

Road Test **VALIANT** **WITH A V-8**

by Jim Wright, *Technical Editor*

EARLY LAST SUMMER, we were at the Chrysler proving grounds getting an advance peek at the '64 line. As usual, when it comes time to play Q&A, our first question was, "When are you guys going to put a V-8 in the Valiant?" And as usual, they wouldn't say a thing, but their grins got a bit wider than usual, so we figured they probably had a little surprise on tap for the mid-year boost. Turns out they did, and at long last there's a V-8 option for the Valiant. Considering the improvement, it was worth the wait.

In the early planning stages, Chrysler engineers took a long look at the Series A, 318-cubic-inch engine — the standard offering in the big Plymouth line. They decided against it. First of all, the "A" engine was physically too large and too heavy for a compact, and it had more displacement than needed. What turned out was a brand-new V-8 for the Valiant chassis. The final result is an excellent example

of why Detroit is the world leader when it comes to engineering an efficient and reliable design at minimum expense.

The "318" block came close to fitting the Valiant chassis, but it interfered with the steering-gear box mounted on the left frame rail. By changing the "318" block patterns slightly to provide a depression in the left bank (in the area of the steering-gear box), clearance was ample. From the important cost angle, this meant that the "A" block tooling could still be used. The "318" block was still too heavy, but this was solved by using the latest thinwall casting techniques. The new 273-inch block weighs about 40 pounds less than the 318-cubic-inch block—a saving that makes a big difference.

It was decided that a displacement of 273.5 cubic inches would give the compact the right combination of power and economy. Bore was reduced to 3.625 inches, while a standard "318" crankshaft (with a stroke of 3.312 inches) was kept. To eliminate the need for special balancing of the "318" crank assembly, an extremely thick-walled piston pin is used to make up for the lighter pistons. This brings



the total reciprocating weight up to that of the 318-incher.

Full-skirt aluminum pistons, with a steel insert for expansion control, are used. The pins are full-floating. Piston tops are flat except for four built-in "eyebrows" to provide valve clearance. The extra two eyebrows allow complete piston interchangeability side to side. Before you write to ask... No, the "273" can't be bored large enough to accept "318" pistons. The walls would be too thin. Maximum overbore (though not recommended by the factory) would probably be in the neighborhood of .125 inch.

Cylinder heads are new, and the best features of both the "A" and the larger "B" engine heads are incorporated. Combustion chambers are wedge-shaped, and the valves are in a single line (like the "B" heads). Intake and exhaust ports are also like the "B" heads. Rocker-arm stands resemble those of the "A" engine. They're cast integrally with the head, but instead of having a hole bored through all five stands to hold the shaft as in the "A" heads, the tops of the stands are machined with a half-round cradle to hold the rocker shaft. Stamped steel washers, radiused to fit the shaft, and cap screws hold the shaft to the head casting.

A notch is cast in the lower edge of each head to match the block depression for steering-gear clearance.

A new intake manifold had to be designed, because the "318" unit not only had too much port area for the smaller "273" but it was also too high and didn't provide enough hood clearance. Instead of sticking to the tried and true two-level (or 180-degree) intake manifold, a new single-level manifold was developed. In a 180-degree manifold, each barrel of a two-barrel carburetor feeds four cylinders, with the passages grouped so that intake pulses are 180 degrees apart. In the "273" single-level manifold, all passages are on a common plane and in their grouping, all cylinders on the right side feed from the right side of the carburetor and the left side from the left carburetor throat. This kind of setup isn't usually too satisfactory, because it means that in most instances two cylinders will have overlapping intake strokes and neither of the cylinders will get the right amount of mixture.

Since the extra clearance afforded by a single-level manifold was needed, Chrysler, by extensive dyno-testing, stayed with the development until they hit on a workable design. They did this by using a pair of plenum chambers, located under each side of the carburetor and connected by a small opening in the common wall. The size and location of the hole was the critical factor in making it work, and this was

determined by tests on both dynamometer and on the road.

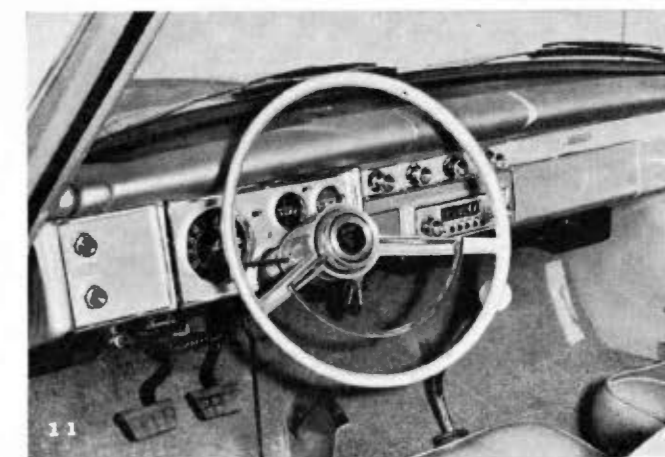
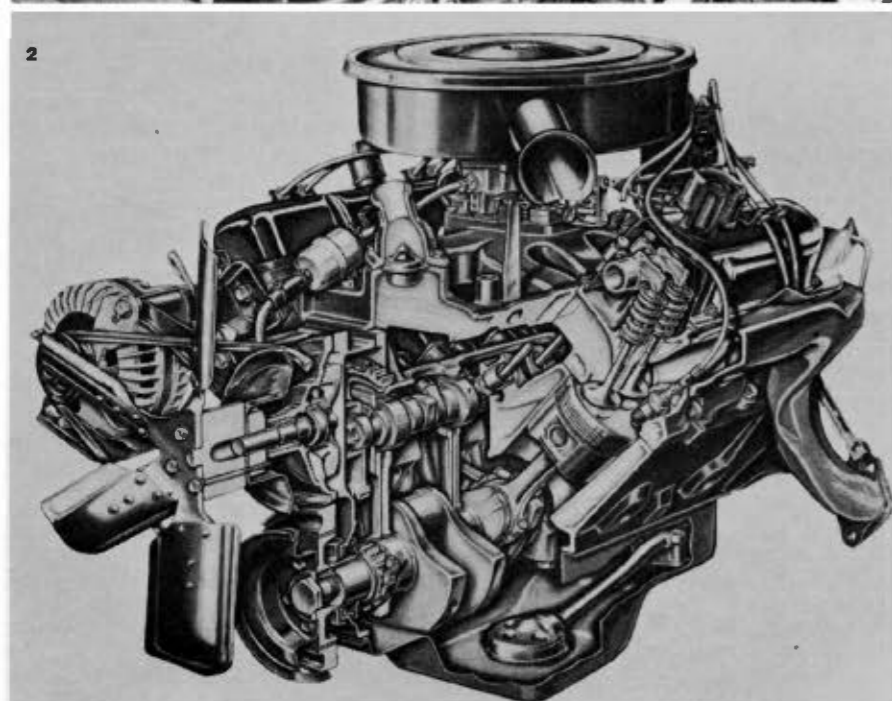
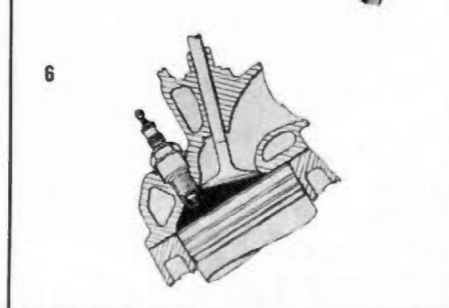
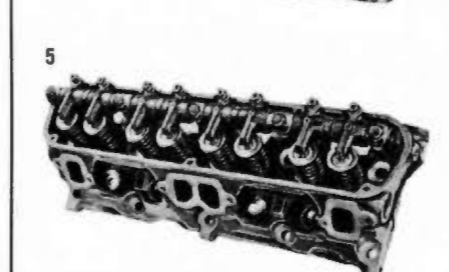
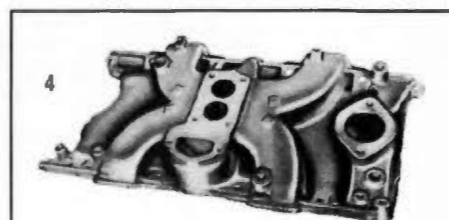
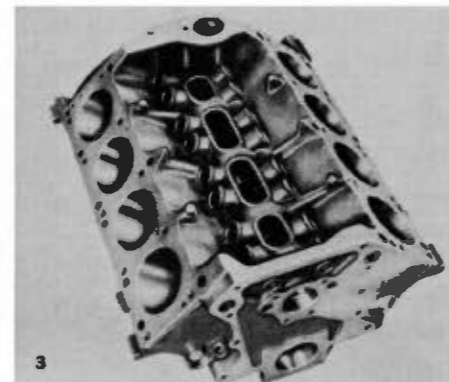
Other differences between the "318" and "273" are in the exhaust manifolding and in the routing of the cooling water through the engine. In the end, the "273" is 70 pounds lighter than the "318" and only 35 pounds heavier than the Slant Six. Horsepower rating of the "273" is 180 at 4200 rpm, with 260 pounds-feet of torque at 1600 rpm.

When we tested the V-8 Valiant, it was the only one in existence west of Detroit, and we were lucky to have it long enough to put over 1100 miles on it. We didn't have a choice when it came to options, but the test car was set up pretty much as we'd have ordered anyway. It had a four-speed transmission, which we liked, but we'd also have liked to have driven one with the automatic for comparison.

What's it like? Well, to our way of thinking, the V-8 makes the Valiant a much more desirable and versatile package. Acceleration from 0-60 mph now takes about six seconds less than with the big Six—even with the standard axle. Quarter-mile times are also down, while terminal speeds are substantially increased. Top-speed runs showed that the upper limit is up by 10 to 15 mph—all this without too much change in gas mileage.

For the 1100-mile test, in which we pushed the Valiant quite hard, our overall average was 15.8 mpg. This breaks down to include an overall high on the highways of 18.2

- 1) Valiant chassis, originally designed for in-line Six, presented a few engineering problems in installation of new V-8.
- 2) Construction and design details are evident in this cutaway. Engine's lower end, crank, rods, and bearings are same as "318."
- 3) Depression in block, barely visible here between first two cylinders on left bank, was necessary to clear steering gear.
- 4) Single-level intake manifold was developed to provide hood clearance after extensive trial-and-error dyno and road tests.
- 5) Head design departs from angled-valve layout of "318-A" engine, follows that of larger, more powerful "383" and "426-B."
- 6) Combustion chambers are Chrysler's tried and proven wedge shape. Spark plug is angled to put it in center of chamber.
- 7) Vigorous cornering technique shows that Valiant still has excellent balance. Flying hubcap means wheels flex somewhat.
- 8) Steering wheel position, seat location, and placement of gearshift lever all combine to give most drivers good stance.
- 9) At high speeds, the Valiant shows good stability and is little affected by crosswind loading or sudden dips in road.
- 10) Acceleration is above average for car weight, engine size, and installed rear axle (2.93). Wheelspin was at a minimum.
- 11) Dash layout is simple, functional, and attractive. Sturdy Hurst gear lever and shift linkage is standard with four-speed.



mpg (at 75 mph the engine is turning only 3000 rpm) and an around-town low of 14.7. Due to the low (8.8-to-1) compression ratio, the "273" doesn't need anything more potent than good, regular-grade gasoline.

On the minus side of the scale, the V-8 Valiant uses the same brakes as the Six. On paper they appear to be large enough to handle the 3000-odd pounds of the new car, but in practice they fall a trifle short. Used hard during our high-speed runs and also during some stretches of tricky mountain driving, they showed a tendency to fade rather rapidly — more than we're used to. Also, when they were hot, they'd pull unexpectedly either one way or the other, and straight-line stops meant rapid and precise steering corrections. We'd like to see a little bigger brake supplied with the V-8 option, or maybe if 14-inch wheels were used instead of the 13-inchers, the existing brakes would cool better.

One of the most frequent questions we were asked by other interested motorists and service station operators was, "Has handling been hurt any by the extra weight of the V-8?" In a word, No. Spring and torsion-bar rates have been increased to compensate, and the V-8 model handles just as well as, if not better than, the Six. The engine's lower center of gravity, plus the fact that its mass center is farther back in the chassis, means that the car's balance is really very little affected by the extra overall weight. The Valiant is still one of the better-handling compacts.

During our acceleration runs, where we broke the rear wheels loose on purpose (although quick, no-burn starts weren't any problem), we didn't notice a trace of rear spring wrap-up. There wasn't any during hard stops, either, when the wheels were locked up.

The basic Valiant hasn't changed. Our test car hadn't been specially assembled, so it was comparable to what the average buyer would get. At the end of the test, the odometer showed over 4800 miles, and no rattles or squeaks had developed. The Valiant felt as solid as anything we've driven in this size and price range — maybe a little more so. At high speeds, wind, road, and engine noise levels were very low. We were very satisfied with the body package in every way.

Good quality control is being maintained on the assembly line, and as a result, all the panels, doors, and trim — both inside and out — fit as they should. The bucket seats are comfortable on both long and short hauls, and an adjustment is available to accommodate large drivers. The padded dash includes a good-sized storage space, conveniently grouped knobs and switches, plus large, round instruments. Wheel location is good and should suit a variety of drivers.

If you're a steady MT reader, you'll remember that we've been wishing they'd put out a V-8 for this sweetheart for a long time. Judging from the number of reader letters we've gotten asking about engine swaps for the Valiant, quite a lot of you wanted it, too. Well, here it is, and if you get one, we hope you find it as satisfying as we did. /MT

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- 1) Stopping distances under panic conditions were up to par, but brakes were prone to quick fading, which can cause problems.
 - 2) Spare location is good feature and provides a flat floor. This makes it easier to store items of various shapes, sizes.
 - 3) With driver's seat all the way back, there's adequate leg room for rear-seat passengers. Wide doors allow easy access.
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VALIANT SIGNET 200

2-door, 5-passenger hardtop

OPTIONS ON CAR TESTED: V-8 engine, 4-speed transmission, power steering, radio, heater, vinyl top, tinted windshield, seat belts

BASIC PRICE: \$2375 (approx.)

PRICE AS TESTED: \$3012.80 (plus tax and license)

ODOMETER READING AT START OF TEST: 3581 miles

RECOMMENDED ENGINE RED LINE: 5200 rpm

PERFORMANCE

ACCELERATION (2 aboard)

0-30 mph.....	3.2 secs.
0-45 mph.....	6.0
0-60 mph.....	9.9

Standing start 1/4-mile 17.5 secs. and 79 mph

Speeds in gears @ 5200 rpm

1st43 mph	4th	108 mph (actual)
2nd65 mph	top speed @ 4400 rpm	
3rd93 mph		

Speedometer Error on Test Car

Car's speedometer reading.....	30	45	50	60	70	80
Weston electric speedometer...	30	45	50	60	70	80

Observed miles per hour per 1000 rpm in top gear.....24.5 mph

Stopping Distances — from 30 mph, 32 ft.; from 60 mph, 156.5 ft.

SPECIFICATIONS FROM MANUFACTURER

Engine

Ohv V-8
Bore: 3.625 ins.
Stroke: 3.312 ins.
Displacement: 273.5 cu. ins.
Compression ratio: 8.8:1
Horsepower: 180 @ 4200 rpm
Torque: 260 lbs.-ft. @ 1600 rpm
Horsepower per cubic inch: 0.66
Carburetion: 1 2-barrel
Ignition: 12-volt coil

Gearbox

4-speed manual, all synchro
(Hurst floor shift standard)

Driveshaft

1-piece, open tube

Differential

Hypoid, semi-floating
Standard ratio: 2.93:1

Suspension

Front: Independent, non-parallel control arms, with lateral torsion bars and direct-acting tubular shocks
Rear: Rigid axle, with 5-leaf, semi-elliptic springs and direct-acting tubular shocks

Steering

Rack and sector, with integral power
Turning diameter: 37.1 ft.
Turns lock to lock: 3.5

Wheels and Tires

5-lug, steel disc wheels
7.00 x 13 2-ply rayon tubeless tires.

Brakes

Hydraulic, duo-servo; self-adjusting; cast-iron drums
Front: 9-in. dia x 2.25 ins. wide
Rear: 9-in. dia. x 2.00 ins. wide
Effective lining area: 153.5 sq. ins.

Body and Frame

Unit construction
Wheelbase: 106.0 ins.
Track: front, 55.9 ins.; rear, 55.6 ins.
Overall length: 188.2 ins.
Overall width: 70.1 ins.
Curb weight: 3060 lbs.

COMING THROUGH THE RIVERSIDE RACEWAY ESSES AT BETTER THAN 80 MPH, THE VALIANT EXHIBITS VERY LITTLE BODY ROLL, GOOD ADHESION.

