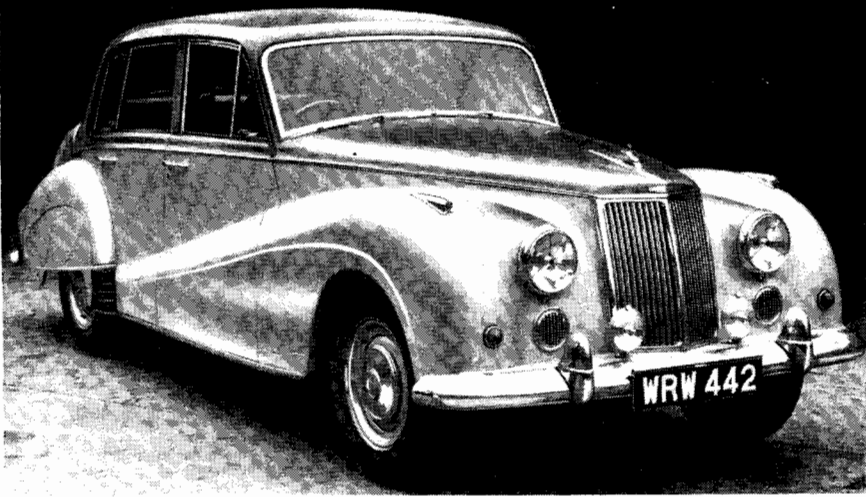


Reprinted from
The Autocar
17 October 1958

Once again the Sphinx mascot graces an Armstrong Siddeley bonnet. Parking lamps are mounted high on the wings, amber flashers are fitted, and the twin fog lamps are standard

*More Powerful
Armstrong Siddeley
With
Automatic Transmission*



1959 MODELS

Star Sapphire

FIRST examples of Armstrong Siddeley's new Star Sapphire have started to leave the works at Coventry; a substantial production programme has been planned. While the car may seem familiar at first sight in its general outline, mechanical changes, general development and important new items of equipment have all combined to transform this model for 1959.

Principal feature of the Star Sapphire is the new, more powerful 4-litre engine, designed to give high torque at low r.p.m., ensuring exceptional flexibility and good matching with the characteristics of the Borg Warner automatic transmission which is now standard equipment. Additional standard fittings are servo-aided brakes with discs for the front wheels, and integral, power-assisted steering. Among important detail changes are the provision of an independent heating system for the rear passengers, and demisting of the rear window.

The 346 Limousine continues as previously with synchromesh gear box, but automatic transmission becomes available at extra cost.

Engine

A revised cylinder block, cast in one with the crankcase, is used for the new 3.9-litre over-square engine. This accommodates the increased bore diameter and provides water passages between each cylinder. Vandervell lead-indium is used for the big end and main bearings, and the connecting rods, derived from those of the 3,435 c.c. engines, have been stiffened at the webs and radii. The bearing caps

have also been strengthened, and a vibration damper is fitted at the front end of the crankshaft. The pistons are fitted with two compression and one oil control rings. A larger capacity sump carries 14 pints, compared with the previous engine's 11 pints, and the oil pump feed has been increased by 60 per cent.

Exhaust valves, which have stellite stem tips, are of KE.965 steel; compared with those of the 346 engine, the valve head diameters have been increased by 0.1in, making the sizes 1.80in inlet and 1.59in exhaust. They are closed by double coil springs, and to cut down reciprocating weight, the pushrods are formed of drawn steel tubing of 0.028in wall thickness.

A six-port induction system is cast internally in the cast iron cylinder head, and separate, water-heated alloy manifolds carry the twin downdraught Stromberg carburettors, which are fed from the 16-gallon tank by an A.C. mechanical pump. A dual exhaust system is used. The manufacturers claim that the new Star engine, in addition to a greatly increased power output, also has an improved fuel consumption range when compared with the 346 engine.

Steering

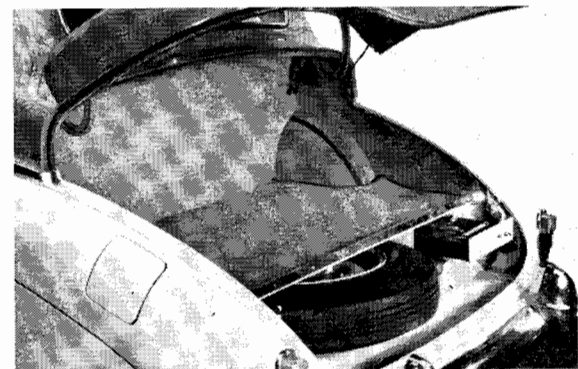
Burman power-assisted steering is fitted; the operation of this new system was fully described in last week's issue of *The Autocar*. On the Sapphire the pump for the steering gear is located on the back of the generator, to which it is connected by a flexible coupling. They are driven by a double belt from the crankshaft.

Brakes

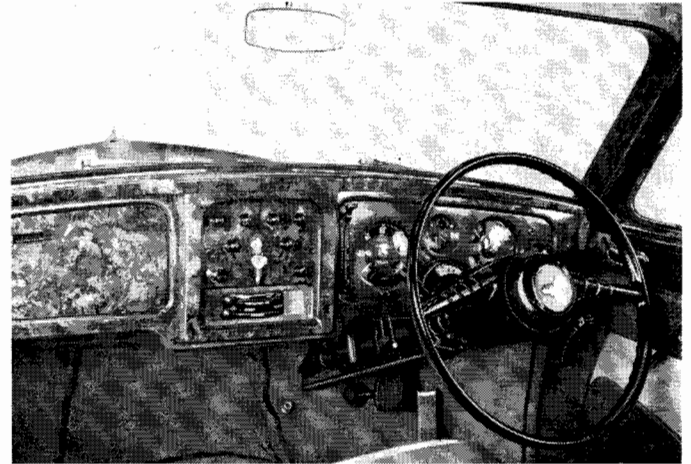
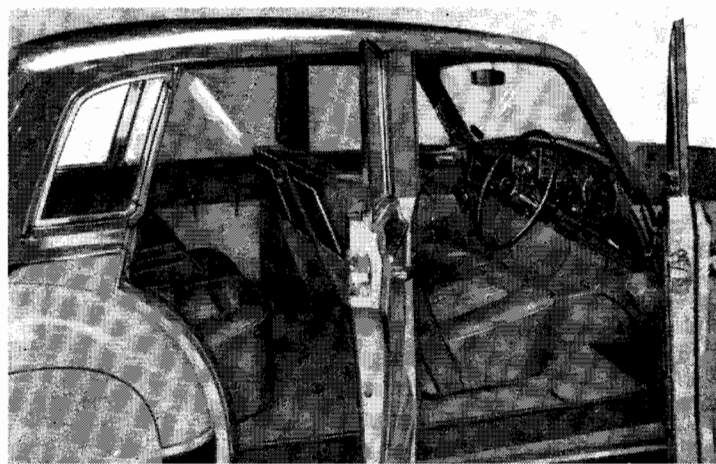
Hydro-Vac servo assistance is applied to the Girling braking system; a reservoir is incorporated to allow up to five braking applications with a dead engine. Disc brakes are fitted at the front, and 12in diameter drums with two-trailing shoes at the back—this combination gives ample stopping power for the performance of the Star Sapphire and also enables a powerful hand brake to be fitted. Splash guards are placed on the insides of the discs, to keep grit and water off the surfaces. The friction pads are wedge-shaped; with a total friction area of 30.5 sq in, the pads sweep a 280 sq in area of disc, compared with the 170 sq in of the rear drum brakes, which have a friction linings area of 90 sq in.

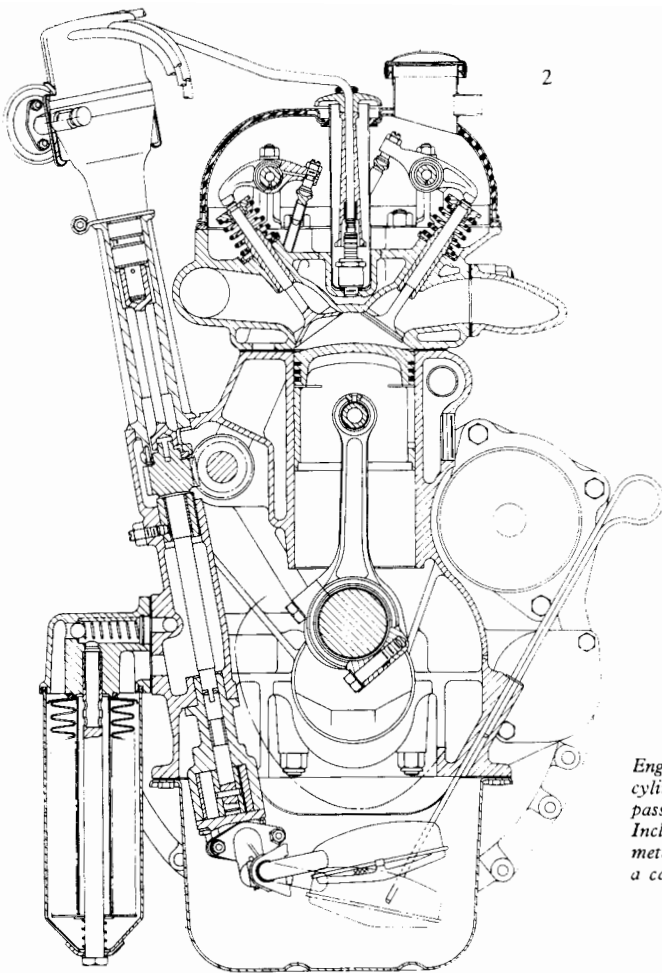
Suspension

Provision has been made to adjust the camber angle of each front suspension by means of steel shims, and this should ease servicing problems. The long half-elliptic rear springs have reverse camber, and the rear shackles are mounted beneath the frame, instead of with the shackle pin pass-

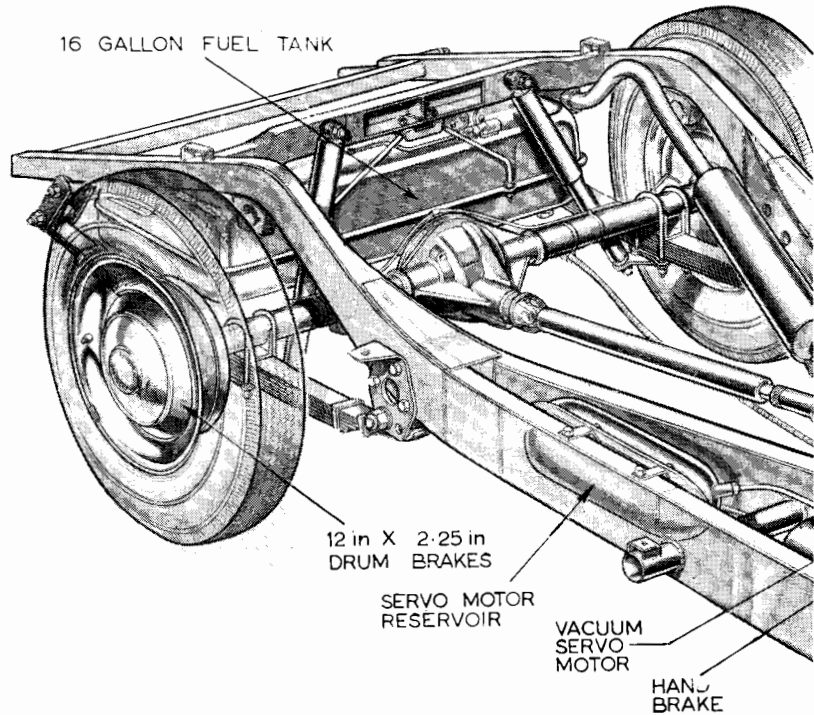


Below left: Entry is easy to the deeply upholstered seats, which may be had covered with two-tone leather. There is a hinged pocket in the back of each front seat. Below right: Highly polished veneer covers the fascia and window surrounds. Right: The luggage locker is lined and the spare wheel is housed beneath its floor, with a tray containing a kit of small tools.





Engine cross-section showing the new cylinder block with generous water passages around the enlarged bores. Inclined valves of increased head diameter are operated by push-rods from a camshaft carried high in the block



12 in X 2.25 in DRUM BRAKES

SERVO MOTOR RESERVOIR

VACUUM SERVO MOTOR

HAND BRAKE

ing through the frame members as was the former practice. "Helper" spring leaves have been omitted, and a thick rubber pad is secured to the underside of the chassis frame on the centre line of the axle; compression of this pad provides progressive damping under load. Armstrong telescopic dampers are fitted front and rear.

Transmission

Automatic transmission is provided by a normal Borg-Warner box. The gear control lever is mounted on the left of the steering column and the positions are indicated on an illuminated quadrant; a manual control permits the intermediate gear ratio to be held up to its maximum speed of approximately 60 m.p.h. The divided propeller shaft has a rubber-mounted steady bearing.

Body

The all-steel body, built by Armstrong Siddeley at Parkside, Coventry, is rust-proofed, and all its undersurfaces are sprayed with sound-deadening material before the body is painted. The doors are hung on their forward edges, and they

seat on double rubber sealing strip. A wide choice of colour schemes is offered.

Seating

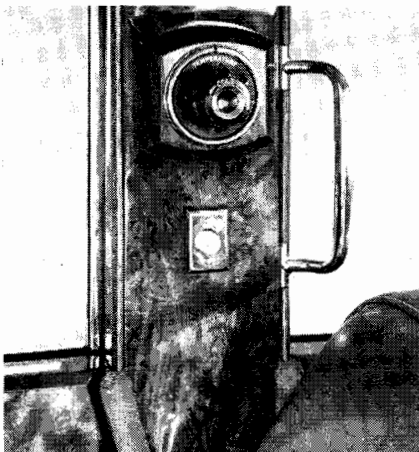
A lot of work has been carried out to make the interior as comfortable as possible. The seats are built up on spring cases, with soft rubber Vitafoam fillings covered with best quality leather. The front seats are separately adjustable for leg room; the angle of the back rests (which are curved to give lateral support when cornering) is not variable. Central folding arm rests are provided, and there is an arm rest on each front door.

The floor of the rear compartment is flat, and in front there is only a shallow protruberance over the gear box. Close-fitting carpet covers the whole floor, and a rubber mat protects it from concentrated wear by the heels of a driver's shoes. Each front door has a map pocket with a spring-loaded flap; there is an ashtray in the forward part of the garnish rails in addition to one in the back of the left front seat.

One of the striking features of the body interior is the quality of the walnut veneer facia and door rails; these extend round the window frames and windscreen, and the door centre pillars are also in walnut veneer. The work is well carried out, and absence of screw heads is appreciated.

Instruments

In a rectangular central panel of the facia are grouped the switches and the front compartment heater controls with



On the right door pillar is the control for the rear compartment heater. The switch operates the heater fan. Grab handles are fixed to each pillar and on the left of the facia

SPECIFICATION

ENGINE	
No. of cylinders	6 in line
Bore and stroke	97 x 90mm (3.82 x 3.54in)
Displacement	3,990 c.c. (243.49 cu in)
Valve position	O.H.V.
Compression ratio	7.5 to 1
Max. b.h.p. (gross)	165 at 4,250 r.p.m.
Max. b.m.e.p.	160 lb sq in at 2,000 r.p.m.
Max. torque (gross)	260 lb ft at 2,000 r.p.m.
Carburettor	Stromberg DAV42 twin downdraught
Fuel pump	AC mechanical
Tank capacity	16 Imp. gallons (73 litres) including 2 gallons (9 litres) reserve
Sump capacity	14 pints (8 litres)
Oil filter	Full flow
Cooling system	Pump, fan and thermostat
Battery	12 volt, 64 amp hr
TRANSMISSION	
Clutch	Fluid torque converter
Gear box	Borg-Warner automatic
Gear lever position	Steering column lever, intermediate gear hold.
Overall gear ratios	Direct top 3.77; intermediate 5.41 to 10.82; low 8.674 to 17.348; reverse 7.574 to 15.148.
Final drive	Hypoid bevel, 3.77 to 1.
CHASSIS	
Brakes	Hydraulic, vacuum servo assisted; front disc, rear drum
Disc diameter	11.82in
Drum diameter and shoe width	12 x 2.25in
Suspension: front	Independent, coil and wishbone
rear	Semi-elliptic leaf springs

Dampers	Armstrong telescopic
Wheels	Steel disc
Tyre size	6.70—16in
Steering	Burman integral power
Steering wheel	Two-spoke, 17in dia
Turns, lock to lock	3½

DIMENSIONS	
Wheelbase	9ft 6in (289.6cm)
Track, F	4ft 9.875in (147cm)
R	4ft 9.5in (146cm)
Overall length	16ft 2in (492.8cm)
Overall width	6ft 2in (188 cm)
Overall height	5ft 2in (157.5cm)
Ground clearance	8.5in (21.6cm)
Turning circle	38ft (11.58m)
Kerb weight (with 5 gal petrol)	3,920 lb

PERFORMANCE DATA	
Top gear m.p.h. at 1,000 r.p.m.	21.8
Torque lb/ft per cu in engine capacity	0.94
Brake surface area swept by linings	Front, 280 sq in; rear, 170 sq in
Weight distribution (dry)	F, 51 per cent; R, 49 per cent

PRICES

STAR SAPPHIRE: Saloon, with Borg-Warner automatic transmission, disc front brakes and Burman integral power steering: **Basic** £1,763; Purchase Tax £882 17s; **Total** £2,645 17s.
SAPPHIRE 346: Limousine with synchromesh gear box: **Basic** £1,910; Purchase tax £956 7s; **Total** £2,866 7s. Limousine with automatic gear box: **Basic** £2,099; Purchase tax £1,050 17s; **Total** £3,149 17s.

Star Sapphire

PROPELLER SHAFT
INTERMEDIATE
BEARING

AUTOMATIC GEARBOX
SELECTOR CONTROL

BORG WARNER
AUTOMATIC
TRANSMISSION

TWO STROMBERG
DOWNDRAUGHT
CARBURETTORS

4 LITRE
6 CYL
97 X 90 mm

POWERED
STEERING
HYDRAULIC
RESERVOIR

POWERED STEERING
PUMP INCORPORATED
IN BELT DRIVEN
GENERATOR DRIVE

REAR ENGINE
GEARBOX
RUBBER
MOUNTING

HYDRAULIC
BRAKE
RESERVOIR

BRAKE
MASTER
CYLINDER

UNIVERSALLY
JOINTED STEERING
COLUMN

BURMAN POWERED
STEERING SERVO
ACTUATOR

SHIMS FOR
ADJUSTING
CAMBER ANGLE

CRANKSHAFT
DAMPER

ANTI-ROLL BAR

TRAILING LINK
I. F. S.

SINGLE POINT
FRONT ENGINE
RUBBER MOUNTING



GIRLING SINGLE CALIPER
DISC BRAKES 11.82 in dia

J. A. MARSDEN

additional space for a radio; at night, a small concealed light illuminates the switch panel. In front of the driver are a large speedometer, and a matching dial containing fuel, water temperature and oil pressure gauges, and an ammeter; a clock is placed between the two dials. On the right are the usual warning lights, and the control for the screen

washer. The direction flasher lever is on the right of the steering column, which has a quick-action adjustment for length.

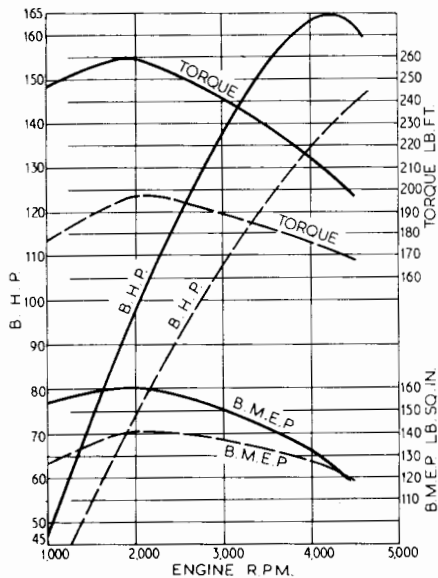
Heating

The Star Sapphire is one of the few cars to be equipped with a separate heater installation for the rear compartment; it is included in the standard specification, and is under the control of the occupants of the rear seat. The heater unit, housed in a compartment beneath the seat cushion, is of the recirculatory pattern—it draws air from the interior of the car, heats it to the required temperature and recirculates it. Exit vents are placed in the lower edge of the seat cushion and

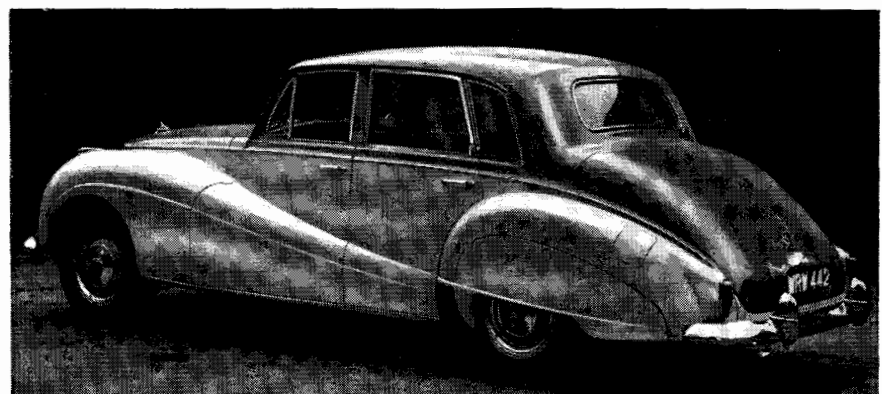
provision is made for rear window demisting by conducting warm air from the heater unit, along ducts placed behind the seat squab, to longitudinal vents which direct the air on to the window.

In the front compartment the heater is of the usual fresh-air type, with a booster fan and windscreen demisting vents.

Preliminary experience of the Star Sapphire on the road confirmed that the car has good acceleration and is capable of a high cruising speed. There is freedom from roll on corners, and immediate response to any movement of the steering wheel. The brakes are impressive, a lightly loaded pedal giving a smooth, powerful response.



Left: Gross power curves for the Star Sapphire (continuous line) and the Sapphire 346 (dotted). Below: The front wing line sweeps down to merge into the rear wheel spats. Opening quarter panes provide ventilation when the main windows are closed





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