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TESTS: TR7s for track & street, Peugeot 504 Diesel

ROAD & TRACK

SEPTEMBER 1977

UK 65p

\$1.25

Clénet: Half Continental Mark V & Half MG Midget

TRIUMPH SPITFIRE & GT6 USED CAR CLASSIC

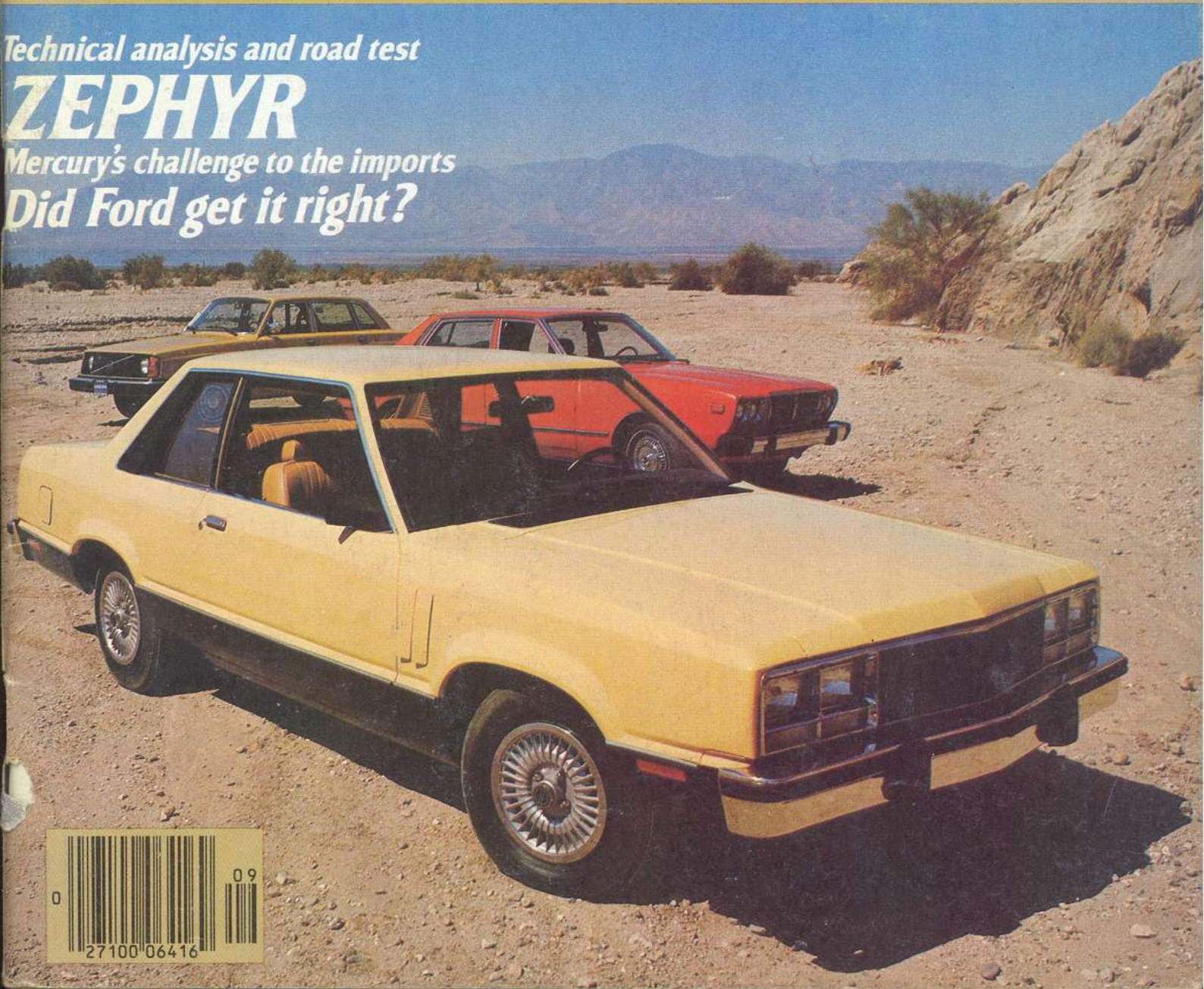
Driving Impressions: Aston Martin Vantage & Audi 5000

Technical analysis and road test

ZEPHYR

Mercury's challenge to the imports

Did Ford get it right?





PEUGEOT 504 DIESEL AUTOMATIQUE

Stately and comfortable motoring with the piquant aroma of the 7th arrondissement

PHOTOS BY JOE RUSZ



IN 1978, PEUGEOT will celebrate the 50th anniversary of building diesel-powered production cars. The French car maker actually developed the first diesel automobile engine in 1922, but production didn't start until 1928.

The point is Peugeot has been building diesel cars longer than any other manufacturer and they know how to do it quite well. For the European market, there's a full range of diesel Peugeots, but Americans get only the top-of-the-line 504 available in two models, a 4-door sedan and the only diesel-engine station wagon sold in the U.S.

Diesel-powered cars have been in the U.S. market for a number of years, selling at a steady pace but not generating much enthusiasm or boom in buyer demand, appealing generally to people with strong environmental concern quotients, former truck drivers, traveling salesmen and retired persons who sought longevity and low maintenance. That generalization (admittedly oversimplified) has undergone a major revision in the past four years, however, with the petroleum shortage and increasingly stringent emission controls. Diesel car sales have risen, diesel technology is getting more attention and even U.S. auto makers are getting into the act. So Peugeot has updated the 504 Diesel models to maintain its position as a leader in this market.

There are three major improvements for the 1977 Peugeot Diesels: a larger-displacement engine, power-assisted steering and optional automatic transmission.

Engine displacement has grown from 2112 cc to 2304 and this was accomplished by increasing the bore from 90.0 mm to 94.0, while the stroke remains at 82.8 mm. The horsepower (SAE net) has grown to 71 at 4500 rpm versus the previous 62 at the same

rpm. More importantly, net torque has jumped from 88 lb-ft at 2000 to 99 at 2500 rpm, giving the diesel driver more low-speed pulling power. An additional wrinkle for the new Peugeot diesel engine is that it *can* use no. 1 diesel fuel as well as no. 2. However, Peugeot recommends the latter except in a pinch as no. 1 fuel is a cheaper grade with more impurities that have a tendency to clog the fuel injection nozzles.

The automatic transmission option should improve Peugeot's marketing position vis-a-vis Mercedes-Benz's 240D model which has been available with either 4-speed manual or automatic transmission for several years. Peugeot's automatic uses a torque converter with 3-speed planetary gearbox and has a direct 1.00:1 ratio in top gear. The automatic-equipped Diesels have a numerically higher final drive ratio (3.78:1 compared to 3.70) than the 4-speed models. (The Diesel station wagon has a 4.11:1 final drive ratio in both automatic and manual gearbox configurations to compensate for its greater load-carrying capacity.) We were disappointed that the automatic has no provision for part-throttle downshifts and the lack of a lock-out for 1st gear. The 504 Diesel's performance, even with the larger engine, is not going to astound anyone. Perhaps because nearly all cars have given up a great deal of horsepower and straight-line acceleration in these days of emission controls, the Diesel doesn't *seem* to be as slow subjectively as in days of yore, and it isn't. In fact, performance is comparable to that of the Mercedes-Benz 300D tested in January 1975 (some of the improvement in the Peugeot's performance is attributable to our new testing methods). The new 504 recorded a 0-60 time of 21.7 seconds (20.3 for the 300D) and covered the quarter-mile run in 22.8 sec at a speed of 61.5 mph compared to

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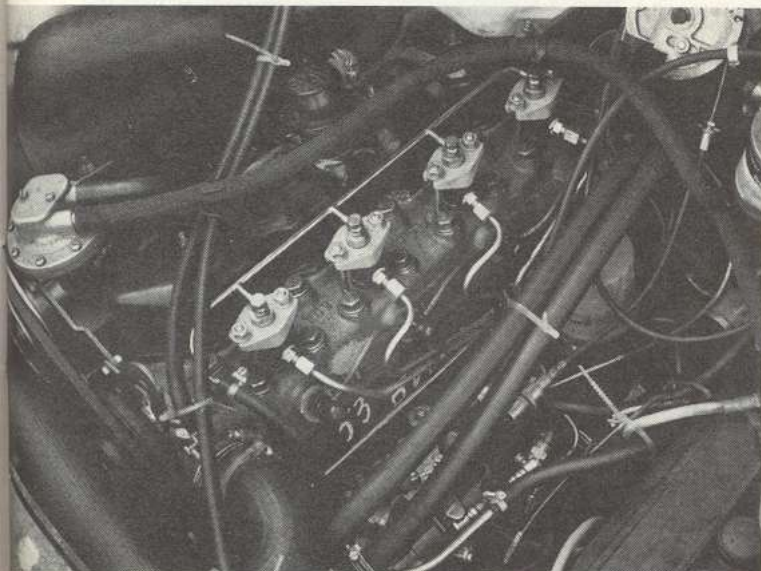
the 5-cylinder Mercedes' time of 22.0 at 62.0 mph. In comparison to the 4-speed equipped 504 Diesel we tested (September 1973), the improvement is remarkable: nearly 6.5-sec quicker to 60 mph and nearly 6 mph faster through the quarter-mile.

The Peugeot Diesel's new power-assisted steering eliminates our earlier complaints about heaviness and slow response to driver inputs, while still transmitting sufficient feel through the steering wheel for precision maneuvering. There are disc brakes at all four wheels on the sedan (rear drums on the wagon) and in our testing we found them to be excellent with a stopping distance from 60 mph of 156 ft, virtually no fade and just a touch of lock-up at the end of the stop.

The Peugeot's handling is slightly above average for a family sedan, and certainly within the requirements we would expect drivers of diesel cars to demand. Anyone caring to press on, though, will find a considerable amount of body lean during hard cornering. More important to the average driver is the quality of the ride, which is excellent in the French tradition, with a controlled smoothness that defies nearly every conceivable road surface, irregularity or dip. That ride, in companion with the excellent seats and the standard steel sunroof with its minimal wind noise and buffeting, make the 504 a delightful touring sedan. And it needn't be a short trip as the luggage compartment is so large and well arranged that even in a family of four no one has to skimp on wardrobe selection.

We do have some complaints to register about the car, however. It's noisy. We expect a diesel engine to rattle when first started, but our test car was always noisy, with a variety of resonances and buzzes that were annoying at city and highway speeds. This is an unpleasant surprise in a car of the quality we have come to expect from Peugeot and makes the Volkswagen Rabbit diesel seem silent by comparison. Other features of the car that disturb us are placement (still) of the turn indicator lever on the right side of the steering wheel, the peculiar rotation/movement of the stalk for turning on the headlights, lack of a handle on the glovebox door and so much vibration of inside and outside rearview mirrors that they were nearly useless.

All in all, however, the Peugeot 504 Diesel Automatique is a superior family sedan. The diesel concept has become considerably more attractive to many car buyers in recent years because of its economy aspect (while diesel fuel prices have risen considerably they still average, nationwide, about 11¢/gal. less than unleaded gasoline) and longevity of expected engine life. With General Motors now entering the diesel market to compete with Peugeot, Mercedes-Benz and Volkswagen, buyers will have even more alternatives. The competition for diesel sales should become increasingly fierce, but Peugeot will undoubtedly maintain a strong position, thanks to its pioneering position and the quality of its product.



PRICE	
List price, all POE.....	\$9240
Price as tested.....	\$9468

GENERAL	
Curb weight, lb.....	3165
Weight distribution (with driver), front/rear, %.....	55/45
Wheelbase, in.....	108.0
Track, front/rear.....	55.8/52.4
Length.....	182.4
Width.....	66.7
Height.....	57.0
Fuel capacity, U.S. gal.....	18.5

CHASSIS & BODY	
Body/frame.....	unit steel
Brake system.....	10.8-in. discs front and rear, vacuum assisted
Wheels.....	steel disc, 14 x 5
Tires.....	Michelin XAS, 175HR-14
Steering type.....	rack & pinion, power assisted
Turns, lock-to-lock.....	3.5
Suspension, front/rear:	MacPherson struts, lower lateral arms, coil springs, tube shocks, anti-roll bar/semi-trailing arms, coil springs, tube shocks, anti-roll bar

ENGINE & DRIVETRAIN	
Type.....	ohv inline 4, diesel
Bore x stroke, mm.....	94.0 x 82.8
Displacement, cc/cu in.....	2304/141
Compression ratio.....	22.4:1
Bhp @ rpm, net.....	71 @ 4500
Torque @ rpm, lb-ft.....	99 @ 2500
Fuel requirement.....	diesel #1 or #2
Transmission.....	automatic; torque converter with 3-sp planetary gearbox
Gear ratios: 3rd (1.00).....	3.78:1
2nd (1.48).....	5.59:1
1st (2.48).....	9.37:1
1st (2.48 x 2.3).....	21.6:1
Final drive ratio.....	3.78:1

CALCULATED DATA	
Lb/bhp (test weight).....	46.1
Mph/1000 rpm (3rd gear).....	19.1

Engine revs/mi (60 mph).....	3140
R&T steering index.....	1.25
Brake swept area, sq in./ton.....	277

ROAD TEST RESULTS

ACCELERATION

Time to distance, sec:	
0-100 ft.....	4.5
0-500 ft.....	12.4
0-1320 ft (¼ mi).....	22.8
Speed at end of ¼ mi, mph.....	61.5
Time to speed, sec:	
0-30 mph.....	6.2
0-40 mph.....	9.3
0-50 mph.....	14.9
0-60 mph.....	21.7
0-70 mph.....	33.5

SPEEDS IN GEARS

3rd gear (4500 rpm).....	86
2nd (4500).....	59
1st (4500).....	34

FUEL ECONOMY

Normal driving, mpg.....	25.0
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BRAKES

Minimum stopping distances, ft:	
From 60 mph.....	156
From 80 mph.....	na
Control in panic stop.....	excellent
Pedal effort for 0.5g stop, lb.....	30
Fade: percent increase in pedal effort to maintain 0.5g deceleration in 6 stops from 60 mph.....	nil
Overall brake rating.....	excellent

HANDLING

Speed on 100-ft radius, mph.....	31.6
Lateral acceleration, g.....	0.668
Speed thru 700-ft slalom, mph.....	53.5

INTERIOR NOISE

All noise readings in dBA:	
Constant 30 mph.....	66
50 mph.....	72
70 mph.....	77

SPEEDOMETER ERROR

30 mph indicated is actually.....	29.0
60 mph.....	59.0
70 mph.....	69.0

ACCELERATION

