

SAFETY LEGISLATION AND THE ENTHUSIAST

ROAD & TRACK^{ICD}

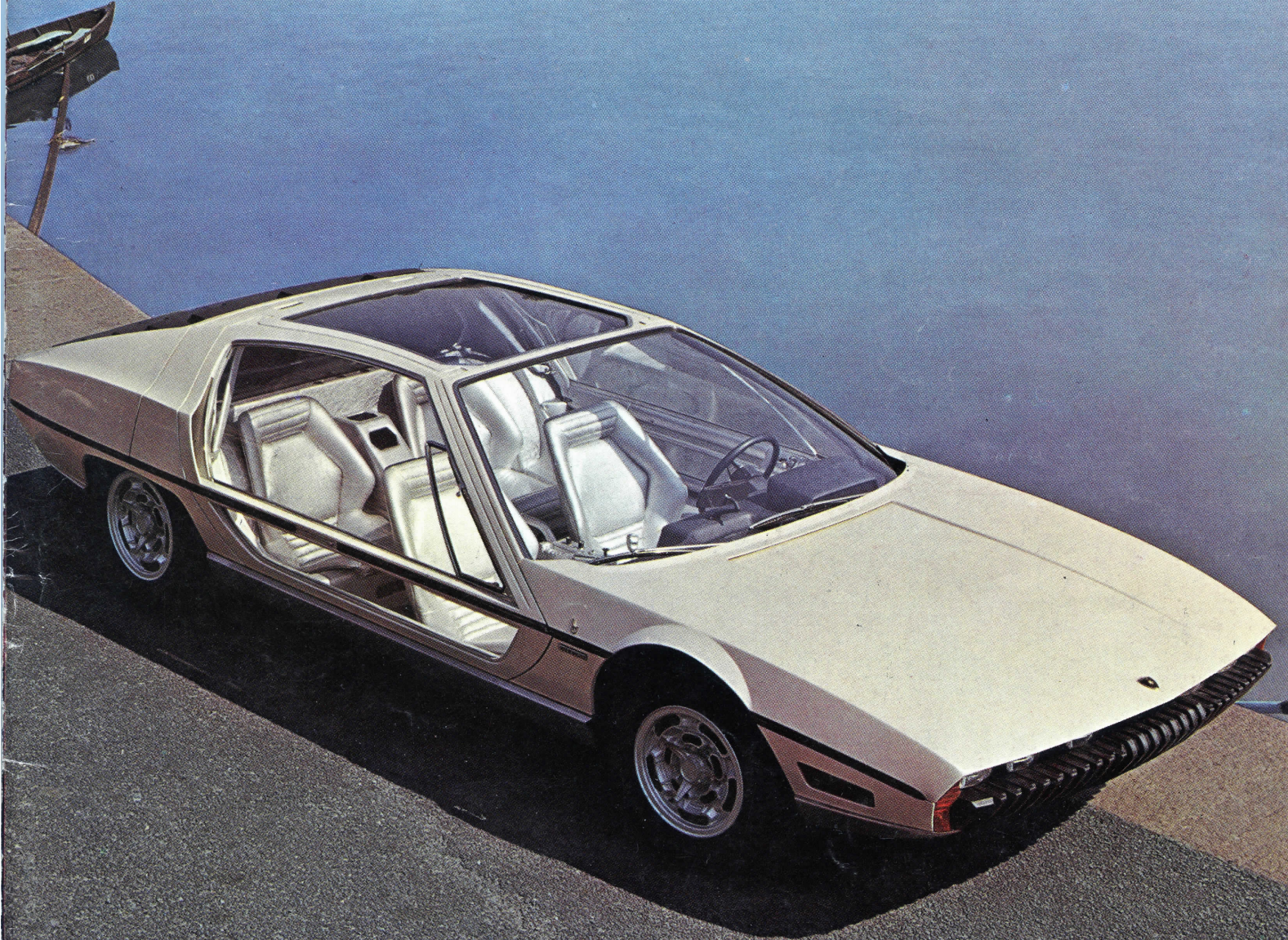
JULY 1967

UK 3/9

SWEDEN KR. 4.50 INKL.OMS

SIXTY CENTS

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Bertone's Lamborghini Marzàl



PEUGEOT 404 AUTOMATIQUE

Evaluating the optional 3-speed ZF automatic in the familiar 404

 THE LINES OF the Peugeot 404 remain clean and tasteful even though it has now been around long enough to become familiar to most of us. It is to the company's credit that they have not tried to update the sheetmetal by facelifts and it remains a well built, well finished car that promises durability and service by its very feel.

The 404 has been kept up to date by minor mechanical revisions, however, and the changes made in the latest model are typical. A few examples: The compression ratio has been raised from 7.6 to 8.3:1 for a gain of 4 bhp and 1.5 lb-ft torque. An alternator replaces the generator. The rear body configuration has been redone, this time with the spare tire going under the trunk and accessible from the outside. The result is an extra 1.5 cu ft of luggage space and a like number of extra gallons in the fuel tank. Minor styling changes have been made in the rear bumper design and the shape of the reflectors. The instrument panel is much more attractive, with round white-on-black dials and there's now a lighted, lockable glove box. And the upholstery material, a point for criticism in our 1965 test, is now porous vinyl plastic instead of the non-breathing variety. There is a new option: the 3-speed ZF automatic transmission, at \$195, and the main purpose of this test is to evaluate the automatic's performance in the 404.

The ZF is one of two 3-speed torque converter automatics sold in large quantity by European transmission suppliers for cars in the 1300-2000 cc class, the other being Borg-Warner's Model 35. We have tried the 35 in many cars and it has always seemed a marginal proposition to us. This was our first road test experience with ZF's offering and knowing Zahnradfabrik Friedrichshafen AG's reputation we expected the transmission to be a superior solution to the knotty problem of making an automatic work well in a small-displacement sedan.

In general operational and design characteristics the ZF unit is not markedly different from other 3-speed converter transmissions. Gear changes are accomplished by a hydraulic circuit effecting various combinations of multi-disc clutches, one-way clutches and brake bands. The one-way clutches are used wherever possible, rather than the bands, to get the smoothest shifts possible: with a one-way clutch performing the function of anchoring a reaction member to the case, there is no problem of timing the application of a brake band and thus there's less chance of a bumpy shift.

Three points distinguish the ZF from the general run of similar boxes: 1. A relatively "tight" converter is used—that is, one with a low stall speed, low maximum torque multiplication and hence minimum slippage. 2. The converter has a centrifugal lock-up clutch within itself which solidly locks it up at any speed above that at which it ceases to multiply torque—thus totally eliminating slip at higher speeds. 3. The driving ranges available all shift automatically between the three gears, no range offering complete manual override. →



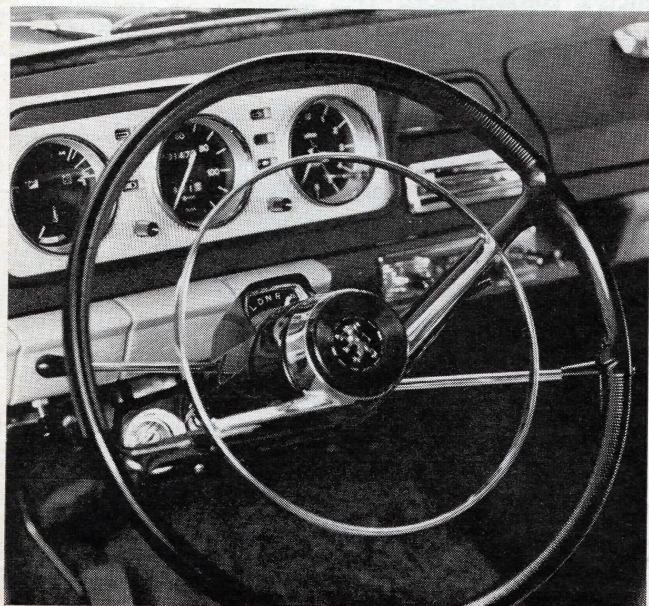
The 404's lines are the product of another, less graceful era in European sedan design: rear fins were characteristic of Pininfarina's work of the period. Lines are clean and tasteful, however, and not botched up by facelifts; headroom is generous.

PEUGEOT 404 AUTOMATIQUE

Peugeot has selected the ZF version with a 2.29:1 converter, 2.56:1 1st gear and 1.52:1 2nd. It has only two forward driving positions on its shift quadrant, rather than the three offered on BMWs with the ZF. D range starts in 2nd gear normally, upshifting somewhere between 20 and 55 mph to 3rd depending on throttle opening; if the throttle is floored on moving off it will immediately shift to 1st for a brisk take-off. In L range the unit starts in 1st and the automatic shift to 2nd and 3rd still occur, but at relatively high road speeds. At full throttle the 1-2 and 2-3 shifts occur at the same road speeds, 30 and 57 mph—not allowing the engine to reach its power peak, at least in our test car.

The transmission shifts beautifully, especially considering that it's hooked to a 4-cyl engine. But we would prefer an everytime 1st-gear start in D and some real manual control over the gearbox. ZF claims that the 2nd-gear start is for fuel economy, but we wonder if they have established this scientifically: tests run by American companies with 1st and 2nd-gear starts in a carefully controlled city traffic pattern

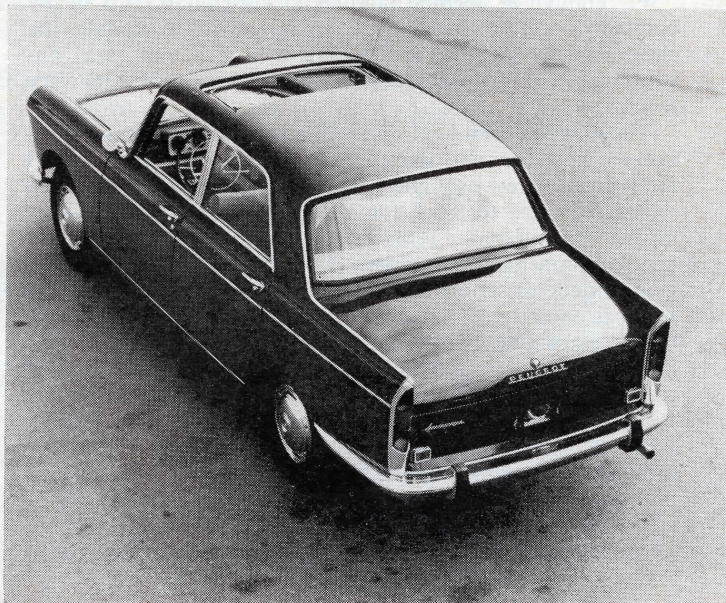
Instrument layout is new this year, highly readable; sign language is used for the gauge labels and warning lights.



(known acceleration and deceleration rates, idling periods, distances) show that a 1st-gear start gives marginally *better* fuel economy in city traffic. Reason: to get the same acceleration rate in 2nd gear requires more torque converter action and hence more slip. If 1st gear were engaged on start-off, with the 1-2 shift occurring at about 15 mph on light throttle and the 2-1 downshift at about 5 mph on closed throttle, the Peugeot would be a more pleasant car to drive in traffic, we think. As it is it feels distinctly sluggish in D and has to be "floored" for any kind of brisk start. Ultimate performance is not drastically less than our last 404, but fuel economy was about 5 mpg less than with the manual.

The 404's endearing qualities are still all there. Its interior, already attractive, is now more so with the new upholstery material and instruments and is certainly outstanding for the price. Sharp triangular edges between the dash padding and radio could be lethal in a crash, though, and somewhat nullify the value of the padding. The seats are outstandingly comfortable and thoroughly adjustable; the vision in all directions is good, and say what you will about tailfins, you know just where the rear corners of this car are. The heating and ventilation system, standard equipment, works very well though

Sunroof fits and works well, is a valuable feature in areas where sun is rare. Bolt-on wheel covers weren't centered.






Label on rear betrays rarity of automatic transmissions in Europe. Backup lights and rubber-insert guards are standard.

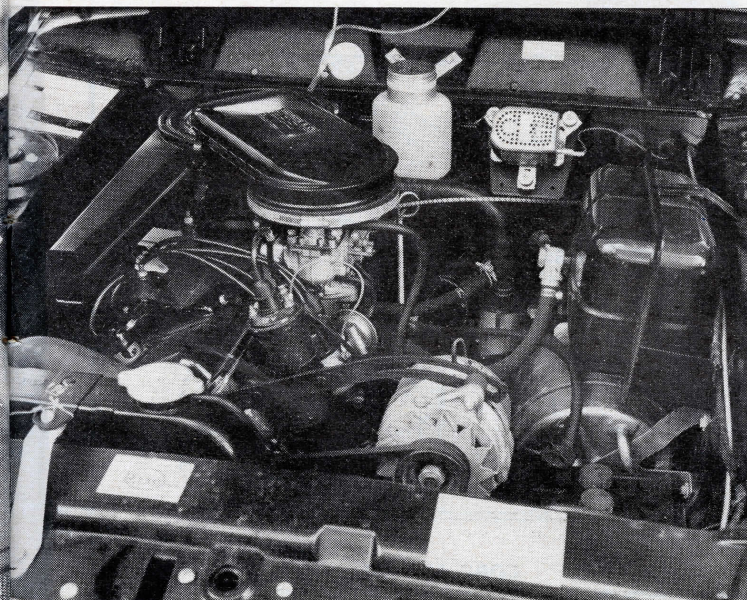
its blower switch is inconveniently located on the blower box under the dash. The windshield wipers have only one speed.

For a car without independent rear suspension, the 404 rides very well. It's one of those cars with enough rubber in the right places to eliminate all trace of suspension noise; on rough roads the ride is outstandingly good and on the freeway it's the equal of many cars weighing 1500 lb more. Steering is a bit heavy at low speeds but it's accurate and not overly slow. The soft suspension allows a lot of body roll but the standard Michelin X tires must make up the difference for roadability is completely adequate for its performance level. Noise level is low at highway speeds except for a bit of excess wind noise and engine vibration periods typical of "fours." The 404's unusual trailing-shoe drum brakes, assisted by vacuum, do their job very well.

As enthusiasts, we'd still prefer the manually shifted gearbox, but as practical observers of the motoring scene we appreciate the fact that there's a whole new generation of drivers that don't even want to know about manual transmissions.

The 404 with the automatic is a solid, practical and comfortable car that does what it is intended to do and does that with competence and finesse. 

New air cleaner and an alternator identify the latest engine. A power boost of 4 bhp helps offset automatic's losses.



PEUGEOT 404 AUTOMATIQUE ROAD TEST RESULTS

PRICE

List price.....	\$2935
Price as tested.....	3000

ENGINE & DRIVE TRAIN

Engine, no. cyl, type . . .	4 inline, ohv
Bore x stroke, mm	84.2 x 73.0
Displacement, cc/cu in . .	1618/98.7
Compression ratio	8.3:1
Bhp @ rpm	80 @ 5600
Equivalent mph	89
Torque @ rpm, lb-ft.	97.5 @ 2500
Equivalent mph	43
Transmission type	automatic, 3 speeds plus torque converter
Gear ratios, 3rd (1.00)	4.20:1
2nd (1.52)	6.37:1
1st (2.56)	10.75:1
1st (2.56 x 2.29)	24.6:1
Final drive ratio	4.20:1

PERFORMANCE

Top speed, 3rd gear, mph	87
Acceleration, time to distance, sec:	
0-100 ft	5.0
0-250 ft	8.0
0-500 ft	11.9
0-750 ft	15.3
0-1000 ft	18.1
0-1320 ft (¼ mi)	21.5
Speed at end, mph	58
Time to speed, sec:	
0-30 mph	5.7
0-40 mph	8.9
0-50 mph	13.5
0-60 mph	20.0
0-70 mph	28.8
0-80 mph	40.2

BRAKE TESTS

Panic stop from 80 mph:	
Deceleration rate, % g	87
Control	very good
Fade test: percent of increase in pedal effort required to maintain 50%-g deceleration rate in six stops from 60 mph	15
Overall brake rating	very good

SPEEDOMETER ERROR

30 mph indicated	actual 28.8
40 mph	38.3
60 mph	56.5

CALCULATED DATA

Lb/hp (test weight)	35.7
Cu ft/ton mi	71.6
Mph/1000 rpm (high gear)	16.8
Engine revs/mi	3590
Piston travel, ft/mi	1715
Rpm @ 2500 ft/min	5220
Equivalent mph	84
R&T wear index	61.5
Brake swept area, sq in/ton	148

FUEL

Type fuel required	premium
Fuel tank size, gal	14.5
Normal consumption, mpg	19-21

GENERAL

Curb weight, lb	2480
Weight distribution (with driver), front/rear, %	55/45
Wheelbase, in	104.3
Track, front/rear	52.9/50.4
Overall length	174.0
Width	64.0
Height	57.1
Frontal area, sq ft	20.3
Steering type	rack & pinion
Turns, lock-to-lock	3.75
Brake type: drum vacuum assisted	

ACCOMMODATION

Seating capacity, persons	5
Seat width, front/rear	2 x 26.0/55.0
Head room, front/rear	39.0/36.0
Seat back adjustment, degrees . . .	70
Driver comfort rating (scale of 100):	
For driver 69 in. tall	95
For driver 72 in. tall	95
For driver 75 in. tall	85

ACCELERATION & COASTING

