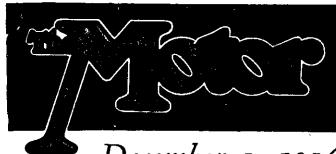


Road Test Report of

**THE
CITROEN
DS19**

Reprinted from



December 5, 1956

The Motor Road Test No. 30/56 (Continental)

Make: Citroen

Type: DS19

Makers: Citroen Cars Ltd., Trading Estate, Slough, Bucks.

Test Data

CONDITIONS: Weather: Mild, dry weather with moderate breeze. (Temperature 43°-45°F., Barometer 30.0-30.1 in. Hg.). Surface: Smooth concrete (Ostend-Ghent motor road). Fuel: Premium grade approx. 95 Research Method Octane Rating.

INSTRUMENTS

Speedometer at 30 m.p.h.	8% fast
Speedometer at 60 m.p.h.	10% fast
Speedometer at 90 m.p.h.	2% fast
Distance Recorder	2% fast

WEIGHT

Kerb weight (unladen, but with oil, coolant and fuel for approx. 50 miles)	24½ cwt.
Front/rear distribution of kerb weight	66½/33½
Weight laden as tested	28 cwt.

MAXIMUM SPEEDS

Flying Quarter Mile

Mean of four opposite runs	86.5 m.p.h.
Best one-way time equals	90.9 m.p.h.

"Maximile" Speed (Timed quarter mile after one mile accelerating from rest)

Mean of four opposite runs	83.0 m.p.h.
Best one-way time equals	86.5 m.p.h.

Speed in Gears

Max. speed in 3rd gear	81 m.p.h.
Max. speed in 2nd gear	53 m.p.h.

FUEL CONSUMPTION

37.5 m.p.g. at constant 30 m.p.h. on level.
37.0 m.p.g. at constant 40 m.p.h. on level.
35.0 m.p.g. at constant 50 m.p.h. on level.
30.5 m.p.g. at constant 60 m.p.h. on level.
27.0 m.p.g. at constant 70 m.p.h. on level.
24.0 m.p.g. at constant 80 m.p.h. on level.

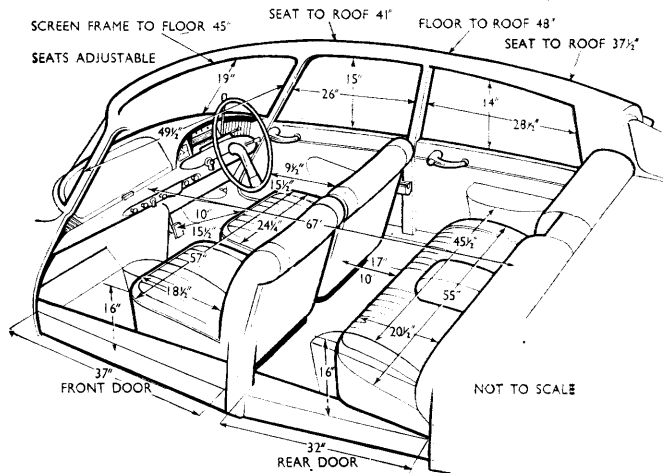
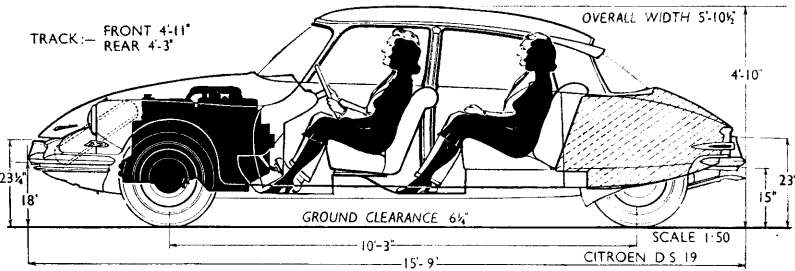
Overall Fuel Consumption for 986 miles, 41½ gallons, equals 23.8 m.p.g. (11.9 litres/100 km.)

Touring Fuel Consumption (m.p.g. at steady speed midway between 30 m.p.h. and maximum less 5% allowance for acceleration) 29.8 m.p.g.

Fuel Tank Capacity (maker's figure) 13½ gallons

BRAKES from 30 m.p.h.

0.97g retardation (equivalent to 31 ft. stopping distance) with 65 lb. pedal pressure
 0.84g retardation (equivalent to 36 ft. stopping distance) with 50 lb. pedal pressure
 0.42g retardation (equivalent to 72 ft. stopping distance) with 25 lb. pedal pressure



ACCELERATION TIMES from standstill:

0-30 m.p.h.	7.3 sec.
0-40 m.p.h.	10.8 sec.
0-50 m.p.h.	14.5 sec.
0-60 m.p.h.	23.3 sec.
0-70 m.p.h.	30.4 sec.
0-80 m.p.h.	39.8 sec.
Standing quarter mile	22.6 sec.

STEERING

Turning circle between kerbs.	
Left	37½ feet
Right	35½ feet
Turns of steering wheel from lock to lock	2.9

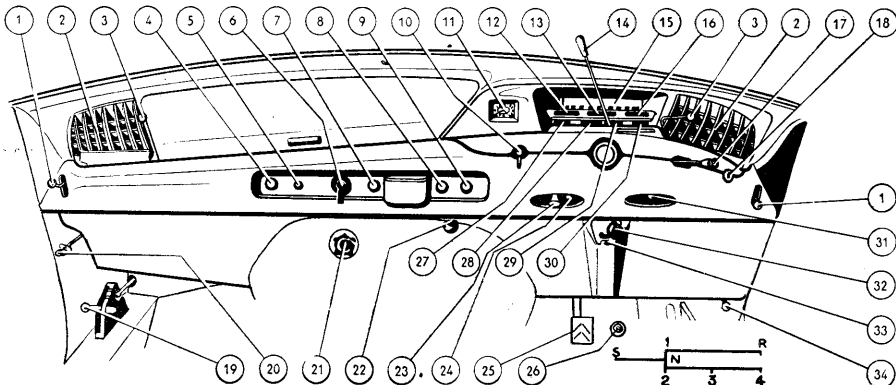
ACCELERATION TIMES On Upper Ratios

	Top	3rd	2nd
10-30 m.p.h.	20.0 sec.	12.1 sec.	7.2 sec.
20-40 m.p.h.	15.7 sec.	8.7 sec.	5.9 sec.
30-50 m.p.h.	16.0 sec.	10.5 sec.	7.6 sec.
40-60 m.p.h.	21.3 sec.	13.8 sec.	—
50-70 m.p.h.	24.1 sec.	14.6 sec.	—
60-80 m.p.h.	26.6 sec.	16.5 sec.	—

HILL CLIMBING at sustained steady speeds

Max. gradient on top gear	1 in 16.6 (Tapley 135 lb./ton)
Max. gradient on 3rd gear	1 in 9.4 (Tapley 240 lb./ton)
Max. gradient on 2nd gear	1 in 5.8 (Tapley 380 lb./ton)

- 1, Heater air controls. 2, Cold air vents. 3, Cold air controls
- 4, Interior and Courtesy light switch. 5, Windscreen washer
- 6, Ignition timing control. 7, Choke control. 8, Screen wipe switch. 9, De-mister fan switch
- 10, Direction indicator switch. 11, Clock. 12, Headlamp main beam warning lamp. 13, Hydraulic pressure warning lamp. 14, Gear lever (and starter control). 15, Speedometer. 16, Dynamo and oil pressure warning lamp. 17, Lights (including dipping) and horn (two-tone) control. 18, Ignition key. 19, Suspension height adjustment control. 20, Bonnet release. 21, Heater temperature control tap. 22, Emergency manual screen wiper handle. 23, Instrument lighting rheostat. 24, Speedometer "trip re-setter." 25, Parking brake pedal. 26, Power brake pedal. 27, Ammeter. 28, Trip distance indicator. 29, Total distance indicator. 30, Fuel



- contents gauge. 31, Clutch manual engagement control. 32, Parking brake release knob. 33, Parking brake safety catch. 34, Rear-compartment heater air control.

The CITROEN DS19



OUTLOOK from the DS19 is enhanced by the pronounced fall-away at the front, by the relatively high roof-line and by the extremely narrow front pillars. The front and rear wings may be detached after the removal of one nut.

WITH hydraulic power operating steering, brakes, clutch and gears, and a hydro-pneumatic suspension system, the Citroen DS19 has been regarded by some people as a European answer to easy-to-drive American automobiles. This is a false idea, for whilst the Citroen designers have done their utmost to take effort and discomfort out of driving, they have not hesitated to ask a driver to exercise a certain measure of judgment and delicacy of touch, and they have built a car which is economical as well as fast, which is at home on winding old-fashioned roads as well as on modern highways. There are some respects in which they may have been unconventional for the sake of being unconventional, but most of the unorthodoxies which the Citroen designers have evolved are magnificently justified by the results obtained.

By reason of a front-wheel-drive layout leaving the main length of the chassis uncluttered by mechanism, the DS19 is a delightfully roomy five-seater, easy to enter and roomy when entered. Transla-

The Most Complicated Car Made Anywhere in Europe, the Most Comfortable Car Made Anywhere in the World

tion of the design into English has eliminated reclining-type front seats, but instead has brought leather upholstery and other refinements of style. In its coachwork as well as in its dynamics on the road the DS19 is that rare thing, a car appealing equally to the owner driver and to the buyer who will customarily ride behind a chauffeur. Despite low build, it provides generous headroom, and slender roof pillars make it an exceptionally easy body to see out of, whilst a rear seat passenger who prefers to rest finds that rubber cushioning is provided just where his head lolls sideways. Light though the body is in relation to the sturdy chassis below it, the doors open and close with the easy firmness of traditional coach-built models.

Hydro-pneumatic suspension as used on this model is undoubtedly well short of perfection, but equally undoubtedly it is far superior to anything else which we have experienced. Entering the car with high expectations, it is possible to be a little disappointed at first, on finding that especially at low speeds bumps can still be felt and heard to some extent. Anyone who reacts thus needs only to step out of the DS19 into any other car, and retrace his route, to realize just how big an advance the Citroen does in fact represent. Whereas most suspensions are very much a compromise, suiting certain loads and certain sorts of going better than others, the Citroen suspension is self-adjusting to any load, and is equally outstanding in its behaviour on good roads or unmade tracks. If the design has a limitation, it

concerns very long waves or hump-back bridges, over which the old style of almost-springless sports car is in fact the best performer, but even in these rare conditions the DS19 is at least as comfortable as an orthodox car.

To suit rutted going there is a suspension height control inside the car, unfortunately located on the left beyond the driver's comfortable reach. Extreme upward and downward positions of this control are for use in conjunction with a simple prop to give engine-power jacking, and there are two partially raised positions which may be used with the car in motion, although they somewhat reduce the comfort of its riding. Ground clearance in the normal riding trim is perhaps a little less than is wise, the smooth underside of the car once grounding harmlessly but noisily when a hard-surfaced minor road changed rather suddenly from the level to an uphill grade.

Whilst it would be inexact to say that this car corners without roll, the soft springing does not in fact allow very much tilting of the body during fast cornering—the natural cornering speed of this car is such that it is almost normal to have to brake when half-way around a corner, because of catching up other traffic even when not consciously hustling. The only time when roll is noticed, other than when looking for it, is when changing over from left to right lock in a double swerve. Squeal is a sound which the Michelin "X" tyres, with steel wire backing to their treads, virtually never cause, although at

In Brief

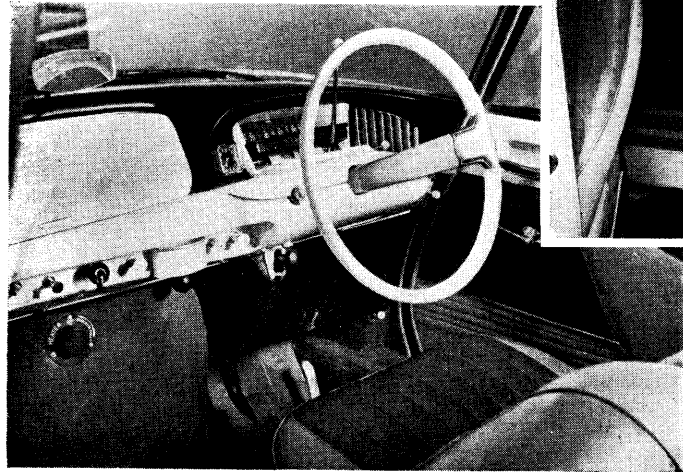
Price: £1,150 plus purchase tax	£576 7s.
equals	£1,726 7s.
Capacity 1,911 c.c.
Unladen kerb weight 24½ cwt.
Acceleration:	
20-40 m.p.h. in top gear 15.7 sec.
0-50 m.p.h. through gears 14.5 sec.
Maximum direct top gear	
gradient 1 in 16.6
Maximum speed 86.5 m.p.h.
Maximum speed 83.0 m.p.h.
Touring fuel consumption 29.8 m.p.g.
Gearing: 23.0 m.p.h. in top gear at 1,000 r.p.m.; 34.8 m.p.h. at 1,000 ft./min. piston speed.	

Reprinted from "The Motor,"

December 5, 1956

The CITROEN DS19

STRANGE in layout but exceptionally spacious, the interior is noted for two brake pedals, the larger for emergency use only, a single-spoke steering wheel, a gear lever which controls the clutch, and deeply upholstered seats which in the British version are leather-covered.



low speeds they do transmit some road noise into the body.

Uniquely and very successfully, this model superimposes hydraulic power assistance on the rack-and-pinion steering of earlier front-wheel-drive Citroens, securing control which is both precise and finger-light. A little more "feel" around the straight-ahead position of the wheels might help a stranger to feel at home sooner, but hard cornering reveals a marked and stable degree of "understeer" which is not greatly affected by sudden closing of the throttle. Even with the engine stopped in neutral, a pressure reservoir keeps the steering (and brakes) powered for a considerable distance before a bright red lamp on the fascia lights up to warn of an almost-exhausted store of hydraulic power.

Unlike some pre-production examples the brakes of this production car were superb. Taking the form of a button almost like a rubber-covered dip-switch, the brake pedal has no perceptible range of movement, but gives braking beautifully proportioned to the pressure placed upon it from the gentlest minimum up to a powerful and fade-free maximum, pressures required being light but not embarrassingly so. No time lag can be detected, and the amount of braking applied to the rear wheels is automatically adjusted to suit the load in the car. Once a driver gets used to the brake pedal being nearer to the floor than is the accelerator, this is appreciated as a virtue making for quicker brake application in an emergency than is possible with the ordinary long-travel brake pedal. At times, braking smoothness could be marred by vigorous rocking of the power unit on its flexible mountings (the disc-type front brakes are inboard-mounted on the power unit), but this seemed to be an engine rather than

brake roughness and was virtually eliminated by moving the gear lever across its quadrant from top to the third and second gear positions as the car slowed down.

With the application of hydraulic power operation to an excellent synchromesh gearbox, and automatic clutch operation, changes of gear are in fact simply a matter of moving a finger-light lever across its quadrant. Nothing interferes with the driver's freedom to select his own gears, but the actual work is done for him. Perhaps to emphasize that it has no synchromesh, first gear is not in line with the other three but "across the gate" from second gear. Use of this ratio for starts from rest is encouraged, second being high enough to let 50 m.p.h. be reached, and though it is unsynchronized it engages with no more than a mild "clonk" if required while the car is climbing a very steep hill. Use of the gear lever to operate the starter ensures that the starter can never be operated inadvertently whilst a gear is engaged, but we would prefer an orthodox gear lever location alongside the steering wheel to that above the steering wheel which has been chosen.

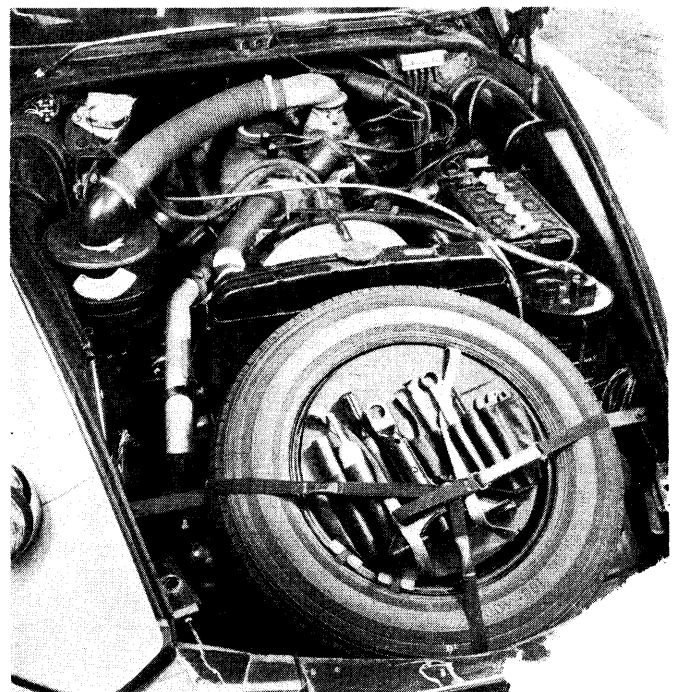
Whilst the automatic clutch works well

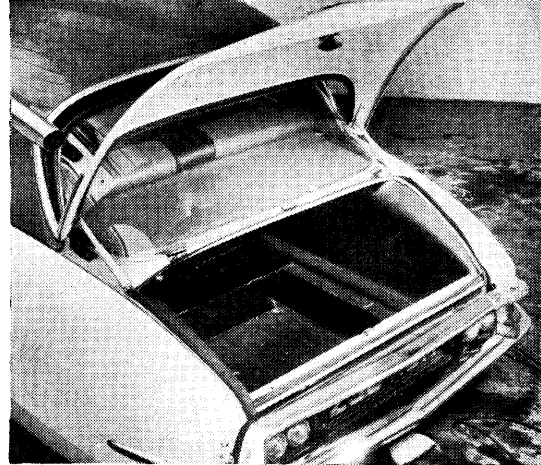
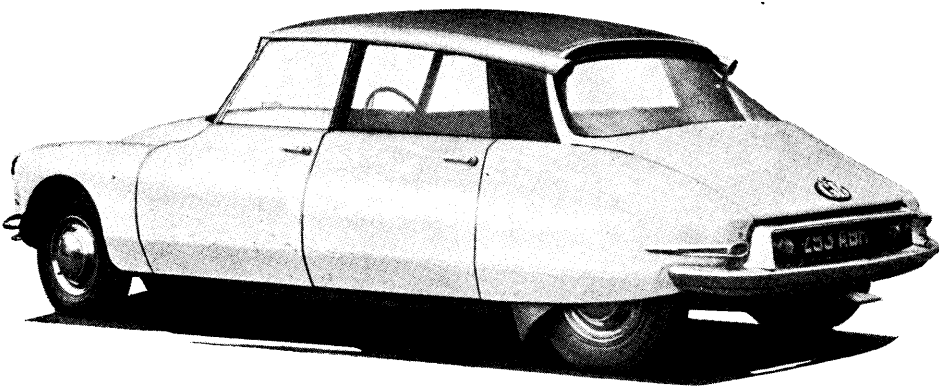
with the improvements on the original design which have already been adopted, it is not incapable of further improvement. Only moderate skill and familiarity are needed from the driver to secure really smooth travel, but the effect of throttle opening on clutch engagement speed needs to be known for a driver to have either real performance or real smoothness on call. An interesting detail is a control from the power brakes which slows down the tick-over, release of the brakes speeding up the tick-over just enough to cause clutch drag.

An extremely compact turning circle and light steering make the DS19 far more suitable for use around town than were its predecessors. But the arrangement of the gear-change control so that the movement from first to second is the least handy one, and the provision of very high gears, are details emphasizing that this car is at its best from 30 m.p.h. upwards. The high second ratio has already been mentioned, and third is a ratio as silent as top which can be used for acceleration right up to 80 m.p.h. if desired, top being in effect an overdrive ratio giving only moderate acceleration, but on which any speed between 30 m.p.h. and the over-85 m.p.h. maximum can apparently be sustained indefinitely without strain.

One of the details of the latest Citroen

SIMILAR to the long-established Light 15 in dimensions, the DS19 engine has an inclined-valve head and is dominated by the hydraulic servo mechanism. The forward-mounted spare wheel has proved an efficacious energy-absorber in the event of collision. Despite apparent congestion, accessibility is reasonable.





engine is a twin-choke progressive carburettor, with a just-perceptible "second pressure" on the accelerator pedal indicating when the second throttle begins to open. Up to cruising speeds of about 75 m.p.h. only the first half of the carburettor need be operating, and in relation to its roominess this is a very economical car, as witness the steady-speed figures on the data page which from a level of 37½ m.p.g. at 30 m.p.h. deteriorate only to 24 m.p.g. at as much as 80 m.p.h. The compression ratio of the engine is high, but an ignition timing control on the fascia panel may be used to permit use of varied qualities of petrol.

Whilst it started instantly when anything but stone-cold, the engine of the test model was sometimes slow to fire first thing in the morning after cold nights in the open. Once started, however, it ran happily on a midway setting of the rich mixture control, and the car could soon be driven away without the fast idle upsetting operation of the automatic clutch.

Luxurious roominess, speed without extravagance, and a quite unique standard of comfort over every variety of road are virtues which the DS19 backs up with others. Although the sloping rear window restricts the size of its door, the luggage locker is quite roomy and conveniently rectangular in shape—if the lid is left open to permit carriage of a bulky load, rear

UNIQUE features abound in the DS19, amongst them a rear locker lid hinged forward of the rear window so that when fully open a useful rear view is retained. The absence of a rear axle increases the capacity of the boot, and the naturally translucent plastics roof is coloured.

vision from inside the car is not blocked. The fuel tank is of sensible size, and some details such as the door catches are commendable.

There are, on the other hand, silly little shortcomings, such as an unnecessarily small locker on the fascia panel, a strip-type speedometer along which the needle moves in erratic jerks, and an inadequate rear-view mirror. Use of a pedal operated by the left foot for the parking brake seems to have more disadvantages than advantages in comparison with a good hand-brake lever.

Following on the excellent example of the Citroën 2 c.v. model, the DS19 has provision for blowing plenty of unheated fresh air into the upper part of the body interior while the heater is supplying warmed air to both the front and rear compartments at floor level. Unquestionably this system makes for freedom from fatigue when properly adjusted, but of the

six heating and ventilation controls which comprise two cold-air shutters, two hot-air shutters, one front-to-rear air directing valve and a water tap, only the latter is marked to identify its effect. No fan is provided to assist air circulation at town speeds, unfortunately, although one is provided for blowing de-misting air on to the windscreen interior.

Our experience of the DS19 was very varied, covering major and minor roads in England and Wales, motor highways and cobbled byways in Flanders, and even unmade tracks across open commons. Although the remarkable attractions of this model are obtained from an unusually complex design, we did not have the slightest signs of any malfunctioning other than failure of the (conventional) speedometer drive. The elaborate hydraulic system is not altogether silent; slight and not-so-slight hisses or chirps from behind the instrument panel sometimes accompany clutch operation as the gears are changed, but these noises were not objectionable to our staff. Introduction of this model was a very bold step, and, whilst it might have been almost equally bold for a motorist to order one of the first models a year ago, the current production version aroused our enthusiasm to a quite unusual extent.

Specification

Engine	
Cylinders	4
Bore	78 mm.
Stroke	100 mm.
Cubic capacity	1,911 c.c.
Piston area	29.6 sq. in.
Valves	Inclined pushrod o.h.v.
Compression ratio	7.5/1
Carburettor	Weber 24/30DCLC twin downdraught
Fuel pump	Mechanical
Ignition timing control	Centrifugal and manual
Oil filter	Citroën, located in rocker cover
Max. power	75 b.h.p.
at	4,500 r.p.m.
Piston speed at max. b.h.p.	2,950 ft./min.
Transmission	
Clutch	Automatic single dry plate
Top gear (s/m)	3.30
3rd gear (s/m)	4.78
2nd gear (s/m)	7.35
1st gear	13.8
Reverse	14.8
Propeller shaft	Nil (front-wheel drive)
Final drive	9/35 hypoid bevel
Top gear m.p.h. at 1,000 r.p.m.	23.0
Top gear m.p.h. at 1,000 ft./min.	34.8
Chassis	
Brakes	Hydraulic power operated, inboard disc-type front, outboard drum-type rear
Front brake disc diameter	11½ in.
Rear brake drum internal diameter	10 in.
Friction lining area	81 sq. in.
Suspension (self-trimming):	
Front	Oleo pneumatic struts, anti-roll torsion bar and transverse wishbones
Rear	Oleo pneumatic struts, anti-roll torsion bar and trailing arms (I.R.S.)
Shock absorbers	Incorporated in suspension struts
Steering gear	Rack-and-pinion with hydraulic power assistance
Tyres	Michelin "X," 16.5—4.00

Coachwork and Equipment

Starting handle	Yes	Locks:	
Battery mounting	On left of engine	With ignition key	Ignition
Jack: Prop for use in conjunction with powered raising and lowering of car on suspension.		With other key	Driver's door and luggage compartment
Jacking points	Two on each side, external	Glove lockers	One on fascia with lid
Standard tool kit: Jacking prop, wheel removing key, wheel disc removing key, 2 double-ended spanners, ring spanner, sparking plug spanner, pliers, screwdriver, grease gun.		Map pockets	None
Exterior lights: Two headlamps, two tail lamps, number plate lamps.		Parcel shelves	Behind rear seat
Number of electrical fuses	Two	Ashtrays	One front, two on centre door pillars
Direction indicators: Flashers (separate from stop and side lamps) with time switch		Cigar lighters	None
Windscreen wipers	Two-blade electrical, non-self-parking	Interior lights	Four, with courtesy switches on driver's door
Windscreen washers	Yes	Interior heater: Fresh-air type with de-misting fan, also separate intakes for unheated fresh air.	
Sun vizors	Two, universally pivoted	Car radio	Optional
Instruments: Speedometer, decimal trip distance recorder, fuel contents gauge, clock.		Extras available	None
Warning lights: Dynamo charge and low oil pressure (combined), low hydraulic pressure, headlamp main beam, direction indicators.		Upholstery material	Leather on wearing surfaces, leathercloth elsewhere
		Floor covering	Pile carpets over sponge rubber
		Exterior colours standardized	Black and choice of four duotone combinations
		Alternative body styles	None

Maintenance

Sump	7 pints S.A.E. 20 (summer and winter)	Valve timing: I.O., 3° b.t.d.c.; I.C., 45° a.b.d.c.; E.O., 45° b.b.d.c.; E.C., 11° a.t.d.c.	
Gearbox and differential	4½ pints S.A.E. 90 EP gear oil	Tappet clearances (cold):	
Cooling system capacity	19 pints (drain taps)	Inlet	0.008 in.
Hydraulic reservoir	9 pints	Exhaust	0.010 in.
Chassis lubrication: By grease gun every 1,000 miles to 6 points; by oil gun to 2 points every 1,000 miles.		Front wheel toe-out	1-3 mm. on wheel rim
Ignition timing: 8° fully retarded, max. centrifugal advance 29°, manual ignition control range 8°.		Camber angle	0° to 15' negative
Spark plug type	Marchal CR35S or Champion H10	Castor angle	1° 42' pre-set
Spark plug gap	0.024-0.028 in.	Steering swivel pin inclination	0° pre-set
Contact breaker gap	0.016	Tyre pressures:	
		Front	24 lb.
		Rear	20 lb.
		Brake fluid	Antar FH6 or Lockheed 55
		Battery type and capacity	12-volt, 57 amp./hr.

AN EXPLANATION OF SPECIAL TERMS IN THE DATA PANEL OF "THE MOTOR" ROAD TESTS

THE following notes may assist readers of these reprints who are unfamiliar with some of the special terms regularly used:

Kerb weight: The weight of the car ready to be tested with oil, water, tools and fuel for approximately 50 miles.

Laden weight: Kerb weight plus driver, one passenger and standard test apparatus.

Tapley figures: Acceleration and hill-climbing ability of the car measured by the instrument of this name, which consists of a damped pendulum. Gradients climbable in top gear equivalent to the Tapley figure recorded are set out separately.

Drag: The figure that would be recorded by a spring balance if this were placed in a long tow rope and the car pulled at the stated speeds of 10 and 60 m.p.h.

Power curves: These are calculated from performance of the car on the road and show the power available at the wheels in top gear and the power required to drive the car along a level road in still air. The margin between these two curves is the power available for top-gear acceleration and hill climbing.

Braking figures: With the friction coefficient between tyres and road at the normally accepted maximum coefficient of unity the rate of retardation on the car cannot exceed 32.2 ft. per second²—the acceleration of gravity: this would be equivalent to stopping the car in 30.1 ft. from 30 m.p.h. The recorded figures are therefore set out as a percentage of gravity, with the equivalent stopping distances.

Maximum speed: Timed by two observers on a level road in both directions with sufficient run-in (between 1 and 3 miles) to ensure that the car has reached its terminal velocity.

Acceleration: Top-gear accelerations are taken from rolling starts—i.e., when timing between 30 and 50 m.p.h. full throttle has been given at well below 30 m.p.h. This applies to other acceleration times in a fixed gear.

Standing start acceleration times: Are the best that can be recorded by the testers using the fastest possible rather than the smoothest getaway from rest, and upward gear changes on full throttle when this is practicable.

Fuel consumption: The steady speed figures are the average of runs in opposing directions consuming a measured 1/10 gallon. The overall figure is based on a mixture of town and country driving and reflects the natural pace of the car so that if an unchanged engine and transmission system were transferred from a car having moderate road holding to one outstanding in these characteristics the overall consumption would tend to suffer.

Under and oversteer: An understeering car will tend to be naturally straight-running and be stable in cross winds, but will require unexpected steering lock to carry it round a corner of given radius. An oversteering car corners willingly but may wander on the straight and is often sensitive to cross winds.

Equipment: This is correct as at the time of road test, and should be checked if a purchase is contemplated at some substantially later date.