

**Road
Research
Report:**

OLDS TORONADO

Does front-wheel-drive work? Wow, does front-wheel-drive work!

Oldsmobile Division of General Motors Corporation may be in big trouble. For years, the entire automobile industry has been yelling itself hoarse about how sensational and spectacular and safe and sexy their cars were—when more often than not, they weren't. Now Oldsmobile comes along with the Toronado, which is as good as the ads have traditionally claimed cars are supposed to be, and we can't figure out how they're going to invent the necessary new words. Nobody in Detroit has ever had to face a problem like this before. Oldsmobile may have produced the first truly new car in this decade, only to be semantically obsolete.

It's safe to say that everybody has finally come to recognize the fundamental advantages of having the engine and the driving wheels in the same end of the car. Chassis stiffness, design flexibility, utilization of available space, cornering power, traction, and overall

mechanical efficiency, are all enhanced by this simplified configuration—and it doesn't really make any difference which end of the car carries the engine, as far as the basic function is concerned. In racing cars we've seen it shifted to the rear, but racing cars are "pure" automobiles, and don't have to concern themselves with mundane considerations like luggage space and passenger accommodation. Therefore, front wheel drive, with the engine over the driving wheels, is a logical way to go when the designer seeks to combine maximum passenger and luggage space with maximum efficiency and performance.

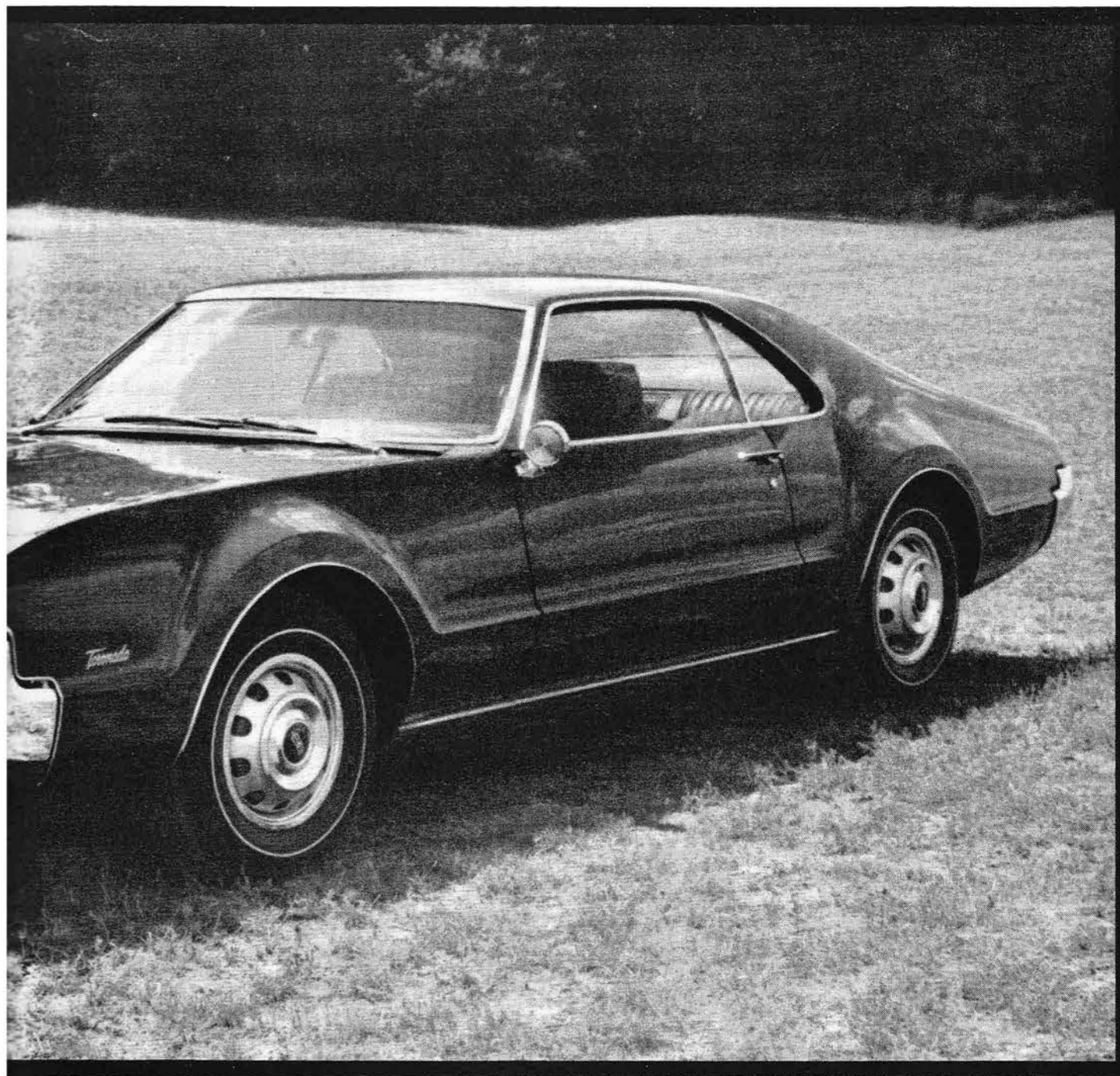
The British motoring press, with predictable nationalistic fervor, has set out to convince the world that Oldsmobile is following the lead of BMC's Mini-Minor and MG-1100. Not true. The Oldsmobile is an infinitely more sophisticated machine than the British offerings, both in design and performance. The only European fwd design that even approaches the Toronado is the Lancia—both Fulvia and Flavia models—but then the Lancia isn't coping with even a third of the power that the Oldsmobile must transmit to the pavement. No, from every viewpoint, the Toronado is a unique new car—one that may finally break down the orthodoxy and conformity that have gripped this country's auto industry since they gave up on steam.

In spite of a lot of expert advice to the contrary, many American engineers have felt for a long time that Detroit's full-size passenger cars *should* be front wheel drive. The arguments against it have been based on everything from memories of hard-steering pre-war Cords to the Gospel of British fwd genius Alec Issigonis, who says that fwd is only workable in cars of less than two liters (Issigonis is also reputed to have refused to visit this country, on the grounds that he doesn't like "big things").

Ford did a lot of research and development work with front wheel drive in the early Sixties, and there were fascinating Thunderbirds running around Detroit, handling like no Thunderbird before or since. In fact, there's a story of a very important GM executive who'd been forced to park both of the family cars about a block from home, because a blizzard had made it impossible for him to negotiate his driveway. On emerging from his house in the morning, he was confronted by a neat set of tire tracks that led from a nearby Ford executive's garage, up the GM man's driveway, turned around, and went back down the snowy street toward Dearborn. Ford never went any farther with their development work, except to utilize fwd on the little Taunus 12M, which was introduced in 1963. They felt that although the Taunus was a shoe-in for the German market, a small economy car would be out of the running in the States. The trend, Ford said, was to bigger, more luxurious cars with a broad range of options, so import plans were abandoned, and with them, fwd.

In 1955 General Motors had a LaSalle show car that featured front wheel drive, but didn't run. More interesting was a light delivery van called L'Universelle, which had a V-8 engine driving the front wheels through a Hydramatic transmission. Like the Toronado, the little truck also had parallel wishbones and torsion bars for the front suspension. At the time, there was a certain amount of conjecture in the automotive press concerning both experimental vehicles, but interest centered largely on a possible comeback for the LaSalle, rather than any firm predictions of fwd passenger cars. (Though there are stirrings today that may indicate a possible re-birth for the LaSalle, too.)

If the men who stuck their necks out for front wheel



drive during the past fifteen years need any defense or justification, the Toronado has "I-told-you-so" written all over it. It drives effortlessly and pleasantly without any of the "front-drive effects" that we've all come to know and compensate for in the Minis, SAABs, and Citroens. It rides and handles better than most sedans of its size and weight. It has—as a direct result of its front wheel drive layout—enormous amounts of flat-floored room inside, which is particularly impressive in view of its 119-inch wheelbase. It is a genuine six-passenger sedan, and even though it is very low and sleek, head room and leg room are comparable to the 123-inch wheelbase Olds 88 sedans. Better still, the flat floor and elimination of a rear-mounted final drive makes it possible for the center passenger to ride comfortably in front or rear seats.

There's every reason to believe that popular success

for the Toronado, along with the lessons learned from a couple of years of fwd production at Oldsmobile, could start a sweeping conversion to the Toronado concept throughout the General Motors line of full-sized cars. It's an exciting car, one that could lead to better handling, more efficient automobiles from every American manufacturer. Let's look at it in detail.

ENGINE AND DRIVE LINE

The engine and transmission of the Toronado are not in themselves terribly exciting. It's what Oldsmobile did with them that's worthy of note. Very simply, the engine has been moved slightly to the right of center, and the Hydramatic transmission nestles in on the big V-8's left side, carrying the drive from the back of the engine to the front wheels via a torque converter and a chain drive. Engine and transmission become a neat,

assembled unit, held in place by one front and two rear engine mounts.

The Toronado's engine is the standard 425-cubic inch Oldsmobile V-8, as used in the Starfire and 98 series. It has been moderately hopped up to produce 385 gross horsepower, which is an increase of 15 bhp over last year's Starfire powerplant. It has cast iron cylinder heads and block, with a bore and stroke of 4.125 x 3.975 inches. The increased power comes almost exclusively from improvements in breathing; larger intake valves, a sportier camshaft, more efficient manifolds, better flow in the heads themselves, and the new Rochester "Quadrajets" four-barrel carburetor. Smoothness and torque are the engine's greatest attributes. It doesn't deliver its power in any wild, head-snapping blasts, but comes on with a smooth, growing surge that flows through the torque converter and the three-speed

TORONADO CONTINUED

"Turbo-Hydramatic" transmission like it was produced by a turbine.

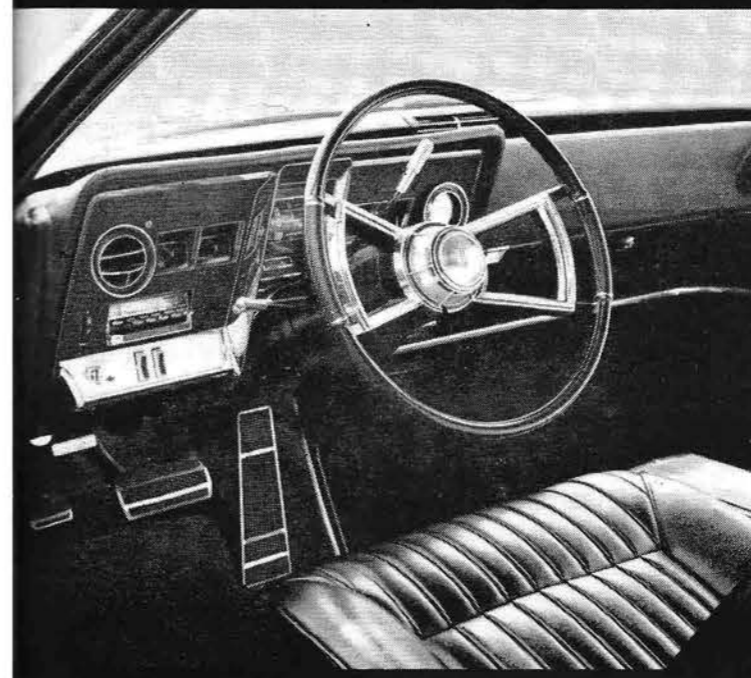
GM was experimenting with fwd as long ago as 1958, and many variations were tried, including the BMC-type transverse engine/transmission layout. The normal fore and aft layout was finally selected for the Toronado because the modern American V-8 is practically as wide as it is long—precluding any significant saving of space—and because the transverse layout could have limited the adaptability of the basic concept to future engine/transmission combinations. The Oldsmobile approach is unique, and does seem to point the way for possible further use in other GM products.

The variable pitch torque converter is bolted to the rear of the engine, as usual, but the transmission had to be turned 180 degrees to get the power to the front wheels. This was accomplished through the use of a two-inch multiple-link chain which takes the drive from the converter to the planetary gear sets. The chain sprockets are supported by ball bearings running in a cast iron carrier bolted to the transmission case, which contributes both rigidity and sound-deadening. The chain is splash-lubricated by the automatic transmission fluid. Both gear- and belt-drives were tried but discarded. Gears were too noisy, and the power transmitted would have required far too wide a belt, although Oldsmobile engineers feel that belt drive (à la sohc Tempest) would be quite satisfactory in less powerful cars.

The cast iron differential housing bolts directly to the die-cast aluminum transmission case and is thus offset substantially to the left of center. Planetary gears are used in the differential, instead of bevel gears, to keep the final drive unit as narrow as possible and to allow room for the straddle-mounted pinion. The half-shafts are of equal length, made possible by a short, solid drive shaft that runs from the offset differential (on the left) and passes under the oil pan to a steady bearing on the right side of the engine. Each half-shaft is fitted with a permanently-lubricated constant-velocity Rzeppa-type U-joint at its inboard and outboard ends. Power is transmitted via ball-splines from the differential to the half-shafts, and these same splines must accommodate all the axial movements of the half-shafts through the range of front suspension movement. It all looks terribly expensive, and more than likely is.

Smoothness and silence are always primary design considerations in American cars—particularly those in the Toronado's price class—and fwd posed some interesting problems for the Oldsmobile engineers. As one of their press releases pointed out, "No one had ever built a large, high-powered front-drive automobile to modern standards of ride, handling, and refinement." The inherent rigidity of the Toronado's ultra-short drive line with all its potential vibrations resulted in the use of rubber as a vibration-damping agent at several critical points. Although the single most important vibration damper is probably the Toronado's torque converter, the entire drive line had to be tuned. The driving sprocket of the transmission chain is rubber-damped, allowing about two degrees of movement before metal-to-metal contact, and the right-hand half-shaft features a "pot-joint" coupling that allows seven degrees of rotation before a positive metal-to-metal contact is made.

These refinements made the Olds so smooth and so free from traditional front-drive symptoms that the driver is really hard-pressed to find any evidence that
(Text continued on page 94; Specifications overleaf)



Road Research Report: OLDSMOBILE TORONADO

Manufacturer: Oldsmobile Division
General Motors Corporation
Lansing, Michigan

PRICE
Price as tested: ca. \$4500 FOB Lansing

ACCELERATION

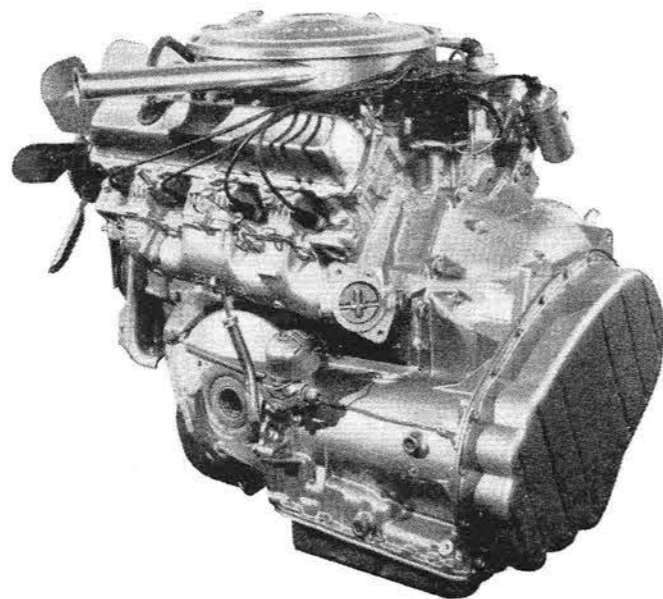
Zero to	Seconds
30 mph.....	3.3
40 mph.....	4.6
50 mph.....	6.3
60 mph.....	8.6
70 mph.....	10.9
80 mph.....	13.8
90 mph.....	17.7
100 mph.....	24.6
Standing 1/4-mile.....	.88 mph in 16.7

ENGINE
Water-cooled V-8 cast iron block, 5 main bearings
Bore x stroke..... 4.13 x 3.97 in, 104 x 100 mm
Displacement..... 425 cu in, 6965 cc
Compression ratio..... 10.5 to one
Carburetion..... Single 4-bbl (Quadrajel)
Valve gear..... Pushrod-operated overhead valves, hydraulic lifters
Valve diameter..... Intake 2.06 in, exhaust 1.62 in
Valve lift..... 4.31 in
Valve timing
Intake opens..... 21° BTC
Intake closes..... 27° ABC
Exhaust opens..... 71° BBC
Exhaust closes..... 31° ATC
Power (SAE)..... 385 bhp @ 4800 rpm
Torque..... 475 lbs-ft @ 3200 rpm
Specific power output..... 0.91 bhp per cu in, 55.31 bhp per liter
Usable range of engine speeds..... 1600-5200 rpm
Electrical system..... 12-volt, 73 amp-hr battery, 42A alternator
Fuel recommended..... Premium
Mileage..... 15-18 mpg
Range on 24-gallon tank..... 360-432 miles

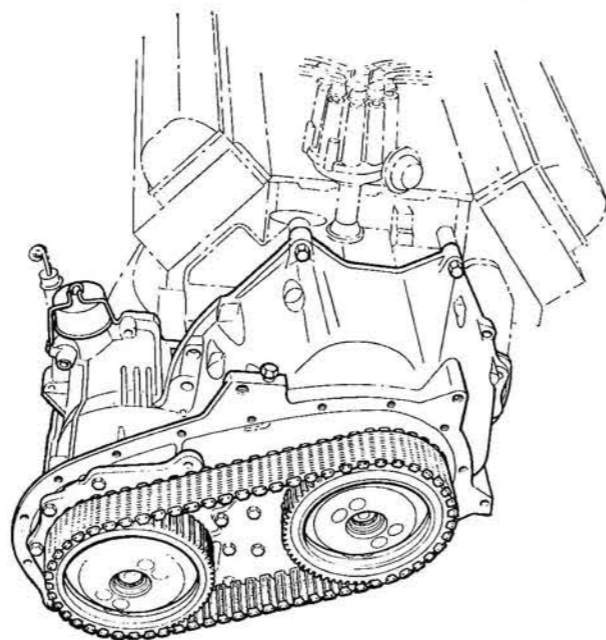
DRIVE TRAIN

Transmission.....	3-speed automatic plus torque converter			
Gear	Ratio	Overall	mph/1000 rpm	Max mph
Rev	2.08	6.68	12.35	64
1st	2.48	7.96	10.36	54
2nd	1.48	4.75	17.37	90
3rd	1.00	3.21	25.67	133
Final drive ratio.....	3.21 to one			

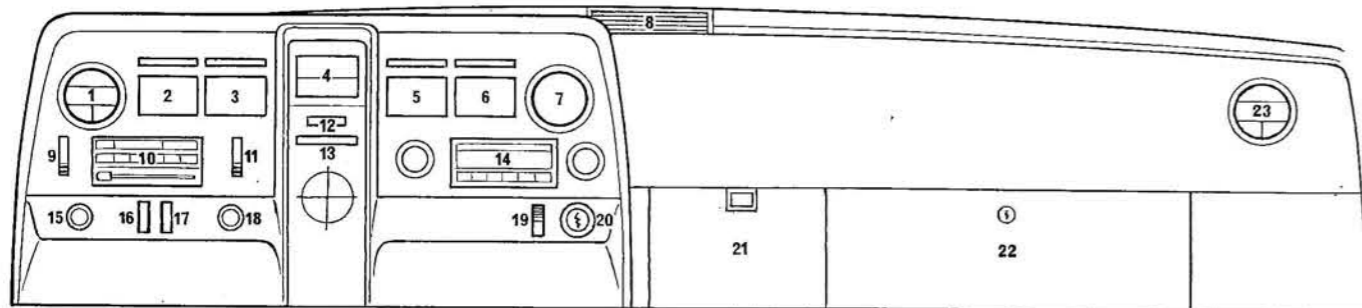
CHASSIS
Wheelbase..... 119 in
Track..... F 63.5 R 63.0 in
Length..... 211 in
Width..... 78.5 in
Height..... 52.8 in
Ground Clearance..... 5.0 in
Dry weight..... 4311 lbs
Curb weight..... 4496 lbs
Test weight..... 4542 lbs
Weight distribution front/rear..... 60.3/39.7%
Pounds per bhp (test weight)..... 11.79
Suspension: F: Ind., unequal-length wishbones, coil springs, stabilizer bar.
R: Rigid axle, single-leaf springs, traction dampers.
Brakes..... 11-in drums, front and rear, 328.2 sq in swept area
Steering..... Recirculating ball
Turns, lock to lock..... 3.4
Turning circle..... 43 ft
Tires and wheels..... 8.85 x 15, 6-in rim



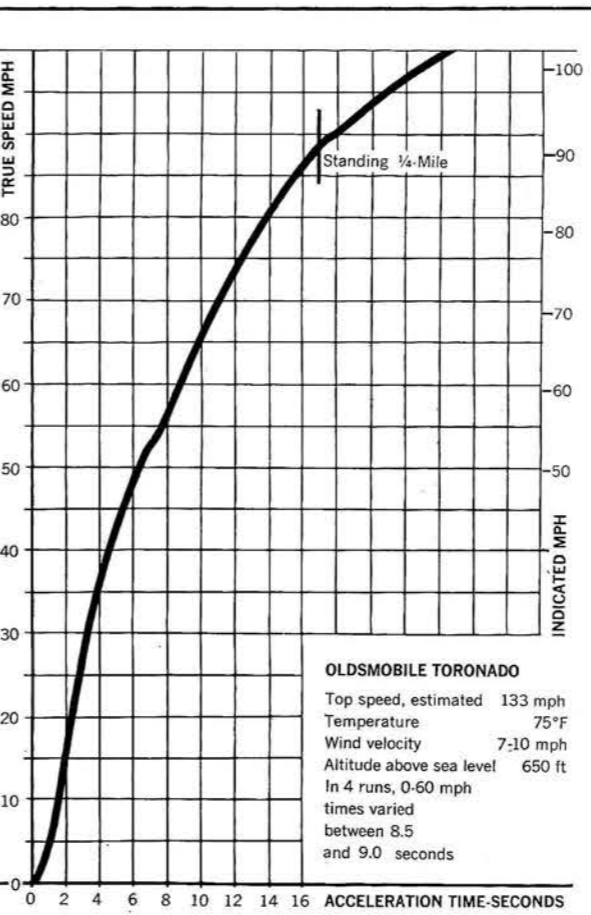
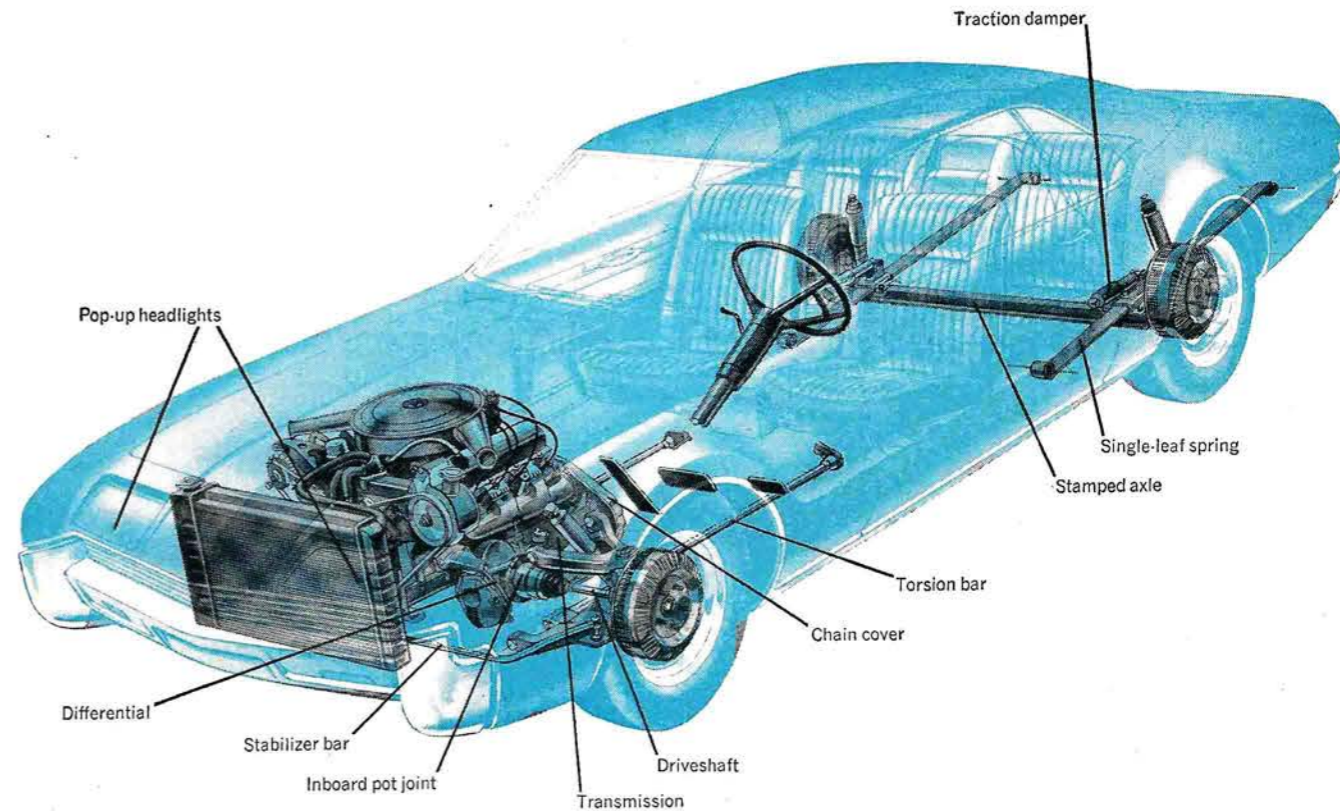
Left rear view of engine/transaxle.



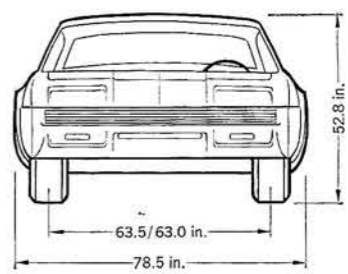
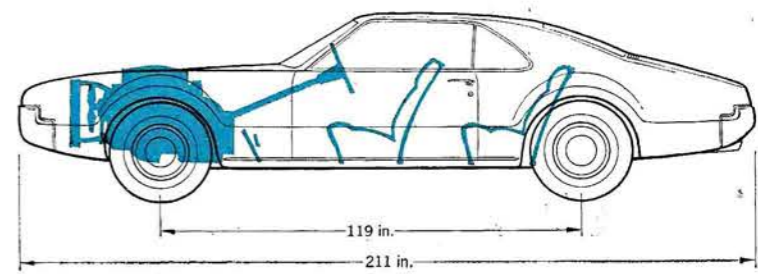
Detail of transmission chain drive.



(1, 8, 23) Air vents, (2) Fuel gauge, (3) Water temperature gauge, (4) Speedometer, (5) Ammeter, (6) Oil pressure gauge, (7) Clock, (9, 10, 11) Heater/Air conditioning system, (12) Odometer, (13) Tripmeter, (14) Radio, (15) Light switch, (16) Windshield wiper, (17) Windshield washer, (18) Cruise control, (19) Courtesy light switch, (20) Ignition switch and starter, (21) Ashtray, (22) Glove compartment.



OLDSMOBILE TORONADO
Top speed, estimated 133 mph
Temperature 75°F
Wind velocity 7-10 mph
Altitude above sea level 650 ft
In 4 runs, 0-60 mph times varied between 8.5 and 9.0 seconds



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TORONADO CONTINUED

the front wheels are actually driving the car. Olds engineers don't feel that they've yet developed the system to a point where it would work as well with a normal clutch and manually shifted transmission, so that the Toronado is offered only with the three-speed Turbo-Hydramatic and torque converter. However, we can't really see any need for a manual transmission. The Olds version of the Hydramatic three-speed is so efficient and so flexible that there'd be no significant advantage to the addition of a three- or four-speed manual box. Similarly, the Olds offers no limited-slip differential for the Toronado for the simple reason that it doesn't seem to need one, and the possible problems posed by the combination of fwd and a locking differential outweighed any potential benefits.

CHASSIS/SUSPENSION

Just as the Toronado's front-drive is a dramatic break with GM (and industry) orthodoxy, the newest Oldsmobile's chassis and suspension indicate that its designers really did start with a fresh piece of paper and complete freedom from old prejudices and bad habits.

One staff member has described the body and chassis of the Toronado as an "over and under," because it is, in effect, a unit body with an unusually long sub-frame to support the front suspension. This sub-frame extends clear back to the forward mounts for the rear springs and terminates there, leaving the integral body to support the rear suspension. This combination of an integral body with an abbreviated normal chassis frame results in a structure that is roughly twice as stiff in torsion as the Olds 98. The original plan, evidently, was to have a more typical sub-frame for the front suspension and engine, with the integral body structure handling everything else. Oldsmobile was dissatisfied with the amount of noise transmitted by this layout, and finally wound up with the longer sub-frame. They still feel that the rear suspension transmits more noise than they'd like, but the Toronado is at least as quiet as its two primary competitors, the Ford Thunderbird and the Buick Riviera.

The front suspension is by parallel, unequal-length wishbones and torsion bars—the Toronado being the first GM production car to use this springing medium. The torsion bars were adopted so that there'd be no coils cluttering up the area between the stamped wishbones—that

space being pretty well filled up with the angled tubular shock absorbers and half-shafts and things. Ball joints connect each pair of wishbones to the hub carriers, which are steel forgings with an integral steering arm. Caster and camber are adjusted by an eccentric cam assembly, which eliminates the shims used on other cars. And finally, the front suspension is completed with a one-inch-diameter stabilizer bar, mounted ahead of the wheels.

Power steering is standard equipment on the Toronado, with 3.4 turns lock-to-lock and an overall ratio of 17.8 to one, producing a 43-foot turning circle. Not surprisingly, a telescopic shock absorber/steering damper is fitted to the center link of the track rod. This is an extremely effective steering set-up—betraying no power-on, power-off changes in steering behavior, but still retaining some road feel, unlike most of the other cars in the GM family.

The rear suspension is almost too simple to believe—complicated only by the presence of four shock absorbers instead of two. The rear axle is a brutal-looking hat-section beam, located only by a pair of single leaf springs. One pair of shock absorbers is mounted horizontally, pointing forward to prevent rear spring wind-up under braking. The extra pair of shock absorbers was used here instead of radius rods to help prevent harshness. The single-leaf springs mount to the rear of the sub-frame at their forward ends, and are attached to the body sheet metal at the rear.

The extra stiffness of the "over-and-under" chassis and body assembly surprised the engineers by making it possible to use very high spring rates—considerably higher than on any other car in the Oldsmobile line. For instance, the 98-series sedans have a final rate at the wheels of 89 pounds-per-inch in the front, and 105 in the rear, while the stiff-riding 442 has final rates of 124 front and 130 rear. Compare those to the Toronado's 162 in the front and 157 in the rear! The result is a car with a more than acceptable boulevard ride, with the additional benefit—particularly attractive to enthusiasts—of greatly increased cornering power.

Bigger, stiffer tires further increase the potential cornering power of this already superior-handling package, even though that wasn't the main reason for their use. The Olds engineers were forced to specify the larger rubber, with considerably stiffer sidewalls, because the Toronado is HEAVY! Forty-four-hundred-and-ninety-six pounds

heavy, to be explicit. The additional rigidity of the chassis/body structure was destined to impose some penalty, and that penalty was weight. We can only complain about all this avoirdupois on philosophical grounds, because the Toronado goes and stops without any problems at all—weight or no weight—but one must admit that 4496 is a rather startling figure, especially when we're accustomed to thinking about 1200-lb. race cars and 2000-lb. sports machines.

Weight distribution on the Toronado is 60.3% on the front and 39.7% on the rear, which is near-perfect for front-wheel traction, but puts 2710 lbs. on the front wheels—probably as much as any two unladen drive wheels carry on any car we can think of. There's a certain amount of jubilation among some of the Olds engineers over this because, as one of them said, "We've finally got a car with enough rubber on the ground!" And that's reason enough for jubilation from all hands, considering the puny rubber that supports so many American cars today. The standard tire for the Toronado was specially developed, and is called "TFD." It has the already-mentioned stiffer sidewalls and a high-traction tread pattern for greater efficiency on slippery surfaces. The TFD tire is called 8.85 x 15, but is probably larger—the tire companies still electing to confuse us all with undecipherable systems for rating and measuring their products. There's also a 9.15 x 15 radial-ply tire in the works, and we've seen them, but they weren't officially available when we drove the car.

There is nothing terribly special about the brakes, although a great deal of development time and effort was spent to make them as efficient as possible and Oldsmobile is very proud of them. At one point, both inboard and outboard disc brake systems were tried, but discarded in favor of drums. The official argument in favor of drums concerns their ability to stop "well enough" and still do it as smoothly and silently as General Motors deems necessary. It's our feeling that they could make the more-efficient discs meet these somewhat cosmetic requirements, if they'd spend the same amount of money and effort that they've spent to retain drums.

However, if they *must* have drums, they managed to produce a pretty good set-up for the Toronado. Due to the location of the front hubs, it was necessary that all four drums be mounted well outboard. Specially designed, deeply-dished 15-inch wheels are used, each with ten big,



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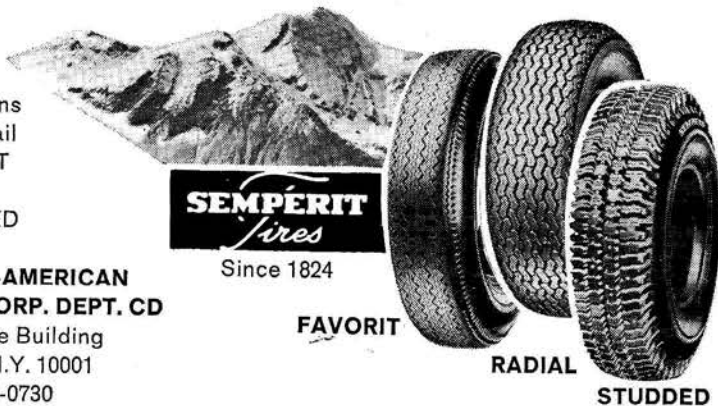


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TORONADO CONTINUED

functional-looking slots to direct fresh air over the extensively-finned brake drums. These cast iron drums are eleven inches in diameter, and use much wider brake shoes for the front than the rear—since the front, with over 60% of the static load, must carry an enormous share of the braking effort. The front shoes are 2.75 inches wide and the rears are 2.00, with a total swept lining area of 328.2 square inches. Power boost for the brakes is standard equipment, but although they are self-adjusting, the Toronado's brakes have no fore-and-aft proportioning valve—once again because the engineers feel that such devices tend to detract from the all-important smoothness and silence. Our brake tests with the car indicated that a little more distribution of braking effort would have been welcome, while a little smoothness and silence might not have been missed.

INTERIOR AND EXTERIOR

The Toronado had much the same visual effect on us that the '65 Corvair had last year. We were driven over to the big Olds garage at the proving ground, clambered out of the station wagon, walked through a side door, and . . . WHAM! There were three of them, just sitting there, looking sort of aircraft-like and loaded with a kind of slick, glossy menace. We hadn't seen any pictures of the Toronado, so we really didn't have a clue what to expect. Seeing it that way, on those terms, was a nice, stimulating automotive experience.

We've always felt that Oldsmobile has a unique ability to take a given GM body shell and make it look cleaner and more expensive than the Buicks and Pontiacs that shared it, and the Toronado demonstrated our point. Its body shell is the same as that of this year's Buick Riviera, and—in our estimation—the Toronado wins the beauty contest hands down. On the other hand, Oldsmobile interiors have never really torn us up so much, and the Toronado/Riviera comparison is valid here too. The Riviera's interior—utilizing basically similar components—is a lot more sumptuous and more redolent of the purely automotive niceties than the Oldsmobile.

The Toronado is available in a Standard and a Deluxe model, and though there is some variance in trim quality and extra equipment, we'll only concern ourselves with the car we tested, which was a Deluxe. Two types of seats are available—a bench with a solid seat and divided back, and separate "bucket"

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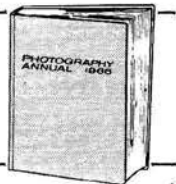
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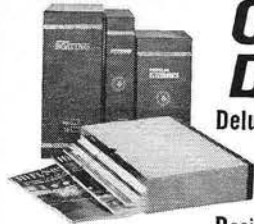
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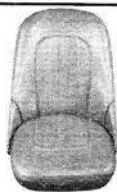
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seats that more nearly deserve the name than any previous design from General Motors. Both offer a reclining back on the passenger's side, and both are available with head rests. We actually preferred the bench version, since the backs are contoured to give reasonably good lateral support and the center backrest can be folded down to form an armrest. The bench is especially practical, in view of the car's flat floor, which makes it possible to comfortably carry three people in the front.

The rear seat is a happy surprise. Though still not as roomy as one of the longer-wheelbase Olds sedans, it is more useful and more comfortable, again because there's no tunnel and because the cushion is full-depth all the way across—the middle passenger is *not* sitting on one inch of upholstery fabric and foam that covers an unyielding hump in the floor.

The instruments and small controls are excellent, and all instrumentation has been grouped in front of the driver—he can literally see and reach everything, which we regard as a distinct safety advantage. This leaves the passenger's side absolutely clean, and it has been deeply recessed so that a properly seat-belted passenger could pivot forward in a collision and not even muss his car or her hair.

The elimination of the little vent windows is reason enough for applause, but the thing that made it possible is even better. The Toronado features a first-class ventilation system that admits fresh air to the cockpit through the air-conditioning nozzles and exhausts and through an anti-back-flow system of louvers below the rear window. It's the next best thing to air-conditioning, which is available as an option. On the subject of options, we should also mention that the tilt-and-telescope steering wheel is available on the Toronado, as are things like vacuum door latches, cruise control, electric windows and seats, AM-FM radio, and you name it. The list of options for the car is long and useful, even though the basic mechanical package remains unchanged.

DRIVING IMPRESSIONS

One of the fascinating things about driving the Toronado was a difference of opinion between the two staff members who did the test. The first gentleman approached the car—expecting it to be the world's most powerful Mini-Minor—and flung it around corners and played road-racer for most of an afternoon. He came away disappointed because it wasn't hairy and it didn't change

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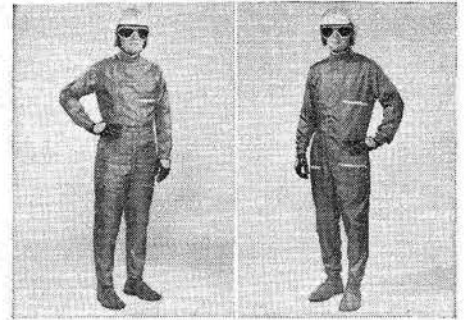
course when he lifted his foot in a corner and it didn't make a lot of noise. The second tester, not a Mini enthusiast, did roughly the same kind of test the next morning, spending a bit less time bashing around corners, and a bit more on the skid-pad and the drag strip. He came away *delighted* because it wasn't hairy and it didn't change course when he lifted his foot in a corner and it didn't make a lot of sporting noise.

The first man was annoyed because it just didn't act like a front wheel drive car was supposed to act. The second man was very favorably impressed for exactly the same reason!

The car will corner faster—produce a greater lateral acceleration, if you will—than any American car of similar size, utilizing the front-engine rear-drive layout. Because it does it so effortlessly, and with so little sportiness, if that's the word, one might not notice just how good it is. It is possible to bend the car into a high-speed, constant radius turn as fast as it'll go, change the throttle opening, and sit there in amazement when nothing happens. Any other fwd car that we ever drove, with any power at all, will simply change direction in such a situation—diving to the inside of the turn with a ferocity that can knock the bark off trees and disfigure the automobile. The Olds is absolutely free of any such bad manners. In fact, the average driver would not be able to tell that the car even *had* front wheel drive, unless he spun the wheels.

It's possible to spin the front wheels only on full-throttle acceleration from a standing start. Unlike the Mini, which chirps both wheels, then gets under way, the Toronado, with its infinitely greater torque, will spin the right front wheel until the driver backs off and tries again. (That's one argument for the transverse engine; its counter-rotation aids fore-and-aft weight transfer.) Once rolling, acceleration is absolutely unaffected by the driving wheels being up front.

We had a problem on braking with our test car—it had nothing to do with fwd, however. The linings had not been properly broken in, and had taken on a glaze which made straight-line stops almost impossible. We tried three 80-0 stops. The first took 9.4 seconds—fairly slow, but reasonably stable. The second took 6.5, accompanied by a lot of slewing around because the glaze was beginning to burnish off, but



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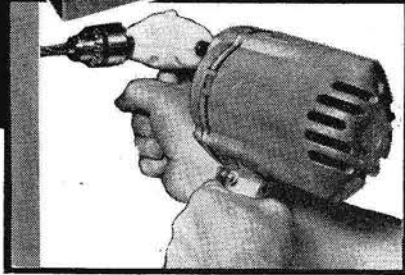
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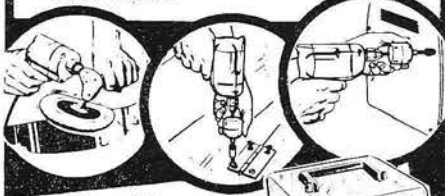


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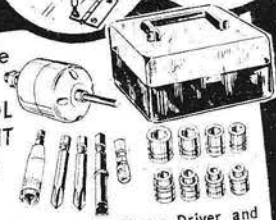
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unevenly. The third stop started out being much faster than the second, but the car was getting out of hand, so we abandoned the attempt at about 20 mph. A few more stops would have seated the linings, and, in our opinion, we should have been able to record stops somewhere around the five-second mark established by the drum-braked Rolls Royce Silver Cloud III (July C/D), which is about as good as you can get without discs.

On the whole, driving the Toronado was as comfortable an experience as it was enlightening. The seats, as mentioned, are luxurious while still offering good lateral support. The driving position, with the "tilt and tel" (telescopic) steering column and six-way power seat, should suit just about everybody. The pedal positions are particularly good, with no transmission hump crowding the throttle to the left. Vision, despite the flat angle of the rear window and a blind-looking rear quarter, is more than adequate. Finally, like its half-sister, the Buick Riviera, the Toronado is blessed with unusually wide doors, making entry and exit unusually easy. While the Toronado isn't going to make a hit at the dragstrip (except maybe in reverse), it's going to be very much at home on the road. It's a rare bird: a driver's car that doesn't detract from the comfort of the passengers.

CONCLUSION

The Oldsmobile Toronado is a beautifully engineered product that indicates a spare-no-expense attitude from conception to completion. The entire design is uniquely free of most of the traditional Detroit engineering prejudices, and the only area which indicates anything less than utter open-mindedness is the retention of drum brakes.

We are most enthusiastic about the car's great evasive capability—the one valid key to improved automotive safety. That this is available on any showroom Toronado, without having to specify a selection of heavy-duty options, is to the everlasting credit of Oldsmobile.

Now the only uncertainty in the entire Toronado equation is its list price. If it can be kept somewhere in line with that of the Riviera, it may record one of the most spectacular sales debuts in the industry's history. If it ends up costing appreciably more—as some rumors indicate—this outstanding automobile may end up in the hands of an inordinately exclusive group of luxury car owners.



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