" A L V I C "

The Magazine of the Alvis Car Club, Victoria.

DECEMBER 1964

THANKS once again to Mr. Brown, of Alvis Ltd. we are able to publish more Alvis service information, especially suitable to Three Litres. This is indeed timely news at a time when the demand for this type of help from the Club is rapidly increasing. This issue of "Alvic" then, will be devoted almost entirely to this class of information.

PROCEDURE FOR LAYING UP CARS

Alvis Ltd. have advised the following as highly desirable procedures to take when laying up a car for a lengthy period. They name Shell oil products, but any other reputable equivalents will do just as well.

ENGINE:

1. Drain existing lubrication oil when engine is hot.
2. Flush with a good quality flushing oil.
3. Fill with Shell Rust Preventive Lubricant 2 (RPL 2).
4. Idle gently for five minutes - then rev up and switch off.
5. When cold, remove all spark plugs and pour a teaspoon of RPL 2 into each hole, smear plugs with RPL 2 and screw back into place.
6. The engine should then be given two or three turns on the starter and LEFT ALONE.

PETROL SYSTEM:

1. Drain petrol tank and place petrol in tightly stoppered can. The carburettor bowl should also be emptied. After draining the petrol tank it should be blown out to make sure that all liquid is completely removed, otherwise rust, scaling and gumming can be expected. Likewise, all petrol pipes should be blown through.

COOLING SYSTEM:

To drain the radiator and engine and leave these dry and empty may give rise to saidification of corrosive matters left in the cooling system. When these products become really hard it is almost impossible to remove them. There are two alternative methods, either being satisfactory:

a) Drain the complete system, fill with cleaning solution such as Clensol and leave for a few hours. Then run the engine for approximately half an hour and drain it, afterwards flushing out several times to remove cleaning solution. Finally, flush and blow out the whole system from bottom to top. This can be done by fixing the water mains to the bottor radiator hose and giving it full water pressure and boosting it with an air pressure at the same time. Do not forget to drain a heater unit if fitted.

b) Fill with sufficient anti-freeze solution to stand any anticipated amount of frost in the particular area.

CHASSIS:

The whole chassis should be painted with Shell RPF 7. Paint carefully over brake drums to prevent oil reaching brake linings. RPF 7 should be applied with a soft brush, and allowed to "Flow" and should NOT be "worked". All chassis nipples should be greased as usual, and spring leaves heavily painted with oil or RPF 7, ensuring that it oozes between the leaves.

GEARBOX AND BACK AXLE:

Drain when hot, flush through with a normal flushing oil and fill to the normal level with RPL 2 or similar oil, turn the parts round for a few revoluions and LEAVE.

ELECTRICAL EQUIPMENT:

Paint RPF 7 over externals of distributor, coil, dynamo, starter and control boxes. All connections may be smeared with vaseline. Battery: The best method is to remove entirely and give regular charging and discharging. If not, then battery should be completely drained and refilled with distilled water. This is a very poor substitute. Merely to leave the acid in the battery will result in early destruction. The terminals should be smeared with vaseline.

BODY:

This should be thoroughly washed, cleaned and polished. Do not forget undersides of wings and body valances. Any scratches or paint chips should be touched up with paint or lacquer; if not, paint on RPF 7. Oil all hinges on doors, bonnet, boot etc. Apply RPF 7 to all chromium plating and bright parts with a soft brush. Wrap tools and equipment in greased paper. Brush interior trim thoroughly, spray fabric or cloth with Shelltox, and feed leather with good leather polish.

GENERAL:

If possible, a waterproof sheet should be placed over the engine under the bonnet, and the whole car covered with a dust sheet. The car should be jacked up on blocks so that it does not rest on the tyres. If not on blocks, tyre pressures should be checked at least once a month.

TO MAKE CAR READY FOR THE ROAD AGAIN AFTER LAYING UP:

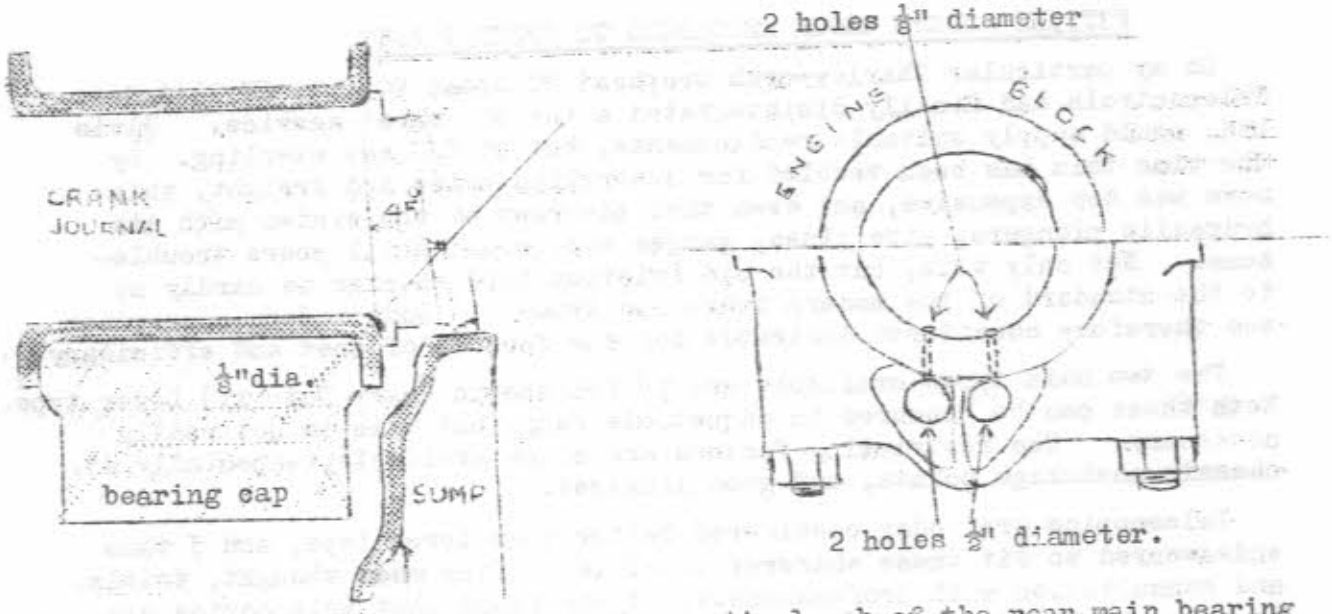
1. Drain sump, gearbox and rear axle of Shell RPL 2.
2. Refill with recommended grades of oil to correct levels.
3. Clean spark plugs and refit.
4. Charge and replace battery, and fill petrol tank and system.
5. Run engine for a few minutes, then add water slowly to radiator if this had been drained.
6. Chrome and bright parts may be cleaned, but RPF 7 is usually left on as it acts as a rust preventive paint. It may be removed by rubbing with a rag soaked in kerosene or petrol.

SERVICE DATA SHEET NO. 96 ENGINE OIL LEAK TA 14.

If an excessive amount of oil leaks from the bottom of the clutch pit, this isprobably coming past the crankshaft rear oil retaining scroll. A slight weep from this position is perfectly allowable, but if really excessive some improvement might be made by the following method:-

1. Drop the sump and chip or file away radically the inside rear face which is adjacent to the bak face of the rear bearing cap. There is at present a space approx. 3/16" wide for the oil to escape from the rear scroll back into the sump. The sump wall can be reduced by approx. 3/32" (the wall thickness is 3/16"), but care must be taken not to thin down the rear wall excessively.

2. Remove the rear bearing cap and machine 1/16" off the back face where it is adjacent to the sump wall. Care must be taken not to machine the length of the main bearing itself. This will also give a little more clearance between bearing cap and sump rear wall.



3. Drill two holes ½" diameter in the vertical web of the rear main bearing cap. The object of these holes is to allow any oil which may be swirling in the rear pockets of the main bearing cap to escape through this web and thereby into the sump.

4. With the rear main bearing and cap together drill two holes ⅛" diameter at an angle of 45° to join the ½" diameter holes. These are to bleed oil from the cavity formed between the rear radius of the crankshaft and the chamfer of the bearing, back into the rear bearing cap. These holes are drilled approx. 7/16" on either side of the bottom centre line.

5. Watch for any fouling of the crankshaft scroll in the sump rear housing. There should be approx. 3 or 4 thou. clearance. If there is any fouling an endeavour should be made to re-position the sump, which may have some latitude on its fitting bolts. Otherwise the fouling must be rectified by careful scraping or filing of the sump housing.

6. Make sure that no Shellac or jointing compound leaks into the sump rear housing when re-assembling, otherwise this clearance will be upset.

OUTER CABLE JAMMING ON CABLE BRAKES.

Owners of vintage and Post-vintage models using Alvis design cable-operated brakes may find that the inner cables stick or jam in the outer metal casings. This is usually due to rust or grit from exposure to water, mud etc, thrown up from the road. This can be largely cured by covering the outer cable with a suitable diameter of PVC tubing to make as close a fit as possible, and to retain oil and grease in the outer cable.

1) Preferably remove outer casing and degrease in both of hot Colosyl WK. If this is not possible, scrub down thoroughly with a wire brush and hot Colosyl WK or kerosene. Allow to dry.

2) Oil cable heavily and smear light film of grease (preferably Moly-type). over outer casing.

3) Slide PVC tubing over the outer casing, ensuring that cable can still flex sufficiently to allow for suspension movements.

4) Clean inner cable with emery cloth, grease heavily and pull through outer casing many times until perfectly free. Refit and re-adjust brakes.

FITTING MODERN SHOCK ABSORBERS TO SPEED TWENTY

On my particular Charlesworth Drophead SC Speed 20, the HT 33 Andre Telecontrols had finally disintegrated after 30 years' service. Alvis Ltd. could supply suitable replacements, but at £20 set sterling. By the time this has been trebled for Australian price and freight, this move was too expensive, and even then the rest of the system with its hydraulic plungers, pipe lines, gauges etc. could still prove troublesome. Not only this, but the old friction type shocker is hardly up to the standard of the modern hydraulic types. Some modern conversion was therefore considered desirable for the factors of cost and efficiency.

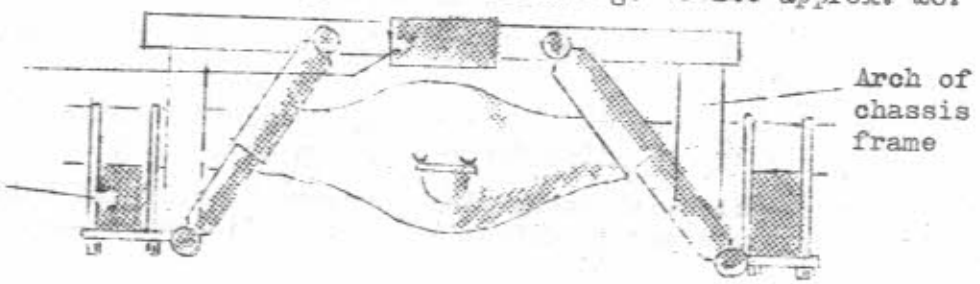
The two main types available are i) Telescopic Heavy Duty ii) Lever type. Both these can be procured in adjustable form, but this is not really necessary. The restricting factors are space available, especially at chassis anchorage points, and good linkages.

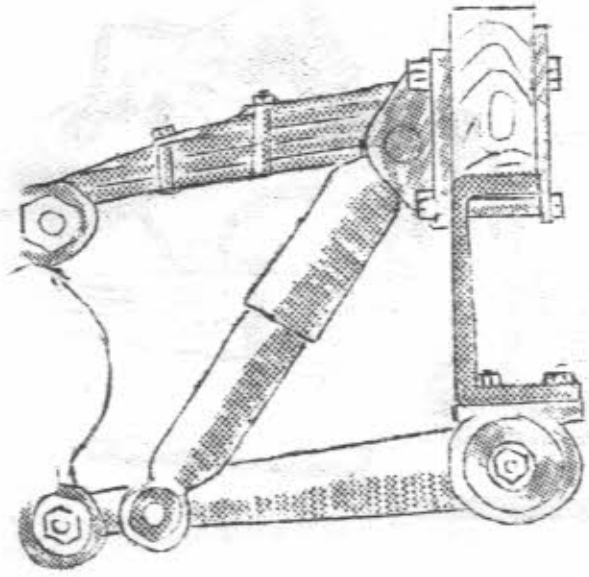
Telescopics are today considered better than lever type, and I thus endeavoured to fit these wherever possible. After much thought, trials, and consultation with professionals, it was found that telescopics can be successfully fitted to the front end of the SC series (and likewise the Sp. 25 and 4.3 series), but not to the SA & SB Sp. 20. On the other hand, the SA & SB Twenties can have telescopics fitted at the rear, whilst the SC cannot, while some Speed 25s and 4.3 can, depending on the particular body fitted. This means that, unless one is prepared to change the chassis and body, lever type must be fitted to the rear of the SC Speed 20 and many 25s and 4.3.

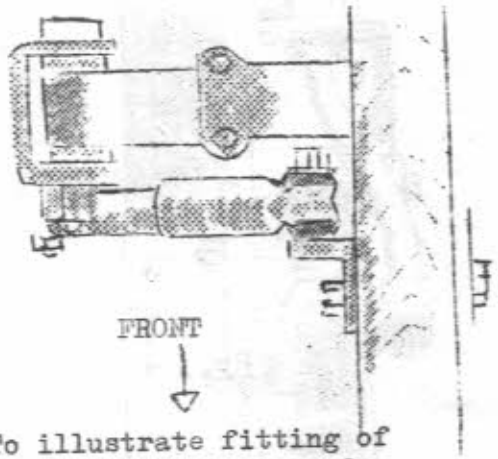
At the front of the SC, it happened that a Holden Utility Kit by Monroe-Wylie did the trick perfectly. The lower eye of the damper is attached to the existing attachment on the lower radius arm, with a suitable rubber spacer to adapt the two conical rubber bushes. The damper thus lies at an angle of approx. 45° across to the chassis, level at the top with the transverse spring. The bracket supplied in the kit is attached by two sturdy coach bolts, or other suitable bolts through the chassis below and the wooden member above, being stabilised by a large metal plate on the inner side of the wooden member. The new upper anchorage is thus above that for the old Telecontrol, which must, of course, be removed completely. The kit cost £8/8/- trade and this was a very reasonable price to modernise the whole front end.

Telescopics are fitted to the rear of the SB Speed 20 in a similar manner. Those who wish to see before they buy or try, can have a look at David Bamford's SB model which is fitted out as below:

The existing lower anchorages are used, and two sturdy angle iron bars are run across the top of the arch of the chassis frame. The dampers are angled across towards the centre to attach uppermost between the two bars. A sturdy rubber pad is attached to the bars to protect the diff. housing should it strike the bars during extreme bottoming. Cost. approx. £8.





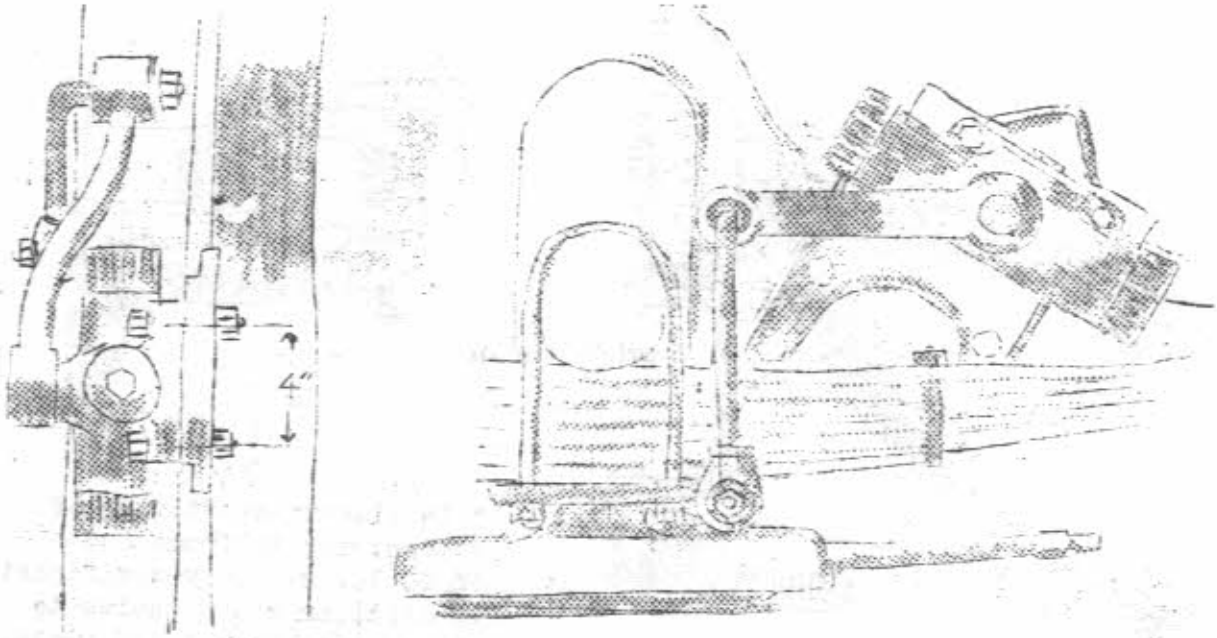


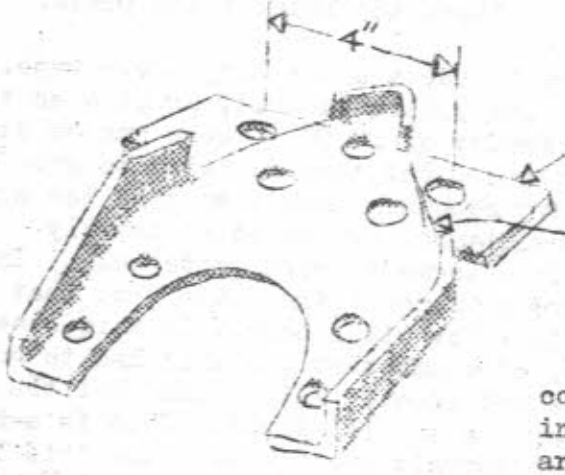
* To illustrate fitting of telescopics to front end of SC 19.82. Only modification is drilling two $\frac{3}{8}$" holes to attach top bracket and plate.

For the rear system, it was necessary to use a Heavy Duty Lever type. The unit I selected as the best suitable was a Girling unit, as used on the rear of the first model Holdens and the fronts of MG TC. These can be set to different compression and rebound rates. I had them adjusted to give a medium compression stroke and a very heavy rebound stroke, so that the spring could initially rise without too much resistance, but would be heavily damped on rebound to prevent swaying. This seems to work quite well. In the Charlesworth DHC I had very little room to mount the units , so that the design which follows may be better modified for other cars. In this case, the body members very very constricting, and meant that the unit had to mounted at an angle from the horizontal which is not ideal. This means that the unit must be removed from the car for topping up with fluid. This is awkward, but since attention is only required at intervals of several years this is not as bad as it sounds. On my earlier Speed 25, I was able to fit Monroe Wylie telescopics as in the front. They were placed vertically above the existing lower anchorage, and mounted above, not to the chassis, but to a large metal body member which Martin & King kindly provided in a convenient spot. I hesistated at the time about doing this, but it seemed to work reasonably during the time I had the car,

With the Girling shocker, the Andre Telecontrol was removed, and then its mounting bracket was removed. This was altered by removing most of the flanged outer edge, and welding on a strip of thick plate steel and drilling two $\frac{3}{8}$" holes 4" apart for the shocker bolts. The diagram will indicate this. The old lower link arm from the Andres was used in conjunction with a suitably bent lever arm, with a rubber/metal Silentbloc bush joining the two. Be careful to get the lever arm put onto the splines in such a position that its mid travel position has the arm horizontal. This will vary depending on the mounting of the shocker body on the chassis bracket. If possible, this should be horizontal, but as shown in my case this was not possible.

It is most important to mount the unit securely to the chassis. I used large Nyloc nuts, pulled up very, very tight, and these have not moved since. Initially, I used spring washers under ordinary nuts, but these soon worked loose, and something better was obviously necessary. The rear springs are quite soft and have a large flexion, so that the rear shocker gets quite a pounding. The two Girlings, plus arms cost about £9 trade.





Steel plate welded on to existing mounting bracket.

Flange of old bracket cut away to allow unit to be clamped flush to new bracket assembly.

The shock absorbers for this conversion were obtained from Pedders in Malvern, who supplied appropriate arms, levers, bushes etc. They are very helpful, and are prepared to give time and valuable advice.

Should any member still have queries about any of these modifications I shall be glad to answer any questions.

DAVID MUIRDEN.

SERVICE DATA SHEET NO. 3L/1.

TA 21 DISTRIBUTOR VACUUM UNIT.

On earlier cars, vacuum units were supplied by the manufacturers with an unsatisfactory type of diaphragm material. These units should be replaced at the earliest opportunity and can be identified by the letters VCBMP stamped on the tag of the unit lock washer. The correct type of unit will be stamped VCBM, VCBMS or VCBMT. The faulty units are confined to cars despatched from the Works before August 31st 1951.

When the unit is functioning correctly, the distributor adjusting knob moves in and out as the manifold depression alters. If the knob remains stationary, this probably indicates that the diaphragm has failed. It will be necessary to fully retard the adjusting knob before the vacuum unit can be drawn out sufficiently to clear the studs. The exact number of turns required to unscrew the unit should be counted as the new unit should be screwed in by the same amount.

From E.N.V. ENGINEERING CO. LTD.

SERVICE INFORMATION FOR ALVIS REAR AXLE NO. A. 182 AS FITTED TO 12/70.

1. Dismantling Rear Axle:

Lift rear axle clear of the ground and remove road wheels and brake drums. Remove cotter pins and nuts at the rear of the brake support plate and pull axle shaft, together with hub and bearing housing, clear of the axle casing and brake support plate. Replace 2 bolts and secure the brakes in position.

Disconnect propellor shaft and remove 10 nuts securing the diff. housing to the axle case. The diff. assembly is now free to be removed.

2. Dismantling Differential Assembly:

Remove set screws and cotter pins and nuts securing the bearing caps. The diff. case complete with crown wheel and diff. journal bearings can now be withdrawn. To remove spiral bevel pinion, the pinion flange nut is removed and the pinion passed through the coupling thrust bearing and clear of the housing. The thrust bearing is located between two screwed sleeves, access to the inner sleeve being obtained by removing the lock plate situated on top of the housing.

3. Reassembly:

Assemble the thrust bearing (SKF 130091) with the filling slot toward the coupling. Examine the oil seal and replace if necessary. Assemble the screwed sleeves to locate the thrust bearing. Press the inner ring of the pinion head roller bearing (SKF 130299) against the abuttment face of the pinion head. Place the distance piece on the pinion shaft and the outer ring of the roller bearing with the lip toward the spline end of the pinion. The pinion bearing can now be pressed into position in the housing. Place the second distance piece over the splines and assemble the coupling flange on to the splines and secure thoroughly by the washer and nut.

When reassembling the diff. case be sure to place the two halves of the case with the serial number opposite to ensure true running of this part. The crown wheel should be assembled on the diff. case and checked with a dial indicator for 'run-out' at back and periphery. The maximum permissible error is .003". Assemble the diff. case assembly with the crown wheel in engagement with the pinion, replace the adjuster rings and bearing caps and secure by the nuts, adjusting to give .006" backlash in the gear teeth. This is measured at the outer diameter of the crown wheel with a dial gauge. Smear the crown wheel with a suitable marking compound, rotate the gear in both directions to reproduce tooth contact and compare with correct marking as shown in "Alvic" March 1962, with contact centrally on the gear teeth. Correct backlash is obtained by crown-wheel adjustment, and not by pinion adjustment. The diff. journal bearings should be pre-loaded to the extent of 1 - 1½ castellations after all end float has been removed.

Re-assembling Axle:

This should present no difficulty, the shims for adjusting the axle shaft for end float are placed between the bearing housing and the brake support plate. The maximum end float is .005".

SERVICE INSTRUCTIONS FOR ALVIS REAR AXLE NO. A. 238 as fitted to Alvis TA 14.

1. Dismantling Rear Axle:

Jack rear wheel clear of the ground. Remove wheels and countersunk screws securing the brake drums, and ease brake drums off the register. Remove the nuts securing the rear hub housing to the axle casing. The axle shaft together with the hub housing and bearing can now be withdrawn. Replace two bolts to secure the brake assembly in position.

Care must be taken not to damage the oil seal by allowing the full weight of the shaft to fall upon it. The shims for adjusting the rear hub bearings will be found between the hub housing and the brake support plate. The hub bearing can be removed by removing the securing nut and pressing the axle shaft through the housing. A distance piece is found on the shaft which locates the inner cone of the bearing.

The diff. housing can now be withdrawn from the axle casing by removing the 10 nuts securing the housing to the axle casing.

2. Dismantling Differential Assembly:

Lift tab washer and remove set screws securing the bearing caps. The complete diff. box with journal bearings and adjuster nuts can be withdrawn. The crown wheel is secured to the diff. box, which can be separated at the centre register by removing the locking clip and eight set screws. To withdraw the hypoid pinion, remove the cotter pin and nut, and press pinion through coupling and bearings. The inner cone of the pinion head bearing will be left on the pinion shaft. The shim controlling the pre-load of the bearings will be found between the shoulder of the pinion and the thrust face of the tail bearing. The shims behind the pinion head bearing control the position of the pinion to secure correct meshing of the teeth.

3. Reassembly:

The hypoid gears are carefully lapped together by the manufacturers to secure correct tooth contact and to position the abuttment face of the pinion a definite distance from the crown wheel centre line. Shims are used in the assembly to allow for tolerances in machining the housing and the taper roller bearings. When assembled by the manufacturers, the tolerances of the housing and the bearings are accurately measured by special fixtures and the correct amount of shim metal behind bearings to secure the correct distance of the pinion from the crown wheel centre. Garages, service stations, private mechanics cannot use this method, so an alternative method must be used. During re-assembly, the need for extreme cleanliness of all parts is of the utmost importance.

To assemble hypoid gears, first secure the crwon wheel to the diff. box by the ten set screws. To ensure concentricity of the diff. box, the serial numbers should be together. Next, insert shims to equal .030" in pinion head bearing housing and press ring into position.

Press outer ring of tail pinion bearings into housing, the thrust faces of both pinion bearings being against the shoulders of the housing. Next press the inner cone of bearing on to the pinion shaft, again with the thrust face of the bearing against the shoulder of the pinion. Assemble distance piece together with .050" shim on pinion shaft, insert pinion through pinion head outer ring, suppprt the pinion head, and

press the inner cone of bearing and coupling on to the pinion, securing with the nut. When assembled by the manufacturers, a solid distance piece of correct length is used, but for convenience of service, a narrow distance pice is preferred, with shims to make up the length. There should now be end float in the pinion bearings. Adjust by reducing the shims until a pre-load of 8 - 10 pound pull is obtained.

Now assemble diff. box with crown wheel attached into the housing, replace bearing caps and adjusters and lightly tighten bearing cap set screws. Adjust bearing adjusters until there is no end play in the bearings and backlash in the gears equals .006" measured at the crown wheel periphery. Paint gear teeth with marking compound or bearing blue and rotate gears in both directions. Adjust pinion backward and forward by removing or adding shims to obtain correct marking on teeth. (Ref. chart in March 1962 "Alvic".) This procedure moves the pinion in or out and maintains the pre-load on the bearings.

The officiency and quietness of a hypoid gear is dependent upon the correct setting and profile bearing. When making the last adjustment, press the oil seal into the housing. It is recommended that a smear of jointing compound be painted on the housing, and the taper roller bearings given a liberal application of grease, before pressing in the oil seal.

It is also necessary to pre-load the differential box journal bearings. This is done by adjusting the nuts until all end play has disappeared, and then tightening the adjuster one extra castellation, making sure that the gear teeth retain their .006" backlash.

Finally replace all lock plates, turn over the tab washers and fit cotter pins where required.

4. Reassembling Rear Axle:

Thoroughly clean joint faces of axle case and differential, and apply paper gasket ot axle case face. Assemble the housing over studs and dowel pins and pull up with the ten nuts provided. Next, press the outer ring of the hub bearing and oil seal into the housing. The spacer is assembled on the axle shaft, the hub housing assembly is placed on the shaft, and the inner cone of the bearing is pressed on to the axle shaft, and secured by a washer, tab washer and nut.

Pass the axle shaft through the oil seal in the axle casing and with shims between the brake support plate and hub bearing, secure with bolts and nuts. Adjust be reducing or adding shims until the combined end float of the two axle shafts is .005" - .008".

Finally, replace brake drums and secure with countersunk screws. Do not forget to refill with the correct grade of oil.

7th Sept. 1962

FACTORY SERVICE NOTE:

ADJUSTING FAN BELT ON TA, TC 21.

The best way to adjust the fan belt and dynamo on the early Three Litre cars (TA, TC 21, TC 21/100 "Grey Lady") with the engine in situ, is to make it a two man job with one levering the dynamo away from the engine to give the necessary tension, and the other underneath the car to tighten the securing bolt nut. It is a very difficult operation to perform single-handed.

FACTORY SERVICE NOTE

7th Sept. 1962

EXTRACTING BROKEN AXLE SHAFT

Sometimes it is possible to remove the remains of a broken axle shaft from a Speed 20 or similar axle, by using a tube with the bore the same diameter internally as the diameter of the shaft. A split tube of relatively light section is best, when, with a bit of luck, it can be persuaded to pass over the end of the broken shaft and grip it sufficiently for extraction purposes. Failing this, removal of the differential and extraction of the opposite half-shaft is necessary (not always possible). A rod or tube can be entered then from the far side of the car and the broken shaft driven out.

29th June 1964.

WATER PUMP ASSEMBLY AND DISMANTLING FOR THREE LITRE

1. Drain water system and disconnect hoses to radiator.
2. Remove bonnet complete.
3. Jack up car at front end and remove front road wheels.
4. At the bottom of the radiator inside the front wings will be found three bolts on offside and nearside. Remove.
5. Remove three bolts on offside and nearside from inside the radiator, holding radiator to cradle.
6. Remove long stud or tie rod across radiator block.
7. Lift out radiator complete, taking care not to damage wings, piping etc.
8. Remove fan belt and disconnect and dismantle fan blades.
9. Remove all nuts from all studs securing pump housing and also water connections to cylinder head.
10. When removing pump, please note that the extension flange covers the rear end of the camshaft and the double coil spring washer, and thrust will drop out. These should be carefully retained.
11. The items should be replaced in the reverse order to above, but location of the spring washer and thrust of the camshaft must be carefully watched. The thrust must be located (with the spring underneath) on the pegs of the pump flange. This should be secured with fine wire to the pump casing until the pump has been remounted on the studs and is almost home, when the wire can be removed.

Notes: The parts can be fitted independently on the latest cars on which the water connection studs are replaced by set screws. If the cylinder head has been removed, it is a good idea to mount the pump on the cylinder block and line up the aluminium connecting elbow before finally tightening down the cylinder head nuts. It is usually possible to obtain a little fore-and-aft movement of the head on the studs, but the final line up of the pump connections can be made by using more or less joint washers C. 4367. If the compression ratio of the engine has been raised by machining the cylinder head, a corresponding amount of metal should be taken from the water connection spigot.

As for re-fitting the radiator, some latitude is allowed in the mounting bolt holes so that a temporary set up should first be made, and then the radiator re-positioned to match the bonnet before finally tightening up.