

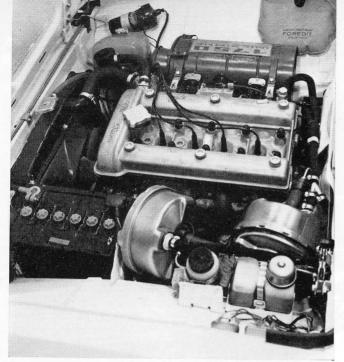
GORDON CHITTENDEN PHOTOS

ALFA ROMEO 1750: BERLINA, SPIDER, GTV

Engineering Analysis & Road Test of the Impressive New Line of Fuel-Injected Alfas

Named in Honor of the successful Alfa Romeo 1750 racing cars of the late 1920s, Alfa's new 1750 line of cars was introduced at the Brussels show in January 1968. But they were not to reach the American market for a full year after that, because the U.S. Federal safety and smog laws had gone into effect just days before their introduction. Interior and other changes had been incorporated in anticipation of the required compliance with safety regulations, but the thornier problem of exhaust emissions (thorny because of Alfa's traditional high-output engines) was one that would take many months to solve to Alfa's satisfaction. In the meantime, Alfa dealers and enthusiasts languished—even we were beginning to wonder if the marque would be back with us again. We're happy to say that the marque is here to stay-and the little chrome plaque that says Inezione is a testimony to the determination of Alfa Romeo to comply with our smog laws and maintain

Alfa performance rather than lose it to control devices. But let us first see how the 1750 line differs from the earlier models they supersede in our market. The biggest change occurred in the sedan: the Giulia Super, the uglyduckling sedan, was radically facelifted by Bertone to become the new 1750 Berlina (Berlina simply means sedan in Italian); the Giulia Super remains in production but is not available in the U.S. The 1750 Berlina has a 2.4-in. longer wheelbase, 9.8 in. more overall length, considerably better rear passenger accommodation and slightly better trunk space; more sound insulation, improved heating and ventilation, more luxurious fittings and much more graceful (though still not outstanding) styling. All three models (Berlina, Spider Veloce and GTV coupe) have revised or new instrument panels for better crash safety, incorporating newly designed instruments as well. And in the chassis several detail changes add up to an important overall handling im-



Engine and its surroundings are a joy to behold in all the new 1750s—this the Spider. Injection system is low on opposite side of engine, buried beneath big air cleaner box. Spider instrument panel, right, is largely unchanged from 1600.



provement: wheels have been widened from 4.5 in. to 5.5 in. and decreased in diameter from 15 to 14 in.; 165-14 tires replace 155-15s; and there are softer springs at the front and the addition of an anti-roll bar at the rear. Re-located shock absorbers, a revised transverse link in the rear suspension (the latter for lower production cost only) and revised front suspension geometry (giving a higher roll center) complete the suspension changes.

An enlarged engine is the most important single mechanical change. Its basic design is the same—that delightful allaluminum, double overhead cam four—but bore and stroke have been increased from 78.0 x 82.0 mm to 80.0 x 88.5 mm with no respacing of the bores. This should be the last enlargement of a unit that began life as a 74 x 75 engine of 1290 cc. The new dimensions give 1779 cc and for once the model designation (1750) is on the conservative side!

Alfa engine engineers chose to improve the torque curve







Instrument panel of Berlina, left, is simple and handsome, but minor instruments are too far removed from driver's line of vision for safe and quick reading. Berlina body is an extensive facelift by Bertone of old Giulia sedan.

more than the peak power output. Power is up from 125 bph @ 6000 rpm to 132 @ 5500 (5.6% more), but the peak torque is up from 115 lb-ft @ 2800 to 137 lb-ft @ 2900 rpm—a 19.1% increase. And this is all the more significant because the engine stays within 3% of that peak all the way from 2500 to 5000 rpm.

All this engine data was taken from descriptions of the 1779 engine as it appeared with Weber carburetors originally. For the U.S. market Alfa decided to develop a fuel injection system that would maintain these power and torque figures while providing the super-accurate fuel metering necessary to meet our emission regulations in everyday driving. Chosen as basis of the injection system was a metering pump made by Alfa subsidiary Spica for certain diesel trucks. Alfa did the tests and development to come up with the required metering characteristics and from these Spica designed the metering mechanism. Spica also manufactures

ALFA ROMEO 1750

the system, which is conventional as mechanical FI goes. Fuel is supplied to the metering pump by an electric pump at about 7 psi; excess fuel, acting also as a coolant for the metering pump, returns to the fuel tank, and if the supply pressure drops below 7 psi a warning light on the dash comes on. The metering or injection pump has four variabledisplacement plungers actuated by a tiny crankshaft and connecting rods; the plunger displacement is regulated by a rack connected to the throttle linkage, so that delivery characteristics depend upon engine speed and throttle opening. In addition, there are provisions for cold-start enrichment and cold-running enrichment, the latter decreasing gradually as the engine warms up. The injection pump is strictly mechanical, driven at half engine speed by a toothed belt from the crankshaft pulley. Strangely enough, the metering unit includes a 3-position control which must be adjusted sea-

To keep pace with the improved performance and handling, Alfa engineers enlarged the brakes: front discs are up from 10.5 in. to 10.7. Power assist is standard and the ATE ball-and-ramp pressure-limiting valve limits further increase of pressure to the rear brakes beyond a set deceleration value.

It should be evident, then, that all the changes wrought in the new 1750 Alfas are changes that make sense to the enthusiast: for greater performance, better handling and more safety. And, in the Berlina, they even sneaked in a little better style—which was needed badly.

Spider. The Spider Veloce, most recent of Alfa's production designs before the 1750 revamp, came in for the fewest body changes. All that's visually different are the revised main instruments and padding, a grille guard bar and the lower, wider wheels and tires, and only the *Inezione* (injection) nameplate on the back of the car is really obvious from outside.

When the ignition switch (which also locks the steering column) is turned on, there's an immediate giveaway for the fuel injection: a rather obtrusive fuel-pump drone. Underway one begins to notice other things; the larger engine is mechanically smoother and quieter (though, when cold, piston slap is noticeable) and its idle is smoother and more consistent at a moderate 750 rpm. It will pick up butter-smoothly from 1000 rpm in 5th gear—no bucking at all, though there's no point in doing this other than to demonstrate the fact that it can be done. All isn't perfect, though, as we noted some flat spots—one manifesting itself as a stumble getting off from rest, the other at 2500 rpm when cracking open the throttle. The engine does get a bit harsh above 4000 rpm, but the old resonance which used to drive us batty at 70 mph has been subdued to a pleasant hum. Gearing for U.S.-bound cars, incidentally, is different from those sold in Europe: 1750 Spiders and GTVs are built with 4.10 final drives normally, but for the U.S. they come with the same 4.56 ratio used in previous 1600 models.

Through the gears the new engine gives a real and readily detectable performance gain. Getting off the line is different from what it was with previous Alfas, for now it's the wheels that slip instead of the clutch; using all the wheelspin available our Spider got through the ¼-mi in 17.3 sec and was doing 80 mph at the end. This compares with 18.5 sec and 76.5 mph for the Duetto we tested a couple of years ago and is in spite of an increase in curb weight from 2195 lb to 2345. The performance difference is even more noticeable when the driver isn't in the mood for shifting; that extra

torque is right there when it's needed. Top speed is up by 2 mph, but that wasn't the point of the new engine.

The gearbox is unchanged, and it's as nice as ever, even if we find fault with its leaned-back shift lever and its unwillingness to synchronize when shifted from neutral to 1st. For the performance tests we made really fast shifts with no trouble except a couple of misses when going from 2nd to 3rd, the latter in the center gate; which is no sweat, because when this happens you get 5th. The indirect ratios are slightly audible and whatever whine there is from 5th gets drowned by wind noise. However, the differential puts up a howl that couldn't be drowned by anything; this we consider quite unacceptable, and it could easily spoil the car for those bothered by such things.

We've always liked Alfa handling, but in recent years it has seemed too heavily biased toward understeer. This is corrected beautifully in the 1750. The combination of the higher front roll center and softer front springs leaves roll resistance at the front about the same, but the new anti-roll bar at the back gives more roll resistance there. The result, simply, is less understeer. It is now much easier to break the tail loose than before; this breakaway is as smooth and controllable as previous Alfas' stubborn understeer had led us to expect. The wider 165-14 Pirelli Cinturatos give noticeably more cornering power and squeal very little. We all liked the new handling characteristics and felt we could get the car around any given turn faster than we could with the previous model. The final limit to any cornering activity is set by the rear anti-roll bar, as it turns out: at the limit the inside wheel lifts and spins. One need not slow much on rough roads—the roadster body is stiff and rattle-free, and live axle skitter is at a minimum.

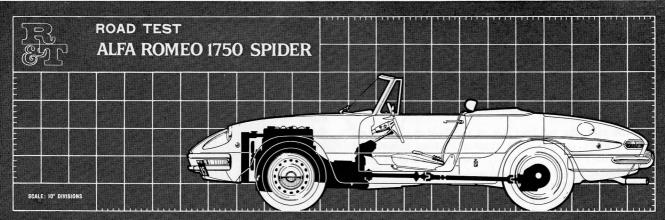
The steering seems stiffer at low speeds, but it is as accurate and sensitive as ever at speed. We drove the car a lot in the rain and found its stability on wet pavement almost uncanny, which made us impatient with people in lesser cars who didn't have the confidence to press on.

The enlarged and revised brakes, too, are definitely improved over past Alfa performances. The Spider racked up an impressive 90% g deceleration rate in the panic-stop test, vs. 84% for our last Duetto, and what little fade that earlier car showed in the fade tests (11%) has been reduced to zero by the larger front discs. And the brakes, like the handling, are nearly as sure in the wet as in the dry.

On first getting in, one is put off by the relation of steering wheel, pedals and seat. Alfa's interior packaging chief must be able to touch his toes without bending over, if the proximity of the pedals to the seat and wheel is any indication. However, most of us were able to select a combination of longitudinal and seatback adjustment that we could get used to, those with short arms using a rather vertical seatback position. The two steering-column stalks, one for the headlights and the other for the directionals, cause some confusion and we feel the brake and clutch pedals are just too close together. Brake and throttle, however, are just right and heel-and-toe work (toe on brake, heel on throttle) works out just right for downshifting while braking. A tall person will feel somewhat cramped in the Spider, not because of lack of seating space but because the low windshield and side window tops may cause him to stoop.

The large speedometer and tachometer are interesting: side orientation of their zeros gives horizontal readings at highway speeds (the speedometer is ridiculously optimistic, as usual); the white-on-black faces would be very readable if it weren't for curious 2½-mph increments on the speedo. Three minor gauges are out in the dash center, angled toward the driver and not too far away for easy reading. There is a great abundance of warning lights.

Seats cradle their occupants nicely and the new head restraints are adjustable for height; our test car had only lap belts, no shoulder-lap straps being available. Heating and ventilating controls are now in English and are quite legible



PRICE
Basic list\$4333
As tested
ENGINE
Type4 cyl inline, dohc
Bore x stroke, mm80.0 x 88.5
Equivalent in 3.15 x 3.48
Displacement, cc/cu in1779/108.4
Compression ratio9.5:1
Bhp @ rpm 132 @ 5500
Equivalent mph107
Torque @ rpm, lb-ft137 @ 2900

Type fuel required premium

Equivalent mph.....54

DRIVE TRAIN
Clutch diameter, in8.5
Gear ratios: 5th (0.790)3.60:1
4th (1.00)4.56:1
3rd (1.35)6.21:1
2nd (1.99)9.08:1
1st (3.30) 15.0:1
Final drive ratio 4.56:1

DRIVE TRAIN

CHASSIS & BODY

CHASSIS & BODI	
Body/frameunit st Brake type: disc; 10.7-in. fro	eel nt.
10.5-in. rear; power assist.	
Swept area, sq in	397
Wheelssteel disc, 14 x 5	1/2
Tires Pirelli Cinturato 165	-14
Steering typeworm & sec	
Turns, lock-to-lock3	
Turning circle, ft3	3.5
Front suspension: unequal-len	gth
A-arms, coil springs, tube shoc anti-roll bar.	ks,
Rear suspension: live axle w	ith
trailing arms & transverse lin	
coil springs, tube shocks, ar roll bar.	

EQUIPMENT

Standard: power brakes, radial tires, 5-speed gearbox.
Options: radio.

ACCOMMODATION

Seating capacity, persons2
Seat width
Head room38.5
Seat back adjustment, deg 40
Driver comfort rating (scale of 100):
Driver 69 in. tall90
Driver 72 in. tall85
Driver 75 in. tall

INSTRUMENTATION Instruments: 140-mph speedo,

8000-rpm tach, 99,999 odo, 999.9 trip odo, oil pressure, water temp, fuel level Warning lights: oil pressure, fuel pressure, low fuel, generator, brake fluid loss, heater on, lights

MAINTENANCE

on, high beam, directional signals

Engine oil capacity, qt5.8
Every 3000 mi: chg eng oil & filter,
lub U-joints & spline, chk fluids,
grease dist., var. op'l chks
Every 6000 mi: chg air cleaner &
fuel filter, chk clutch play
Every 12,000 mi: chg plugs, gen'l
engine tuneup, chg brake fluid
Every 15,000 mi: chg gearbox &
differential oil
Every 27,000 mi: chk brake system,
tighten nuts & bolts
Every 30,000 mi: pack frt wheel brgs
Warranty period, mo/mi
6/unlimited
Tire pressures, psi, f/r 24/26

GENERAL

Curb weight, Ib
Test weight
Weight distribution (with
driver), front/rear, %56/44
Wheelbase, in
Track, front/rear51.6/50.0
Overall length
Width64.2
Height50.8
Ground clearance, in 5.8
Overhang, front/rear37.4/41.9
Usable trunk space, cu ft7.5
Fuel tank capacity, gal12.2

CALCULATED DATA

ROAD TEST RESULTS

ACCELERATION Time to distance, sec: 0–250 ft 6.2 0–500 ft 9.5 0–40 mph......5.1 0–60 mph 9.9 0–70 mph 13.0 To pass car going 50 mph....5.4

FUEL CONSUMPTION

Normal	driving,	mpg	ζ	 	 . 21.5
Cruising	g range,	mi.		 	 . 262

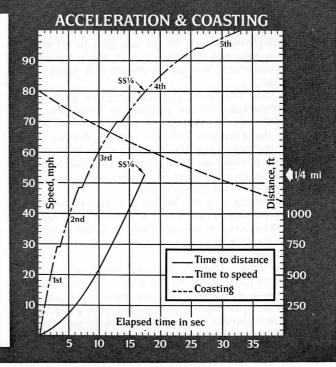
SPEEDS IN GEARS

5th gear (5900 rpm), mph115
4th (C200)
4th (6300)94
3rd (6300)70
2nd (6300)48
1st (6300)29
DDAVEC

BRAKES
Panic stop from 80 mph:
Deceleration, % g90
Controlvery good
Fade test: percent of increase in
pedal effort required to maintain
50%-g deceleration rate in six
stops from 60 mphnil
Parking: hold 30% gradeyes
Overall brake ratingexcellent
SPEEDOMETER ERROR

30 mph indicated actual 28.3

40 mph37.0
60 mph54.5
80 mph72.6
100 mph91.3
Odometer, 10.0 mi actual 9.38



ALFA ROMEO 1750

but unlighted for night use. The heater has only a 1-speed blower and it is noisy, but heat output seems quite good—Alfa is now using higher coolant temperatures, the test car running at about 190°F. There are good face-level vents in the dash ends.

In all the rain, the roadster top of the Spider allowed no bothersome leaks, even though weatherstripping behind the door glass wasn't adjusted correctly. Two-speed wipers are a welcome change (required by law) and are able to keep up with all but cloudbursts, though the blades didn't run smoothly on the windshield of the test car.

The 1750 Spider, then, is a car that is improved solidly in several important areas. Its price increase seems reasonable in view of the improvements (and inflation). Its worst points are its styling and its rear axle noise; its best points are its performance, handling, braking, ride, finish—even the underhood is beautiful—and comfort. If you can accept the styling, we would heartily recommend the Spider as the best sports car obtainable for less than \$5000.

Berlina. All general comments as to engine behavior, clutch and gearbox made above apply to the Berlina as well, though the particular example we tested was cleaner-running than either the Spider or the GTV we drove. It did have some engine surging due to lean mixtures at speeds below about 50 mph in 4th gear, however.

The important thing to note about the Berlina's performance is that it is quiet, quiet, quiet. No Alfa was ever this quiet, we'll bet, and the 1750 Berlina can take its place among the most refined sporting sedans of the world, bar none. Mechanical noise from under the hood is negligible; the traditional Alfa exhaust blat can be heard as if it were off in the distance somewhere—it almost seems out of character here. But it's funny how quieting the car in general makes some noises stick out more than before: in this case it's the 5th-gear whine that comes through. One of our drivers found this objectionable.

Weight (an extra 140 lb) and aerodynamics make the Berlina slower than the Spider. The Berlina is also heavier, by 160 lb, than its predecessor the Giulia Super, but it beats that car through the 1/4-mi by 0.5 sec, gets to 60 mph a half-second sooner and manages 2 mph more top speed, all with this refinement that makes the old G.S. seem crude by comparison.

Since the same suspension and brake changes apply to the Berlina, its road behavior was expected to follow the same pattern, and it does. There seems to be no noticeable effect traceable to the wheelbase increase, and the Berlina really comes into its own when it's time to travel fast on bad roads. Its extra height means additional suspension travel, and one has to try very hard to bottom the springs. The body structure is *absolutely* rattle free.

Brake performance in the Berlina is improved to almost exactly the same degree over the G.S. as is the 1750 Spider's over the 1600 Duetto. It managed 84% g in the panic stop (vs 78% for the G.S.) and like the Spider came through our fade test without fade.

When the Alfa engineers stretched the Giulia sedan's body shell, they put most of the extra space into rear passenger room; this is now quite adequate, including headroom, for two full-size passengers—and a third in a pinch if the central armrest-cum-bin is removed and exchanged for the flat piece that's kept in the trunk. Trunk space isn't all that much more—only an extra half cubic foot.

The whole instrument panel is new; small but legible tach

and speedo are mounted high up and look very nice, but the minor instruments have been relegated to a position in the new central console where the eye has to go too far sideways and down to read them. As far as we could find, there is no instrument light rheostat. The gearshift also sprouts from the console, looking very odd, but actually it's where it has always been—far forward and leaned 'way back.

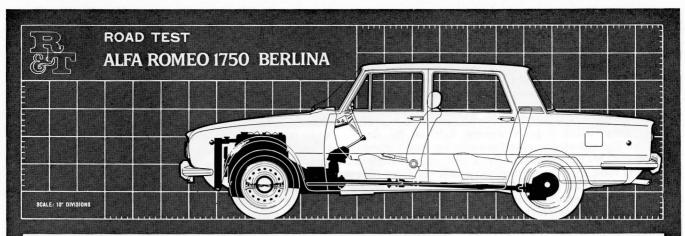
The sedan's driving position is more upright than that of either Spider or GTV but its seats are equally good and they recline fully. Vision is fine in all directions—no claustrophobia here—but, surprisingly in such an upright car, taller drivers will find the windshield and side windows a little low-topped. There's a proper pull-up handbrake between the seats to warm the enthusiast's heart.

Interior colors are improved as much as exterior styling; the old "orange" is replaced by a true brown, and black is black now instead of charcoal grey. Our only great disappointment with the Berlina is its heating and ventilation system: this came in for extensive changes, even to air mixing for temperature control instead of the old water valve. But the whole thing is hampered by an inadequate intake of fresh air; even with a vent wing open—opening one is a clumsy operation—the flow of ram air through the car is puny. Give Alfa some credit, however, for working on this most deficient aspect of their cars to some degree: there is a new 2-speed blower, and we were impressed by the very hot temperature of air coming from the heater.

At \$3545 the 1750 Berlina is a lot of sports sedan for the money and merits serious consideration by anyone with enough family or friends to need the seating space along with sporting behavior. And, as one of our testers pointed out, half the fun of driving a car like this is being able to do so much in a car that looks so innocent. It's not as fast through any given turn as the Spider—weight, center of gravity and all that—but the fairly good driver (and Alfas make any driver a better one) will be able to shock a lot of guys in Corvettes and supercars, not to mention the more traditional live-axle sports cars.

GTV. We also drove a 1750 GTV for general impressions; performance data for it would be about the same as for the Spider. The GTV also has a new interior with better padding, less reflections and the side-zeroed instruments; its oil pressure gauge is built into the tach, which seems the best possible place for it. It shares with the Berlina new-and poorly labeled and sticky-heat-vent controls, but has a much superior flow of fresh air through the system. The new seats are wild-looking and very comfortable; they're open at the sides and have crank-up headrests. Exterior revamping is limited to a new grille with what we thought were quad headlights, but they're actually regular dual lights plus a set of driving lights. The GTV is a nice closed GT, with minimal seating for +2 in the rear; we were surprised to find that the load information plaque in the glove box, now required by law, states that the maximum carrying capacity is 388 lb; that doesn't leave much after you have two 150-lb passengers in the front seats.

The New 1750s are a terrific line of cars—more thoroughly engineered than in the past, solidly improved and only modestly increased in price. Strangely enough, styling is not a strong point of any of them, despite Alfa's reliance on the houses of Pininfarina and Bertone. But they are driver's cars, every one of them, in the best possible sense of that appellation. They are designed to go fast comfortably and to provide the driver with the precision of operation that may pass right over the average driver's head but which is of continuing satisfaction to those who practice driving as an art. And why not practice it as an art?—as long as you have to do it daily you might as well enjoy it.



PRICE	
Basic list\$36 As tested\$36	
ENGINE	

DRIVE TRAIN

Clutch diameter, in 8.5
Gear ratios: 5th (0.790)3.60:1
4th (1.00)4.56:1
3rd (1.35)6.21:1
2nd (1.99)9.08:1
1st (3.30) 15.0:1
Final drive ratio4.56:1
The state of the s

CHASSIS & BODY

EQUIPMENT

Standard: power brakes, radial tires, 5-speed gearbox Options: radio

ACCOMMODATION

Seating capacity, persons $\dots 4+1$
Seat width,
front/rear2 x 21.8/2 x 20.2
Head room, front/rear39.0/34.5
Seat back adjustment, deg 90
Driver comfort rating (scale of 100):
Driver 69 in. tall
Driver 72 in. tall80
Driver 75 in. tall

INSTRUMENTATION

Instruments: 140-mph speedo, 8000-rpm tach, 99,999 odo, 999.9 trip odo, oil pressure, water temp, fuel level, clock Warning lights oil pressure, fuel pressure, low fuel, generator,

on, high beam, directional signals MAINTENANCE

brake fluid loss, heater on, lights

Fundamental FO
Engine oil capacity, qt5.8
Every 3000 mi: chg eng oil & filter,
lub U-joints & spline, chk fluids,
grease dist., var. op'l chks
Every 6000 mi: chg air cleaner &
fuel filter, chk clutch play
Every 12,000 mi: chg plugs, gen'l
engine tuneup, chg brake fluid
Every 15,000 mi: chg gearbox &
differential oil
Every 27,000 mi: chk brake system,
tighten nuts & bolts
Every 30,000 mi: pack frt wheel
brgs
Warranty period,
mo/mi6/unlimited
Tire pressures, psi, f/r22/23
1110 prossures, psi, 1/1

GENERAL

CALCULATED DATA

Lb/hp (test wt)
Mph/1000 rpm (5th gear)18.6
Engine revs/mi (60 mph)32 0
Engine speed @ 70 mph,
rpm3750
Piston travel, ft/mi1865
Cu ft/ton mi
R&T wear index60
R&T steering index 1.282
Brake swept area sq in/ton283

ROAD TEST RESULTS

ACCELERATION
Time to distance, sec:
0–100 ft3.4
0–250 ft6.1
0–500 ft9.7
0-750 ft12.5
0–1000 ft
0–1320 ft (¼ mi)17.9
Speed at end of ¼ mi, mph76
Time to speed, sec:
0–30 mph3.5
0–40 mph5.2
0–50 mph8.0
0–60 mph11.0
0–70 mph
0–80 mph20.6
0–100 mph
Passing exposure time, sec:
To pass car going 50 mph6.2
ELIEL CONCLIMITION

FUEL CONSUMPTION

Normal driving,	mpg20.4
	mi249

SPEEDS IN GEARS

5th ge	ar (5650)	rr	10	n)		n	n	p	h			1	10
4th	(6300)														94
3rd	(6300)														70
2nd	(6300)														48
1st	(6300)				•										29
	B	R	A	1	k	<	E	Ξ,	S						

BRAKES
Panic stop from 80 mph:
Deceleration, % g84
Controlvery good
Fade test: percent of increase in
pedal effort required to maintain
50%-g deceleration rate in six
stops from 60 mphnil
Parking brake:
hold 30% gradeyes
Overall brake ratingvery good
SPEEDOMETER ERROR

60 mph55.5
80 mph74.0
100 mph92.6
Odometer, 10.0 miactual 9.40

ACCELERATION & COASTING

