

SECTION K

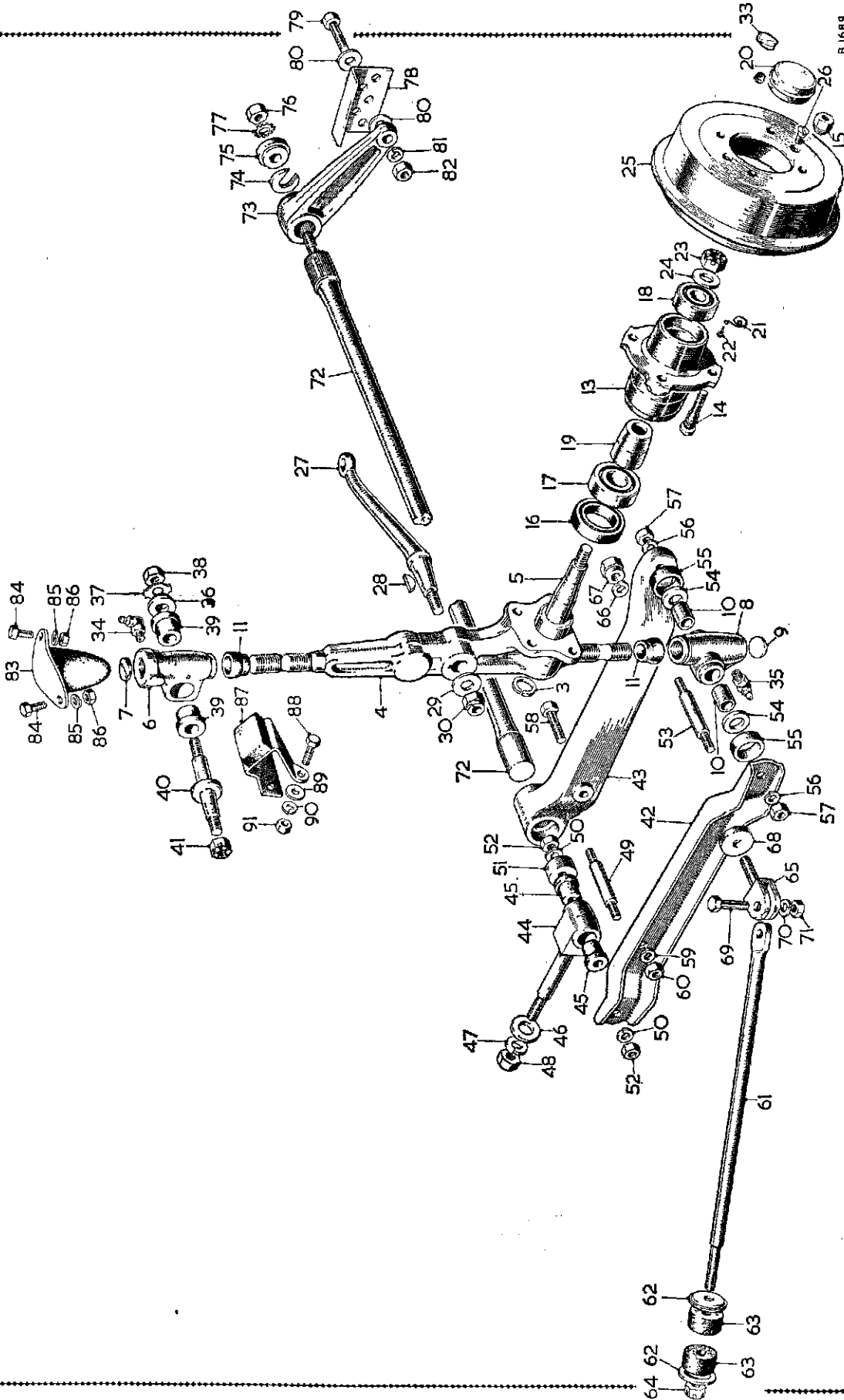
THE FRONT SUSPENSION

General description.

Maintenance.

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THE FRONT SUSPENSION COMPONENTS



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KEY TO THE FRONT SUSPENSION COMPONENTS

No.	Description	No.	Description
3.	Clip.	63.	Bush to frame (rubber)
4.	Swivel pin and stub axle—L.H.	64.	Slotted nut.
5.	Stub axle—L.H.	65.	Fork to lower arm.
6.	Upper link—L.H.	66.	Spring washer for nut.
7.	Plug.	67.	Nut for fork.
8.	Lower link—L.H.	68.	Washer for fork nut.
9.	Plug.	69.	Bolt—to fork.
10.	Bush.	70.	Spring washer for nut.
11.	Seal (rubber).	71.	Nut for bolt.
13.	Hub assembly.	72.	Torsion bar.
14.	Wheel stud.	73.	Lever—rear end.
15.	Nut for wheel stud.	74.	Washer—lever retaining.
16.	Hub oil seal.	75.	Washer—lever locating.
17.	Inner bearing.	76.	Nut.
18.	Outer bearing.	77.	Washer for nut.
19.	Spacer for bearing.	78.	Adjuster plate.
20.	Cap.	79.	Bolt—lever to frame.
21.	Spring—anti-static (when radio is fitted).	80.	Washer for bolt.
22.	Screw for spring (when radio is fitted).	81.	Spring washer for nut.
23.	Nut—L.H. thread (to stub axle).	82.	Nut for bolt.
24.	Washer for nut.	83.	Bump rubber assembly—L.H.
25.	Brake drum.	84.	Screw to wheel arch.
26.	Screw.	85.	Spring washer for nut.
27.	Steering lever—L.H.	86.	Nut for screw.
28.	Key—to swivel pin.	87.	Rebound check bracket assembly.
29.	Washer for swivel pin.	88.	Screw—to wheel arch.
30.	Nut for swivel pin.	89.	Plain washer for screw.
33.	Dust seal—brake.	90.	Spring washer for nut.
		91.	Nut for screw.
34.	Lubricator for upper link.		
35.	Lubricator for lower link.		
36.	Washer for rear pivot.		
37.	Tab washer for rear pivot.		
38.	Nut for rear pivot.		
39.	Bush for upper link (rubber).		
40.	Pivot—damper arm.		
41.	Nut for front pivot.		
42.	Lower arm—front.		
43.	Lower arm—rear.		
44.	Eyebolt.		
45.	Bush for eyebolt (rubber).		
46.	Washer—eyebolt adjusting.		
47.	Lock washer—eyebolt to frame.		
48.	Nut—eyebolt to frame.		
49.	Fulcrum pin—eyebolt to arms.		
50.	Spring washer for fulcrum pin.		
51.	Spigot pivot (rear).		
52.	Nut for fulcrum pin eyebolt.		
53.	Fulcrum pin—link to arms.		
54.	Thrust washer for link fulcrum pin.		
55.	Sealing ring for link fulcrum pin.		
56.	Spring washer for fulcrum pin nut.		
57.	Nut for link fulcrum pin.		
58.	Bolt—rear arm to front.		
59.	Spring washer for nut.		
60.	Nut for bolt.		
61.	Tie-bar.		
62.	Cup washer.		

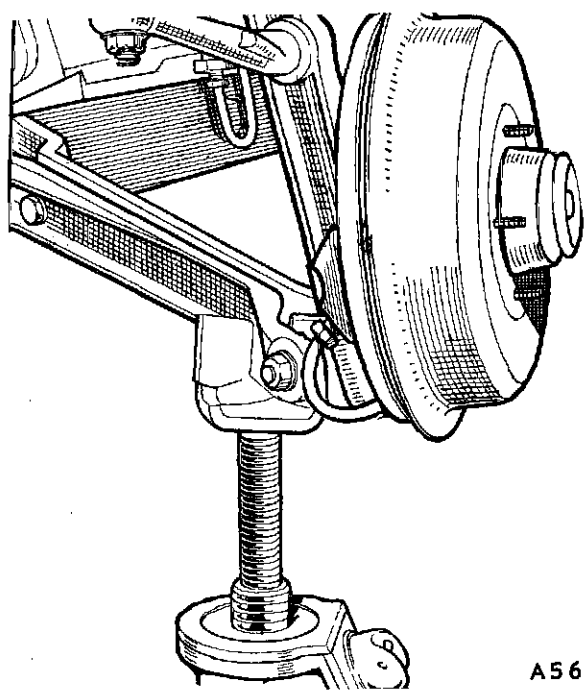


Fig. K.1

When jacking the suspension arms care must be taken to prevent the jack from slipping. The use of a special jack pad is advised

GENERAL DESCRIPTION

The independent front suspension comprises torsion bars disposed longitudinally and splined into arms attached to the lower ends of each swivel pin. At their upper ends the swivel pins are linked to the hydraulic damper arms.

The grease nipples provided at the swivel pin links are the only points requiring lubrication attention, the inner ends of the lower arms being anchored to the frame members in flexible rubber bushes.

Tie-rods between the forward side of the lower suspension arms and the frame members maintain rigidity of the assembly during acceleration and braking and abnormally rough road conditions.

The trim of the suspension is adjusted at the rear end of each torsion bar by means of an adjuster plate in conjunction with the torsion bar rear end lever.

MAINTENANCE

NOTE.—Rubber bushes are used in the suspension and the rear springs are rubber-mounted. It is therefore most important not to lubricate these components with oil. If squeaks develop the springs should be sprayed with Lockheed Super Heavy Duty Brake Fluid.

Normal maintenance is confined to lubrication of the linkage.

A grease gun should be applied to the nipples at the top and bottom of the steering swivel pins at the specified intervals. The recommended lubricant is grease to Ref C (page PP.2). If the car is operated in dusty conditions the swivel pins should be lubricated more often.

Section K.1

TRIMMING THE TORSION BARS

The adjuster plate provided at the rear end of each torsion bar should be used to correct any list on the car which develops if the torsion bars do not settle evenly.

To carry out this adjustment raise the front of the car until the road wheels are clear of the ground and remove the hub disc and wheel.

Place a jack beneath the outer end of the lower suspension arm and raise it until the hydraulic damper arm at the top of the swivel pin is just clear of the rubber rebound pad. Care must be taken to see that the jack is not liable to slip while it is taking the torsion bar load.

Remove the nut and bolt securing the tie-rod to the fork on the suspension arm and remove the nuts and bolts retaining the forward half of the arm.

Disengage the lower swivel pin link from the suspension arm and lower the jack until the load is taken off the torsion bar.

Slacken the nut and washer on the rear end of the torsion bar.

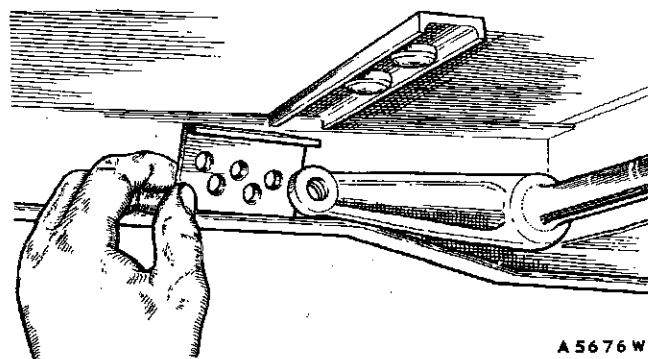


Fig. K.2

A vernier plate is employed to provide accurate adjustment of the torsion bars

Withdraw the nut and bolt securing the torsion bar rear end lever to the frame cross-member and slide the adjuster plate in the required direction. Take care not to lose the flat washer which is between the lever and the plate.

To set the car upwards select a lower hole in the adjuster plate. Each successive hole raises the car approximately $\frac{1}{4}$ in. (6.3 mm.). If the plate is moved in the reverse direction the car is, of course, lowered.

If the lever is rotated one spline on the torsion bar the car will be raised approximately $1\frac{1}{2}$ in. (3.8 cm.).

Replace the nut and bolt in the rear end lever and fully tighten it. The remainder of the assembly procedure is a reversal of the order of dismantling.

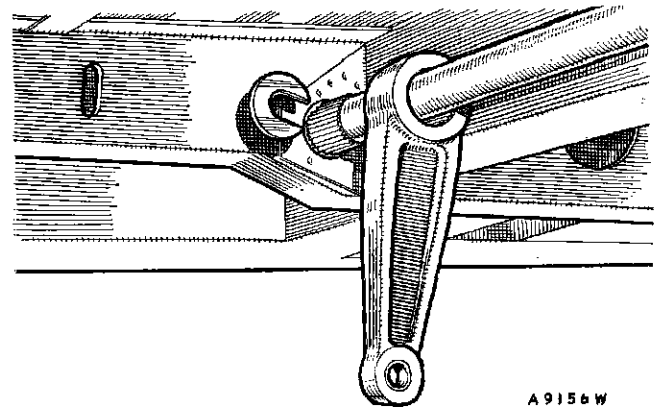


Fig. K.4

Inserting the slotted retaining washer between the end of the torsion bar and the frame member. Note that the bevel is towards the lever

Section K.2

REMOVING A TORSION BAR

Raise the front of the car until the road wheels are clear of the ground.

Remove the hub disc and wheel. Place a jack beneath the outer end of the rear portion of the lower suspension arm and raise it until the hydraulic damper arm at the top of the swivel pin is just clear of the rubber rebound pad. Care must be taken to see that the jack is not liable to slip while it is taking the torsion bar load. A special end fitment on the jack is advisable (see illustration Fig. K.1).

Withdraw the securing bolt and disengage the tie-rod end from the fork on the suspension arm. Remove the nuts and bolts securing the halves of the lower

suspension arm and remove the front half of the arm. Disengage the swivel pin link from the suspension arm and lower the jack until the load is off the torsion bar.

Remove the nut from the rear end of the torsion bar and the nut and bolt securing the torsion bar lever to the frame. Slide the lever forward along the torsion bar until it is clear of the splines and remove the lever locating and retaining washers.

Withdraw the torsion bar from the suspension arm splines and lift it clear.

Section K.3

RESETTING AND REPLACING THE TORSION BARS

A torsion bar which has been fitted and used on one side of the car must on no account be transferred for use on the other side. The torsion bars are only interchangeable when new. They become 'handed' once they have been in service and must from then on always be used on the same side of the car.

There are 48 splines on each end of the torsion bars, and for each consecutive spline position of the rear end lever a radial movement of the swivel pin of approximately $1\frac{1}{2}$ in. (3.8 cm.) is provided.

To replace the torsion bar support the front end of the car and adjust the jack beneath the lower suspension arm until there is a difference in height of $5\frac{1}{8}$ in. (14.3 cm.) between the inner and outer suspension arm fulcrum pins.

NOTE.—The car must be standing on a level floor and measurements taken from a horizontal flat plate.

When a new torsion bar is to be fitted this difference in height must be increased to 6 in. (15.2 cm.) to allow

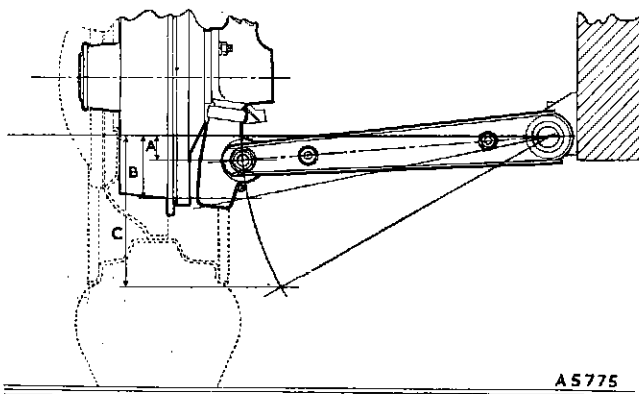


Fig. K.3

The position of the lower arm of the suspension under various conditions of loading is indicated in this diagrammatic drawing, where (A) is the position under a full load of three passengers and full equipment ($\frac{3}{8}$ in. or .95 cm.), (B) is the position with the car unladen ($1\frac{1}{8}$ in. or 4.1 cm.), and (C) is the assembly position with no load on the torsion bar ($5\frac{1}{8}$ in. or 14.3 cm.)

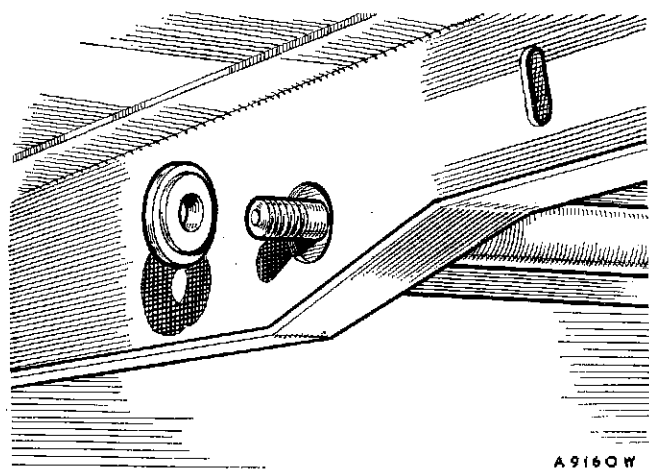


Fig. K.5

The shouldered washer which locates the rear end of the torsion bar in the frame must be fitted with its shoulder engaging the hole in the frame

for the small permanent set which takes place when the bar is loaded for the first time.

Thread the rear end of the torsion bar through the rear end lever and the frame cross-member. The lever is offset and must be fitted with the recessed side to the rear.

Engage the front end of the torsion bar in the suspension arm and slide the lever over the rear end splines, bringing the eye of the arm into line with the slot in the frame cross-member.

Insert the slotted retaining washer between the lever and the cross-member with the countersunk side towards the torsion bar splines. Ensure that the washer fits into the register in the lever and refit the shouldered locating washer on the end of the torsion bar threaded attachment spigot. The small diameter of this washer **must** register with the hole in the frame. Replace the torsion bar retaining nut and washer.

Insert the adjuster plate and flat washer between the rear end lever and the frame. Align a hole in the adjuster plate with the lever eye and insert the locking bolt and flat washer from the rear. Replace and tighten the nut and spring washer.

Raise the jack until the lower swivel pin link engages the suspension arm. Ensure that the rubber seals and thrust washers are in position and replace the forward half of the suspension arm.

Replace and tighten the suspension arm, swivel link, and tie-rod nuts and bolts.

Lower the car onto level ground and check the difference in vertical height of the inner and outer suspension arm fulcrum pins. This measurement should be $1\frac{1}{8}$ in. (4.1 cm.) and be the same on both right-hand and left-hand suspension assemblies.

Section K.4

REMOVAL AND REPLACEMENT OF THE SWIVEL PIN ASSEMBLY

The following instructions are for removing the swivel pin assembly with the brake-drum, hub, and brake-plate attached. These parts may be removed first, in accordance with the instructions given in Sections K.7 and K.8, and the brake-plate left suspended from the hydraulic damper arm rebound bracket with the flexible hydraulic brake pipe still attached, thus obviating the need to bleed the brakes after assembly.

Removal

Raise the front of the car and remove the wheel. Place a suitable jack beneath the suspension arm and lower the car until it is just taking the torsion bar load and the hydraulic damper arm clears the rubber rebound pad beneath it.

Unscrew the small union nut securing the hydraulic brake feed pipe to the flexible pipe beneath the bracket on the wing valance. Detach the flexible pipe by unscrewing the large hexagon nut, using a $\frac{3}{8}$ in. spanner on the hexagon provided above the bracket to prevent the hose from turning (see Fig. M.13).

Remove the split pin and slacken off the slotted nut securing the steering tie-rod ball joint to the steering-arm. Tap the circumference of the steering-arm eye and, placing a support above the steering-arm, use a suitable brass drift applied to the ball joint nut to drive the ball pin from its tapering seating.

Remove the nut and bolt securing the tie-rod to the fork on the suspension arm and remove the nuts and bolts retaining the forward half of the arm.

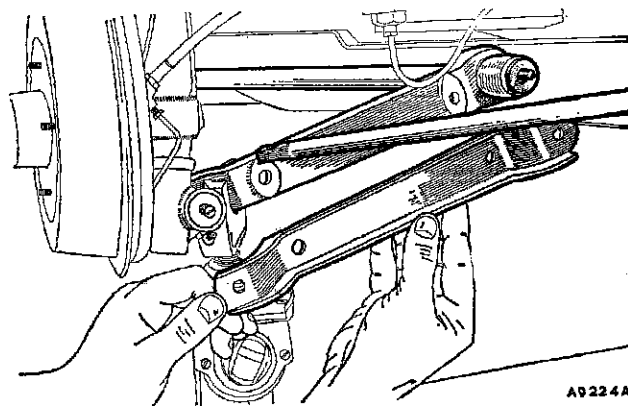


Fig. K.6

The front suspension arm must be removed before it is possible to withdraw the torsion bar

Disengage the lower swivel pin link from the suspension arm and lower the jack until the load is taken off the torsion bar.

On swivel pins with plain pivot pins

Tap back the lock washer and slacken the $\frac{7}{16}$ in. locknut and $\frac{3}{8}$ in. nut on the pivot bolt securing the swivel pin to the hydraulic damper arm. Remove the split pin and slacken the $\frac{7}{16}$ in. nut from the opposite end of the bolt. Tap the circumference of the eye in the hydraulic damper arm, place a support behind it, and use a brass drift to drive the bolt from its tapered seat.

Support the swivel pin assembly and withdraw the pin from the hydraulic damper arm, leaving the assembly free to be removed for further dismantling.

On swivel pins with screwed pivot pins

Remove the split pin from the nut attaching the pivot pin to the damper arm and unscrew the nut. Tap the circumference of the eye in the hydraulic damper arm, place a support behind it, and, using a brass drift, drive the pivot pin from the tapered seating in the damper arm. This will release the swivel pin assembly for further dismantling.

Replacement

The swivel pin assembly may be replaced without difficulty by carrying out the removal instructions in the reverse order, provided the following points are given special attention:

- (1) The swivel pin and links fitted to the left-hand side

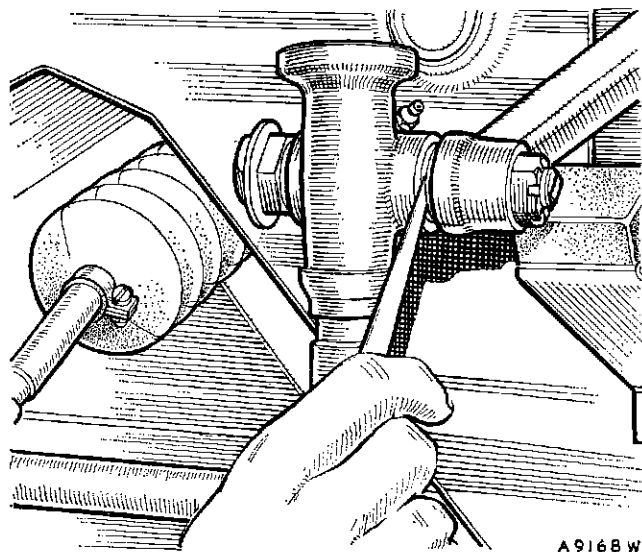


Fig. K.7

It is essential to give the upper swivel pin link an end-float of .002 in. (.05 mm.) to ensure proper functioning. The clearance should be checked with a feeler gauge as shown

of the car have left-hand threads at each end and those fitted to the right-hand side have right-hand threads.

- (2) The swivel pin links screw onto threads on each end of the swivel pin and the threads are waisted at their centre to avoid fouling the pivot bolts passing through the links. Before the pivot bolt is replaced the link must be correctly positioned on the thread.

First screw the link onto the swivel pin until the waisted portion of the swivel pin links up with the pivot bolt hole.

Place the pivot bolt in position in the link and screw the link to the extent of its maximum travel on the swivel pin thread; this is about three complete revolutions. Screw the link back approximately one and a half turns to obtain the maximum clearance for the pivot pin in each direction.

If the brake-plate has been removed from the swivel pin assembly the lower link must also be centralized in a similar manner before the brake-plate is replaced and before the swivel pin is fitted to the suspension arm.

- (3) Before the lower steering knuckle link is bolted in position ensure that both thrust washers and rubber seals are fitted correctly.
- (4) *In the case of plain-type pivot pins.* Replace both rubber seals on the taper pin securing the swivel pin to the hydraulic damper arm before it is placed in position, otherwise damage may occur when passing the rear seal over the lock washer.

IMPORTANT.—Plain-type pivot bolts in the upper swivel pin link must be given .002 in. (.05 mm.) end-float. If they are fully tightened the suspension will become solid.

Tighten the large hexagon nut with a $\frac{3}{8}$ in. spanner and then slacken off one flat and adjust until there is .002 in. (.05 mm.) clearance between the damper arm and the link. A light sideways tap should be given to the top of the swivel pin to ensure that it is hard against the nut and that the total clearance between the damper arm and the link does not in fact exceed .002 in. (.05 mm.).

Replace and tighten the lock washer and nut and then re-check the clearance to ensure that it has not been lost. Secure the nuts with the lock washer.

In the case of bottom pivot bolts of the plain type, they must also have an end-float not exceeding .002 in. (.05 mm.). A small clearance must remain, however, to ensure that the swivel link

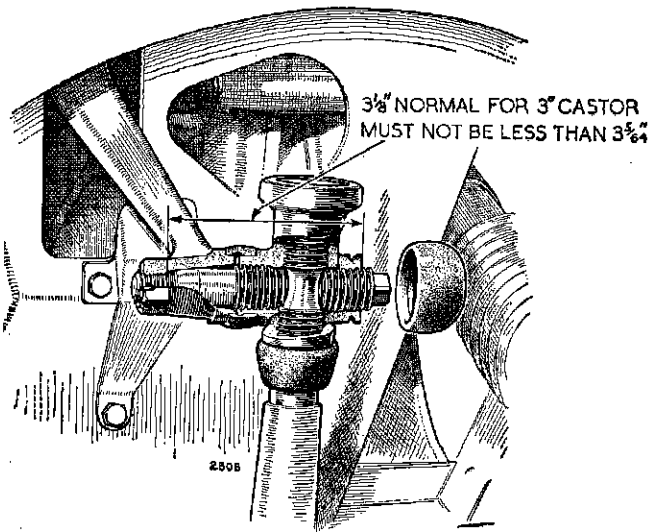


Fig. K.8

The dimension indicated in this illustration is most important to ensure free movement of the pivot pin in the link in the case of models fitted with links and pins of the screwed type

is able to move freely between the lower arms. If the clearance exceeds .002 in. the shoulder of the pin must be ground to bring the clearance within this amount.

- (5) *In the case of the screwed-type pivot pins.* Replace the rubber seal between the link and the eye of the damper arm before placing the arm in position and see that it is fitted with its smaller diameter (marked MOWOG) outwards so that it grips the damper arm. See also that it is not trapped when the arm is moved into position on the taper of the pivot pin. The castellated attachment nut should now be tightened lightly so as to take up play while still permitting the pivot pin to turn.

By means of the squared end of the pivot pin turn it in the required direction to give an over-all dimension of $3\frac{1}{8}$ in. (79.4 mm.) and never less than $3\frac{3}{8}$ in. (78.6 mm.) from the outside of the damper arm to the outside of the link as indicated in Fig. K.8. Tighten up the castellated nut in this position and replace the split pin. Replace the rubber sealing cap on the boss of the link.

Section K.5

DISMANTLING AND EXAMINING THE SWIVEL PIN ASSEMBLY

Remove the swivel pin assembly as detailed in Section K.4 and remove the rubber seals and thrust washers from the swivel pin links. Unscrew the upper and lower

K.8

links from the swivel pin ends. **The left-hand swivel pin has a left-hand thread at each end.**

Thoroughly clean and dry off all parts and examine them for wear.

Check the swivel pin links for wear across the thrust faces and in the threaded bores. When new, the links should be a free turning fit on the swivel pin, but without slackness. In service a certain amount of slackness is permissible, but when any doubt arises a new swivel link assembly should be fitted. Lubrication of the swivel link assemblies at the intervals recommended will considerably reduce wear on the threads and should be carried out regularly.

Check the top pivot pin for wear in its link. If either the link or pin is worn it must be renewed.

The two thrust washers fitted to the lower swivel pin link should be examined for wear. The faces should be flat and parallel.

Check that the grease nipples are clear.

If the rubber seals are damaged or worn they should be renewed.

Section K.6

REMOVAL AND REPLACEMENT OF THE LOWER SUSPENSION ARM

Remove the front suspension arm as detailed in Section K.4.

Remove the torsion bar as detailed in Section K.2.

This will enable you to remove the nut, washer, and fulcrum pin securing the arm to the eyebolt. This will permit you to remove the suspension arm.

Before the arm is replaced inspect the fulcrum pin and eyebolt rubber bushes. If either shows signs of wear new ones must be fitted.

Section K.7

REMOVAL AND REPLACEMENT OF THE BRAKE-DRUM AND HUB

Prise off the hub cover by inserting the flattened end of the wheel nut spanner in the depressions provided adjacent to the cover holding studs and giving a side-ways twist.

Slacken the wheel securing bolts.

Raise the car until the wheel to be operated on is clear of the ground.

Unscrew the wheel bolts and remove the wheel.

Depress the centre of the hub grease retaining cap to release it and remove the cap from the hub.

Remove the split pin from the stub axle nut and unscrew the nut, remembering that the axle on the left-hand side of the car has a left-hand thread.

Remove the flat washer.

Fit the hub extractor (Service tool 18G 304) to the hub, using two adaptor bolts 18G 304 E (B.S.F.) or 18G 304 C (UNF.). Use the central extractor screw to withdraw the brake-drum and hub assembly.

Should the inner bearing, bearing spacer, and oil seal remain on the stub axle the bearing must be withdrawn with the aid of a separate extractor. Care must be taken not to damage the oil seal at the rear of the bearing.

IMPORTANT.—When the front hub has been removed the inner bearing, oil seal, and bearing spacer must be correctly replaced in the hub before it is refitted to the stub axle. If the hub is pressed on the shaft and the bearing and oil seal are not in their correct position the inner bearing will re-enter its housing but the oil seal will remain displaced and allow lubricant to reach the brake linings.

Replacement

If all grease has been cleaned from the hub and the bearings washed for examination, ensure that they are repacked with grease before the hub is reassembled.

Replace the bearing spacer with the chamfered side towards the small outer bearing and then press the large bearing into position. Replace the oil seal. The metal face of the oil seal is fitted away from the bearing.

Replace the hub on the stub axle shaft, replace the flat washer, and tighten the hub nut.

On Car No. 228267 and subsequently the front hubs are fitted with angular contact bearings and solid bearing spacers. When replacing these it is important to place the thrust side of each bearing towards the spacer. The

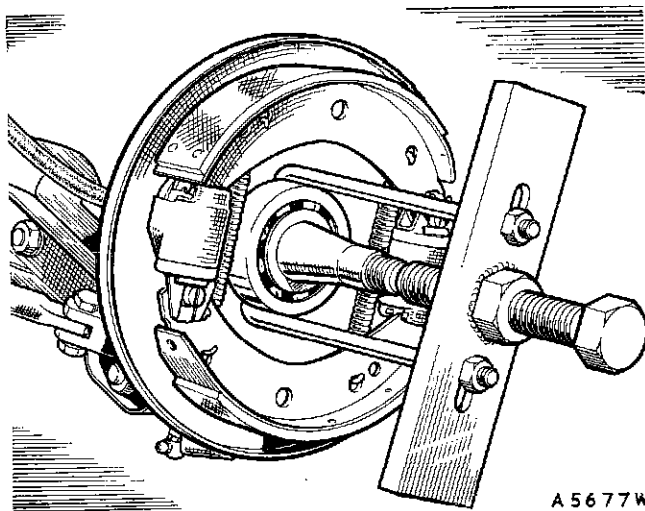


Fig. K.9

A special extractor tool 18G 309 and adaptor 18G 309 A are available for extraction of the inner ball bearing (not thrust type) and oil seal fitted to early models

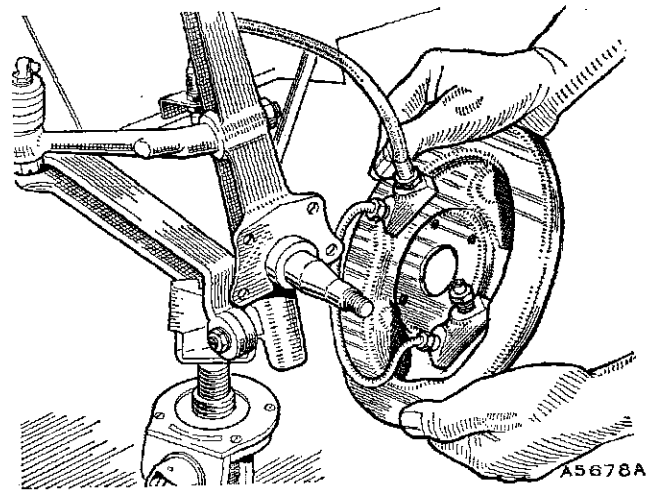


Fig. K.10

Removing the backplate complete with shoes and actuating mechanism

thrust side is that side which carries the bearing part number.

Section K.8

REMOVAL AND REPLACEMENT OF THE BRAKE BACKPLATE ASSEMBLY

Remove the brake-drum and hub as detailed in Section K.7.

If it is required to remove the brake backplate to the bench for attention, then the flexible hydraulic brake hose must be disconnected from its union at the wing valance, but this is not advisable unless absolutely necessary.

On later models the metal interconnecting pipe between the two wheel cylinders must be removed before the brake backplate can be detached from the stub axle owing to the pipe passing behind the swivel pin.

If the desired attention can be given without disconnecting the flexible brake pipe the brake backplate assembly can be hung on a suitable portion of the frame to take the load off the flexible pipe.

Unscrew the small union nut securing the metal feed pipe to the flexible pipe. Use a $\frac{3}{8}$ in. spanner on the hexagon provided above the bracket to prevent the hose from turning while unscrewing the large hexagon nut to detach the flexible pipe (see Fig. M.13).

Unscrew the four $\frac{1}{4}$ in. bolts and nuts securing the brake backplate to the stub axle flange and remove the brake backplate complete with brake-shoes and wheel cylinders.

Reassembly takes place in the reverse order to dismantling, but do not forget to bleed the brakes if the flexible pipe has been disconnected.

Section K.9

MODIFIED WHEEL MOUNTING

Later models are fitted with modified steering levers, swivel pins, and a modified stub axle and brake-drum providing a larger outer bearing. The grease retaining cap protecting the bearing is also different to accommodate the larger components.

Section K.10

FRONT SUSPENSION RATTLE

When front suspension rattle is experienced, particularly on cars fitted with plain swivel link pins, the following action should be taken:

- (1) Ensure that all suspension bearings are adequately lubricated through the grease nipples with a grease gun and examine the steering gear assembly for visible oil leaks, since the lubricant in this assembly provides damping and subdues mechanical rattle.

Assuming the lubrication of the suspension system is satisfactory and the rattle persists:

- (2) Examine the end-clearance of the top swivel pin link bearings when plain pins are fitted. If this exceeds .002 in. (.05 mm.) the locknut should be released and the adjusting nut screwed up to give this figure. Retighten the locknut and lock with the tab washer in the new position. Regrease the bearing assembly after this operation.

If the rattle still persists:

- (3) Check the outer ball connections for play along the axis of the tie-rod. If play in this plane is observed fit new joints.

Should the rattle still exist:

- (4) The trouble is most likely to be in the steering-rack assembly. Remove the bellows and check the end-play of the inner ball joints. Adjust the joints to the minimum possible clearance which will give freedom of action. Next check the damper adjustment. In order to do this the spring inside the damper unit must be removed. The pinion to rack tooth clearance can then be ascertained as there is no loading. Remove shims one at a time from under the damper cap so that the tooth clearance is minimized. This adjustment is critical and it should not be so tight as to prevent the self-centring action of the steering. (The effect of this adjustment must finally be checked on the road.) Readjustment of the damper unit can be effected without draining the oil or removing the bellows. Reassemble and replace the bellows, renewing them if damaged. Recharge with $\frac{1}{2}$ pint (.6 U.S.

pint, .28 litre) of oil to Ref. B (page PP.2). Care must be taken in reassembly to obviate oil leaks.

- (5) If rattle still exists the links and pins should be replaced with the latest-type link and pin assembly described in Section K.13.

NOTE.—It should be borne in mind that front suspension rattles are more prevalent in hot weather due to the reduced lubricant viscosity. Suspension rattle should not be confused with damper noises. Should the complaint be traced to defective dampers, refer to the instructions regarding these in Section L.

Later models are fitted with a modified link and pin (see Sections K.11 and K.13).

Section K.11

ELIMINATION OF RATTLE AT TOP LINK

The fitting of screwed top links and pins has not proved to be a complete cure for rattle between the top link and the pivot pin, and a modified plain-type pin has been introduced, utilizing special thrust washers and a double spring washer.

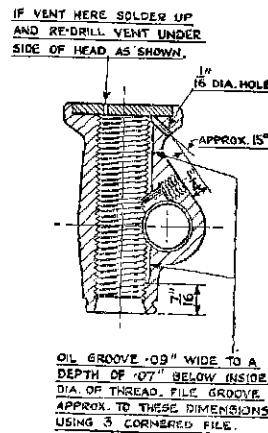


Fig. K.11
The location of the new vent hole and lubricant groove

Cars fitted with the original plain pins can be converted by fitting the following new components:

Description	Part No.
Thrust washer (front)	135950
Pivot pin	135103
Spring washer ($\frac{1}{2}$ in. double coil)	SW 208 N
Thrust washer (rear)	101905
Seal	183237
Locknut	FN 208 Z ($\frac{1}{2}$ in. B.S.F.)
Washer ($\frac{1}{2}$ in. \times $1\frac{1}{4}$ in. \times .08 in.)	278 U 2

The swivel pin link requires slight modification by the elimination of the vent hole in the disc sealing the top of the link and providing a lubricant groove and bleed hole on the pin side of the link.

The lubricant groove can be filed, using a three-cornered file, to a depth of .07 in. (1.78 mm.) below the inside diameter of the thread, with a width of .09 in. (2.29 mm.) approximately, as shown in the illustration (Fig. K.11).

The hole in the sealing disc should be sealed with a blob of solder or a small rivet and the new bleed hole drilled so that it communicates with the upper extremity of the lubricant groove.

Assemble the pin in the link with its tapered end forward, place the front thrust washer in position in the link, and place the seal (Part No. 183237) over the washer and the seating in the boss of the link. Attach to the damper arm.

Place the rear thrust washer (Part No. 101905) on the rear end of the pin, followed by the double coil spring washer (Part No. SW 208 N), the seal (Part No. 183237), the seating washer (Part No. 278 U 2), the original locknut, the lock washer (Part No. 135104), and the new locknut (Part No. FN 208 Z).

Adjustment

Make sure that the pin is firmly bolted onto the damper arm and split-pinned.

Tighten up the inner of the two locknuts at the rear end of the pin so that it is solid and then slacken it back to the extent of two flats. Tighten the outer locknut firmly and turn the tab washer onto both nuts in order to lock them.

Cars with screwed swivel pin links and pivot pins

On cars fitted with the screwed-type link and pivot pins new upper link pins (Part Nos. 127910 R.H., 127911 L.H.) will have to be fitted in place of the screwed type in addition to the parts detailed above.

When fitting new links do not forget to centralize them as indicated in Section K.4.

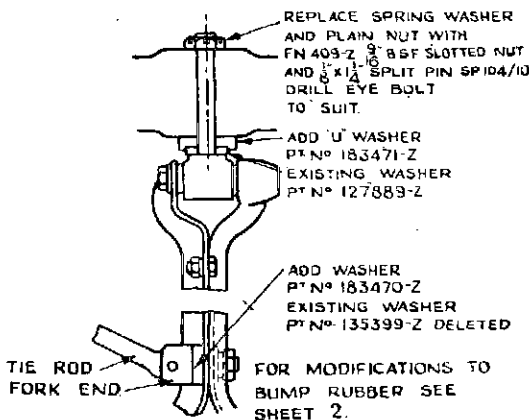


Fig. K.12

The modifications to the mounting of the lower suspension arm to maintain the correct steering geometry when fitting the rubber-bushed top links

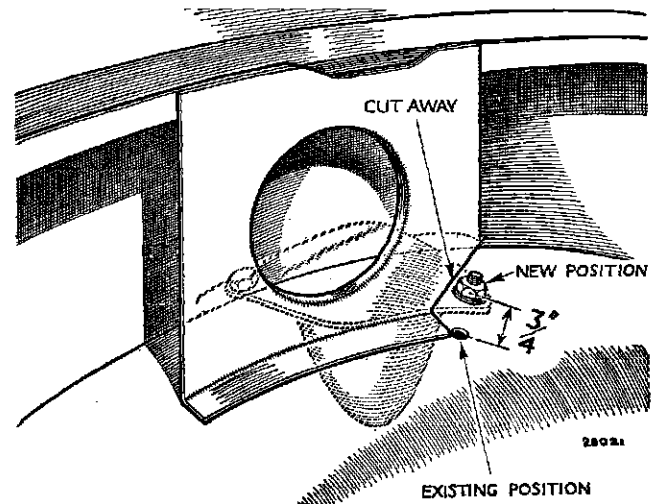


Fig. K.13

The repositioning of the bump rubber necessary with the installation of the rubber-type links

Lubrication

It is important to note that adequate lubrication is an important factor and that the swivel pin links should be lubricated with a grease gun at the specified intervals, or more often if the car is used under dusty conditions.

Section K.12 (Cancelled)

Section K.13

FITTING RUBBER-BUSHED TOP LINKS

The development of a top link with a flexing rubber bush has resulted in considerable improvement in the effective life and silence of the link bearing, and this should be carried out as a service modification whenever possible when dealing with complaints of top link rattle.

The special top links (Part Nos. 183602 and 183603) and associated pivot pins (Part No. 183424) will service all types of swivel pins provided that the complete assembly of link and pin are fitted as indicated and the bump rubber is repositioned.

- (1) Dismantle the top swivel pin assembly by releasing the pivot pin from the damper arm as detailed in Sections K.4 and K.5.

NOTE.—It is not necessary to disconnect the brake hose to carry out the change to the new assembly. Remove the top link completely from the top of the swivel pin.

- (2) Slacken the eyebolt forming the anchorage for the lower suspension arm to the frame and slip the recessed 'U' washer (Part No. 183471) between the existing washer and the frame, as indicated in Fig. K.12. Replace the spring washer and plain

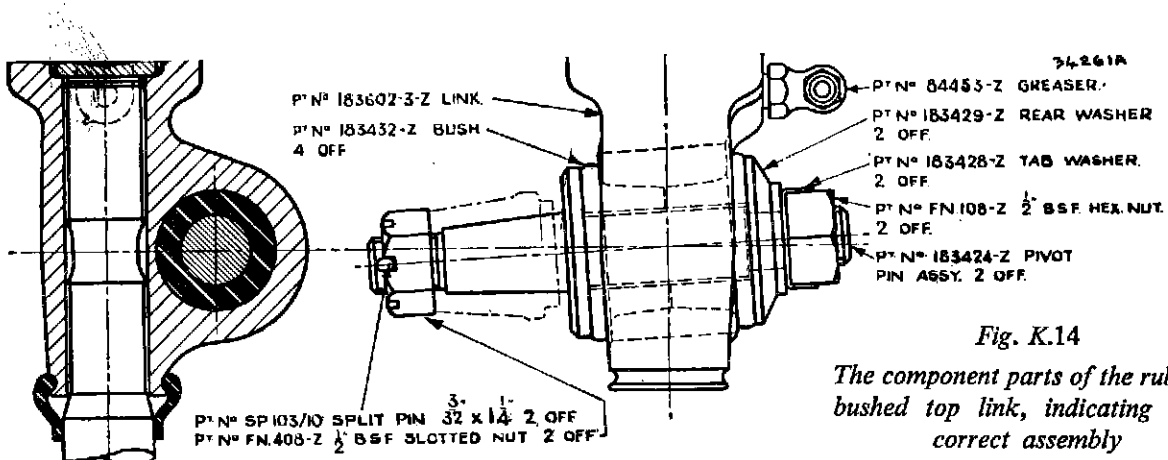


Fig. K.14

The component parts of the rubber-bushed top link, indicating their correct assembly

nut of the eyebolt with a $\frac{3}{8}$ in. B.S.F. slotted nut (Part No. FN 409 Z) and split-pin in position after tightening.

- (3) Release the tie-rod fork ends from the outer ends of the lower suspension arms and replace the existing washer with one to Part No. 183470. Refit the fork end to the suspension arm.
- (4) Assemble the rubber bushes and new pivot pins to the top links as shown in Fig. K.14, but leave the pivot pin nut retaining the rubbers slightly loose so that the rubbers can still turn on the pin.
- (5) Assemble the top links to the swivel pins by screwing them fully home and then screwing them back approximately one complete turn so that the lug is towards the centre of the car.
- (6) Insert the tapered end of the pivot pin into the arm of the damper and tighten it up firmly onto the taper with the retaining nut. (It may be necessary to slacken the lower arm fixing bolts to

provide sufficient movement.) Split-pin the nut when fully tightened.

- (7) Release the jack and allow the car to rest normally on its springs. Now tighten up the pivot pin rubber retaining nut and lock it in position with its tab washer.
- (8) Reposition the bump rubbers by removing the rear bolt, slackening the front bolt, and swinging the bump rubber so that the rear fixing hole is moved $\frac{3}{4}$ in. (19 mm.) farther away from the centre-line of the car. Drill a new hole $\frac{3}{8}$ in. (7 mm.) diameter in this position and bolt the bump rubber in the new location after clearing away the corner of the stiffener as necessary.
- (9) Re-track the front wheels. This is most important.

Section K.14

MODIFIED FRONT HUB GREASE CAP

Later models are provided with grease caps which are a push fit on the end of the front hubs, and these have to be prised off carefully for replenishment with grease at overhaul periods. Use one of the greases recommended under Ref. C (page PP.2).

Section K.15

MODIFIED SWIVEL PIN ASSEMBLY

A modified swivel pin assembly (Part Nos. 183889 R.H., 183890 L.H.) is fitted to cars subsequent to No. 161856. This assembly includes a new swivel pin lower link (Part Nos. 183770 R.H., 183771 L.H.) which is fitted with a bush (Part No. 183774), thrust washer (Part No. 183775), and a sealing ring (Part No. 183776), all of which are renewable.

The new assembly is interchangeable with the older type (Part Nos. 183781 R.H., 183782 L.H.). But when fitting a new-type lower link on cars originally fitted

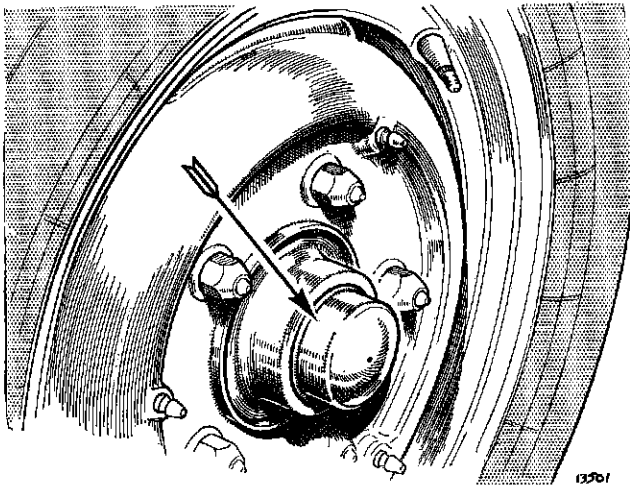


Fig. K.15

The modified grease-retaining cap fitted to the front hubs of later models. On later models the wheels are secured by studs and nuts

with the old type the thrust washer (Part No. 183775) and a sealing ring (Part No. 183776) must also be fitted and will be supplied automatically when ordering a lower link for cars prior to No. 161857.

Section K.16

SWIVEL PIN RETHREADING PROCEDURE

After a considerable period of service some wear may be anticipated on the swivel pin threads, resulting in the upper and lower links being a slack fit and possibly causing noise in operation. Assuming attention be given before wear becomes too extensive, it is now possible to reclaim the swivel pins by cutting a .015 in. (.38 mm.) undersize thread. Suitable undersized upper and lower links are available under the following part numbers:

<i>Description</i>	..	<i>Part No.</i>
R.H. upper swivel pin link	..	AJA 4005
R.H. lower swivel pin link	..	AJA 4009
L.H. upper swivel pin link	..	AJA 4006
L.H. lower swivel pin link	..	AJA 4010

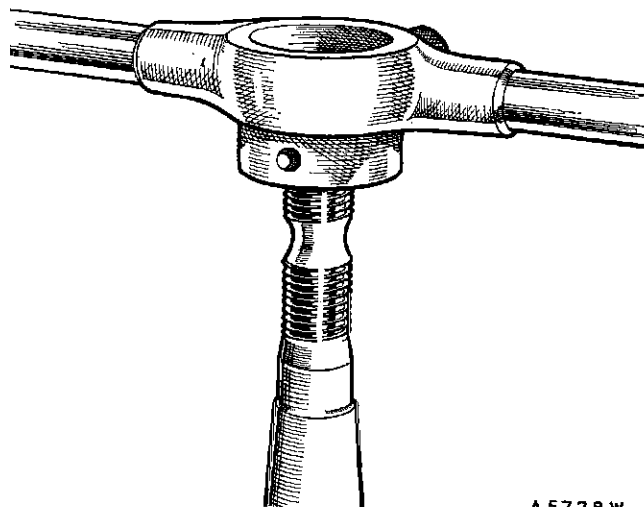


Fig. K.16

A special die nut in use. Note the depth of the die, which enables it to span the relieved portion of the thread. The register on the side of the die allows it to be reversed in the holder when necessary

The undersized swivel pin links will be painted orange for identification purposes.

In order to cut a new thread die nut set Part No. 18G 305 A may be employed, and this comprises one R.H.- and one L.H.-threaded die nut suitably etched for identification purposes. The threads for the upper and lower links are similar. A die nut holder (Part No. 18G 305) is also available.

The die nuts will fit a standard die nut holder, and to avoid the possibility of damage care must be exercised to obtain correct alignment when commencing the cut. A suitable cutting oil (lard oil) is required in generous quantities when the cut is being made after the threads have been thoroughly cleaned.

Section K.17

LATER-TYPE BRAKE-DRUMS AND HUBS

Studs and nuts are used on later models to secure the wheel (Fig. K.15), and when this is the case the brake-drum may be removed independently of the hub by the removal of the two countersunk recessed-headed screws.

To remove the hub, having first jacked up the vehicle and removed the wheel, prise off the hub cap and remove the split pin from the stub axle nut and unscrew the nut, remembering that the axle on the left-hand side of the car has a left-hand thread. The hub may now be withdrawn, using the Service tool (18G 304) and the two bolts (18G 304 F) which screw onto the studs. Should the inner bearing and oil seal remain on the stub axle, the bearing must be withdrawn, using Service tool 18G 309.

Section K.18

STRENGTHENED SWIVEL PIN ASSEMBLIES

Strengthened swivel pin assemblies are introduced at Car No. 462458. The new assemblies (Part Nos. ATA 4000 R.H., ATA 4001 L.H.) are completely interchangeable with the original assemblies.

When fitting the new assemblies to cars prior to Car No. 462458 the steering levers **must** be fitted to the lower mounting holes in the assemblies.