S E R V I C I N G   O F   A L L A R D   C A R S

F O R W O R D

Allard cars have been designed to incorporate Ford Components in all the positions which normally require service from time to time, such as Engine, Transmission, Rear Axle Components, Wheel Bearings, Oil Seals, Steering Ball Joints, Kingpins & Bushes, etc.

The Ford Motor Company provide excellent Service Data on all these Components, so this article will not do much more than cover them generally with mention of the more important settings and adjustments.

The Chassis and Suspension are of Allard Design and Manufacture and to gain the full advantage of the handling and cornering capabilities of these cars it is necessary to ensure that the correct conditions and adjustments are maintained.

A Lubrication Chart showing the correct grades of Greases and Oils to use in the various parts of the Chassis, Engine and Transmission is included on the Chassis Number Plate situated on the Engine Side of the Bulkhead, and also in the Instruction Book in which a Chassis Diagram is also provided.

Where information of a service nature is required, which is not covered by this Instruction Book, enquiries should be addressed to : -

THE ALLARD MOTOR COMPANY LTD.
24/28, Clapham High Street,
Clapham, London, S.W.4.

Service items not covered by Ford Dealers can be obtained from : -

ADLARDS MOTORS LIMITED
3, Keswick Road,
Putney, London, S.W.15

SCREW THREADS

It should be noted that, following the Ford Motor Company's practice, American screw threads are used throughout.

YEAR	MODEL	CHASSIS NO. FROM	DESCRIPTION	NO. OF CYLINDERS	BORE/ STROKE	CAPAC-ITY.
1946	J1	106	100" Wheelbase Competition 2 Str.	8	77.8/ 95.2	3622
1946	K1	104	106" Wheelbase Touring 2 str.	8	77.8/ 95.2	3622
1946	L	102	112" Wheelbase Touring 4 Str	8	77.8/ 95.2	3622
1947	M	208	112" Wheelbase Drophead Coupe	8	77.8/ 95.2	3622
1949	P	1500	112" Wheelbase Saloon	8	77.8/ 95.2	3622
1950	J2	1512	100" Wheelbase Competition 2 Str	8	Various	Various
1950	K2	1700	106" Wheelbase Touring 2 Str	8	77.8/ 95.2	3622
1951	J2X	2191	100" Wheelbase Competition 2 Str.	8	Various	Various
1951	M2X	2295	112" Wheelbase Drophead Coupâ	8	77.8/ 95.2	3622
1952	P2	4000	112" Wheelbase "Monte Carlo" Saloon	8	Various	Various
			or Safari Estate Car	8	Various	Various
1952	21C and 21Z	5000	96" Wheelbase Palm Beach (Consul or Zephyr engine). Touring 2 Str	4 Con))) 6 Zep)	79.3/ 76.2	1508 . . . 2267
1953	J2R	3400	96" Wheelbase Racing 2 Str.	8	Various	Various

NOTE: The competition cars and the P2 were fitted with a variety of engines, i.e. Ford-Mercury, Ardun-Mercury, Cadillac, Chrysler, Dodge, etc.

The chassis numbers of the various types were not necessarily consecutive and are, therefore, no indication of the date of construction.

Standard Ford V-8

Bore	77.9 m.m.
Stroke	95.25 m.m.
Cubic Cap.	3622 c.c.
Compression Ratio	6.15:1
B.H.P.	85 @ 3,500 r.p.m.
Maximum Torque	150 lbs. ft. @ 1,500 r.p.m.
Ignition	Lucas Coil and Distributer.
Plugs	Champion 7
Location of No. 1 Cylinder.	On Right-Hand bank next to Radiator
Firing Order	1, 5, 4, 8, 6, 3, 7, 2.
Carburrettor	Ford-Double Choke, Standard jet sizes.

Transmission

Clutch	Single Plate 9" O/D.
Gear Ratios :	
Top	3.78:1.
Second	6.70:1.
First	11.80:1.
Reverse	15.10:1.

Brakes — Lockheed 12" dia x $1\frac{3}{4}$" (Developed dimensions of Lining $11\frac{5}{8}$" x $1\frac{3}{4}$" x $\frac{1}{4}$").

Steering — Marles Cam and Roller

Tyres — 6.50 x 16 or 6.00 x 16.

Capacities — Fuel Tank 18 Imp. gallons including two in reserve.

Cooling System	$4\frac{1}{2}$ Imp. gallons.
Engine Sump	1. Imp. gallon.
Gearbox	2. Imp. pints.
Rear Axle	$2\frac{1}{2}$ Imp. pints.

USEFUL SERVICE DATA

Engine

Normal Oil Pressure	30 lbs. per sq. in.
Tappet Clearance (Cold)	Inlet 0.0125 ins. Exhaust 0.016 in.
Valve Timing: Inlet	Opens at T.D.C. Closes 44° after BDC.
Exhaust	Opens 48° before BDC. Closes $6\frac{1}{2}$° after TDC
Spark Timing	4° before T.D.C.
Contact Breaker Gap.	0.014 in. - 0.016 in.
Plug Gap	0.022 in

Electrical

Lucas 12 volt system	Two 6 volt 50 amp. hr. batteries
Lamp Bulbs (Page 19)	

Engine Number — Stamped on the near-side of the cylinder block.

Chassis Number — The Chassis Number and type are stamped on a plate located on the near-side bulkhead under the bonnet.

ENGINE AND DRIVING CONTROLS
Instruments and Switches

The following is a brief description of the various controls, switches, gauges etc., which are to be found in the driving compartments of the two and four seater ALLARD cars. The coupe differs from this layout in that alternative forms of windscreen wipers are fitted and certain cars embody a steering column gear change.

The steering wheel is of the sprung type and is fitted with a telescopic adjustment for height. To alter the position of the wheel unscrew the clamp on the steering column just below the wheel. When the correct position has been obtained, the clamp must be screwed up, thus securing the wheel at the chosen height.

The remote control for the gear change is so arranged that the minimum movement of the driver's hand is necessary when changing gear.

Clutch, foot-brake and accelerator pedals are fitted, in that order, from the centre line of the car.

The choke control is to the left of and below the centre line of the speedometer. Pulling out the control provides rich fuel mixture for cold weather starting. The richness of the mixture is in direct proportion to the extent to which the control is pulled out and once the engine is warm enough to run evenly, the control must be gradually pushed home until it is fully in. Never drive the car with this control in operation.

The hand throttle control is to the right of and below the centre line of the speedometer. Turning the knob anti-clockwise opens the throttle, increasing the engine speed. Clockwise rotation of the knob decreases engine speed. Operation of this control is unnecessary when starting the engine as the choke control is interconnected with, and automatically adjusts, the throttle.

The ignition switch (combined with the lights switch) is located on the left of the speedometer and is operated by a removable key.

The starter switch is beneath the speedometer and to the left of the hand throttle. To operate, the button should be firmly pressed in and released immediately the engine fires. The switch is so wired that it will not operate unless the ignition is switched on.

The headlamp and pilot light switch is combined with the ignition switch. Two positions are marked, one for pilot and tail lights, the other for headlamps plus tail and pilot lights.

The headlamp dipper switch, together with the horn button and trafficator control are mounted in the centre of the steering wheel.

NOTE: In those two-seater models not fitted with trafficators the horn and dipper control is mounted on the dashboard.

The red ignition warning light is situated immediately below the speedometer and its purpose is to indicate when the ignition is switched on. The light will go out when the engine is running above a tick-over, but it should NOT remain on when the car is driven and if it does then the charging circuit should be checked at once, as the light indicates that the dynamo is no longer charging the batteries.

The engine oil pressure, in lbs. per sq. in., and water temperature in degrees Fahrenheit, are shown on a combined gauge located on the left of the speedometer.

The fuel gauge, which is electrically operated, is mounted below and to the left of the speedometer. It indicates the total amount of fuel in the tank, including the reserve supply. The gauge is operative only when the ignition is switched on.

The Ammeter, situated above the fuel gauge, indicates the current passing to, or from, the batteries.

The Reserve Fuel Switch, marked "PETROL", is situated to the left of the oil and water gauge. Pulling out the switch brings into use the petrol reserve of approximately two gallons.

The Reversing Light Switch, marked 'R', is mounted below the speedometer and brings into operation a lamp which is incorporated in the rear lights, giving illumination for reversing after dark.

The Panel Light Switch, marked 'P', is mounted above the fuel gauge and controls the indirect illumination of the instruments.

<u>WINDSCREEN WIPER</u>

<u>Tourer & 2-Seater</u> — To start the wiper, pull out the handle and turn to disengage it from the switch. Then move the switch to 'ON' position. To stop, move the switch to 'OFF' position, pull out the handle and turn the end of the handle into the top of the switch control.

<u>Coupe</u> — Two types of wiper have been fitted to these cars. One pattern has the control knob situated above the centre of the instrument panel and is pushed and turned to start. The other type is operated by a simple push pull switch mounted on the extreme right of the instrument panel.

<u>ADDITIONAL FITMENTS</u> — Introduced from Chassis No. 1500.

<u>Cigarette Lighter</u> — Operate by maintaining pressure on the moulded knob until a red glow is seen under the glass. The knob is then pulled up and away from the holder, carrying with it the heated element.

<u>Headlight Indicators</u> (Certain export models only). — The small red light on the dashboard indicates that the headlamp switch is in 'Bright' position; the light is extinguished when headlamps are dipped

<u>Direction Flasher Indicator</u> (Export Models only) — The second small red light indicates the use of the direction flashers.

<u>Air Conditioner</u> — The Saloon model is fitted with an air conditioning unit, controlled by flexible cable from the centre of the parcel tray, under the instrument board. Operation of this control admits fresh air from the front of the car into the interior through a valve in the bulkhead. When a heater is fitted this is coupled to the conditioning installation and air is also delivered to the windscreen warming apertures.

<u>Low Fuel Warning Light</u> — On some cars, in place of the switch controlling a reserve fuel supply, a green indicator light is fitted. This light comes on automatically when three gallons only remain in the tank, and remains alight until the tank is re-filled. This circuit, in common with the other accessories, only operates when the ignition is switched on.

LUBRICATION AND MAINTENANCE

The importance of proper lubrication and periodical inspection and adjustments cannot be over emphasised. The lubrication and maintenance work on your car can be divided into two groups :-

(1) Points requiring attention every 1,000 miles.

(2) Points requiring attention twice yearly or every 5,000 miles (whichever occurs first).

The Lubrication Chart (Fig. 14) gives full information for the complete lubrication of the car. Proper lubrication has a vital effect on its life -(consequently these instructions must be followed very carefully).

GROUP (1)

Engine Lubrication

It is advisable to drain off the sump oil when the new car has been driven 300 miles; again when a total mileage of 1000 miles has been reached and at each 2000 miles thereafter. The oil will drain out more completely if warm, and should be replaced by approximately one gallon of engine oil of the recommended grade. Do not flush out the engine with paraffin. Check the oil level at least every 250 miles. Add oil when required to bring it to the proper level.

If the car is driven at high speeds for long periods the oil level must be watched closely as oil consumption is greater when the engine is operated under these conditions.

To determine the correct oil level, use the dipstick located on the near-side of the engine, as follows :-

Pull out the dipstick, wipe it with a clean rag, re-insert and again remove it. The mark made by the oil indicates its level.

When the oil reaches the point marked 'FULL' on the dipstick, it is at its maximum level and any above this level is actually wasted. Furthermore, oil need only be added when the level falls to the bottom arrow of 'Safe Driving Range', though under no circumstances should the oil level be permitted to fall below this point, as any attempts to run the engine with too little oil will cause serious damage.

The oil filler should be checked when the car is standing on level ground and, if possible, after the engine has been standing idle for some little time and the oil is cold.

The oil filler is mounted in an accessible position on top of the engine and also acts as the crankcase ventilator and breather. When filling, the flow of oil into the engine will be facilitated by partially withdrawing the dipstick to allow air to escape. Care should be taken to replace the filler cap and dipstick properly after the oil has been added. When replacing the dipstick, push it all the way down. Failure to insert it fully into the opening permits oil to escape.

Only the recommended engine oil should be used.

Inferior oils have a tendency to carbonise quickly and also to 'gum-up' the piston rings, valve stems and bearings. In cold weather a lighter grade of oil is essential for the proper lubrication of the engine. It is recommended that the oil changing should be done at the periods of chassis lubrication.

The clutch release bearing is of the 'greaseless' type and requires no lubrication. NOTE: The clutch itself is of the dry-disc type and under no circumstances should it be oiled.

Steering Gear Lubrication

Every 1000 miles, remove the plug on the steering gearbox and add gear oil until it reaches the level of the filler plug hole. Use gear oil only, never use grease.

Gearbox Lubrication

Every 1000 miles sufficient 'extreme-pressure' gear oil should be added to bring it level with the filler plug.

Rear Axle Lubrication

Every 1000 miles sufficient 'extreme-pressure' gear oil should be added to bring it level with the filler plug. Do not overfill as excess oil may leak through to the brake linings and greatly impair braking efficiency.

Universal Joint Lubrication

Every 1000 miles the universal joint housing should be filled with special universal joint lubricant. The universal joint housing cap is provided with the grease gun point.

Chassis Grease Points

Dirt and grease should always be removed from the grease points before applying the grease gun and do not mistake the bleed screws on the brake backplates for grease nipples.

Fuel Pump Filler

To clean the filter, remove the screw in the centre of the top cover and remove the cover. The filter screen may then be lifted off the pump body and cleaned. When replacing the gauze be sure that it is correctly located and that the cover gasket is in good condition. Loosen the fuel inlet union (immediately above the drain plug) and allow the sediment to run off after unscrewing the drain plug.

Be careful to replace the drain plug and to tighten the union. If there is excessive water or sediment, drain the accumulation from the petrol tank drain plug. Make sure to screw up the drain plug before refilling the tank.

Tyres

Air pressure in the tyres should be checked with a pressure gauge. Unequal tyre pressure results in uneven braking action and hard steering. Check the tyre pressures regularly every week.

Batteries Topping-Up

Every four weeks inspect the batteries and add sufficient distilled water to bring the electrolyte to the proper level. A rapid loss of water in the batteries is usually an indication of an excessive charging rate, which should be corrected by a Lucas Agent.

Starting Motor

The bearings in the starting meter are lubricated when they are assembled and require no attention between major overhauls.

GROUP (2)

Twice each year, preferably in the spring and autumn, or at every 5000 miles, whichever occurs first, in addition to all the lubrication and maintenance operations in Group (1), the following operations are required : -

Rear Axle Draining and Lubrication

The gear oil in the rear axle should be drained off and the housing flushed with paraffin. Fresh 'extreme-pressure' gear oil should then be put in until it reaches the level of the oil filler hole in the housing. Use correct grade of oil. Rear axle capacity is approximately 2½ pints.

Gearbox Draining and Lubrication

Drain the oil from the gearbox after removing the drain plug at bottom of housing. Thoroughly flush with paraffin and refill with fresh 'extreme-pressure' gear oil of the correct grade.

Pour the lubricant in through the filler hole located at the right-hand side of the housing until it reaches the level of the hole Gearbox capacity is approximately two pints.

Front Wheel Hub Lubrication

At this period, or at any time when the car has been driven with the front wheel hub caps taken off or missing, the front hubs should be removed and the bearings and the inside of the hubs washed clean with paraffin and re-packed with a good quality wheel bearing grease.

Shock Absorbers (Lever Type)

Check the level of the fluid in the shock absorbers and add sufficient fluid until it reaches the level of the filler plug. Grease or engine oil should never be put into the shock absorbers.

Shock Absorbers (Telescopic)

No maintenance necessary except renewal of rubber bushes in mountings after considerable mileage.

Ignition

At this period, or at any time when misfiring of the engine at low speeds and loss of power indicates that it is necessary, it is advisable to inspect and adjust as required the gaps between the contact breaker points, as well as those at the sparking plugs.

Battery

Inspect battery connections, clean away any deposit if the connections are corroded and smear well with petroleum jelly.

Clutch

Check the amount of free travel of the clutch and adjust if required (Fig. 5).

Brakes

Check the movement of the brake pedal, adjusting the brakes if the pedal travels to within one inch of the floor board (Fig. Nos. 10, 11, 12 and 13).

Engine

The majority of engines fitted to Allard cars are Dagenham built Ford V-8 30 h.p. Units with Iron Head and Single Carburettor. A small number have been fitted with Canadian 32 h.p. units and also with Ardun O.H.V. Cylinder Heads on Canadian 32 h.p.Cylinder Blocks. (A cross-section of the standard Ford V-8 is shown in Fig 7).

Aluminium Cylinder Heads and Twin Carburettor Manifolds manufactured by The Allard Motor Company are fitted to a number of cars with either 30 h.p. or 32 h.p. engines. The Twin Carburettor Manifold will fit either the 30 or 32 h.p. units, but different Cylinder Heads are required. A simple way of identifying the Units is by counting the Cylinder Head Studs. The English 30 h.p. unit has 21 studs and the 32 h.p. units have 24 studs. The Ardun O.H.V. conversion will only fit on 24 stud blocks. Canadian 30 h.p. units also have 24 stud blocks although their bore is the same as the English 30 h.p. i.e. 3.1/16", while the 32 h.p. units have a bore of 3.3/16".

Earlier 'J2' models were fitted with 32 h.p. S.V. units bored out to 3.5/16" giving a capacity of 4375 c.c. These will only stand a .010" increase in bore size and must be linered. They are fitted with Aluminium Heads and Twin Solex A.A.P.I. 30 Carburettors as Standard. The Compression Ratio may be 7.0:1 or 8.0:1 by using either a 1/16" Copper and Asbestos Gasket or a .010" Corrujoint Cupro Nickel Gasket respectively. The Corrujoint Gaskets can be refitted with jointing compound in emergency but should normally be replaced. A new Gasket should only be smeared with Engine Oil before fitting.

If severe 'pinking' is experienced with Aluminium Heads, it is best overcome by a combination of slightly retarding the Ignition and slightly enriching the mixture by increasing the Compensator Jet, or the Accelerator Pump Jet, but not the Main Jet otherwise Fuel consumption will suffer. The recommended carburettor settings for this 4375 c.c. engine are as follows : Petrol Starting 145. The Aluminium Heads are made to take 14 MM. Plugs. Champion J. 10 Comm. are normally fitted with a gap of .022".

The Aluminium Heads for the standard h.p. units give a 7.0:1 compression ratio only. A Corrujoint gasket or thin copper gasket cannot be fitted owing to piston clearance to the cylinder head being small.

When a twin carburettor manifold is fitted to this unit Solex 30 A.A.P.I. carburettors are used and the recommended settings for these are as follows: Venturi 23. Main Jet 105. Correction Jet 210. Pilot Jet 50. Air Starting Jet 5. Petrol Starting 130.

The Ardun O.H.V. Unit which is fitted as standard to later 'J2' models employs two Solex 40 A.A.P.I. carburettors and the recommended settings are as follows : Venturi 28 MM, Main Jet 180, Economy Jet 200, Correction Jet 260, Accelerator Pump Jet 70. Slow Running 55. Starter Air Jet 5. Starter Petrol Jet 170. 18 MM plugs are fitted to this unit normally Champion R. 15 with .022" gap.

The Tappet clearances are adjustable at the Push Rod side of the Rocker Arms on Ardun Units. The Rocker covers are removed after undoing the three domed nuts and the knurled rings at the top of each plug tube, taking care not to damage the cork gasket at the base of the cover. The clearances must be set when the engine is hot to .010" for inlet and .012" for exhaust.

On all Ford based engines the fan is driven by a short separate belt from the double pulley on the dynamo. The main belt drives water pumps and dynamo and is adjusted by slackening the dynamo securing bolt and lifting the dynamo up. Usually this adjusts the fan belt correctly as well, but sometimes this causes the fan belt to become too tight, and the fan hub and spindle assembly has to be lifted. This is done by slackening the nut behind the fan stub axle mounting bracket and raising the fan assembly in the slot in the bracket. Flats are milled on the rear flange of the fan stub axle and these engage in the slot in the bracket to prevent rotation of the stub axle when tightening or loosening the nut.

Engine vibration is sometimes caused by a fan becoming bent or its hub being 'out-of-true'. This can be tested by removing the fan belt and taking the car for a short run. Do not let the water temperature exceed 200° fahrenheit otherwise there is a danger of piston seizure or bore distortion which shorten engine life considerably.

A certain amount of trouble was experienced on some earlier models with overheating, due to poor water circulation of the cylinder block. When a report is received of overheating under full load condition, the ignition timing and mixture strength should be checked first. If found to be correct and the Cooling System drains cleanly the overheating can be overcome by fitting a Venturi type air chute to the front of the radiator block. This speeds up the air flow through the radiator, eliminates turbulence and increases its efficiency.

THE COOLING AND FUEL SYSTEMS

Cooling System

The engine is cooled by the circulation of water through the jackets which surround the cylinders, combustion chambers and valve ports. The water is circulated by thermo-syphon action, assisted by two centrifugal water pumps, one located at the front end of each cylinder block.

A certain restriction in the water flow is necessary to withstand the surge which occurs when the car is heavily braked and this is effected by two restrictor washers, one of which is situated in each cylinder head at the water outlet. Care should be taken to replace these washers if the hose-joints are at any time detached.

The cooling system works under a pressure of 2½ lbs. per sq. in and the overflow pipe is fitted with a spring-loaded ball valve which opens when this pressure is exceeded.

A temperature indicator element is incorporated in the nearside cylinder head and is connected to the thermometer gauge on the dashboard.

Water used to fill the radiator should be as nearly neutral (soft) as possible to minimise corrosion. If alkaline or saline waters only are available, a suitable anti-corrosion agent must be used and you are advised to consult your FORD Agent.

Draining the System

When draining the system it must be remembered without fail that there are two drain taps, one on the outer side of each bank of cylinders. (Fig. 6 shows the position of the taps). There is no plug or tap underneath the radiator. The two taps are at the lowest level of the system.

Cleaning the System

The entire system should occasionally be flushed out. To do this drain off the water from both drain taps, insert a hose into the radiator filler neck and allow water to flow through the system for ten minutes.

Adjusting the Dynamo and Fan Belts

The fan, dynamo and water pumps are driven by two belts - See Fig.6. The dynamo and water pumps are driven by the long belt from the crankshaft, the fan being driven in turn by the short belt from the dynamo pulley above it.

These belts are adjusted to the proper tension before the car leaves the factory and this adjustment should not need attention unless one or both belts tend to slip.

When adjustment of the belts becomes necessary, or when fitting a new belt, the fan-adjusting nut must first be slackened off. The dynamo is then slackened and the longer belt adjusted to the correct tension. This is judged by an in-and-out movement of the belt at a point approximately half-way between water pump and dynamo (on either side as convenient). The total movement should not exceed one inch. When this adjustment has been made the dynamo-holding nut must be securely tightened and the fan assembly pressed downwards until the slack is taken out of the short belt. The fan-securing nut is then firmly tightened.

It is most important that these belts should not be run too tight or this will cause excessive wear in the bearings of the dynamo, fan and water pumps.

FUEL SYSTEM

Fuel Tank

The fuel is carried in an 18 gallon tank mounted at the rear of the chassis. The feed pipe arrangements from the tank are so arranged that a supply of two gallons is trapped in reserve and made accessible at will by an electrically-operated tap controlled from the dashboard by the switch marked 'PETROL'.

This switch should always be left in the 'OFF' position to ensure that the reserve supply will be available when necessary. As stated previously, the petrol reserve switch is only operative when the ignition is switched 'ON'

Note: On the 'J' two-seater model the reserve switch operates an electrical fuel pump which draws from the reserve supply. Under conditions of prolonged full throttle running this pump may also be switched on to augment the petrol supply pressure at the carburettor.

Fuel Gauge

The petrol gauge on the instrument panel is electrically operated. Being entirely automatic in action it requires no attention other than keeping the wiring connection tight. The gauge is not operative until the ignition is switched 'ON'

Fuel Pump

The fuel pump is located on the top of the engine behind the carburettor and is driven by a push rod actuated by a cam on the camshaft. Being automatic in action, the pump requires little attention other than to keep it free from dirt externally, the filler gauze clean internally and all connections tight.

If it is desired to clean the pump gauze screen, take out the screw in the centre of the top cover and remove the cover. When replacing the cover always make sure that the cover gasket is unbroken, that the filter screen is correctly located and that the cover is seating properly.

If at any time the carburettor is not receiving sufficient fuel, one of the following is likely to be the cause : -

1. Fuel tank is empty.
2. Pump gauze screen has become fouled with sediment, in which case it should be cleaned as described above.
3. The fuel pipe or its connections have a leak at some point between the tank and pump permitting the entrance of air. The remedy of course is to trace and stop the leak which, in all probability will be a slack union nut, after which the pump will prime itself and again function properly.

CARBURETTOR

The carburettor (Fig. 8) is of the dual down-draught type with accelerating pump and bleeder valve choke. All necessary major adjustments are made at the time of assembly and, with the exception of the idling adjustment, will remain permanently correct unless tampered with. The idling adjustment should be re-adjusted after the car has been run-in.

As stated in an earlier page of this Manual, it is not necessary to pull out the throttle control when starting the engine, as the throttle is automatically opened the correct amount for starting when the choke control is pulled out.

AIR CLEANER (Where Fitted).

Too rich a fuel-air mixture indicated by a sluggish performance and almost continuous black exhaust gases, may indicate a clogged screen in the air cleaner. If the car is operated under extremely dusty conditions it will be necessary to clean this screen frequently.

IDLING ADJUSTMENT : SPEED & FUEL MIXTURE

The idling speed of the engine is set by the throttle stop screw on the carburettor to an equivalent of 5 m.p.h. in top gear, roughly equal to a fast tick-over. Warm up the engine well and be sure that all joints, manifolds etc., have no leaks, before making this adjustment.

The fuel idling valves control the mixture for slow speed operation, their position is shown in Fig. 8. Each valve controls the supply to a group of four cross-fed cylinders, and unscrewing (anti clockwise) increases the quantity of mixture. Screwing it in (clockwise) reduces the quantity. To adjust, deal with each side of the engine in turn, screwing the valve in first until the engine lags or runs irregularly then screwing it out until running is perfectly smooth.

After adjusting the mixture it will probably be necessary to again adjust for speed, at the throttle stop screw.

CLUTCH

The clutch pedal must be adjusted to 1" free movement at pedal pad (Fig. 5). On 'J2' models, fitted with an intermediate lever, only the lower link should be adjusted. Ensure that the return spring is coupled up and functioning correctly. Heavy pedal operation is usually due to lack of lubrication.

Clutch 'judder' is usually due to the engine tie rods being under insufficient tension. To correct this the nuts behind the flywheel housing lugs must be slackened off and screwed back 1/16" - 1/8" and the front nuts tightened up. These rods are not fitted to cars with De-Dion rear axle.

Traces of oil on the flywheel face or pressure plate will also cause 'judder'. Having cleaned the parts, the source of the oil leak should be traced and cured. This may be due to the rear sump seal, which is a semicircular piece made from braided cotton - wax impregnated - which is retained in a recess in the sump rear wall. Oil leakage is also likely to occur from the gearbox nose over the primary shaft, if the seal is worn. To service this seal the nose has to be unbolted from the gearbox.

GEARBOX

The gearboxes used on earlier models had the Tower type selector lid (Fig.9). The lever was cut down to about 1" and an Allard remote control link clamped to it. The pivot pins on the control may be replaced when excessive wear developes. Earlier 'J2' models and one or two other models used a cast aluminium fully enclosed remote control with its own selector arms bolted on in place of the Ford lid. If gear changing becomes difficult with this lid, the ends of the selector shafts which the lever ball end operates on, should be examined for 'burrs' as lubrication of this mechanism tends to become neglected.

Later models are fitted with the Ford sidechange box with the selector arms and operating levers on a detachable casting bolted to the side of the box. The control mechanism for this box, either central lever or steering column mounted, is an adaption of the Ford steering column control. On the Saloon and Coupe models fitted with steering column control, two intermediate or rocking levers are mounted on the rear of one of the cylinder heads to give good geometry. This pivot bracket must be tight, also the tube on which the levers pivot, otherwise the links tend to bind on the levers making gearchange difficult. The adjustment of the links is also very important. The short links must be adjusted so that the levers on the control tube are perfectly in line in neutral, otherwise the driving pin will not slide from one lever to the other. Also the intermediate arms must be at equal angles with the long and short links.

When this mechanism is used for central lever control, the intermediate levers are not used, but again, the levers on the control tube must be in line in neutral to permit quick smooth changing. If complaints of the gear 'jumping out' are received the linkage should be checked first.

If second or top gear, usually second, persists in 'jumping out' the dogs on the gear and on the synchromesh hub should be examined for wear. When this condition arises the synchromesh cones are usually also worn. If first or reverse gears persist in 'jumping out' the spring locating plungers to the selector arms should be examined. The usual cause is a broken or collapsed spring.

When box is stripped down all teeth and dogs should be examined closely for chips and the appropriate part replaced. The failure of these parts can cause the complete destruction of the box.

REAR AXLE AND SUSPENSION

The rear suspension on all models up to 1951, except 'J2' models and a few 'K2' models, is by transverse leaf spring with Ford axle and torque tube swinging from the rear of the gearbox. The track of the Ford axle has been reduced on 'K1', 'K2', 'L1' and 'J1' models by 6". This is done by cutting a piece out of each half axle case at the radius rod lug. The tapers on the half shafts are remachined at the appropriate length.

The Ford shackle bushes should be checked for distortion and wear. The rear spring 'U' bolt nuts should be checked with the car on its wheels to ensure that they are tight. Complaints of 'wander' at speed have been found to be due to their being loose.

The Panhard rod frame bracket, when fitted to leaf spring models (Saloon models in particular) is secured by three bolts to the front flange of the main rear crossmember. These bolts should be checked for tightness as should also the bolts through the silentbloc bushes at each end of the Rod. On models where the axle bracket for the Panhard rod is bolted to the radius rod end forging with a ½" B.S.F. high tensile bolt, this should be checked for tightness. This bracket is welded to the forging on later models.

The De-Dion rear axle fitted to all 'J2' models and a few 'K2' models is attached to the frame by 3 rubber bearings. The main bearings located at the forward end of the radius rods, is of the Ford rubber ball type. This should be checked for lost motion and the belt passing through the bush and holding the radius rod lugs at each end should be closely examined for scoring and grooving. This should be replaced, if necessary, by the correct spare part which is a best quality high tensile bolt of standard dimensions.

The other two bearings are the silentbloc bushes, one at each end of the Panhard rod which locates the suspension laterally. These should be examined to ensure that the rubber has not pulled away from the metal inner or outer sleeves and replaced if at all doubtful.

The mechanical details of the Allard De-Dion axle are identical with the Ford axle (Fig. 3) except for the 4 extra bearings and the Universal half shafts.

On all models the rear hubs, of Allard manufacture and design, run on the Ford non-adjustable parallel roller bearings. When removing the hub, using the Ford tool, the key to the shaft should be examined for a step. If this has developed the key must be replaced. A fibre washer is used under the hub nut to prevent oil leakage and, if this shows signs of oil seepage, it should be replaced. This does not apply to the De-Dion axle where a steel washer is used. When the hub is removed the roller bearing cage assembly and the oil seal are 'in situ'. Care must be taken when extracting the seal, not to damage its case or the sealing lip. When this is removed the cage assembly will slide out. This should be replaced if at all scored or pitted. The outer track, which is pressed into the hub, should also be replaced if in the same condition. This is removed by a special Ford Extractor tool.

The inner track is pressed on to the end of axle case and requires to be machined off when replacing. Some axles, however, start life without sleeves and the end forging is case hardened on the track. When this wears out the forging has to be machined to take a sleeve. Alternatively, a replacement half axle case may be used.

The De-Dion Axle Outer Half Shafts are located endwise by an LS.15 Ball Race which is protected by a Western Oil Seal. This Race should be replaced, if noticeable 'end shake' can be felt by pushing and pulling the Hub. To remove the Race the Outer End of the Universal Half Shaft must first be disconnected, and then the Steady Plate between the Bearing Housing and the Dead Axle Tube removed. The remaining Four Bolts holding the Bearing Cap should now be removed. Having drawn Hub off, the Axle Shaft, with Flange, Bearing, Bearing Cap and Oil Seal, can now be withdrawn from the inner side. When the Ring Nut holding the Inner Track of the Bearing to the Flange is undone, the Bearing can be pressed off. When reassembling, the Ball Race and the Hub Race should be packed, but not over packed, with Grease of the correct Grade. Ensure that the Bearing Cap Bolts are rewired together.

The Universal Half Shafts are of Needle Roller Pattern, and should be checked in the same way as an open Propellor Shaft. Excessive wear will cause vibration and roughness when running, and are likely to knock slightly at very low speeds. Replace the Pinnacle Nuts securing the Universal Half Shafts to the Flanges whenever they are disturbed.

The Roller Bearings on each side of the Differential Case on De-Dion Axles are either RLS.15 with grooved Inner Track or RLS.15E Grooved Outer Track. These can be checked for wear by slackening off the Brake Adjusters, and then pushing and pulling on the Brake Drum from below. No 'shake' should be present. To replace or examine these Bearings the Universal Half Shaft and the Brake Drum must first be removed. The Brake Drum is held between the Half Shaft Flange and the Inner Shaft Flange and is simply pulled off when the Half Shaft is disconnected. The Six Bolts holding the Bearing Cap should now be removed, and then the ¾" A.N.F.Nut on the end of the Shaft. The flange may now be drawn off with Bearing, Bearing Cap and Oil Seal together. A stop is provided behind the Bearing Inner Track to facilitate its removal.

Backlash between the Crown Wheel and Pinion should be .002" - .012", and this is adjusted by Paper Gaskets between the Differential Case and End Housings.

As an example of how this should be done, assume that it is necessary to remove One Gasket on the Crown Wheel Side. Having done this the Case and both Housings should now be assembled, and held with say Four Bolts. Check for tightness by rotating the Shafts. If too tight it will be necessary to insert a Gasket on the other side as the Bearings have obviously now worn as much as the Crown Wheel and Pinion. Generally, however, the wear is virtually equal.

Before attempting to adjust the Backlash the Pinion Bearings should if necessary, be adjusted to 12-17 ins/lbs preload. This is done by slackening the Two Lock Nuts on the Outer End of the Pinion after prising up the Lock Washer Tabs. This Lock Washer should be closely examined for cracks at the base of the Tabs, and replaced if evident. The Torque Tube must be unbolted from the Differential Case, and the Propellor Shaft unpinned from the Pinion Shaft, before this operation can be carried out.

Whenever the Torque Tube is disturbed, great care should be taken to ensure that the Speedometer Drive Gearbox, situated at the Gearbox End, is removed first, otherwise the Gears will be damaged.

The Torque Tube is a Ford Component shortened to suit the Allard. The Centre Bearing normally employed on Ford Vehicles is removed. The Propellor Shaft is a Tubular Hardy Spicer pattern to Allard specification, which is pinned to the Pinion Shaft in exactly the same way as the Solid Ford Shaft. The parallel Roller Bearing at the Gearbox End is retained and this has a Split Outer Track to facilitate its removal from the Torque Tube. This should be carried out with the correct Ford Tool.

All work on the Axle or Torque Internals can only be carried out when the Units have been removed from the Car. First disconnect the Suspension, Shock Absorber Connections, Hydraulic Brake Pipe and Hand Brake Cable. Then undo the Four Bolts on the Cap of the Rear of the Gearbox, which functions as a Pivot Bearing and Anchorage for the Torque Tube. The axle and Torque Tube Assembly may now be drawn away from the Gearbox, the Propellor Shaft sliding out of the Splined Universal Coupling attached to the Gearbox.

When reassembling the Torque Tube to the Gearbox, care must be taken to ensure that the correct number of Paper Gaskets are used between the pressed Steel Inner Cap and the Split Cast Outer Cap. To obtain the correct condition the empty Torque Tube should be bolted up with the Inner Cap to the Gearbox with two or three Gaskets. When the correct condition is arrived at, the Torque Tube can be moved by hand with only slight effort, and will drop slowly under its own weight. The Caps must be well smeared with the correct grease on their working faces before final assembly. Considerable noise can be caused on moving away from stationary, or when moving slowly in Traffic, if this Torque Tube Bell End is loose in the Gearbox Housing. Also an excessive load is placed on the Universal Joint.

REAR SPRING DATA

L E A F

MODEL	PART NO	NO. OF LEAVES	FREE LENGTH (INS)
L.K.	71L 5560	10	31½
M.	71M 5560	14	40
P.	91P 5560	12	40
L.	61L 5560	10	31½

C O I L

MODEL	PART NO	NO. OF COILS	FREE HEIGHT (INS)
J.2.	91J 5560	13¾	14½
J.2.X	11J 5560	12	13½
K.3.	21K 5560	9·3	15¾
P2 Saloon	21P 5560	7.4	15·7
P2 Safari	11P 5560	9	14

FRONT SUSPENSION & STEERING

The front suspension is of the Split Axle Type with Transverse Leaf Spring on earlier Models and Coil Springs on later Models (Figs 1 and 2)

There are only Four Bearings in the Suspension, Two Silentbloc Bushes to the Axle Beams and Two Ford Ball Type Rubber Bushes locate the ends of the Radius Rods. The Silentbloc Bushes in the Axle Beams should be examined for Rubber displacement and deterioration and replaced if this is at all noticeable. The Radius Rod Bushes should be checked with the load taken off the Suspension i.e: 'jacked up' by the Chassis. If any lost motion can be felt these should be replaced.

On Models fitted with a Leaf Spring the Ford Shackle Bushes should be replaced if noticeably distorted or worn, also the Nuts on the Spring 'U' Bolts should be checked to ensure that they are tight. A modification was introduced on this latter point so that the 'U' Bolts may be assembled the reverse way from original Assembly; to enable the Nuts to be tightened readily from above. If any difficulty is experienced in this respect, a Service Data Sheet showing the modification may be obtained from the Company.

The Kingpin Cotter Pin Nuts should be checked for tightness, and if the Plain End of Cotter Pin is below the surface of the Axle Beam Boss, it should be replaced. If it works loose again quickly, the Kingpin should be checked for fit in the Axle Beam Boss. If slack, the Kingpin should be checked for size and also the holes in the Beam which, if enlarged, must be built up and remachined, or the Beam replaced. It is advisable, under these conditions, to fit New Kingpins and Bushes which, in any case, should be replaced if more than 1/16" slack can be obtained at Wheel Rim. Care must be taken to avoid confusing these two points with slackness of the Wheel Bearings, which should be adjusted so that only the slightest 'rock' can be felt. This can be done after removal of Wheel Hub Cap and Hub Grease Cap. The Split Pin to the Stub Axle Nut should be replaced whenever disturbed. Do not overpack Hub with Grease.

On earlier Models the Stub Axles, Steering and Track Rod Arms, were Ford Integral Forgings, but on later Models, fitted with Allard Forgings, the Track Rod and Drag-Link Arms are separate parts. The 9/16" A.N.F. Nuts securing these Arms should be examined for tightness and also that the correct special Washer is fitted. This must be either of the same O/Dia. as a B.S. ½" Washer, or a B.S. 9/16" Washer with a flat on one side, and must be at least as thick as the appropriate B.S. Washer (·080) These Arms have sometimes been refitted without a Washer, so that the Nut bottoms on the Thread without holding the Arm tight, or else a Light Washer has been fitted which 'dishes' after a short while, again allowing the Arm to come loose. When the Arm becomes loose there is a danger of it fracturing at the Square Shoulder, owing to leverage against the Stub Axle Boss.

The Kingpin Thrust Race, located between the top of the Stub Axle and the head of the Kingpin, should be checked for wear and 'pitting' of the Tracks.

TRACK ADJUSTMENT

When adjusting track it is essential to make equal adjustments on both halves of track rod by means of right and left-handed ball joints, so keeping centre arm parallel to axis of car. In any case of wander or tendency to pull to one side, check position of centre arm, and if necessary correct by adjusting track rod lengths whilst maintaining correct toe-in. Toe-in on all models is ⅛ - 3/16" at rim. However, owing to the wheel manufacturer's permissible tolerance of 0·100" run-out, it is necessary, before checking or adjusting rack, to jack-up wheels and determine position of run-out. This is done with a stand with a pointer firmly fixed to it pointing at rim to just touch at the high point (if the wheel is out of true). Mark this point with chalk. The "low" point opposite should also be marked and then two more marks made at right angles to the first marks. The second marks indicate the "true" portion of the wheel. The first marks should now be rubbed out. When both wheels have been so marked, the car should be let down on to its wheels with these marks in line, wheel for wheel. It is now necessary, with aplit-axle suspension, to roll car some yards so that correct camber angle is resumed. Car should be brought to rest with chalk marks horizontal to ground and the arms of the tracking tool placed against the wheel rim on these marks. Adjust on both track rods equally to avoid bias to Silentbloc bearing on centre steering arm, which will cause car to run off course unless held.

WHEEL BALANCE

Wheel balance is very critical on split-axle suspension, and wheel tyre and tube assemblies should be rebalanced to within 10 in. oz. whenever they are disturbed for puncture repair etc. It is also advisable to have spare wheel correctly balanced.

STEERING GEARBOX

The Adamant Steering Gearbox (Fig. 4) is of Marles Hour Glass Worm and Roller Design, and there are two points or adjustment. To remove 'end shake' on the Worm, it is necessary to remove Shims located between the End Plate and Case. To remove 'endshake' on the Rocker Shaft, which carried the Drop Arm, the Setscrew on its inner end must be screwed in after slackening the Locknut. When carrying out these adjustments the Drag-Link Ball Joint must be disconnected, otherwise it is not possible to determine whether the conditions are correct. Before reconnecting the Drag-Link the Steering Wheel should be rotated to ensure that the Box is not tight.

If the Steering Gearbox has to be removed from its Bracket at all, the Top Cap should be marked before removal, to ensure that it is replaced the same way round. Also, after tightening the Four Bolts, the Steering Wheel should be rotated before attaching Drag-Link, to be certain that the Clamp has not squeezed the Steering Gearbox Trunnion which in turn grips the Rocker Shaft causing stiffness. The Bore of the Bracket is a reamed fit for the Trunnion, and must be quite free of paint and foreign matter. If the Box is still stiff, the Clamp Bolts may be taken back a half turn from dead tight.

The Bearing at the top of the Column is a wrapped Felt Bush impregnated with Tallow and should be replaced if at all dry. To replace this Bush it is necessary to remove the Steering Column from the Car and dismantle it. First the Steering Wheel and Stator Tube must be dismantled from the Column. The Stator Tube is removed after undoing three radially placed 2 B.A. screw from the Connector adjacent to the Steering Gearbox. Having withdrawn the Stator Tube the Circlip retaining the Steering Wheel may now be removed and the wheel drawn off. On Models fitted with Steering Column Gearchange, the Clamp Caps at upper and lower ends of Control Tube must be removed and the mechanism pulled away from the Column after removing Bulkhead Sealing Rubber Retainer. Having removed Steering Gearbox Clamping Cap the Column may now be lifted out. The End Plate and Side Plate must now be removed and the Rocker Shaft withdrawn, enabling the Column Shaft with Worm attached to slide out. The Felt Bush can now be replaced. Take care to avoid pushing new Bush out when reassembling Column Shaft.

FRONT SUSPENSION

YEAR	MODEL	TOE IN	CAMBER ANGLE	CASTOR ANGLE	KINGPIN ANGLE
1946-9	All models with leaf springs	⅛	2°	2°	7°
1949-53	P.M. K.2 J.2 Coil Springs	⅛-3/16	2°	3°-4°	7°
1953-6	M.2.X P.2. J.2.X K.3	⅛	2°-3°	2°	7°

SPRING DATA

L E A F

YEAR	MODEL	PART NO	NO LEAVES	FREE LENGTH
1946-9	K.1.	71K 5310	13	30"
	L & M	71L 5310	15	30"

C O I L

YEAR	MODEL	PART NO.	NO OF COILS	FREE HT	STATIC HT OF SPRING
1949-56	K2,3 P1 M2 & J2X	91P 5310	8½	12"	9⅛
1949-56	J.2.	91J 5310	10	11⅜	8⅞
1949-56	P.2.	11P 5310	7¾	12.5/16	8¾

THE BRAKING SYSTEM

DATA TABLE (All Models)

YEAR	CHASSIS NO.	TYPE	DRUM DIA	LININGS
1946-8	Up to 1949	LOCKHEED PHASE I	12"	FERODO 11⅝ x 1¾ x ¼
1948 - Onwards	1950 - onwards	LOCKHEED PHASE II	12"	FERODO 11⅝ x 1¾ x ¼

* Some J2 & J2X Models were fitted with Alfin brake drums and 2¼" wide brake shoes.

FLUID IN MASTER CYLINDER

Occasionally examine the fluid level in the master cylinder and keep this topped up to within one inch of the filler plug. DO NOT FILL COMPLETELY.

Access to the filler plug is gained by lifting the mat in the driving compartment and removing the large rubber plug which will then be exposed. Topping up should only be necessary at extremely long intervals. A rapid or considerable fall in fluid level indicates a leak at some point in the system which must be traced and rectified.

BRAKES

The Brakes on all Models are Lockheed 12" dia. Hydraulically operated. Models built up to 1948 were fitted with Phase I Brakes (See Figs 10, 11 and 13) which had Leading and Trailing Shoes Front and Rear. Adjustment is carried out by Spanner on the Two Hexagons on the Back Plate having 'jacked' the Wheel up. The forward Hexagon is rotated anti-clockwise and the Rearward one clockwise, looking from Wheel side of Brakedrum, to adjust Linings. They should be turned until tight, and then brought back one notch. Later Models are fitted with Phase II (See fig 12) 2 Leading Shoe Front and Leading and Trailing Rear Brakes. The Lockheed guarantee is nullified if the Linings on these Brakes are Chamfered in any way. Adjustments on Cars with Pressed Steel Wheels is carried out by removing the Wheel and inserting a Screwdriver into holes in the Brakedrum, two in the Front Drums, one for each Leading Shoe, which are independent of each other, and one in the rear drums where both Shoes are adjusted together.

ADJUSTMENT OF BRAKES (All models except Phase I Rear)

The Adjusters on the Front Brakes are located just ahead of the 'twelve'and 'six' o'clock positions in a clockwise direction, and on the Rear just after the 'six' o'clock position. To take up the Lining clearance the adjusters must be turned in a clockwise direction until tight and then brought back one notch. Models fitted with Wire Spoke Wheels need only be 'jacked up' as the Screwdriver can be passed through the spokes on the Front Wheels and into the Brake Drum holes. All Models fitted with Wire Spoke Wheels have de-Dion Rear Axles with the Brake Drums inboard on the Differential Housing, therefore, these Models should be 'jacked up' by the centre of the Dead Axle Tube, and adjustment carried out as previously described, through a single hole in each Rear Drum.

ADJUSTMENT OF REAR BRAKES ON PHASE I

The hand lever and foot brake pedal operate the same pair of shoes in each rear drum by combined "hydraulic and mechanical expander units" - termed bisectors. Hydraulic pressure from the footbrake pedal, acting upon the piston, expands the shoes by moving a pull rod which has two roller segments, abutting the tappets. This pull Rod extends beyond the hydraulic cylinder of the bisector unit and is connected to the hand brake cable (See Fig.13).

Each bisector unit is attached to the brake back-plate by two bolts with self-locking nuts in such a way that during adjustment it is free to slide vertically to centralise the shoes in the drum. This freedom is necessary as there is only one shoe adjuster attached to one tappet. The whole bisector unit must be moved, therefore, to equalise the clearance between each shoe and the drum.

The shoe adjuster is situated inside the brake drum and is reached through a hole in the drum, exposed when the wheel is removed. The drum should be rotated until the hole is in line with the bisector unit, and then slight movement in either direction will position the hole so that the teeth of the shoe adjuster screw may be reached with a narrow screwdriver or similar tool.

It is most important that there should not be any pull on the handbrake cable when adjusting the shoes and if there is any doubt whatever about this, the clevis pin connecting the cable to the bisector pull rod should be removed before adjusting the shoes.

The adjuster should be turned until the shoes are hard against the drum. The foot-brake should then be applied and released (to centralise the bisector) and then, if the wheel remains locked, the adjuster should be slackened off just enough to allow the wheel to rotate without binding. If the wheel is quite free after centralising, the operation should be repeated, the adjuster being screwed up again until the wheel locks and then slackened off after re-centralising, as previously described.

If any difficulty is experienced in adjusting the shoes it should be ascertained that the bisector unit can slide on the back-plate. The drum should be removed and (brakes being off) an attempt should be made to move the complete bisector unit up and down to an extent of half an inch. If it can be moved and the shoe adjuster is free, all is in order and the drum may be replaced. If no movement is possible check that the two fixing bolts are sufficiently slack. The correct tension is obtained by tightening the self-locking nuts until the double spring washer is fully compressed and then slackening off the nut half a turn. If the nuts are found to be only finger tight they should be renewed, but only self-locking nuts may be used here.

The shoe adjustment should be made in both rear drums and if the hand-brake cable was disconnected the clevis pins should be replaced. The cable must be long enought to enable the pins to be inserted without any pull on the bisector pull rod. A small adjustment can be made in the length of the pull rod but any big discrepancy must be met by extending the length of the brake cable. This is effected by means of a threaded rod and wing-nut on the base of the hand-lever. Slackening off the wing-nut will increase the effective length of the cable by allowing the lever more travel.

The Pedal Travel is adjusted by the Stop Screw Bearing on the Brake Pedal Lower Lever. On no account should adjustment be carried out on the Master Cylinder Pushrod.

The 'Flyoff' Type Handbrake on earlier Models fitted with 'Phase I' Brakes is adjusted by a Knurled Knob at the Base of the Lever. On later models fitted with 'Phase II' brakes, the Handbrake, either 'Flyoff' or Pistol Grip, is automatically adjusted when the Linings are adjusted. Paraffin must not be used for cleaning Brake Drums.

BLEEDING THE SYSTEM

Bleeding should only be necessary when some portion of the system has been disconnected, or the supply tank drained. Fill the supply tank before bleeding and keep it at least half full throughout the operation, otherwise air will be drawn in, necessitating a fresh start. This operation is as follows :-

1. Attach an 18 in. to 20 in. length of 3/16" bore rubber tube to brake cylinder bleed screw and allow its free end to be submerged in a little brake fluid in a clean glass jar

2. Open bleed screw one full turn.

3. Set an assistant to depress the brake pedal quickly, allowing it to return without assistance; repeat this pump action with a slight pause before each depression of the pedal.

4. Watch the flow of fluid into the glass jar, and when all air bubbles cease keep the pedal firmly against the floorboard whilst the bleed screw is securely tightened.

5. Repeat at each wheel cylinder.

   NOTE: The fluid bled from the system should be allowed to stand until it is clear of air bubbles before using it again. Dirty fluid should be discarded altogether. The Master Cylinder must be kept topped up during the bleeding operation.

No lubrication is necessary of any part of the brake system, with the exception of the hand-brake cross-shaft and cable pulleys.

Do not mistake the bleeder screws on the bisectors for grease points.

THE SHOCK ABSORBERS

Year	Model	Type - Front	Type - Rear
1946-1949	J, K, L & M (Leaf Spring)	Luvax-Girling Arm Type P.V.6	Luvax-Girling Arm Type P.V.6
1949-1950	P1, M2 & K2	Armstrong Telescopic AT7/1091 AT11/1022 for racing.	Armstrong Telescopic AT7/1090
1950-1952	J2 & J2X	Armstrong Telescopic AT7/1091	Armstrong Telescopic AT7/1090

FRONT - MODELS J, K, L & M

On early models with leaf front springs, arm-type units fitted with short rubber-bushed connecting links. Valve accessible beneath hexagon plug centrally situated in body of shock absorber; by adding or removing washers under valve head varying degrees of damping may be obtained. Hexagon plug is also filling orifice and when servicing units at 5,000 mile intervals keep fluid to level just below base of plug. Remove shock absorber from car before adjusting as otherwise it is impossible to judge damping value.

Rubber bushes in links are not normally replaceable without special tools, and should be returned to manufacturers for this service.

REAR - MODELS J, K, L & M.

Rear shock absorbers were the same as front, but with straight arm in place of cranked one. Foregoing information on servicing also applies.

FRONT & REAR - ALL OTHER MODELS

Tubular shock absorbers used on front and rear axles are non-adjustable and must be exchanged for new units when they cease to be effective. Conical-rubber bushes in eye-ends are in two halves, and pins are so threaded that when nuts are tightened degree of preloading on rubbers is correct.

ELECTRICAL SYSTEM

CHARGING SYSTEM DATA TABLE

YEAR	MODEL	LUCAS GEN TYPE	REGULATOR
1946-50	A11	C45P/CW24	RE 95
1950-2	A11 (Exc. J2, K2)	C45/CW48	RE 106/1
1950-2	J2 K2	C39/CW48	RE 106/1
1952-6	P2 K3	C39/CW48	RE 106/1

YEAR	MODEL	STOP LAMP	DIPPER	LIGHTING
1946 - onward	A11	H22	FS22/1	PP-G.1

YEAR	MODEL	LUCAS STARTER TYPE	SWITCH
1946-52	A11	M 456	SS5

YEAR	MODEL	HORN	WINDSCREEN WIPER	TRAFFICATOR
1946-52	A11	WT 614 69011/2	CRT14-XW9 and alternatives	S.F.80

The 12-volt earth-return system includes batteries, dynamo, starter and ignition and lighting equipment. In the earth-return system a single wire is used to convey the current to the various units and it returns through the metal parts of the chassis. It is, therefore, very important to see that the fixing bolts of all electrical units and the earth connectors where these occur, are tight and clean, making good metal-to-metal contact.

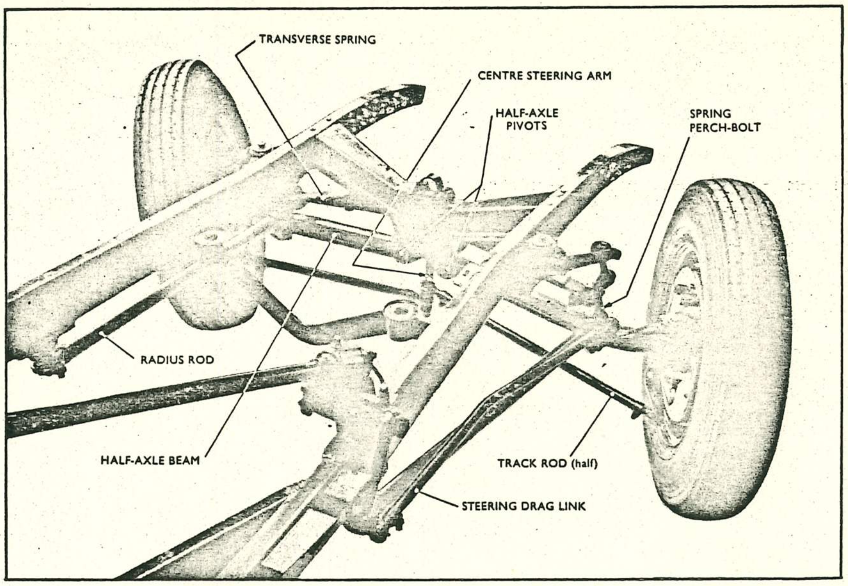
The wiring diagram for models prior to chassis No. 1500 is given in Fig. 15. for all subsequent models Fig. 16.

IGNITION

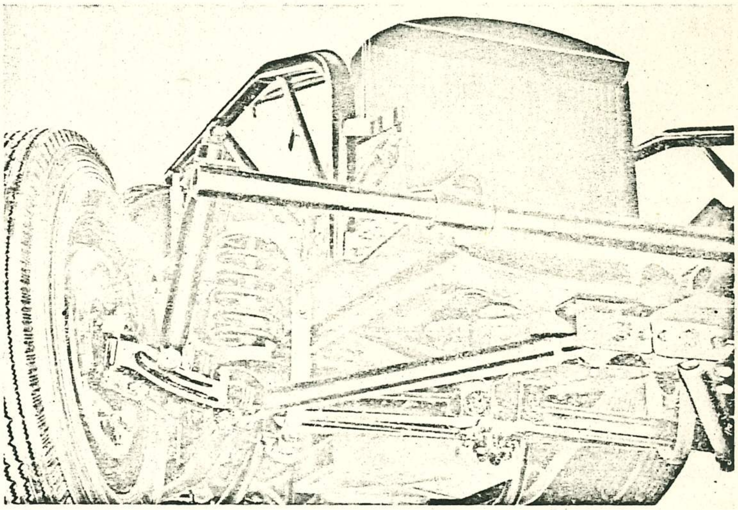
The adjustment of the Contact Breaker points of a V-8 Distributor should not be attempted without the use of a re-timing instrument, on which the Distributor is mounted. The Contact Breaker Gap for all Allard Models and Engines is ·014" to ·016".

A considerable number of cases of Ignition inefficiency and failure have been found to be due to deterioration of the Plug Leads inside their Conduits on the Cylinder Heads. A new Plastic covered Lead was recently introduced which overcomes this difficulty.

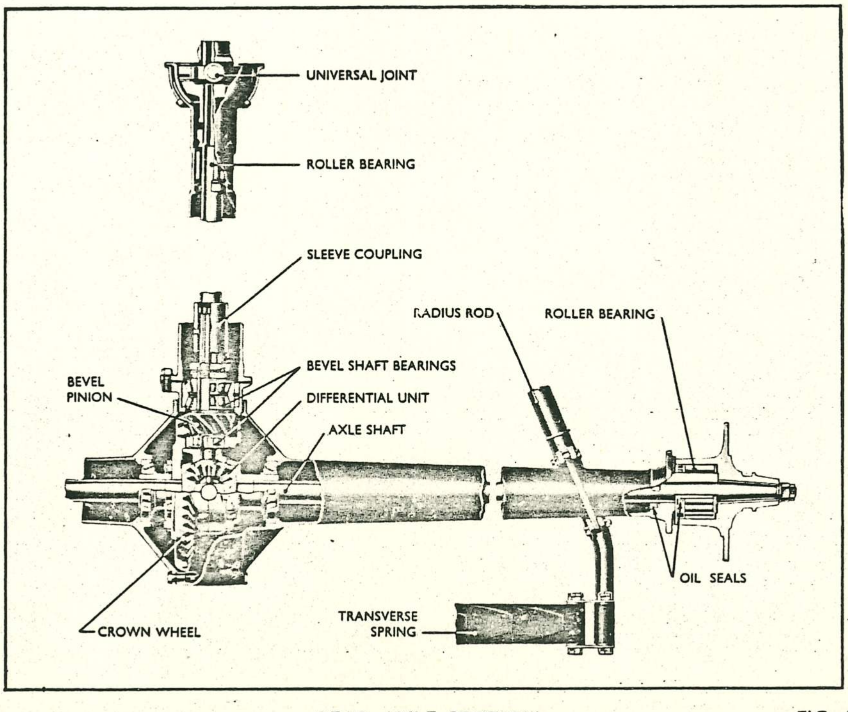
Trouble is also caused by the Lower Leads in the Distributor Cap (to Cylinders 4 and 8), not being properly home while appearing to be on casual inspection.



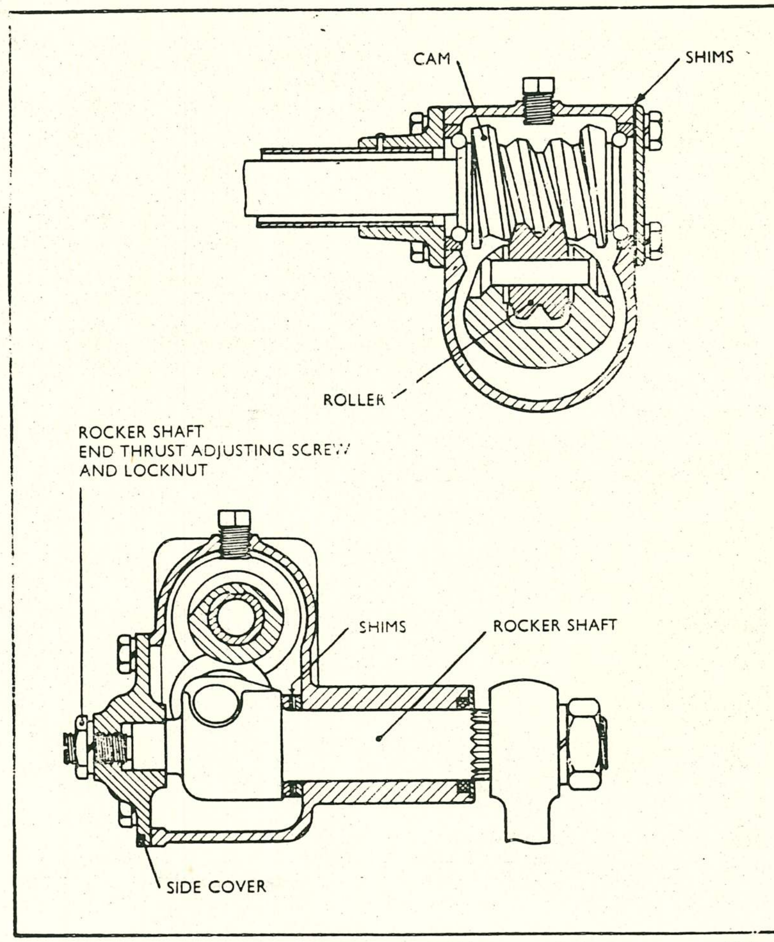
FRONT SUSPENSION (leaf spring) FIG. 1



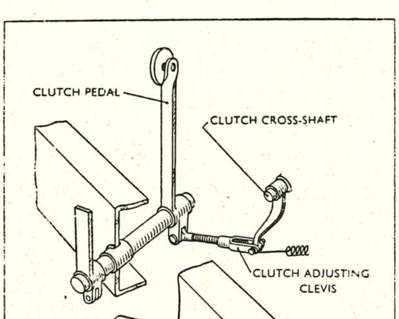
FRONT SUSPENSION (coil spring) FIG. 2



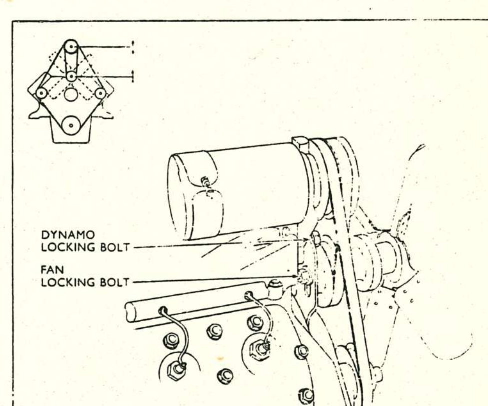
REAR AXLE SECTION FIG. 3



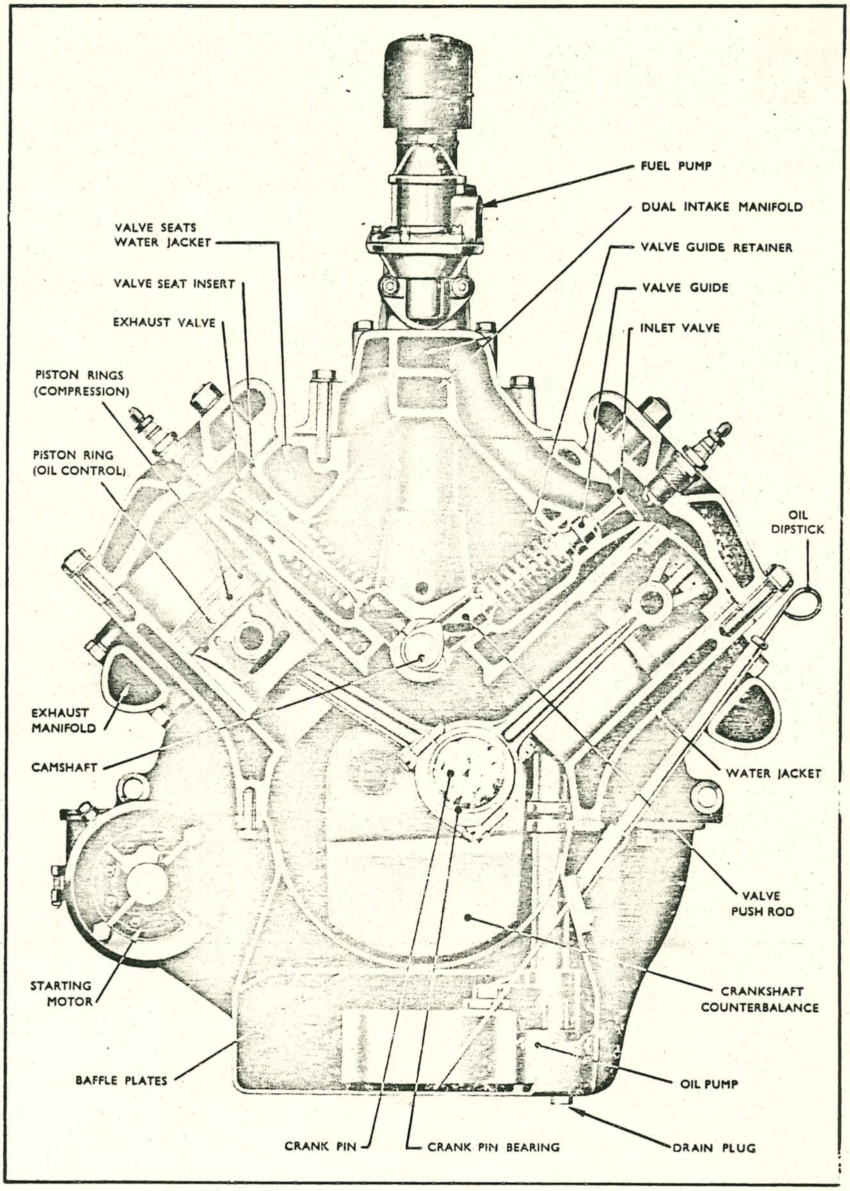
STEERING BOX FIG 4



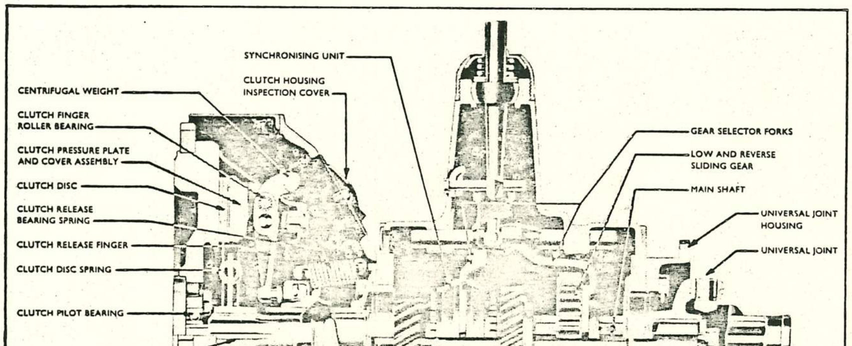
CLUTCH ADJUSTMENT FIG. 5



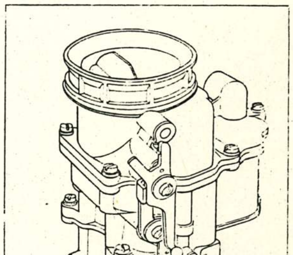
DYNAMO BELT ADJUSTMENT FIG 6



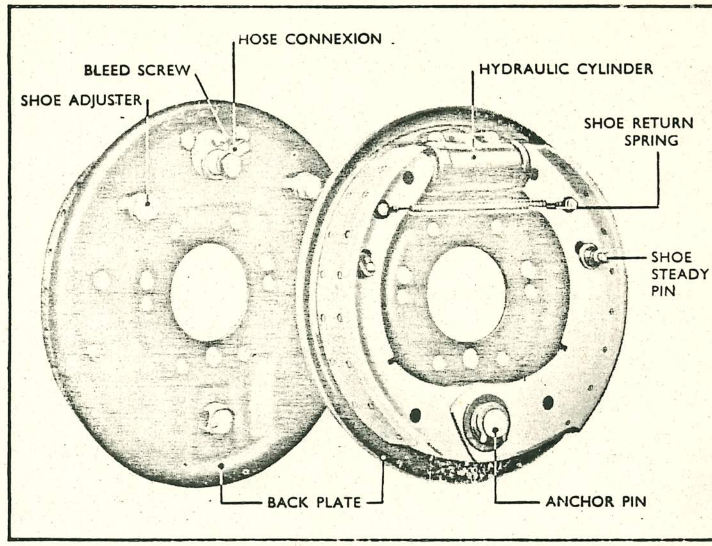
CROSS SECTION OF ENGINE FIG. 7



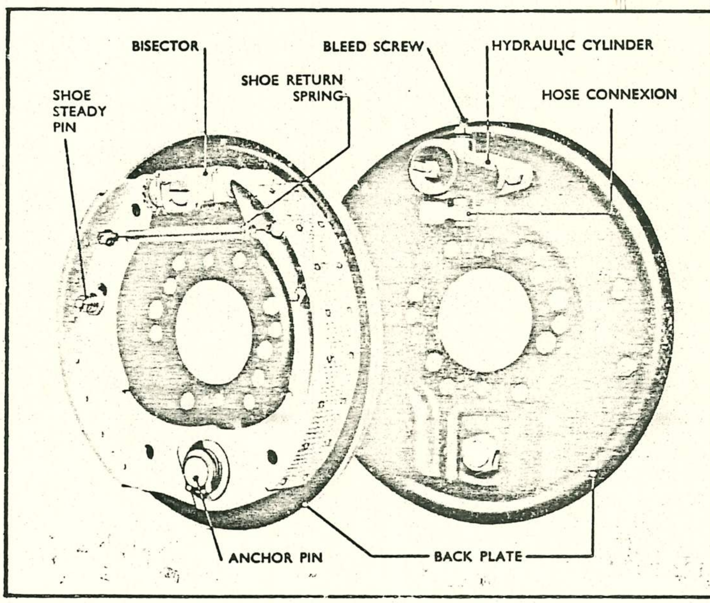
CENTRE CHANGE GEARBOX SECTION FIG. 9



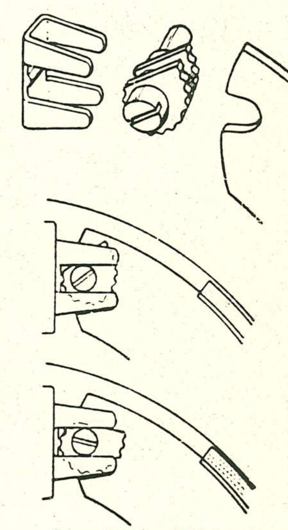
CARBURETTOR FIG. 8



PHASE 1 FRONT BRAKES
FIG. 10

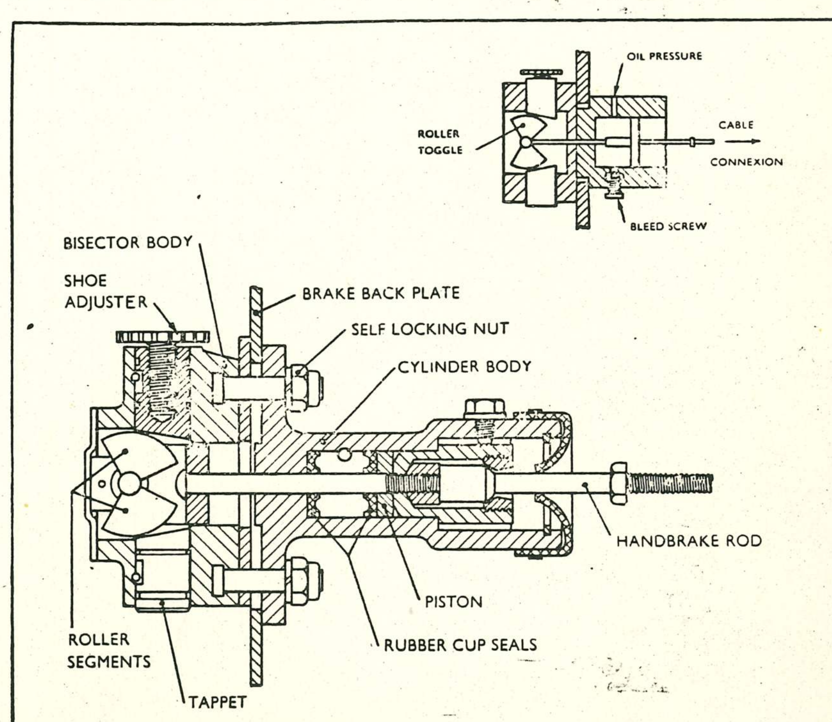


PHASE 1 REAR BRAKES FIG. 11



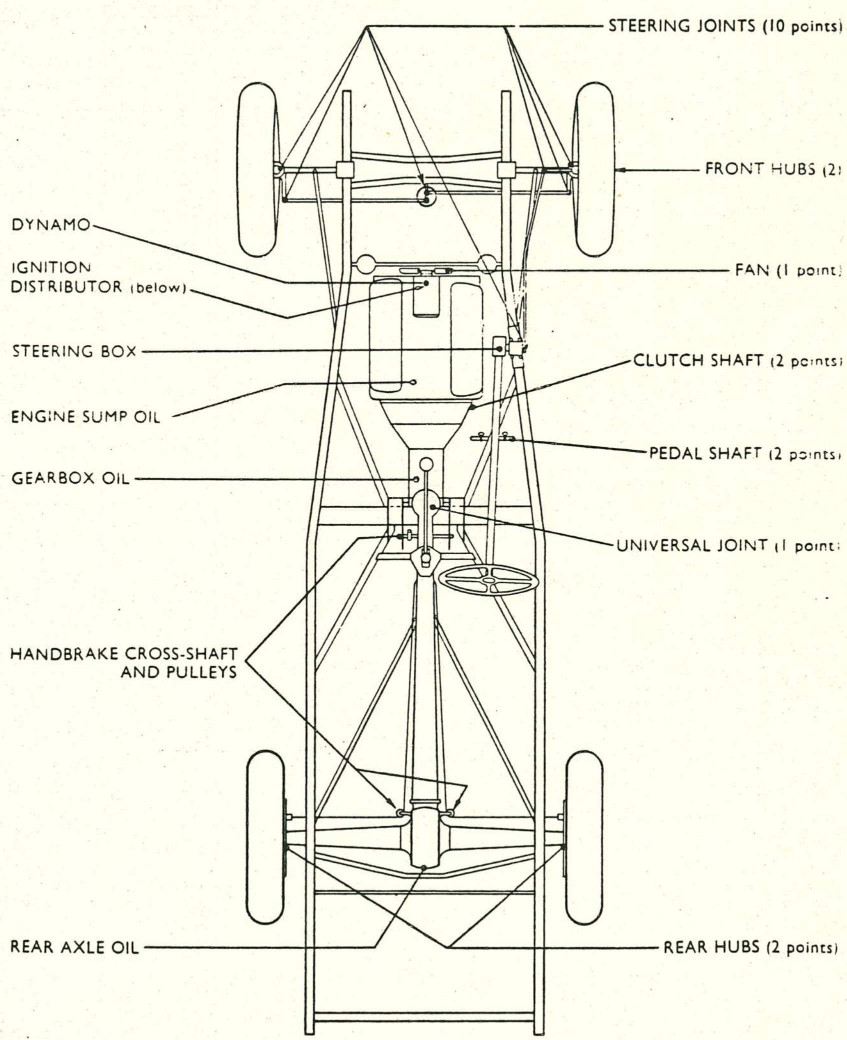
Drawings by courtesy of the "Autocar"

PHASE 2 ADJUSTER
FIG. 12

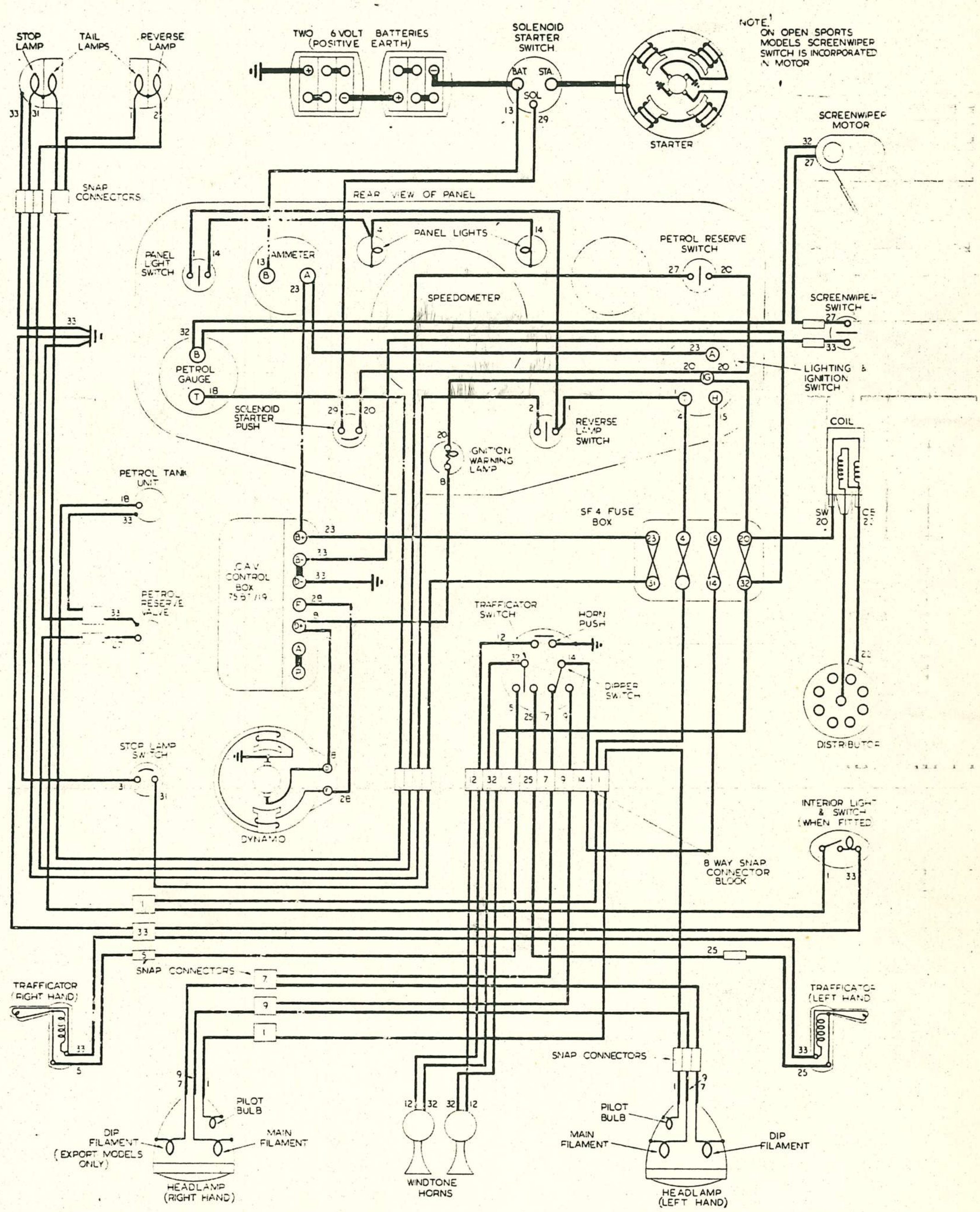


BISECTOR ARRANGEMENT. PHASE 1 REAR BRAKES.
FIG. 13

OIL **GREASE**

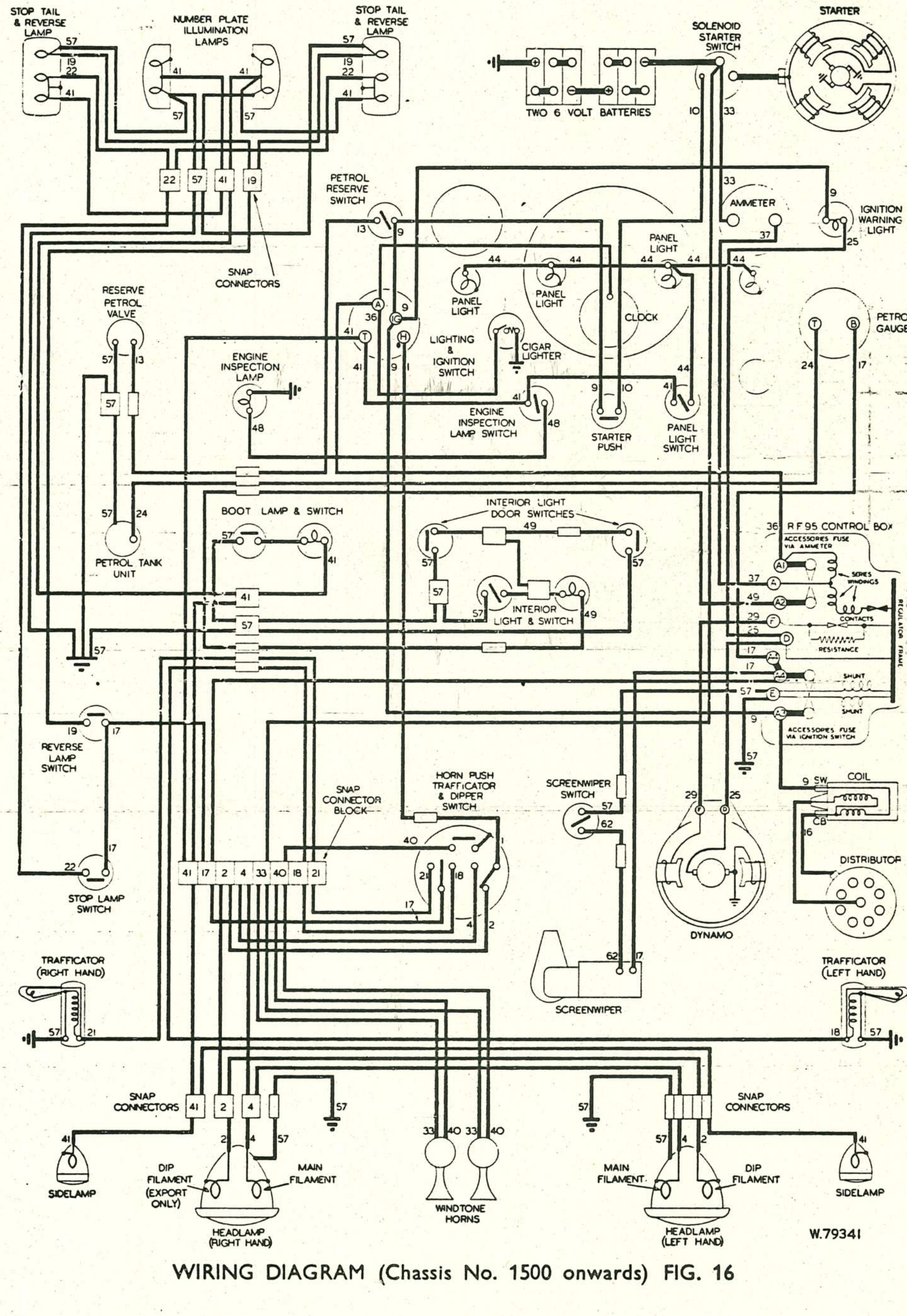


LUBRICATION CHART FIG. 14



WIRING DIAGRAM (Prior to Chassis No. 1500) FIG. 15

KEY TO CABLE COLOURS			
1	RED	18	BLUE & PURPLE
2	RED & YELLOW	19	BLUE & BLACK
3	RED & BLUE	20	WHITE
4	RED & WHITE	21	WHITE & GREEN
5	RED & GREEN	22	WHITE & BROWN
6	RED & BROWN	23	WHITE & PURPLE
7	RED & BLACK	24	WHITE & BLACK
8	YELLOW	25	GREEN
9	YELLOW & BLUE	26	GREEN & BROWN
10	YELLOW & GREEN	27	GREEN & PURPLE
11	YELLOW & BROWN	28	GREEN & BLACK
12	YELLOW & PURPLE	29	BROWN
13	YELLOW & BLACK	30	BROWN & PURPLE
14	BLUE	31	PURPLE
15	BLUE & WHITE	32	PURPLE & BLACK
16	BLUE & GREEN	33	BLACK
17	BLUE & BROWN		



WIRING DIAGRAM (Chassis No. 1500 onwards) FIG. 16

KEY TO CABLE COLOURS					
1	BLUE	23	GREEN WITH BROWN	45	RED WITH GREEN
2	BLUE WITH RED	24	GREEN WITH BLACK	46	RED WITH PURPLE
3	BLUE WITH YELLOW	25	YELLOW	47	RED WITH BROWN
4	BLUE WITH WHITE	26	YELLOW WITH RED	48	RED WITH BLACK
5	BLUE WITH GREEN	27	YELLOW WITH BLUE	49	PURPLE
6	BLUE WITH PURPLE	28	YELLOW WITH WHITE	50	PURPLE WITH RED
7	BLUE WITH BROWN	29	YELLOW WITH GREEN	51	PURPLE WITH YELLOW
8	BLUE WITH BLACK	30	YELLOW WITH PURPLE	52	PURPLE WITH BLUE
9	WHITE	31	YELLOW WITH BROWN	53	PURPLE WITH WHITE
10	WHITE WITH RED	32	YELLOW WITH BLACK	54	PURPLE WITH GREEN
11	WHITE WITH YELLOW	33	BROWN	55	PURPLE WITH BROWN
12	WHITE WITH BLUE	34	BROWN WITH RED	56	PURPLE WITH BLACK
13	WHITE WITH GREEN	35	BROWN WITH YELLOW	57	BLACK
14	WHITE WITH PURPLE	36	BROWN WITH BLUE	58	BLACK WITH RED
15	WHITE WITH BROWN	37	BROWN WITH WHITE	59	BLACK WITH YELLOW
16	WHITE WITH BLACK	38	BROWN WITH GREEN	60	BLACK WITH BLUE
17	GREEN	39	BROWN WITH PURPLE	61	BLACK WITH WHITE
18	GREEN WITH RED	40	BROWN WITH BLACK	62	BLACK WITH GREEN
19	GREEN WITH YELLOW	41	RED	63	BLACK WITH PURPLE
20	GREEN WITH BLUE	42	RED WITH YELLOW	64	BLACK WITH BROWN
21	GREEN WITH WHITE	43	RED WITH BLUE		
22	GREEN WITH PURPLE	44	RED WITH WHITE		

ALLARD Sydney Allard's first Allard car appeared in 1936. It was very much a "special" in that it used the V8 engine and chassis from a Ford and the body came from an ex-Earl Howe Grand Prix Bugatti. The car won its first event at Taunton as well as a 100-mile race on Southport sands. Known as CLK 5, the car also won a number of mud-plugging trials events such as the Experts and the Lawrence Cup, and was even matched against a f.w.d. Jeep.

Following its trials success, the "Allard Special" went into limited production in London. The records indicate that 12 were built, and in the hands of Allard, Hutchison, Warberton and Appleton, the Allard Special proved to be almost invincible in trials competition. Some without Allards wanted to have them banned! A notable Allard Special was Hutchison's 4.4 litre Lincoln V12 model which won the Wye Cup Trial and was the subject of an article in Motor (22/3 38). Plans for the production of "Lincoln Allards" were upset by the war, and Sydney Allard spent this period servicing war-weary army vehicles at a workshop in Fulham. At least 3 of the 12 Allard Specials are known to be in existance today.

The Allard Motor Company Ltd. was formed at the end of the war and, during the eleven car-producing years which followed, approximately 1,900 Allards were built. Some were road going passenger vehicles, but others were big-engined competition cars:

Competition	Road Sports	Saloons	Convertibles
J1,J2,J2X,J2R.	K1,K2,K3,Palm Beach.	P1,P2,Safari.	L,M1,M2.

The majority of Allards had a deep box-section chassis upon which was mounted a wooden framework to carry the aluminium body panels. Hilton Bros. of S.W.London manufactured many of the bodies, particularly the P1s. Front suspension was by swing axles, and the J2, J2X and J2R had the De Dion rear axle, as did the P2 and K3. Many close-tolerance components of Ford manufacture were used, thus facilitating servicing and repairs. The power unit was usually the trusty 3.6 litre Ford V8 but some cars, particularly the J series, used the more powerful Mercury, Ardun-Mercury, Cadillac and Chrysler V8s of up to 5.5 litres capacity. The larger American engines gave the 2s, 2Xs and 2Rs a very good power to weight ratio, and this was reflected in their performance. A J2 tested by Motor (14/2/51) had a 0-60 capability of 7.4 seconds, and J2s exported to the U.S.A. are known to have been considerably faster. The more notable successes achieved during the "Allard Era" are as follows:

1st Paris - Lisbon Rally, 1947.
1st Paris - Lisbon Rally, 1949.
1st British Hill-Climb Championship, 1949.
1st Circuit of Ireland 1,000 Miles Trial, 1950.
1st Watkins Glen Grand Prix, U.S.A. 1950.
1st Sebring Six Hours Collier Trophy, U.S.A. 1950.
1st Bridgehampton Cup, U.S.A. 1951.
1st Reno Road Race, U.S.A. 1951.
1st Pebble Beach 100, U.S.A. 1951.
1st Peron G.P., Argentine, 1951.
1st Monte Carlo Rally, 1952.
1st Nevada State Cup, U.S.A. 1952.
1st R.A.C. Rally, 1952.

(a J2 driven by Sydney Allard and Tom Cole also took a creditable third place behind two Grand Prix-style Talbots at the Le Mans 24 Hours in 1950, running for some 14 hours in top gear because of gearbox damage. In the 1953 event Sydney, at the wheel of the new J2R, lead the whole field on the first lap but axle failure caused him to retire the car)

During the early 1950s plans were made for the manufacture of J2s by the Kaiser Fraser Corporation of America, but this was later abandoned. Full-time production of the car that caused Ferrari to build bigger engines - 340 and 342 Americas' - came to an end in 1957, and the Allard Motor Company turned to car conversions and the development of performance equipment. Sydney Allard delved into the possibilities of a four-wheel drive competition car powered by two Steyr V8s, and then became the first man in this country to construct a pure American-style dragster powered by a supercharged Chrysler engine. This blue and silver dart-shaped vehicle set an early national record of 10.4 seconds for the standing ¼-mile. Sydney Allard became the prime mover in establishing dragster racing in England, and his company marketed the minature Dragon dragster driven by a Shorrock-Ford Cortina unit. Earlier experiments included a JAP-engined speedway car and the Clipper economy car.

Allard cars were driven by Clark Gable, Grand Prix driver Farina, Jean Kent and Richard Dimbleby, and Dick Barton and 'the Baron' were also endowed with these vehicles. Recently the Allard has been used for advertising purposes, promoting Kodak film in the U.K., and Champion sparkplugs in the U.S.A.

New members who may care to do some background reading should consult: 'Wheelspin' (G.T. Foulis,1946); 'More Wheelspin' (G.T.Foulis,1948); 'British Sports Cars' (G.T.Foulis,1958); 'Racing Sports Cars' (Pelham,1970); 'Automobile Quarterly' (U.S.A.Summer,1970); 'Road & Track July,1963) and 'Autosport' (29/8/69). Autocar, Autosport, Motor and Motor Sport ran tests on most of models listed above. In 1972 a census accounted for 115 cars, and the A.O.C. badge is to be seen in America, Canada, Australia, New Zealand and South Africa. The J2s are very popular in the U.S.A., where Goldschmidt, Wacker and Cole made them famous during the early 1950s.

The late Sydney Allard was a very great motoring enthusiast, and his abilities in this sphere are best illustrated by his outright win in the tough Monte Carlo Rally of 1952. At the wheel of a P1 Allard saloon, he achieved Britain's first victory for twenty-one years in this event. First of the 328 competitors who set out, the R.A.C. later awarded him the Sir Malcolm Campbell Trophy for this feat.

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- Ist Paris - Lisbon Rally, I947.
- Ist Paris - Lisbon Rally, I949.
- Ist British Hill-Climb Championship, I949.
- Ist Circuit of Ireland I,000 Miles Trial, I950.
- Ist Watkins Glen Grand Prix, U.S.A. I950.
- Ist Sebring Six Hours Collier Trophy, U.S.A. I950.
- Ist Bridgehampton Cup, U.S.A. I95I.
- Ist Reno Road Race, U.S.A. I95I.
- Ist Pebble Beach I00, U.S.A. I95I.
- Ist Peron G.P., Argentine, I95I.
- Ist Monte Carlo Rally, I952.
- Ist Nevada State Cup, U.S.A. I952.
- Ist R.A.C. Rally, I952.

(a J2 driven by Sydney Allard and Tom Cole also took a creditable third place behind two Grand Prix-style Talbots at the Le Mans 24 Hours in I950, running for some I4 hours in top gear because of gearbox damage. In the I953 event Sydney, at the wheel of the new J2R, lead the whole field on the first lap but axle failure caused him to retire the car)

During the early I950s plans were made for the manufacture of J2s by the Kaiser Fraser Corporation of America, but this was later abandoned. Full-time production of the car that caused Ferrari to build bigger engines - 340 and 342 Americas' - came to an end in I957, and the Allard Motor Company turned to car conversions and the development of performance equipment. Sydney Allard delved into the possibilities of a four-wheel drive competition car powered by two Steyr V8s, and then became the first man in this country to construct a pure American-style dragster powered by a supercharged Chrysler engine. This blue and silver dart-shaped vehicle set an early national record of I0.4 seconds for the standing ¼-mile. Sydney Allard became the prime mover in establishing dragster racing in England, and his company marketed the minature Dragon dragster driven by a Sherrock-Ford Cortina unit. Earlier experiments included a JAP-engined speedway car and the Clipper economy car.

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The late Sydney Allard was a very great motoring enthusiast, and his abilities in this sphere are best illustrated by his outright win in the tough Monte Carlo Rally of I952. At the wheel of a PI Allard saloon, he achieved Britain's first victory for twenty-one years in this event. First of the 328 competitors who set out, the R.A.C. later awarded him the Sir Malcolm Campbell Trophy for this feat.

KEEP FOR REFERENCE

YEAR	MODEL	GENERAL DESCRIPTION	ENGINE	BUILT
'46/7	J1	100" wheelbase 2-seater. Boxed steel chassis. Split axle i.f.s. Transverse leaf springs front & rear. Aluminium & steel body panels carried on wood/steel framework. 22.5 cwt unladen. Maximum speed 95 mph. Both trials & 'road' bodies fitted on this chassis, the latter being streamlined with large front wings & curved grille.	V8 3.6/3.9 litres Ford/Mercury	12
'46/8	K1	106" wheelbase 2-seater. Suspension & method of body construction similar to above, but only 'road' bodies were fitted. 21.8 cwt unladen. Maximum speed 90 mph	V8 3.6/3.9 litres Ford/Mercury	151
'46/8	L	112" wheelbase 4-seater open tourer. Suspension & body construction similar to above. 25 cwt unladen. Maximum speed 86 mph.	V8 3.6 litres Ford	191
'47/50	M1	112" wheelbase 4-seater drophead. Suspension & body construction similar to above. 26.5 cwt unladen. Maximum speed 90 mph.	V8 3.6 litres Ford	499
'49/51	P1	112" wheelbase 4-seater saloon. Suspension & body construction similar to above, later models had coil springs at front & telescopic dampers front & rear. 28.5 cwt unladen. Maximum speed 85 mph.	V8 3.6/3.9 litres Ford/Mercury	551
'50/1	J2	100" wheelbase 2-seater. Split axle i.f.s. & de Dion rear axle with coil springs & telescopic dampers front & rear. Light alloy body panels on steel tube frame, cycle-type front wings. Ventilated front brakes. 40 gal tank was optional as was quick change axle gearing. 20 cwt unladen. Maximum speed 115 mph. Very successful competition car, especially in America.	V8 3.9/4.4 litres Mercury Cadillac & other in USA to 6 ltrs	99
'50/1	K2	106" wheelbase 2-seater. Split axle i.f.s. with coil springs, transverse leaf spring at rear (de Dion axle was available at extra cost). Aluminium & steel panels carried on wood/steel frame. 24 cwt unladen. Maximum speed 103 mph.	V8 3.9/4.4 litres Mercury Cadillac & other in USA to 5.4 lt	119
'52/3	K3	100" wheelbase 2/3-seater. Steel twin-tube chassis. Split axle i.f.s. & de Dion rear axle. Coil springs & telescopic dampers front & rear. Twin fuel tanks. Aluminium & steel panels on wood/steel frame. 23.5 cwt unladen.	V8 3.6/3.9 litres Ford/Mercury	62
'51/2	J2X	100" wheelbase 2-seater. Basic suspension as J2. Engine 7.5" further forward in chassis gave car a longer nose & more leg room in cockpit. 40 gallon fuel tank. Some cars had aerodynamic bodies for Le Mans, etc. Light aluminium panels on steel frame. 24 cwt unladen. Maximum speed 120 mph. Quick change axle gearing available.	V8 4.4 Mercury Cadillac & other in USA to 6 ltrs	83
'51/3	M2X	112" wheelbase 4-seater drophead. Suspension, construction & appearance very similar to P1 saloon	V8 3.6/3.9 litres	30
'52	P2	112" wheelbase 4-seater "Monte Carlo" (but <u>not</u> Rally winner) saloon. Twin tube chassis. Split axle i.f.s., de Dion axle & coil springs. Single piece fold forward wings & bonnet section raised by two hydraulic rams. Aluminium & steel panels on wood/steel frame. 29 cwt unladen. Maximum speed 85 mph.	V8 3.6/3.9 litres Ford/Mercury	11
'52	Safari	Chassis as P2 saloon. A 7/8-seater, 95 cu.ft. of luggage space available with rear seats folded away. Bonnet & wings section as P2. Construction as P2. 29 cwt unladen	V8 3.6/3.9 litres Ford/Mercury	10

Maximum performance and weight of vehicle sometimes varied because of the choice of engine. Please see notes at the foot of page 2.

Build figures are regarded as being reasonably accurate. Factory records are no longer available.

YEAR	MODEL	GENERAL DESCRIPTION	ENGINE	BUILT
'53	J2R	96" wheelbase 2-seater. Twin tube chassis, split axle i.f.s & de Dion rear axle (a later development provided for i.f.s. by wishbones & torsion bars) Quick change gearing. An auxiliary fuel tank along side of passenger seat gave a total capacity of 50 gallons. Aerodynamic aluminium body on steel tube frame. Originally designed for one engine only - Cadillac. 19.9 cwt unladen. Maximum speed in region of 130/150 mph.	V8 5.4 litres Cadillac. Many were tuned to give up to 300 bhp	7
'52/4	Palm Beach Mk 1	96" wheelbase 2-seater. Twin tube chassis. Steel & alloy body panels. Split axle i.f.s. Coil springs & telescopic dampers front & rear. First Allard to depart from the big V8 image, but at least one was fitted with a 4.5 litre Dodge V8.	4 & 6-cylinder Ford	77
'56/8	Palm Beach Mk 11	96" wheelbase 2-seater & 4-seater GT versions. De Dion axle, some with sliding pillar i.f.s. & front disc brakes One GT version was fitted with a Chrysler V8. 25.5 cwt unladen. Maximum speed 115 mph.	6-cylinder Jaguar	7

OTHER VEHICLES BUILT BY THE ALLARD MOTOR CO LTD

- Atom Speedway Car. A small single-seater driven by a JAP racing engine mounted to left of driver, transmission by chain to rear axle.

Clipper Economy Car. A three-wheeled fibreglass model driven by a 360 cc Villiers engine.

Allard Steyr. A single seater with air-cooled Steyr engine equipped with eight Amal carburetters. Twin rear wheels. Won British Hill-Climb Championship in 1949. A twin Steyr version was not completed.

Dragster. Built on American lines with Chrysler engine & Potvin supercharger location. First of its type in England

Dragon Dragster. Mini version powered by a Shorrock-Ford Cortina engine. Also available in kit form.

GENERAL NOTES ON PRODUCTION VEHICLES

Engines: Most cars were fitted with the 3.6-litre Ford engine. Import restrictions prevented the wide use of American o.h.v. V8 engines, but a way to more power in the UK was by fitting the Ardun o.h.v. conversion to s.v. blocks. Cars exported to the USA usually had their engines installed by specialists such as Detroit Racing Equipment, the British Motor Car Company, Bill Frick Motors, etc. For maximum power, some American engines were bored out to a full 6-litres.

Bodies: In the main these were manufactured by Hilton Brothers, Econ Motors, Abbot of Farnham. Some chassis side members were stamped by Thomsons of Wolverhampton. Some special 'one off' bodies were also built, one being of magnesium by Essex Aero of Gravesend for an extended J2X chassis. Total weight, untrimmed, was 132 lbs.

Design: This work was carried out by Sydney Allard, Reginald Canham, Dudley Hume, Godfrey Imhof and James Ingram.

Prices: These varied because of options on engines and other equipment. A standard P1 saloon cost £1,277 in 1950, and a K2 sports cost £1,368 in 1952. A standard J2R - export only - cost $8,500 in 1953.

Performance: This depended very much on the size and type of engine, its state of tune, and axle ratio. I have personally sampled a 4.5-litre 1947 J1 at 125 mph (D.Kinsella)

Competitions: Allards were very successful in a wide range of events. Those who drove the cars included Peter Collins, John Fitch, Jack Fairman, Masten Gregory, Carroll Shelby, Tom Cole, Erwin Goldschmidt, Godfrey Imhof, and Arkus Duntov.

PRE-WAR ALLARD SPECIALS

CLK 5, the first "Allard Special", appeared in 1936. Eleven or so cars followed, these being built by Adlards Motors Ltd of Putney. Specifications varied, there being 2, 3 and 4-seaters, and narrow 2-seater competition cars. Engines were either Ford V8 or Lincoln V12, and optional equipment included 2-speed rear axles, 30-gallon fuel tanks, magneto ignition, and adjustable shock absorbers. Body panels were aluminium and steel mounted on a wood/steel frame, and prices ranged from £460 to £650. Very active in mud-plugging trials with hundreds of awards to their credit, some competitors wanted them handicapped or run in a special class! The V12 versions were capable of 100 mph.