The Motor Road Test No. 15/60

Make: Auto Union **Type:** 1000S Coupé de Luxe

Makers: Auto Union G.m.b.H., Dusseldorf, Germany

Concessionaires: Auto Union (Great Britain) Ltd., Great West Road, Brentford, Middlesex

Test Data

CONDITIONS: *Weather: Fine, cool, with little wind. (Temperature 40°-46° F., Barometer 29.6 in. Hg.) Surface: Dry, tar macadam. Fuel: Premium grade, pump petrol (approx. 96 Research Method Octane Rating) plus 4% of oil. See text.*

INSTRUMENTS

Speedometer at 30 m.p.h.	9% fast
Speedometer at 60 m.p.h.	6% fast
Distance recorder	accurate

WEIGHT

Kerb weight (unladen, but with oil, coolant and fuel for approx. 50 miles)...	18¼ cwt.
Front/rear distribution of kerb weight	57/43
Weight laden as tested	21¾ cwt.

MAXIMUM SPEEDS

Mean of six opposite runs	80.9 m.p.h.
Best one-way time equals	83.7 m.p.h.
"Maximile" Speed. (Timed quarter mile after one mile accelerating from rest)	
Mean of opposite runs	75.3 m.p.h.
Best one-way time equals	76.3 m.p.h.
Speed in gears	
Max. speed in 3rd gear	67 m.p.h.
Max. speed in 2nd gear	50 m.p.h.

PETROL CONSUMPTION

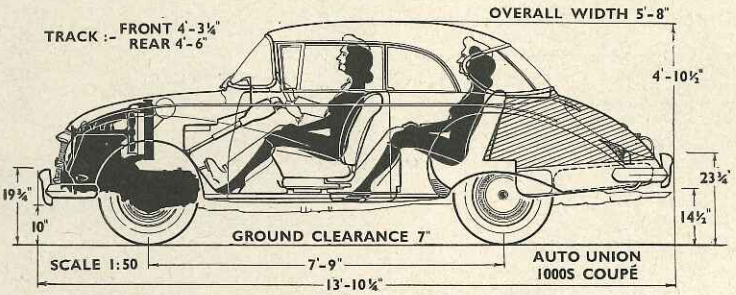
43 m.p.g. at constant 30 m.p.h. on level (oil, 1,720 m.p.g.).
41½ m.p.g. at constant 40 m.p.h. on level (oil, 1,660 m.p.g.).
36½ m.p.g. at constant 50 m.p.h. on level (oil, 1,460 m.p.g.).
29 m.p.g. at constant 60 m.p.h. on level (oil, 1,160 m.p.g.).
24 m.p.g. at constant 70 m.p.h. on level (oil, 960 m.p.g.).
Overall Petrol Consumption for 625 miles, 22.7 gallons, equals 27.5 m.p.g. (10.3 litres/100 km.) plus oil at 1,100 m.p.g.
Touring Petrol Consumption (m.p.g. at steady speed midway between 30 m.p.h. and maximum, less 5% allowance for acceleration) 31.5 m.p.g. plus oil at 1,260 m.p.g.
Fuel tank capacity (maker's figure) 10 gallons

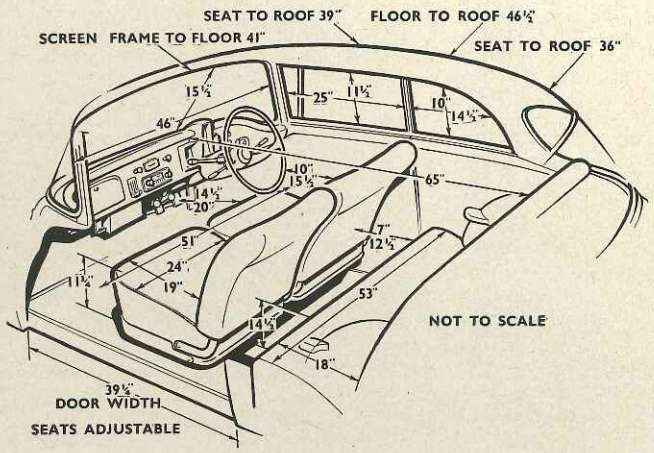
STEERING

Turning circle between kerbs:	
Left	36½ feet
Right	35¼ feet
Turns of steering wheel from lock to lock	2¾

BRAKES from 30 m.p.h.

1.00 g. retardation (equivalent to 30 ft. stopping distance) with 75 lb. pedal pressure.
0.68 g. retardation (equivalent to 44½ ft. stopping distance) with 50 lb. pedal pressure.
0.25 g. retardation (equivalent to 121 ft. stopping distance) with 25 lb. pedal pressure.





ACCELERATION TIMES from standstill

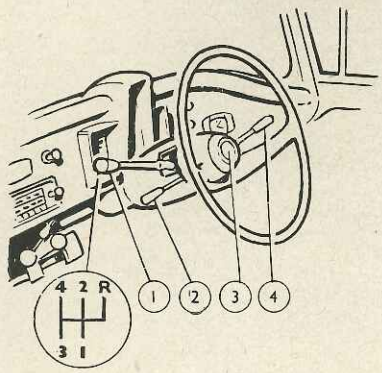
0-30 m.p.h.	6.2 sec.
0-40 m.p.h.	10.2 sec.
0-50 m.p.h.	16.3 sec.
0-60 m.p.h.	23.6 sec.
0-70 m.p.h.	39 4 sec.
Standing quarter mile	23.2 sec.

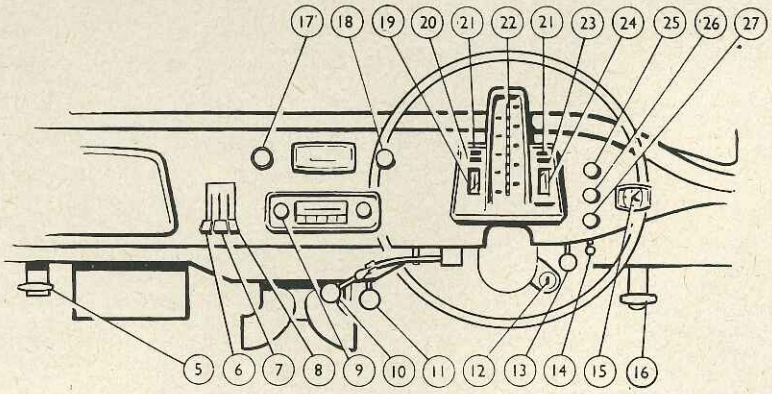
ACCELERATION TIMES on Upper Ratios

	Top gear	3rd gear
10-30 m.p.h.	26.9 sec.	10.9 sec.
20-40 m.p.h.	22.2 sec.	10.4 sec.
30-50 m.p.h.	20.0 sec.	9.9 sec.
40-60 m.p.h.	23.7 sec.	11.8 sec.
50-70 m.p.h.	28.6 sec.	—

HILL CLIMBING at sustained steady speeds

Max. gradient on top gear ... ... 1 in 15.4 (Tapley 145 lb/ton)
Max. gradient on 3rd gear ... ... 1 in 8.8 (Tapley 255 lb/ton)
Max. gradient on 2nd gear ... ... 1 in 5.3 (Tapley 410 lb/ton)





1, Gear lever. 2, Headlamps, dipper and flasher switch. 3, Horn button. 4, Direction indicator switch. 5, Radiator blind control. 6, Fresh air control. 7, Demisting control. 8, Warm air control. 9, Radio controls. 10, Handbrake. 11, Air vent control. 12, Ignition and starter switch. 13, Freewheel control. 14, Parking lights switch. 15, Clock. 16, Bonnet catch release. 17, Cigar lighter. 18, Two-speed windscreen wipers switch. 19, Fuel contents gauge. 20, Headlamp main beam indicator. 21, Direction indicator warning lights. 22, Speedometer. 23, Dynamo charge warning light. 24, Water thermometer. 25, Panel light rheostat switch. 26, Side lights and headlights main switch. 27, Choke control.

The Auto Union 1000S Coupé

A Fast-cruising German Two-stroke with Front-Wheel Drive

NEAT in appearance, with very smooth body contours, the Auto Union coupé is a two-door car with comfortable room for four passengers.

THE Auto Union 1000S is a very good example of the way in which the character of a car is influenced by its country of origin. Clearly, it is designed with Autobahn running very much in mind and there is, about the detail work, a thoroughness which is very much in the German tradition. Its design, moreover, is in many respects unusual, and the final result is a car which comes as a most refreshing and likeable change from the normal run of small cars.

Import duty in Britain unfortunately makes this car seem somewhat expensive in relation to its size, but its sheer individuality—which is of a kind that grows on both driver and passengers as the miles pile up—gives it a very genuine appeal for those who do not mind paying a little more for something which is different with good reason.

Most notable amongst its special features are a three-cylinder two-stroke engine and front-wheel drive. The manufacturers have had a wealth of past experience of both features, and ever since 1931 the front-wheel-drive cars built under D.K.W. and (more recently) Auto Union names, have had two-stroke power units. In three-cylinder form, of course, a two-stroke gives power impulses as frequent as those of a six-cylinder four-stroke, whilst an absence of poppet valves is an asset in obtaining smooth running, mechanical silence and a minimum number of moving parts.

In Brief

Price £888 plus purchase tax £371 2s. 6d. equals £1,259 2s. 6d.	
Capacity	981 c.c.
Unladen kerb weight ...	18¼ cwt.
Acceleration:	
20-40 m.p.h. in top gear ...	22.2 sec.
0-50 m.p.h. through gears	16.3 sec.
Maximum top-gear gradient	1 in 15.4
Maximum speed	80.9 m.p.h.
"Maximile" speed	75.3 m.p.h.
Touring petrol consumption	31.5 m.p.g.
Gearing: 18.2 m.p.h. in top gear at 1,000 r.p.m.; 36.5 m.p.h. at 1,000 ft./min. piston speed.	

This particular two-stroke engine has been tuned to give its best power at fairly high r.p.m., the net output of 50 b.h.p. which is catalogued being in consequence remarkably high for a touring car engine of only 981 c.c. displacement. A rather high top gear ratio is also used (giving 18.2 m.p.h. at 1,000 engine r.p.m.) and, although effortless fast cruising has been combined with the possibility of pulling away quite smoothly from 10 m.p.h. in top gear, there is very little torque at low engine r.p.m., and top gear acceleration is not at its best until 35-40 m.p.h. has been reached.

Fast in the Gears

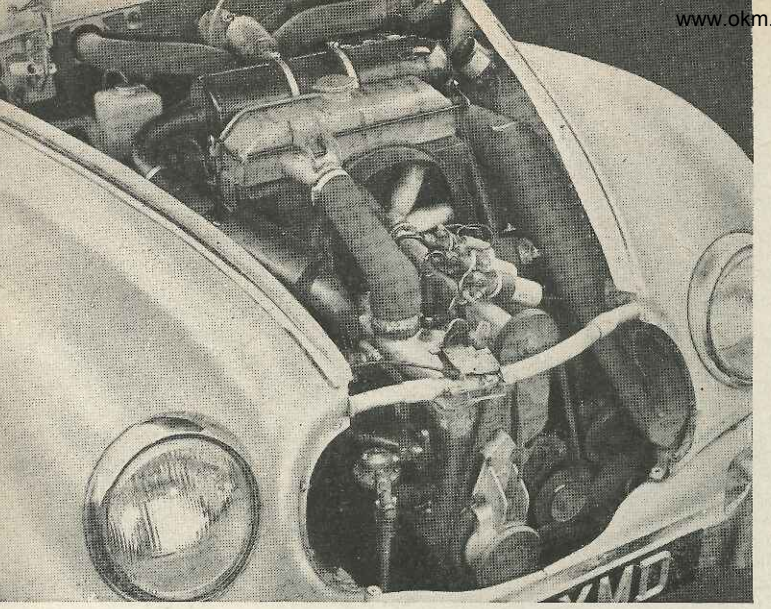
The manufacturers make no attempt to disguise these torque characteristics, as the change-down speed which they recommend from top to third in normal usage is between 45 m.p.h. and 30 m.p.h. Even a driver with a built-in reluctance to use the gear lever need have no qualms about dropping into a lower ratio on this car owing to the exceptionally easy gear-change. Of that, however, more anon.

Granted acceptance of the need for gear changing, the performance becomes very attractive. Not only is the engine unusually smooth, but both engine and transmission reach a high standard of quietness. As will be gathered from the data, the maximum speed—at over 80 m.p.h.—is surprisingly high for a comfortable four-seater of only 981 c.c., but this alone tells only half the story, the very appealing feature of the 1000S being its ability to cruise effortlessly between 60 and 70 m.p.h. At speeds in this region the car gives an impression of tireless ease which somehow spreads to the occupants.

An extremely attractive feature in this connection is a two-pressure throttle. Spring pressure is arranged so that the driver's foot naturally tends to come to a rest at the end of the initial movement, this position giving quite good acceleration for ordinary purposes and a cruising speed varying from a little over 60 m.p.h. to 70 m.p.h. or more according to wind and gradient. In this position, too, the carburation is set to give weak-mixture cruising for economy, so that "first-pressure" motoring makes for the best conditions of economy as well as giving a cruising speed which is quite fast but well within limits of discretion. Taking up the second pressure offers a little more acceleration and a considerable increase in maximum speed when required.

Of the penalties to be paid for the unusually attractive characteristics of smooth and quiet fast motoring, disappointingly modest torque at low r.p.m. has already been mentioned. The other penalty lies in fuel consumption figures which are also rather heavy for an engine of this size, although it is only fair to remember that body space is above average for a car in this class. In terms of actual figures, our tests showed a "touring" petrol consumption of 31.5 m.p.g. and an overall figure of 27.5 m.p.g., these sounding extravagant for a 981 c.c. engine but sensible if compared with equally roomy cars capable of exceeding 80 m.p.h.

Cold starting proved easy at all times and the engine showed a willingness



AN ALLIGATOR bonnet gives quite good access for routine maintenance, but the grille itself is readily detachable to enable the contact breaker to be reached. The radiator is at the rear of the engine; as can be seen here, each sparking plug is fed by a separate coil.

THE downswept tail of the car renders the boot rather wedge-shaped, but it holds more luggage than first appearance suggests. The spare wheel lies flat on the floor.

The Auto Union 1000S Coupé

to pull away from cold, albeit the tick-over remained unsure for the first few minutes in cold weather—a fact which made it well worth locking the free-wheel for the first mile or two after a start from cold. Warming up, however, is considerably aided by a driver-controlled radiator blind which is a standard fitment. Any occasional reluctance of the engine to re-start when half warm is provided for by a half-way position of the choke knob which enables pure air to be fed to the engine should it become "drowned."

From the high praise given to the open-road behaviour of this car, it might be thought that town-driving characteristics have suffered but, whilst it is true that on long runs the car shows to best advantage, it would be wrong to say that its qualities in traffic are inferior—always provided that the driver is prepared to use his gears in a reasonable manner. The only fault in this connection, in fact, is the rather lumpy tickover of the two-stroke engine which some may find slightly irritating when waiting in a traffic block.

So far as fuel is concerned, a recommendation to use Premium grades was followed for the performance tests, but subsequent experiments with standard grades suggested that those who choose to economize in this direction lose little by doing so. The usual two-stroke practice is followed of mixing lubricating oil with the petrol, but the proportion of oil needed is less than half that normally recommended for British engines, 1 pint of oil to 5 gallons of petrol, and a baffled filler mixes oil and petrol together so long as they are poured in in that order.

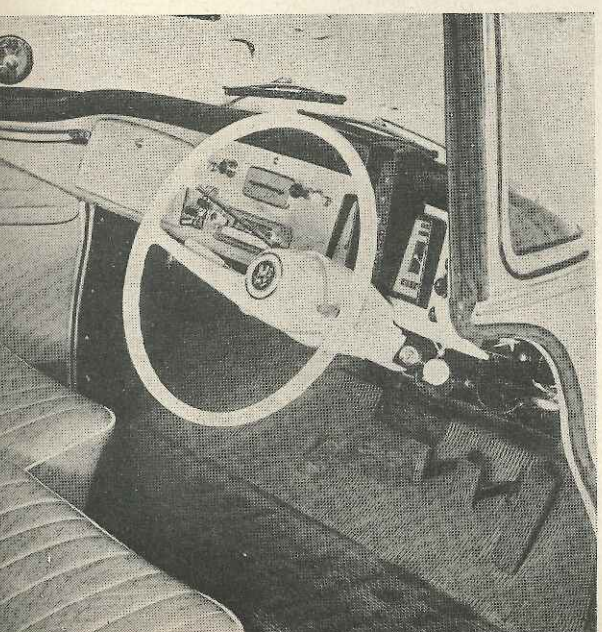
As will have been gathered earlier, a free-wheel is fitted as standard and this, in conjunction with the notably good all-synchromesh, four-speed gearbox provides exceptionally easy gear-changing.

The lever is of the column type, unusually light in operation and with a very limited travel. Most British drivers will find the "upside-down" arrangement of the gate (with first and third at the bottom) strange initially, but the synchromesh is so good-tempered that those used to the more common arrangement will find their first instinctive mistakes painless and easy to rectify. With the free-wheel in action, changes become particularly simple, and a delightful feature is the ability to drop down to a lower gear whilst braking for a corner without any need either to use the clutch or to manipulate the throttle. Upward changes can also be effected without the clutch when the free wheel is in action, but in this case a considerable pause is necessary for the engine r.p.m. to drop, and much quicker changes are possible by using the clutch.

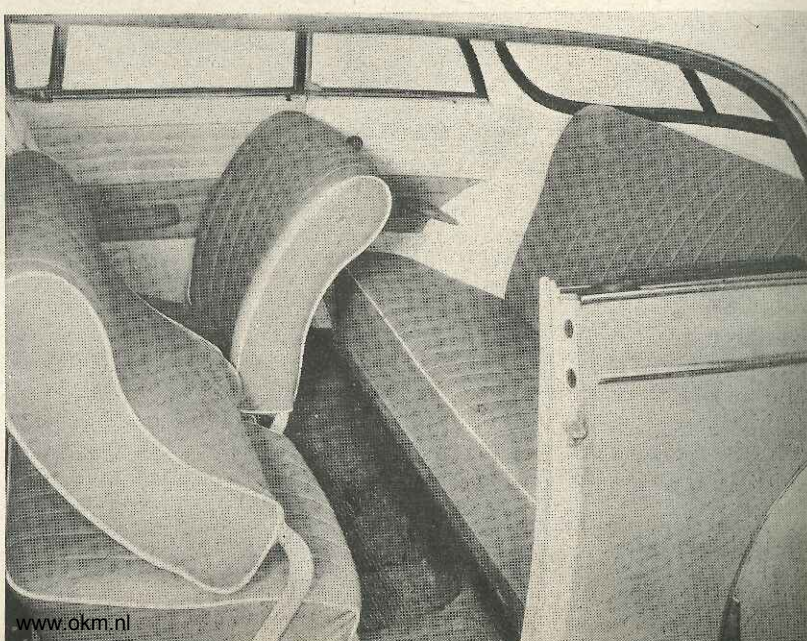
The brakes also are excellent, giving straight-line stopping coupled with moderate pedal pressures and a very high ultimate efficiency, this car, in fact, being one of the few to record 1.0 g. from 30 m.p.h.

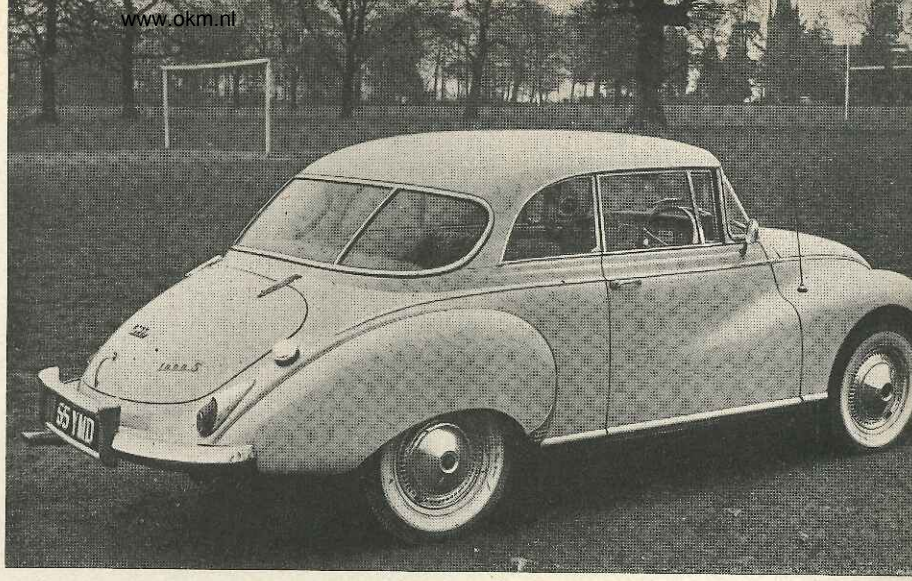
Handling qualities are, again, rather different from the normal run, but very good nevertheless. The rack-and-pinion steering is light, accurate, but without appreciable kick-back through the wheel, and the car gives a very reassuring feeling of inherent stability. The one flaw in this direction was a rather pronounced sensitivity to gusty cross-winds. On corners, the unusual rear suspension (with a transverse spring fixed at one end of the "dead" axle beam and floating at the other) gives a high roll axis at the back and very roll-free cornering. As with most front-drive cars, the 1000S shows up to best advantage

PADDED along the top edge, the facia has a grab handle and glove locker in front of the passenger, and hooded instruments grouped in front of the driver; the tall central scale is a vertical strip speedometer.



DEEPLY curved squabs on the front seats are designed to give good support; they tip forward to give access to the rear seats. There being no transmission tunnel, the floor is flat at front and rear.





ALL-ROUND vision from the two-door body is good, with wraparound windows at front and rear. The side windows can all be wound down into the pillarless body.

when cornering with the throttle well open, but although cutting off the power in the middle of a corner produces an immediate over-steer tendency, this is by no means severe and not seriously disconcerting.

So far as comfort is concerned, the springing is rather inclined to be lively on part load but was nevertheless free from objectionable pitching and offered a very acceptable standard of general comfort.

The distinctive, and in some ways slightly old-fashioned, two-door streamlined body offers very comfortable accommodation for four with notably well-shaped and well-upholstered individual seats at the front. Tip-up squabs give quite easy access to a very comfortable rear compartment in which foot and knee room are entirely adequate and width very ample for two people. Head room, which is unusually good at the front, is just adequate at the rear.

The wrap-round front screen gives a wide angle of vision, although not entirely free from distortion at the edges. At the back, a three-piece wrap-round window almost joins with the side windows to give an excellent view in all directions. The manner in which both the bonnet and boot slope away gives little indication of the exact position of the front and rear extremities but, with a car of reasonably compact overall dimensions, this drawback cannot be regarded as serious. Besides the usual ventilating panels (with locking catches) and winding windows in the front, the rear quarter windows are also arranged to swing down, fan-wise, under the control of winding handles.

The whole interior is schemed with the greatest forethought for details. To quote just a few examples, there is a conveniently placed grab handle on the curved edge of the facia for the front passenger, and a further handle (incorporating a coat hook) above the windows is fitted to assist rear passengers to alight on the pavement side . . . the door arm-rests also act as door handles, it being necessary merely to pull them upwards to release the catches . . . the wipers (although of the converging-blade type) nevertheless have overlapping arms to reduce the unwiped V-section in the centre . . . the interior roof lights have courtesy door switches and an additional switch on the driver's side which not only enables them to be switched on independently, but also to be switched off permanently if desired. These are just a few of the many examples of practical planning.

From the driver's angle, the controls are mostly well placed and a particularly appreciated feature is a steering-column dipper switch which enables the very adequate headlamps to be used as an overtaking signal even when the main lighting switch (on the facia board) is off. Unusual is an ignition switch which can also be used to lock the steering. Another excellent detail is a parking switch which enables the side and tail light on one side of the car only to be illuminated for night parking. Other features include an elaborate and effective heating system, a useful cubby locker, door pockets, a large rear parcel shelf and a generous boot in which a flat platform is provided for suitcases.

Altogether this is a car which is as likeable as it is unusual and which shows, to a marked degree, a practical appreciation of detail user needs.

Specification

Engine

Cylinders	3
Bore	74 mm.
Stroke	76 mm.
Cubic capacity	981 c.c.
Piston area	20.0 sq. in.
Valves	None (two-stroke engine)
Compression ratio	7.25/1
Carburetter	Solex 40 ICB downdraught
Fuel pump	Pneumatic, operated by compression in front crankcase
Ignition timing control	Centrifugal
Lubrication	By 2½% of oil (1 pint to 5 gall.) in petrol
Max. power (gross) at	57 b.h.p. (50 b.h.p. net) at 4,500 r.p.m.
Piston speed at max. b.h.p.	2,240 ft./min.

Transmission

Clutch	Single dry plate
Top gear (s/m)	4.00
3rd gear (s/m)	6.09
2nd gear (s/m)	9.72
1st gear (s/m)	16.70
Reverse	15.11
Propeller shaft	None (front-wheel drive)
Final drive	8/35 spiral bevel from all-indirect gearbox
Top gear m.p.h. at 1,000 r.p.m.	18.2
Top gear m.p.h. at 1,000 ft./min. piston speed	36.5

Chassis

Brakes	ATE hydraulic (2LS at front)
Brake drum internal diameter	9.05 in.
Braking area	110.8 sq. in. of lining working on 224 sq. in. rubbed area of drums
Suspension: Front:	Independent by transverse leaf spring and lower wishbones.
Rear:	Transverse leaf spring and dead axle
Shock absorbers	Telescopic
Steering gear	Rack and pinion
Tyres	5.60-15 tubeless on 4J rims

Coachwork and Equipment

Starting handle	None
Battery mounting	On scuttle
Jack	Ratchet pillar type
Jacking points	Two external sockets under body sides

Standard tool kit: Jack, nave-plate remover, plug and wheel-nut spanner, combination pliers, four double-ended spanners, screwdriver, tool roll. Also touch-up paint.

Exterior lights: 2 headlamps with pilot bulbs, 2 direction indicator lights, 2 stop/tail/turn-indicator lamps, number plate lamp.

Number of electrical fuses	6

Direction indicators: Flashers (not self-cancelling), white at front and combined with stoplamps at rear.

Windscreen wipers	Two-speed electrical self-parking, two-blade
Windscreen washers	Pedal operated
Sun visors	Two, universally pivoted

Instruments: Speedometer with non-decimal total distance recorder, fuel contents gauge, coolant thermometer, clock.

Warning lights: Dynamo charge, headlamp main beam, turn indicators.

Locks: With ignition key	Ignition/steering lock
With other keys	(a) driver's door and luggage locker; (b) petroil filler cap
Glove lockers	One on facia, with lid
Map pockets	Two, inside front doors
Parcel shelves	One behind rear seat
Ashtrays	One on facia, one in rear compartment
Cigar lighters	One on facia

Interior lights: Two, with manual switch and courtesy switch on driver's door.

Interior heater: Warm air from engine's fan and radiator can be directed into car and onto windscreen inner surface.

Car radio	Optional extra

Extras available: Sunshine roof, reclining seats, Saxomat automatic clutch, whitewall tyre trims, road, fog and reversing lamps, undersealing, radio.

Upholstery material	Plastic leathercloth
Floor covering	Rubber mats
Exterior colours standardized	Six two-colour schemes

Alternative body styles: Four-door saloon (also, on slightly different chassis, "1000" two-door saloon, coupé, and estate car; "1000SP" two/four-seater sports coupé).

Maintenance

Engine lubrication: 2½% S.A.E. 40 engine oil to be mixed with petrol (1 pint of oil to 5 gallons of petrol).

Gearbox and differential	4½ pints, S.A.E. 90 or S.A.E. 80 gear oil
Steering gear lubricant	Grease
Cooling system capacity	14 pints (1 drain tap)

Chassis lubrication: Every 1,500 miles by grease gun to 13 points, and by oil gun to 2 nipples on outer universal joints.

Ignition timing: Breakers open 3 mm. before T.D.C. (plus or minus 1 mm.).	
Contact-breaker gap	0.015 in.
Sparking plug type	Bosch M175T1 or Beru 175/18
Sparking plug gap	0.023-0.028 in.
Valve timing	Port timing controlled by pistons
Front wheel toe-in	0-0.08 in., laden
Camber angle	1° 50′
Castor angle	0° (plus or minus 30′)
Steering swivel pin inclination	7° 40
Tyre pressures: Front	20-21½ lb.
Rear	20-24 lb.
Brake fluid	Lockheed No. 1
Battery type and capacity	6 volt, 66 amp hr.

Miscellaneous: Wash carburetter air filter element in petrol every 1,500 miles.