

ROAD & TRACK
R
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TRACK TEST

A PAIR OF Z CARS



We compare Bob Sharp's race-prepared 240Z with the new fuel-injected 280Z at Lime Rock

DATSUN IN THE AUTOMOBILE business nothing in recent years, at least not in the sports/GT market, has enjoyed the success of the Datsun 240Z. Its instant stardom in the marketplace is the stuff automotive legends are made of. And the 260Z and 280Z that came later have done nothing to tarnish that five-year-old legend. The Datsun Z has been a favorite of *Road & Track* readers right along, and this year the R&T staff selected the 280Z the best car in its class in our "Ten Best Cars for a Changing World" in the June issue.

On race tracks around the country the Z has been almost equally successful thanks in large part to the efforts of Bob Sharp Racing in Wilton, Connecticut. Sharp has won two SCCA national championships in a Z car, has won 30 national races with a Z and as this was written was handily leading the IMSA Grand Touring Under 2.5-liter class and was tied for 4th in the SCCA's new Trans-Am series. So the choice of Datsun's fuel-injected 280Z and Sharp's current 240Z IMSA race car for this latest in our series of track comparison tests was really a natural.

For this test we went to Lime Rock Park, Connecticut. Sharp and crew were there with the 240Z that had won the IMSA GTU race the day before, setting qualifying and race-lap records in the process. The race car was matched with a new,

but broken in, 1975 280Z conveniently provided by Bob Sharp Datsun. Although Sharp had been around Lime Rock scores of times in street Z cars they had always been slightly modified: heavier anti-roll bars, competition shock absorbers and the like. This would be his first time at pushing an absolutely street stock Z car around Lime Rock as quickly as he possibly could. He was as curious about the outcome as we were.

Sharp's race car is beautiful in the way a race car should be beautiful. Not necessarily sleek or svelte or graceful or any of the other adjectives that spew from the pens of ad copy writers. Rather, its beauty lies in the way it hunkers down menacingly nose-low on its suspension, the purposeful bulge of its fenders that can only be called sensuous, and up close, the meticulous attention to detail.

But any race car is only as good as it goes and going depends on what's under the skin. Sharp's 240Z is just about as much race car underneath as it can be. Datsun's knee-deep involvement in racing in this country has meant an on-going program of research and development by the factory, Sharp and other teams who derive no little support from Nissan, U.S.A.

The engine in the IMSA car is the 2.4-liter Z unit slightly stretched to 2450 cc which keeps it just under the 2.5-liter classification limit. It is fed by three 50-mm Mikuni-Solex ➡

carburetors and the compression ratio has been raised to 11.8:1, well up from the stock 280Z's 8.3:1. Horsepower is 258 at 8250 rpm, and torque peaks at 184 lb-ft at 6500 rpm. Although the redline is 8300 rpm, Sharp usually makes his shifts at an even 8000.

The car's 2200-lb curb weight is distributed 52% front, 48% rear. The stock 280Z's 2875-lb curb weight is split 50/50. There is a 22-gal. fuel cell and in normal race tune the car delivers approximately 6 mpg on the track. Unlike any production-line Z car sold in this country, the race car has a special, but legal, 5-speed transmission. The transmission is new from Datsun and only recently homologated for racing use. The 5th gear employs a direct-drive ratio rather than an overdrive as with most 5-speed boxes.

The disc brakes are a special Datsun Competition Department design manufactured by Hearst/Airheart. The front calipers are actuated by four pistons each; the rears, two. On the front Sharp has mounted 15 x 10-in. Minilite wheels. The rears are BBS 15 x 15 in. The racing tires are Goodyear, 24.5 x 10/15 in the front and 25.0 x 13/15 rear.

is three-fold: to show what goes into making a race car out of a production car, what it does when the job is finished and to find out just what a production version will do in the hands of a professional.

One figure you will find missing from the performance data of the race car is lateral acceleration. Much to our surprise Sharp has never had the car on a skidpad, which meant there were no existing figures we could pass on to you. And there just isn't a skidpad in the Lime Rock area where we could get our own numbers. However, we can do a little educated guessing based on experience with other race cars. In that June test the stock 280Z generated a lateral acceleration figure of 0.720g. Racing suspension and tires make a big difference, and we can safely assume (guess?) the race car would tour the skidpad at something like 1.100-1.200g. (In the September 1974 issue of R&T in a similar comparison test of a stock Jensen-Healey with Lee Mueller's race-prepared version, the street version recorded 0.758g on the skidpad. The race version did 1.112g.)

No problem, however, determining the race car's acceleration

Sharp in the Lime Rock winner's circle the day before our comparison test.



The interior of the racing car bears little or no resemblance to the street car. There is a full complement of instruments; the bottle for the fire extinguishing system is in the right-side foot well. Roll-cage bars provide both protection and chassis stiffening.

The suspension is "basically stock," according to Sharp. The struts and control arms are stock, or at least start life as stock components. The front and rear anti-roll bars are adjustable, as are the special competition shock absorbers. The coil springs have been made easily removable to allow quick spring-rate changes, and ride height is adjustable. Pick-up points have been relocated to improve the overall geometry.

The gutted interior now contains a single bucket seat. There is a complete roll cage, a fire extinguishing system and of course the stock instrument panel has been replaced with a simple flat metal affair containing a plethora of gauges which keep track of everything from engine rpm to differential temperature.

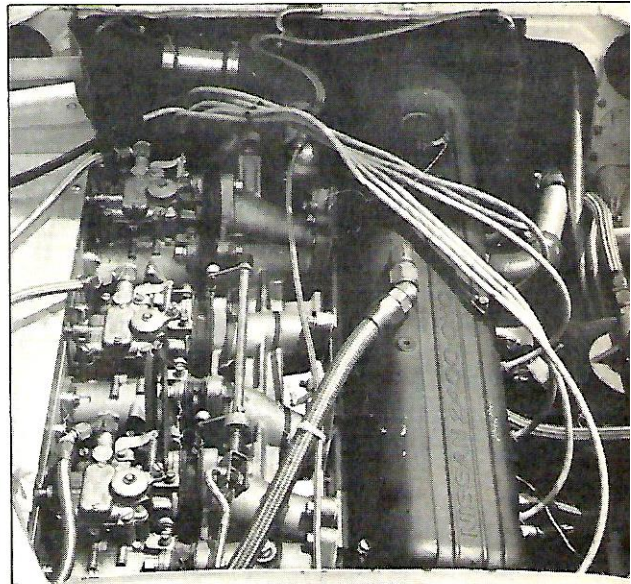
The street 280Z was box stock: no special equipment of any kind. The tires were Toyo 195/70-14 on the standard 14 x 5J steel disc wheels. The 2.8-liter engine (actually 2754 cc, 168 cu in.) produces 149 bhp net at 5600 rpm. In our test of the new 280 for the June issue the car's 0-60 mph time was 9.4 sec, with a 17.3-sec run through the quarter mile. It would, in power alone, be no match for the 250-bhp race car, but that isn't the purpose of these comparison tests. Our purpose

PERFORMANCE COMPARISON Production & Racing Datsun Z Cars

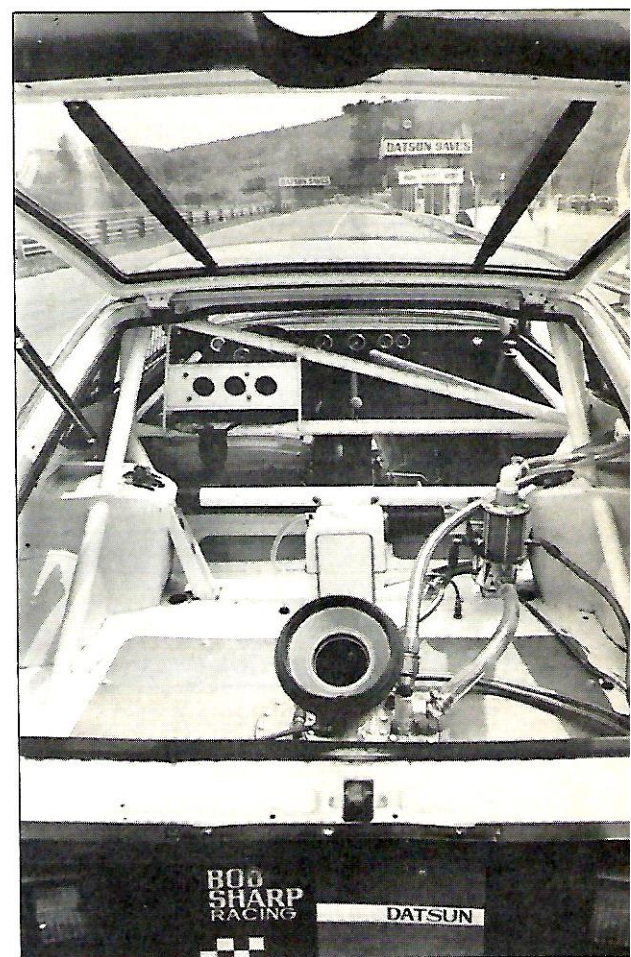
	Production	Racing
Acceleration:		
Time to distance, sec:		
0-1320 ft (¼ mi)	17.3	15.8
Speed at end of ¼ mi, mph	81.0	103.0
Time to speed, sec:		
0-30 mph	3.2	4.4
0-60 mph	9.4	7.0
0-100 mph	30.2	14.8
Fuel economy:		
Mpg	19.5 (normal)	6.0 (race)
Brakes:		
Minimum stopping distances, ft:		
From 60 mph	130	106
From 80 mph	221	197
Pedal effort for 0.5g stop, lb	45	90
Fade, % increase in pedal effort, 6 stops from 60 mph		
@ 0.5 g	excessive	nil

SPECIFICATIONS COMPARISON **Production & Racing Datsun Z Cars**

	Production	Racing
Price	\$6284	\$25,000
General:		
Weight, lb.....	2875 (curb)	2200 (racing)
Weight distribution (with driver), front/rear, %.....	50/50	52/48
Track, front/rear, in.....	53.3/53.0	58.0/63.5
Length, in.....	173.2	171.0
Width, in.....	64.2	82.0
Height, in.....	51.0	49.0
Ground clearance, in.....	5.7	3.6
Usable trunk space, cu ft.....	8.5	nil
Fuel capacity, U.S. gal.....	17.2	22.0
Engine:		
Bore x stroke, mm.....	86.1 x 79.0	84.0 x 73.7
Displacement, cc/cu in.....	2754/168	2450/149
Compression ratio.....	8.3:1	11.8:1
Bhp @ rpm, net.....	149 @ 5600	258 @ 8250
Torque @ rpm, lb-ft.....	163 @ 4400	184 @ 6500
Carburetion/fuel injection.....	L-Jetronic injection	three Mikuni-Solex (2V)
Fuel requirement.....	regular, 91-oct	premium, 102-oct
Drive train:		
Transmission.....	4-sp manual	5-sp manual
Gear ratios:		
5th.....	—	1.00
4th.....	1.00	1.14
3rd.....	1.31	1.29
2nd.....	2.08	1.60
1st.....	3.32	2.35
Final drive ratio.....	3.55:1	4.11:1
Chassis:		
Brake system.....	10.7-in. discs front, 9.0 x 1.6-in. drums rear; vacuum assisted	10.7-in. discs front and rear
Swept area, sq in.....	310	394
Wheels.....	steel disc, 14 x 5J	Minilite 10 x 15 front, BBS 15 x 15 rear
Tires.....	Bridgestone, Wide 70 195/70-14	Goodyear Blue Streak 24.5 x 10-15 front, 25.0 x 13-15 rear
Front suspension.....	MacPherson struts, lower lateral arms, compliance struts, coil springs, tube shocks, anti-roll bar	MacPherson struts, lower lateral arms, compliance struts, coil springs, adj tube shocks, adj anti-roll bar
Rear suspension.....	Chapman struts, A-arms, coil springs, tube shocks, anti-roll bar	Chapman struts, A-arms, coil springs, adj tube shocks, adj anti-roll bar
Instrumentation:		
Instruments.....	160-mph speedo, 8000-rpm tach, 99,999 odo, 999.9 trip odo, oil press., coolant temp, ammeter, fuel level, clock	10,000-rpm tach, oil press., oil temp, coolant temp, ammeter, differential temp, transmission temp
Warning lights.....	brake system, rear-window heat, seatbelts, egr, hazard, high beam, directionals	oil pressure
Accommodation:		
Seating capacity, persons.....	2	1
Seat width, in.....	2 x 21.0	14.0
Head room, in.....	36.5	38.0
Seat back adjustment, deg.....	40	0
Calculated data:		
Lb/bhp (test weight).....	21.2	9.8
Mph/1000 rpm.....	20.3 (4th gear)	17.6 (5th gear)
Engine revs/mi (60 mph).....	2960	3400
Piston travel, ft/mi.....	1535	1645
Brake swept area, sq in./ton.....	196	310



Three Mikuni carburetors feed the racing engine. The car gets approximately 6 mpg on the track.



With the rear hatch open, the racing car's dry-break fuel inlet and fuel filter are easily seen.

and braking capabilities. For that we moved to Lime Rock's front straight. Well, there was a slight problem. In today's era of rolling starts, race cars aren't set up for standing starts. The 240Z was no exception.

"It won't come off the line very quickly," team manager Gene Crowe warned as we set up the testing equipment. "The way the clutch is adjusted Bob has to do a lot of feathering to get underway from a complete stop. If he brought the revs

way up and dumped the clutch the driveshaft and/or differential would probably twist right out trying to break the rear tires loose."

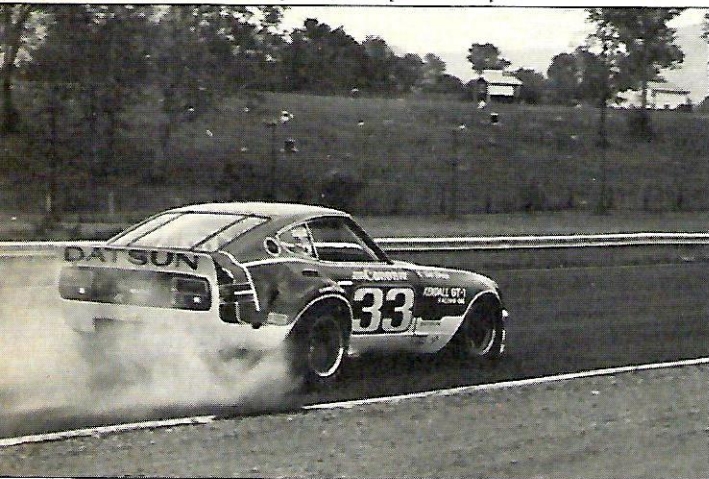
The figures reveal the problem. The watch was started when Sharp first engaged the clutch. There was bucking and snorting and a general reluctance to get underway which is reflected in the 0-30 mph time: 4.4 sec. The stock 280Z took only 3.2 sec. Continuing the comparison, the street version reached 50

mph in 6.9 sec. The race car, although still suffering from the slow start, began to come on and was almost a second quicker at 6.0 sec. But after that, when the race car could start operating in its accustomed range, things started happening in a hurry. The race car's 0-60 mph time was 7.0 sec, compared to 9.4. The race car got to 80 mph in only 10.2 sec vs 16.8. For the race car 100 mph came up in 14.8 sec. The street car took a half-minute—actually 30.2 sec—to reach the century mark. In the June test of the 280Z the car's top speed was 119 mph. According to the race car's gear chart at the 8200-rpm redline in 5th gear the 240Z would be clipping along at 150 mph, and that with a 4.11:1 final drive ratio. In the quarter-mile runs, the street car registered 17.3 sec at 81 mph. The race car, really storming at the end, did 15.8 sec, 103 mph.

The race car stops as well as it goes. Again, a race car is seldom, other than in emergency situations, asked to brake to a complete stop as quickly as it can, so Sharp's experience with such a maneuver was rather limited. The first time he tried it from 60 mph he locked up the rear wheels and amid much smoke and noise brought the car to a halt in 126 ft, a very good effort despite the "sloppy" technique. That first stop showed him what it was all about, so on the next attempt the job was done in a mere 106 ft. In two panic stops from 80 mph the figures were indeed extraordinary: 205 ft on the first attempt followed by 197 ft!

In the panic braking mode the race car stopped straight and without a hint of control loss. The street version exhibited much the same control. Its numbers for the 0-60 mph and 80-0 mph stops were 130 ft and 221 ft respectively. We experienced quite a bit of brake fade with the street car, however; something

In the first panic braking test, Sharp locked up the Z car's rear brakes.



non-existent in the race car.

With the straight-line stuff completed, we could get on with the timed-laps portion of the comparison.

Lime Rock Park is a tough track. It is only 1.53-mi long, it has seven turns, is narrow and in some spots quite bumpy. A race at Lime Rock takes a lot out of both car and driver. The day before, when Sharp was dominating his class in the IMSA Camel GT race, we kept our fingers crossed the car would emerge unscathed and healthy. It did both. However, as healthy as it may have been Sharp explained that with the Mid-Ohio race just four days away there would be no time to correct any damage the engine might incur in our test. While he was more than willing to put the car through our standard battery of acceleration and braking tests we agreed there was no reason to subject the race car to more hot laps around the track. The figures from the previous day's racing would easily suffice.

Sharp, who is thoroughly familiar with the car and the track, very quickly got down to a 0:58.47 during qualifying, a record for the class. In the first heat of the race he set the fastest

race lap record for the GTU class at 0:58.40 on his way to 1st in class and 10th overall. In the second heat he broke the class race lap record with a 0:57.70 (95.46 mph) on the way to another 1st in class and 9th overall. By comparison, Peter Gregg had set a qualifying record in his Porsche Carrera of 0:54.93 (100.27 mph) and Al Holbert, also in a Carrera, had the fastest race lap in both heats with identical 0:55.20 (99.78 mph) clockings.

For the laps in the street car we began by putting the Toyo tires at 36 lb front and rear. Sharp went out for a couple of laps in the 1:18 area. We then adjusted the pressures, putting 40 lb in the front and leaving the rears at 36 lb. The improvement was reasonable, dropping the laps down to a 1:17.8 and a 1:17.6. Bob felt the back end was still not quite to his liking so we also increased the pressure in the rear tires to 40 lb.

He had reported the tires were overheating rather quickly in those first trial laps, so he decided to make a five-lap charge at the clock: a lap to get up to speed, three hot laps and a cool-off.

As he came around to start his first hot lap we got the thumbs up sign and knew he was happy with the tire pressures. Obviously. The first lap dropped down to a 1:16.27. The second lap was a 1:15.79 and he finished the run with a final lap at 1:14.94. The best street car time was 17.24 seconds off the record-setting time of the race car.

Before describing the street car's handling characteristics Sharp promised he wouldn't let his strong Datsun prejudices cloud his objectivity, then he went on to say, "The street car is surprisingly neutral. It is easy to maneuver and is very controllable. There is slight oversteer coming out of a turn under power and a little trailing-throttle oversteer if you back off a little. The car, I think, is capable of more than the tires we are using would allow. They heated up pretty quickly.

"Any road car tends to feel soft and mushy when compared to a race car, but then I wouldn't want the race car suspension set-up on a road car. Balance is very important in a car and in that department the 280Z does a remarkable job for a street machine. In the esses it transitions nicely, although there is a lot of body roll with the stock suspension."

Bob went on to reiterate this was his first experience on a race track with a *completely* stock Z car. Although he lauds the car's handling as-is, he readily admits heavier anti-roll bars and competition-type shock absorbers make a big difference.

"Slow corners are a problem with the car," he went on. "It just isn't a throw-around car like the old Datsun 2000 roadster was. Now there was a pitch-it and point-it car. The Z is really more at home in the 60 to 80-mph bends.

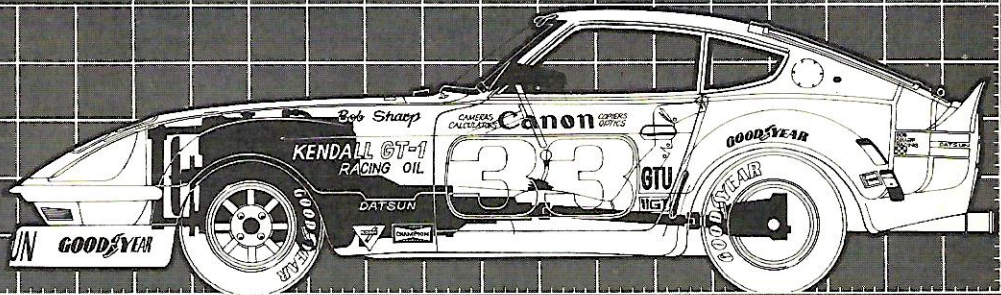
"The brakes got hot, really hot, but didn't seem to lose their efficiency."

Although we were pleased with Datsun's decision to go to larger tires and wider wheels with the fuel-injected 280Z, we were less enamored with the rather sizable increase in steering effort the wider tires produced. However, Sharp found nothing there to criticize. The heaviness disappears at speed and the advantage of more rubber on the road takes precedence.

We were getting ready to record some more timed laps with the street car when a spring rainstorm blew up. Within minutes the track was awash, so our testing session was cut short. But further laps may not have resulted in much improvement in times.

"If we worked all afternoon I might have been able to knock off perhaps as much as a full second," Sharp explained. "But maybe not. The tires were being used about as hard as they would tolerate. I might have been able to improve as I worked more on the technique of driving the car. Regardless, I think we've shown the 280Z, as it comes from the factory, is a very good sports car."

The 280Z is a good sports car, and could be made even better, according to Sharp, with some very simple suspension modifications. The 240Z race car is also very good; state of the art, even. It's hard to imagine what could be done to make it any better.


SCALE: 10" DIVISIONS
PRICE

List price \$25,000

MANUFACTURER

Bob Sharp Racing
Danbury Rd
PO Box 278
Wilton, Conn. 06897

GENERAL

Race weight, lb 2200
Test weight 2540
Weight distribution (with driver), front/rear, % 52/48
Wheelbase, in. 90.7
Track, front/rear 58.0/63.5
Length 171.0
Width 82.0
Height 49.0
Ground clearance 3.6
Overhang, front/rear 42.2/38.1
Usable trunk space, cu ft nil
Fuel capacity, U.S. gal. 22.0

ENGINE

Type sohc inline 6
Bore x stroke, mm 84.0 x 73.7
Equivalent in. 3.31 x 2.90
Displacement, cc/cu in. 2450/149
Compression ratio 11.8:1
Bhp @ rpm, net 258 @ 8250
Equivalent mph 146
Torque @ rpm, lb-ft 184 @ 6500
Equivalent mph 115
Carburetion three Mikuni-Solex (2V)
Fuel requirement .. premium, 102-oct

DRIVETRAIN

Transmission 5-sp manual
Gear ratios: 5th (1.00) 4.11:1
4th (1.14) 4.69:1
3rd (1.29) 5.30:1
2nd (1.60) 6.58:1
1st (2.35) 9.66:1
Final drive ratio 4.11:1

CHASSIS & BODY

Layout front engine/rear drive
Body/frame unit steel
Brake system 10.7-in. discs front and rear
Swept area, sq in. 394
Wheels Minilite 15 x 10 front, BBS 15 x 15 rear
Tires Goodyear Blue Streak; 24.5 x 10-15 front, 25.0 x 13-15 rear
Steering type rack & pinion
Overall ratio 18.0:1
Turns, lock-to-lock 3.1
Turning circle, ft 34.8
Front suspension: MacPherson struts, lower lateral arms, compliance struts, coil springs, adjustable tube shocks, adjustable anti-roll bar
Rear suspension: Chapman struts, A-arms, coil springs, adjustable tube shocks, adjustable anti-roll bar

INSTRUMENTATION

Instruments: 10,000-rpm tach, oil press., oil temp, coolant temp, ammeter, differential temp, transmission temp
Warning lights: oil pressure

ACCOMMODATION

Seating capacity, persons 1
Seat width 14.0
Head room 38.0
Seat back adjustment, deg 0

CALCULATED DATA

Lb/bhp (test weight) 9.8
Mph/1000 rpm (5th gear) 17.6
Engine revs/mi (60 mph) 3400
Piston travel, ft/mi 1645
R&T steering index 1.08
Brake swept area, sq in./ton .. 310

ROAD TEST RESULTS
ACCELERATION

Time to distance, sec:
0-100 ft 4.8
0-500 ft 9.5
0-1320 ft (¼ mi) 15.8
Speed at end of ¼ mi, mph 103.0
Time to speed, sec:
0-30 mph 4.4
0-40 mph 5.2
0-50 mph 6.0
0-60 mph 7.0
0-70 mph 8.6
0-80 mph 10.2
0-100 mph 14.8

SPEEDS IN GEARS

5th gear (8300 rpm) 147
4th (8000) 124
3rd (8000) 110
2nd (8000) 88
1st (8000) 60

FUEL ECONOMY

Race driving, mpg 6.0
Race range, mi (1-gal. res) 126

BRAKES

Minimum stopping distances, ft:
From 60 mph 106
From 80 mph 197
Control in panic stop excellent
Pedal effort for 0.5g stop, lb 90
Fade: percent increase in pedal effort to maintain 0.5g deceleration in 6 stops from 60 mph nil
Overall brake rating excellent

ACCELERATION
