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SECTION 2

SERVICE NOTES ON ALLARD CARS

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, king pins, and bushes, etc.

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 grease 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.

ENGINE

The majority of engines fitted to Allard cars are Dagenham-built Ford V8 30-h.p. units with iron cylinder heads and single carburettors. 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. (*Note.*—The Dagenham-built Ford V8 engine is dealt with in detail in Vol. III.)

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-h.p. or 32-h.p. units, side-valve, 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. engine, i.e. $3\frac{1}{16}$ in., while the 32-h.p. units have a bore of $3\frac{3}{16}$ in.

Early "J2" models were fitted with 32-h.p. side-valve units bored out to $3\frac{5}{16}$ in., giving a capacity of 4,375 c.c. These will only stand a 0·010 in. increase in bore size, and must be linered. They are fitted with aluminium heads and twin Solex 30 A.A.P.I. carburettors. The compression ratio may be 7: 1 or 8: 1 by using either a $\frac{1}{16}$-in. copper and asbestos gasket or a 0·010-in. Corrujoint cupro-nickel gasket respectively. The Corrujoint gasket can be fitted with jointing compound in emergency, but should normally be replaced. A new gasket should be smeared with engine oil only before fitting.

If severe "pinking" is experienced with aluminium cylinder heads, it is best overcome by retarding the ignition a little and enriching the mixture slightly 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 4,375-c.c. engine are as follows: venturi, 24; main jet, 120; compensator, 200; idling, 55; air starting, 5·5; petrol starting, 145.

The aluminium heads are made to take 14·4-mm. plugs. Champion J10 Com. sparking plugs are normally fitted with a gap of 0·022 in.

The aluminium heads for the standard 30-h.p. units give a 7 : 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.

Carburettor Settings—Ardun O.H.V. Unit

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, 6; starter petrol jet, 170. The 18-mm. plugs fitted to this unit are normally Champion R15 with a gap of 0·022 in.

Tappet Adjustment—Ardun O.H.V. Units

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 0·010 in for inlet and 0·012 in for exhaust.

Adjusting Fan and Dynamo Belts—Ford-based Engines

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 the water pumps and dynamo. The dynamo belt is adjusted by slackening the dynamo securing bolt and lifting up the dynamo. Usually this operation adjusts the fan belt as well, but sometimes it causes the fan belt to become too tight, in which case 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.

Testing for Engine Vibration

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 water temperature exceed 200° F., otherwise there is a danger of piston seizure or bore distortion which will shorten the engine life considerably.

Overheating Troubles

A certain amount of trouble was experienced on some early models due to overheating, caused by poor water circulation in 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.

CLUTCH AND GEARBOX

Clutch-pedal Adjustment

The clutch pedal must be adjusted to 1 in. free movement at the pedal pad. 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"

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 $\frac{1}{16}$–$\frac{1}{8}$ in. and the front nuts tightened up. These rods are not fitted to cars using the 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.

Gearboxes Fitted to Early Models

The gearboxes used on early models had the Ford tower-type selector lid. The lever was cut down to about 1 in. long, and an Allard remote-control link clamped to it. The pivot pins on the control may be replaced when excessive wear develops. Early "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.

Gearboxes Fitted to Later Models

Later models are fitted with the Ford side-change gearbox with the selector arms and operating levers on a detachable casting bolted to the side of the box. The control mechanism for this gearbox, either central lever or steering-column mounted, is an adaptation of the Ford steering-column control. On the saloon and coupé 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 gear change 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 freely from one lever to the other. Also, the intermediate arms must abut 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 gear persists in "jumping out" the spring-loaded locating plungers to the selector arms should be examined. The usual cause is a broken or collapsed plunger spring.

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

REAR SUSPENSION AND REAR AXLES

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," "L1," and "J1" models by 6 in. 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.

Panhard Rod Frame Bracket

The Panhard rod frame bracket when fitted to leaf-spring models (saloon models particularly) is secured by three bolts to the front flange of the main rear cross member. These bolts should be checked for tightness, as also should

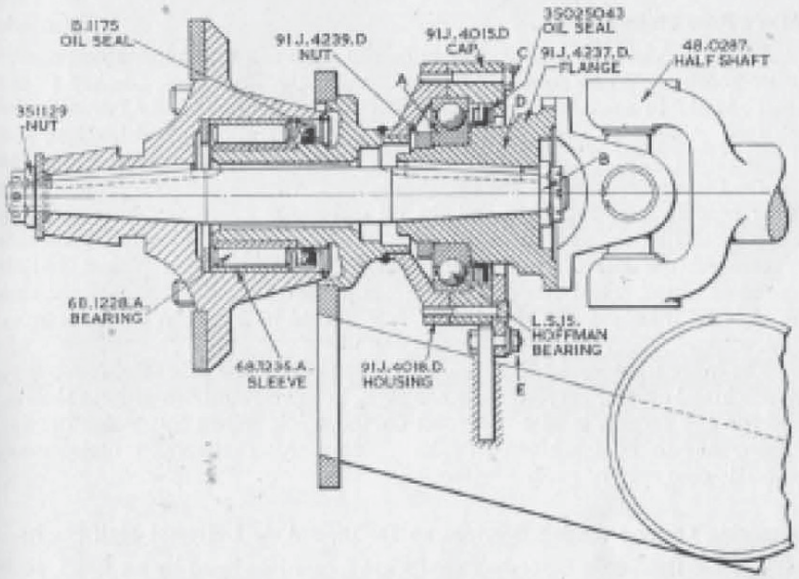

FIG. 1.—SECTION THROUGH OUTER LOCATING BEARING ON DE-DION REAR-AXLE UNIVERSAL HALF SHAFTS

To extract ball bearing *A*, remove nut *B*, six bolts at *C*, and bolts at *E*. Then withdraw flange *D*, complete with bearing and cap.

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-in. B.S.F. high-tensile bolt; this should be checked for tightness. This bracket is welded to the forging on later models.

De-Dion Rear Axle

The De-Dion rear axle fitted to all "J2" models and a few "K2" models is attached to the frame by three rubber bearings. The main bearing 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 bolts passing through the bush and holding the radius-rod lugs at each end should be closely examined for scoring and grooving. The bolts should be replaced when necessary by the correct spare part, which is a high-tensile bolt of standard dimensions. The split pin to the nut should be renewed.

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 for the Allard De-Dion axle are identical with the Ford axle, except for the four extra bearings and the universal half shafts.

Allard Rear Hubs

On all models the Allard rear hubs run on 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 scored and pitted. This is removed by a special Ford extractor tool.

The inner track, which is pressed on to the end of the axle case, 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.

Removing Outer Locating Bearings on De-Dion Axle Universal Half Shafts

The De-Dion axle outer half shafts are located endwise by an L.S.5 ballrace, which is protected by a Western oil seal (see Fig. 1). 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 the 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 ballrace 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.

De-Dion Universal Half Shafts

The universal half shafts are of the needle-roller pattern, and should be checked for wear in the same way as an open propeller shaft. Excessive wear will cause vibration and roughness when running, and is likely to cause knock at very low speeds. Replace the pinnacle nuts securing the universal half shafts to the flanges whenever they are disturbed.

Removing De-Dion Axle Half-shaft Inner Bearings

The roller bearings on each side of the differential case on De-Dion axles

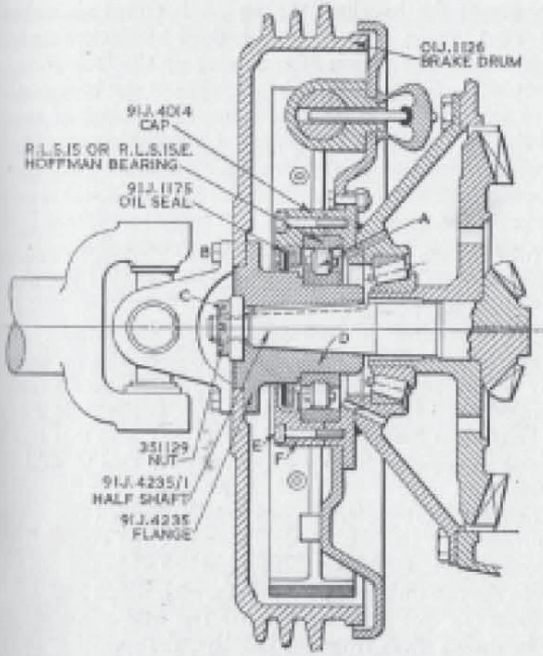

FIG. 2.—SECTION THROUGH INNER ROLLER BEARING ON DE-DION REAR-AXLE UNIVERSAL HALF SHAFTS

To remove roller bearing *A*, remove four nuts *B*, drop universal half shaft, and remove brake drum. Then take out six Allen screws *E*. When nut *C* has been removed, flange *D* may be extracted, with cap *F* and inner track of bearing *A*.

are either R.L.S. 15 with grooved inner track, or R.L.S. 15E, with grooved outer track (see Fig. 2). 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 Allen screws holding the bearing cap should now be removed, and then the ¾-in. A.N.F. nut on the end of the shaft. The flange may now be drawn off with the bearing, bearing cap, and oil seal together. A step is provided behind the bearing inner track to facilitate its removal.

Adjusting Backlash between Crown Wheel and Pinion

Backlash between the crown wheel and pinion should be 0·002–0·012 in., and is adjusted by paper gaskets fitted between the differential case and the 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 not worn so 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 lb.-in. preload. This is done by slackening the two locknuts 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 there are any. The torque tube must be unbolted from the differential case and the propeller shaft unpinned from the pinion shaft before this operation can be carried out.

Torque Tube

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 propeller shaft is a tubular Hardy Spicer pattern type, made 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-tube 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 to the cap on 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 propeller 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 is 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 obtained 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 the torque-tube bell end is loose in the gearbox housing. Also an excessive load is placed on the universal joint.

FRONT SUSPENSION AND STEERING

Front Suspension

The front suspension is of the split-axle type, with transverse leaf spring on early models and coil springs on later models.

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, and 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 the 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 Allard Motor Company.

The king-pin cotter pin should be checked for tightness, and if the plain end of the cotter pin is below the surface of the axle-beam boss it should be replaced. If it works loose again quickly, the king pin should be checked for fit in the axle-beam boss. If slack, the king pin 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 king pins and bushes, which in any case should be replaced if more than $\frac{1}{32}$-in. slack can be obtained at the wheel rim. Care must be taken to avoid confusing these two points with slackness of the wheel bearings; these should be adjusted so that only the slightest "rock" can be felt. This can be done after removal of the 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.

The check straps on the front suspension of all coil-spring models should be checked to ensure that they allow the correct axle movement. They should allow $2\frac{1}{4}$–$2\frac{3}{4}$ in. drop of the wheel relative to the chassis from the static position. This is most easily checked by noting the dimensions between wheel centre and the nearest edge of the wing vertically above, after ensuring correct spring heights, etc. The car is then jacked up until the axle is hanging on the strap, and the dimension rechecked. If drop is excessive the strap may be shortened by redrilling.

Steering

On early 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 $\frac{9}{16}$-in. A.N.F. nuts securing these arms should be examined for tightness, and to ensure that the correct special washer is fitted. This must be either of the same outside diameter as a B.S. $\frac{1}{2}$-in. washer, or a B.S. $\frac{9}{16}$-in. washer with a flat on one side, and must be at least as thick as the appropriate B.S. washer (0·080 in.). 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 become 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.

If jerky steering is experienced when the steering gearbox is correctly adjusted, the king-pin thrust race, located between the top of the stub axle and the head of the king pin, should be checked for wear and "pitting" of the tracks.

The track rod and drag-link clips should be examined for distortion due to overtightening, and should be replaced if distortion has occurred.

There are two points of adjustment on the Marles worm- and roller-type steering gearbox: to remove "end shake" on the worm and "end shake" on the rocker shaft. Adjustments to Marles steering gear are dealt with in Vol. I.

If the steering gearbox has to be removed from its bracket, 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 2B.A. screws in the steering-wheel boss and disconnecting the leads 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 gear change, the clamp caps at the 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.

Steering Alignment

On all models the camber angle should be between 2° and 3° (see Fig. 3). It is not possible to adjust this on leaf-spring models except by resetting or replacing the transverse leaf spring. This becomes necessary if the camber angle drops below $1\frac{1}{2}$°.

The caster angle on all leaf-spring models should be between 1° and 2°. On all models up to 1951 the caster angle increases as the front wheels are deflected upwards from the static position. As the caster angle increases the camber angle decreases, and vice versa. Therefore, if the front spring settles, or the shackles become excessively worn, allowing the camber angle to decrease,

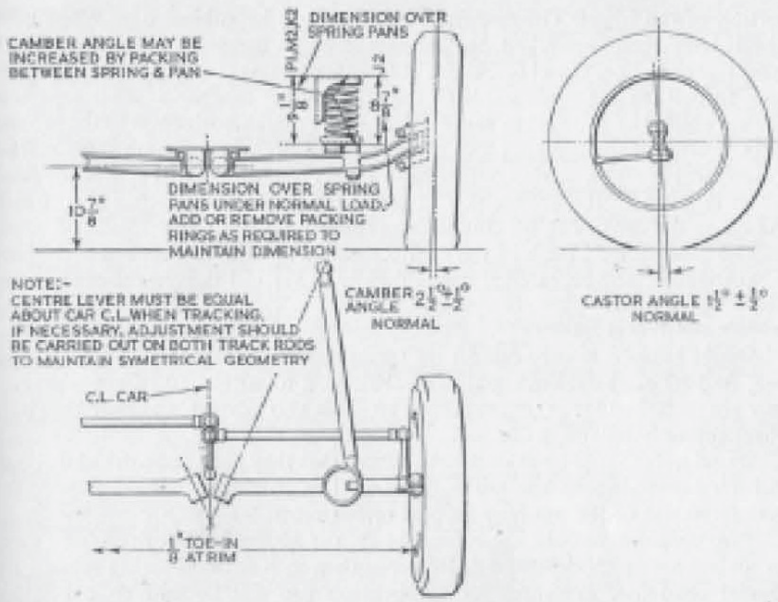

FIG. 3.—STEERING ALIGNMENT

Note that the caster angle on Model "K2" should be 3½°–4½°, and on competition model "J2", the caster angle should be 5°–6°.

the caster angle increases. When this condition is combined with a settled rear spring, wheel wobble is liable to occur on certain road surfaces at speeds of up to 25 m.p.h. The remedy, of course, as previously mentioned, is to replace or reset the springs.

The caster and camber angle on coil-spring models may be adjusted by adding or removing fibre packing rings above and below the springs.

The caster angle for models "M1" coil-spring coupé, "P1" saloon, and "M2" coupé, should be between 1° and 2°.

The caster angle for the "K2" model should be between 3½° and 4½°.

The caster angle for the "J2" competition model should be between 5° and 6°.

The toe-in on all models should be $\frac{1}{16}$–$\frac{3}{16}$ in. at the rim. However, owing to the wheel manufacturer's permissible tolerance of 0-100-in. run-out, it is necessary, before checking or adjusting the track, to "jack up" the wheels and determine the position of the run-out. This is done with a stand placed by the wheel with a pointer firmly fixed to it pointing at the rim to just touch at the high point (if the wheel is out of true), which should be marked 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 split-axle suspension, to roll the car some yards so that the correct camber angle is resumed. The car should be brought to rest with the chalk marks horizontal to the ground and the arms of the tracking tool placed against the wheel rim on these marks. Adjustment must be carried out on both tracks rods equally. If this is not done a bias is given to the "Silentbloc" bearing on the centre steering arm, which will cause the car to run off course unless held.

The "Silentbloc" bush in the centre steering should be checked if shimmy is experienced, and replaced if it readily allows vertical movement of the arm.

Wheels and Wheel Balance

Wheel balance is very critical on the split-axle suspension, and the 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 the spare wheel correctly balanced.

Wheel nuts should be examined to ensure that they have not worked through and are bottoming on the brake drum. If this condition has developed, the chamfered end of the nut may be filed to correct it.

Tyre pressures should not exceed 24 lb. per square inch for the front tyres for all leaf-spring models, and 22 lb. per square inch for coil-spring models for normal road use. Pressures for competition use will depend on conditions and the type of tyre, but generally they should be increased by about 5 lb.

BRAKES AND ELECTRICAL SYSTEM

Brakes

The brakes fitted to all models are Lockheed 12-in. diameter hydraulically operated. Models built up to 1948 were fitted with "Phase I" brakes, which had leading and trailing shoes, front and rear. Brake-lining adjustment is carried out by means of two hexagons on the backplate after having "jacked" the wheel up. The forward hexagon is rotated anticlockwise and the rearward one clockwise, looking from wheel side of brake drum. They should be turned until tight, and then slackened one notch.

Later models are fitted with "Phase II" two-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 brake drum, 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.

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 slackened one notch.

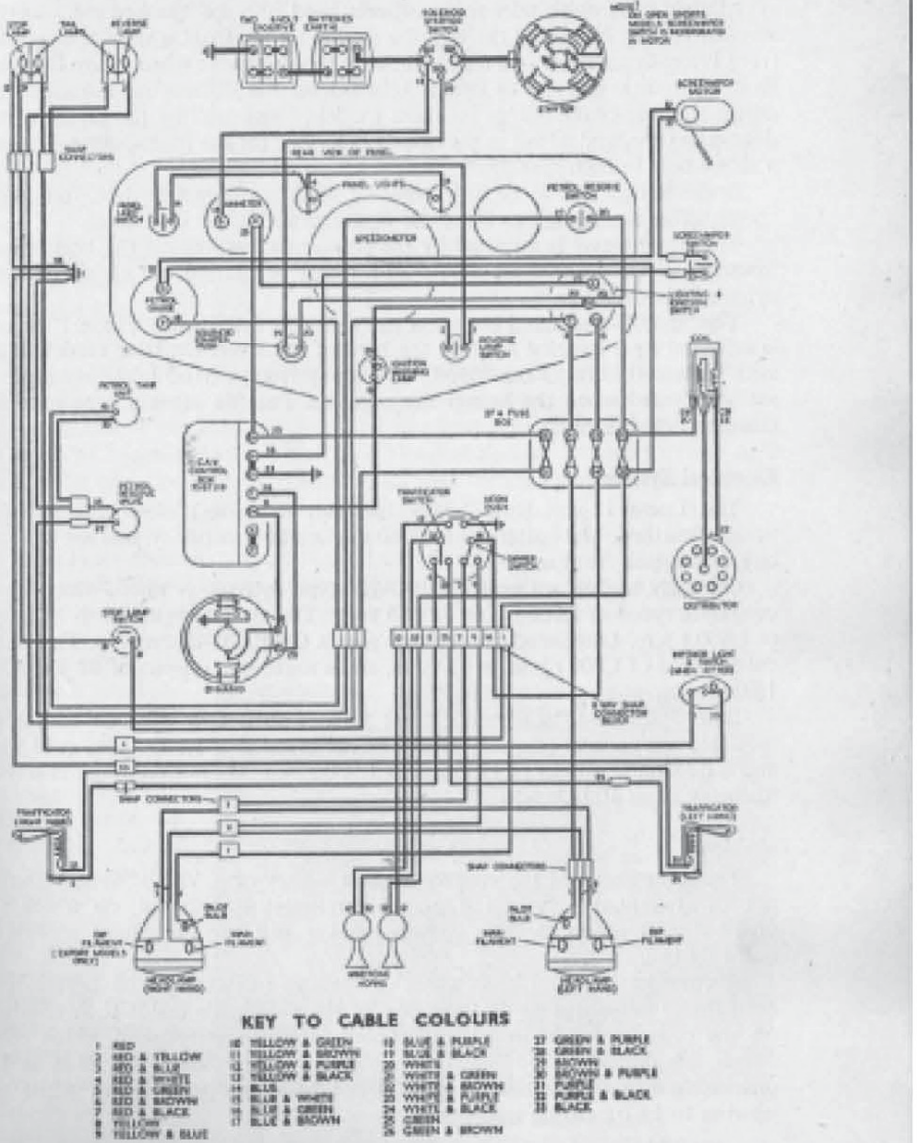

FIG. 4.—WIRING DIAGRAM FOR ALLARD 30-H.P. SALOON COUPÉ AND SPORTS MODELS (1946–47)

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 front brake-drum holes. All models fitted with wire-spoke wheels have De-Dion rear axles with rear brake drums inboard on the differential housing. To adjust the rear-brake linings on these models, "jack up" by the centre of the dead-axle tube, and adjust as previously described for the front brakes, through a single hole in each rear drum.

Brake linings should be fully adjusted, and there must be 1-in. free pedal travel before attempting to bleed the pipelines and wheel cylinders.

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 push rod.

The "flyoff"-type hand brake on early 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 "flyoff" or pistol-grip type hand brake is automatically adjusted when the linings are adjusted. Paraffin must not be used for cleaning brake drums.

Electrical System

The Lucas 12-volt (two 6-volt batteries in series) electrical system is positive earthed. The batteries are of 60 ampere-hour capacity, and are situated one under each front seat.

On early models a Lucas C45P.CW24-type dynamo is fitted, which has a cutting-in speed of 1,000 r.p.m. at 12·5 volts. The maximum output is 13 amps. at 1,600 r.p.m. Later models are fitted with a C45P.CW48 dynamo. This has a cut-in speed of 1,000 r.p.m. at 13 volts, and a maximum output of 20 amps. at 1,600 r.p.m.

Later "J2" and "K2" models are fitted with a C39 dynamo with rear-mounted rev. counter gearbox. This has a cut-in speed of 1,100 r.p.m. at 13 volts and a maximum output of 17 amps. at 1,900 r.p.m. These r.p.m. figures have a tolerance of $\pm$ 100 r.p.m.

Ignition

The adjustment of the contact-breaker points of a V8 distributor should not be attempted without the use of a retiming instrument, on which the distributor is mounted. The contact-breaker gap for all Allard models is 0·014–0·016 in.

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 plastic-covered lead was introduced which overcomes this difficulty. Trouble may also be 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.

D. R. H.