional power-pack for this V8 consists of a four-barrel carburetor, a hotter camshaft and dual exhausts with a rating of 260 horsepower. For those genuinely interested in performance, there are three more engine options available.

The mildest is a 361-inch V8 with a 4.12-inch bore, 3.38-inch stroke, a single four-barrel carburetor, 9:1 compression, a dual exhaust system as part of the option and a horsepower rating of 305 at 4800 rpm. Torque is 395 at 3000 rpm. The next engine is for all practical purposes the same engine but with an eighth-inch larger bore (4.250-inch) for 383 cubic inches and 10:1 compression. This engine uses a single four-barrel carburetor, the same camshaft as the 361-inch V8 and dual exhausts but uses cylinder heads with a slightly larger intake valve (2.08 inches versus 1.95 inches diameter). Its horsepower rating is 325 at 4600 rpm and maximum torque is 425 foot/pounds at 2800 rpm.

The hottest engine option and the one with which our test car was equipped, is the 383 cubic inch V8 with dual four-barrel carburetors and Ram Induction manifolding. A slightly different cam is used to take full advantage of the rammed air by opening the intake valve a little later and closing the exhaust valve a little sooner so that there is not as much overlap between exhaust and intake, therefore less charge loss through the exhaust. Other than the intake system, the camshaft and distributor advance curve, this engine is identical to the 325 horsepower version just mentioned. The Ram Inducted engine is rated 330 horsepower at 4800 rpm and has 460 pounds of torque at 2800 rpm.

All three high performance engines are equipped with hydraulic lifters which prevent extreme engine speeds but high rpm's offer no advantage in these engines since their strong low speed torque characteristics and relatively low horsepower peak indicate they operate best when not revved too tight. A further engine option available only on special order from the factory consists of modified ram tubes, cast iron exhaust headers, a different camshaft, mechanical lifters and adjustable rocker arms. This kit raises the horsepower peak to 5200 rpm with maximum torque at 3600 rpm. This engine of course operates best at much higher rpm's than the other engines listed. Unfortunately, none of these kits were available for our test.

Two transmissions are used behind these high horsepower engines; a three-speed conventional transmission and a three-speed Torqueflite automatic. The conventional transmission is entirely new for 1961 and is actually the first standard transmission designed specifically for the large displacement V8's of today by any company. Gears are larger, wider and far stronger than in any other transmission on the American market today, according to Chrysler Corporation claims. The ratios are 2.55 in first, 1.49 in second, direct in third and 3.34 in reverse. Second and third gears only are synchronized. This transmission uses a Borg and Beck semi-centrifugal clutch 11 inches in diameter and with 1929 pounds of spring pressure.

The automatic transmission is a beefed version of Chrysler's Torqueflite and has ratios of 2.45 in first, 1.45 in second and direct in third. Reverse ratio is 2.2:1. A torque converter driving unit provides a maximum multiplication of 2.2 to 1 at 1920 rpm. The heavy-duty Torqueflite has a heavier pressure regulator spring for increased oil pressure, different governor weights and a stronger reverse planet pinion carrier. Properly adjusted, this heavy-duty transmission is a smooth shifting unit for everyday driving but under full throttle conditions, the ratio changes are very positive and usually produce a slight "chirp" at the rear wheels. Of all the automatic transmissions on the market today, the heavy-duty Torqueflite is the only one designed specifically for abuse behind a high torque V8 and is quite well suited for hauling a 2-ton car through the quarter-mile at better than ninety miles per hour.

Standard rear axle ratio for the high performance V8 is 3.23 with either standard or automatic transmission and for everyday driving as well as an occasional bash at the drag strip, is a good ratio. Chrysler's limited-slip differential, Sure-Grip, is optional. Axle ratios of 3.31, 3.58, 3.73, 3.90, 4.11 and 4.55 are available on special order.

When we took delivery of our Dart test car from Dodge, it was brand new so we spent the next couple of weeks putting break-in miles on the engine and chassis. It was then turned over to a dealer for 1000-mile service and tune-up to factory recommended ignition and carburetion settings. The next Sunday was a nice clear day so we drove out to the Pomona Drag Strip to see how the car would perform. Everything was strictly stock even down to the tire pressure when we made our first run and we came up with a 15.25 second elapsed time and a trap speed of 89.59 mph. The traction had been fair with the Sure-Grip differential and 3.23 ratio but full throttle could not be used immediately on takeoff. There also seemed to be a "flattening out" of the engine at the higher rpm's.

For the second run, we pulled the thin paper-pack air cleaners from each of the Carter four-barrels to see if less air restriction would help. This time a

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definite stumbling could be felt approaching the end of the quarter, indicating that the extra air to the carburetors was causing a "lean" mixture condition. The car ran slower, too; 88.49 mph and 15.93 seconds elapsed time. We took the car home to see if we could correct some of the problems.

During the next week, we discovered that whoever had set the initial advance had evidently done so without disconnecting the vacuum advance line because instead of the factory recommended 7.5° initial advance, the timing had been set at 3° after top center, 10.5° slow. AMA specifications for the 383 ram inducted engine gave maximum centrifugal advance in the distributor at 22° to 26° crankshaft. Our distributor checked out on the low side of this range with 22°. Using the factory recommended 7.5° initial lead would only give a total of 29.5° at 4100 rpm, less than we thought the engine needed. So, instead of the factory recommended advance, we set the initial advance at 12° before top center. With a clean engine and premium grade fuel, we experienced absolutely no detonation in everyday driving. We replaced the stock Autolite A-32 spark plugs with one range colder A-22 to prevent detonation often caused by a hot plug used in competition. These colder plugs operated perfectly in everyday use too.

We checked out the jet size in the secondary side of the Carter AFB carburetors and found them to have .0595-inch openings. We drilled them to .068 and then bought another set of .063-inch jets to take along on the next drag session for a trial. Primary jets for these Carters are calibrated to operate with a three-step metering rod and since our lean condition was noticed only under full throttle, we didn't bother the primary system of the carburetors.

We also borrowed what was supposed to be a 3.90 axle ratio with Sure-Grip. It turned out that the ratio was 3.90 all right but there was no Sure-Grip; we decided to give it a try anyway.

The next Sunday we were among the early arrivals at Pomona but found the track still damp from rain the night before. The first run netted a time of 16.34 seconds and 91.37 top time but with the open differential and 3.90 gears on a slippery starting line, traction was terrible. Everybody running complained that they were off a full second or more. The officials kept running the cars to help dry the track and the second run was a little better with a 15.84 e.t.; top speed was the same, 91.37 mph. By the time we made our third run, the track was dry and the elapsed time dropped to 14.93 seconds and the speed was 91.09 mph. We were having quite a time trying to get traction even with the dry track and after juggling tire pressures on the stock Goodyear 14-inch Rayon tires without any improvement for the next couple of runs, decided to go home.

We changed back to the 3.23 axle ratio to take advantage of the Sure-Grip, and mounted a pair of Firestone's new Butylaire Nylon 8.00-14 tires on the rear. Butyl rubber tires have quickly become a "must" item on the hotter superstocks at drag strips since they offer far better traction than any original equipment tire and actually work better than most "cheater slicks." We chose Firestone's Butylaire since it has a Nylon body and is substantially lighter than Butyl tires we have seen using rayon cord.

We originally experienced wheelsipn using the 3.23 axle ratio with Sure-Grip but the Butyl tires took care of that in a hurry. After installing them, we found it impossible to get a squeal from the rear wheels even when holding the brake, revving the engine to full throttle and then releasing the brake. Our top time improved to 92.21 mph but our best elapsed time with the 3.23 ratio was 15.04 seconds.

In the May 1960 issue of HOT ROD, we reported on some experiments we made using a '60 Dodge Dart with the 383 Ram Inducted engine in which we tried axle ratios of 3.31, 3.90 and 4.55, all with Sure-Grip. At that time, we noticed very little overall difference in either speed or elapsed time with the various ratios but that was with a heavy, fully-equipped hardtop sedan and we couldn't get traction at all with the lower gear ratios. Now that Butyl tires are available, we have no doubt that a repeat of those tests would show a big difference, especially in the elapsed time department.

Editorial deadline on this issue prevents us from coming up with better results in the quarter-mile but we have asked for and received permission to use the car a little longer so will continue our tests and report on the outcome in the March issue. We have 3.90 and 4.11 ratios with Sure-Grip on order and plan to open the head pipes for better exhaust flow after we get the traction problem licked. Some more experimentation in carburetor jetting and ignition timing might also produce better results. We are confident that, hydraulic lifters and all, we can get this Dart down into the low 14 second bracket where it will be a trophy winner and still be strictly stock under NHRA rules. Wonder what kind of an elapsed time it will take to win the Winter Nationals Super Stock Automatic class at Pomona in February? Hmmm.