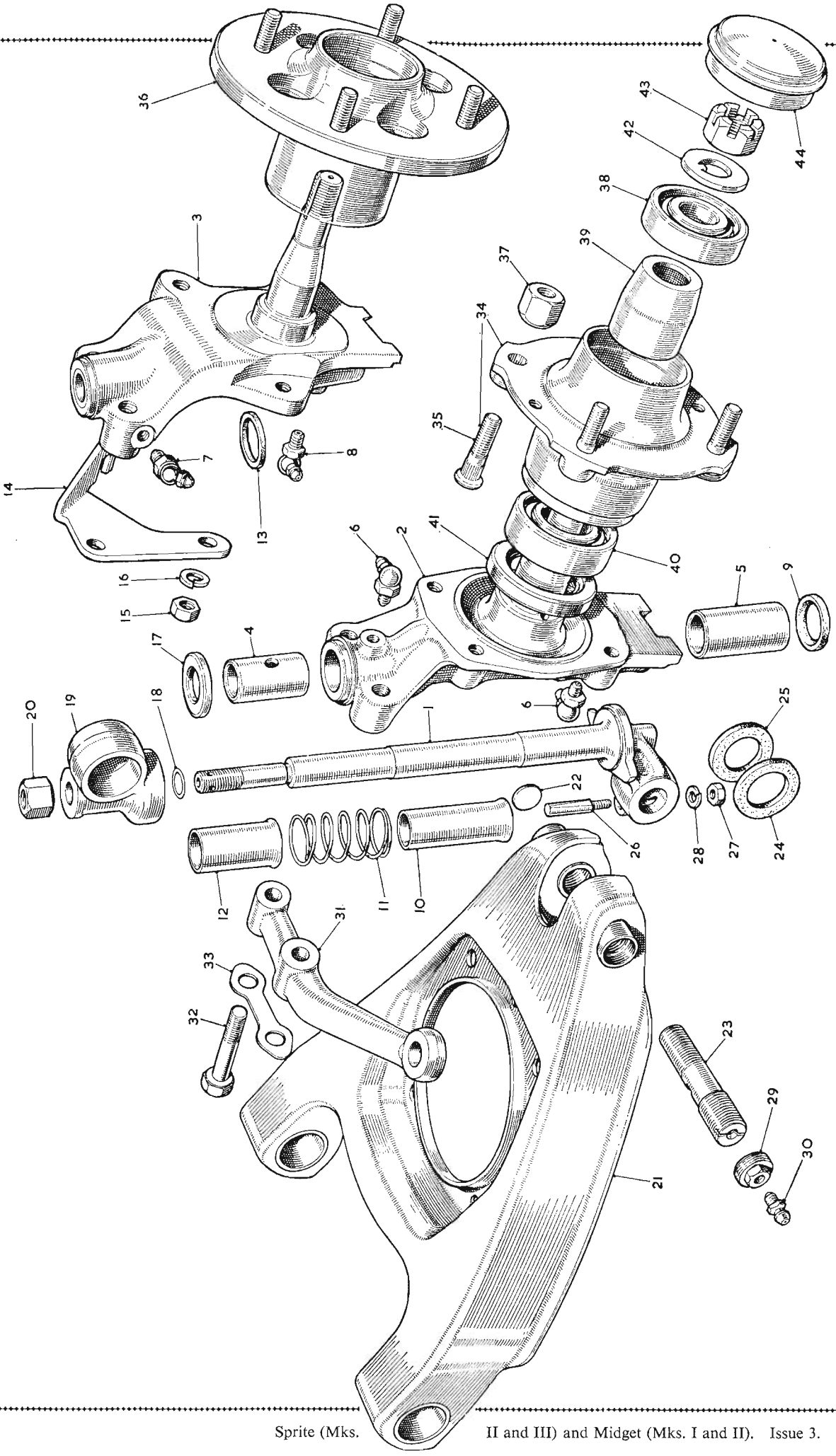
SECTION K

THE FRONT SUSPENSION

	Section
General description	
Castor, camber, and swivel pin angles	K.2
Coil springs	K.4
Front hubs	
Early cars	K.5
Later cars	K.6
Front suspension assembly	K.3
Lubrication	K.1
Service tools	End of Section

THE FRONT SUSPENSION COMPONENTS



KEY TO THE FRONT SUSPENSION COMPONENTS

No.	*Description*
1.	Swivel pin.
2.	Swivel axle assembly.
3.	Swivel axle assembly.
4.	Bush (top).
5.	Bush (bottom).
6.	Lubricator.
7.	Lubricator.
8.	Lubricator.
9.	Sealing ring.
10.	Dust excluder tube (bottom).
11.	Dust excluder spring.
12.	Dust excluder tube (top).
13.	Sealing ring.
14.	Brake hose lock plate.
15.	Nut.
16.	Spring washer.
17.	Thrust washer.
18.	Adjustment washer.
19.	Suspension trunnion link.
20.	Nut.
21.	Lower link.
22.	Plug.
23.	Fulcrum pin.
24.	Ring (large).
25.	Ring (small).
26.	Cotter pin.
27.	Nut.
28.	Spring washer.
29.	Screwed plug.
30.	Lubricator.
31.	Steering lever.
32.	Set screw.
33.	Lock washer.
34.	Hub assembly.
35.	Wheel stud.
36.	Hub assembly.
37.	Nut.
38.	Outer hub bearing.
39.	Bearing distance piece.
40.	Inner hub bearing.
41.	Oil seal.
42.	Retaining washer.
43.	Nut.
44.	Cap.

GENERAL DESCRIPTION

The independent suspension is of the 'wishbone' type. It consists of a single-armed, double-acting hydraulic damper bolted to its support bracket at its upper end. The single arm is towards the front of the car and is secured to the swivel pin trunnion link by a fulcrum pin

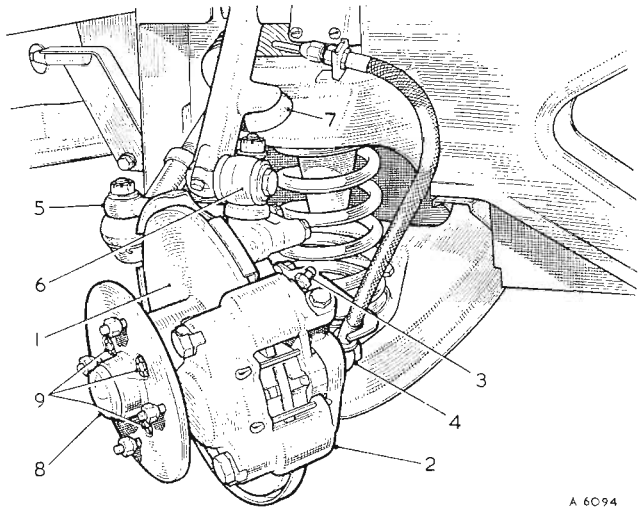


Fig. K.1

Front suspension (later cars)

1. Brake disc.
2. Calliper assembly.
3. Bleeder screw.
4. Calliper fluid connector.
5. Steering lever.
6. Suspension trunnion link.
7. Rebound buffer.
8. Retaining cap.
9. Brake disc to hub securing bolts.

and Metalastik rubber bushes. The bottom end of the swivel pin is secured to the outer end of the lower links by a fulcrum which is cottered in position.

The inner arms of the lower links are fixed to brackets by Metalastik rubber bushes and fulcrum pins.

A rebound buffer is fitted to the bottom of the coil spring top bracket and a smaller rebound buffer under the damper arm.

A spring seat is secured to the lower links by bolts, flat washers, and self-locking nuts.

Section K.1

LUBRICATION

A lubricating gun filled with lubricant should be applied to each of the eight nipples and three or four strokes given at regular intervals. Nipples are provided on both lower arm joints where they meet the swivel axle housings and on the two tie-rod ball joints. There are two nipples on each swivel axle pin which are best lubricated when the weight of the car has been taken off the suspension with a jack or sling. This will allow the lubricant to penetrate around the bushes more effectively.

Section K.2

CASTOR, CAMBER, AND SWIVEL PIN ANGLES

The castor and camber angles and the swivel pin inclination are determined by machining and assembly of the components during manufacture, and are not adjustable.

Should the car suffer damage to the suspension, the angles (as given in **'GENERAL DATA'**) must be verified with a camber, castor, and swivel pin inclination gauge and new parts fitted as found necessary

Section K.3

FRONT SUSPENSION ASSEMBLY

Removing

Raise the car and remove the wheel and coil spring (see Section K.4). Disconnect the steering side-tube from the steering-arm by withdrawing the split pin and removing the slotted nut. If the ball pin shank is tight in the steering-arm release the nut, but do not remove. Sharply tap the steering-arm at the side-tube end, when it will be found to come away quite easily on removing the nut. Disconnect the flexible hose. Withdraw the split pins. remove the nuts, tap the fulcrum pins through the lower link inner ends, and take away the two rubber bushes at the outer ends of the lower link inner brackets. The lower end of the suspension is now free.

At the upper end remove the clamp bolt and shakeproof washer in the hydraulic damper arm, withdraw the split pin, and release the slotted nut on the fulcrum pin. Tap off the fulcrum pin and retrieve the rubber bushes. The suspension unit is now free and can be lifted away.

Dismantling

Secure the suspension by clamping the web of the lower links between a dummy baseplate at the bottom and a solid metal disc and bolt at the top.

Remove the drum securing screw and withdraw the brake-drum (early cars). Remove the hub assembly as described in Section K.5 or K.6.

Detach the backplate by removing its securing bolts and washers.

Tap back the lock washers and remove the set screws to release the steering lever.

Extract the split pin and remove the slotted nut at the top of the swivel axle pin. Remove the trunnion and preserve the shims for use during assembly. Lift off the phosphor-bronze Oilite thrust washer and the swivel axle along with the dust excluder tubes and their spring, and the bevelled cork sealing ring at the bottom of the swivel axle pin.

Release the lower trunnion swivel pin cotter nut and knock the cotter loose. Remove the nut, spring washer, and cotter. Screw out the swivel pin lower trunnion oil nipple and its housing, which also serves to plug the lower trunnion.

Unscrew the swivel pin lower trunnion fulcrum pin, remove the swivel pin and cork sealing washers, and knock out the welch plug.

Reassembling

Reverse the sequence of operations detailed for dismantling, but note the following point. Place the phosphor-bronze thrust washer over the swivel axle. Put a ·008 in. shim (·008 in. [·2 mm.] and ·012 in. [·3 mm.] shims available) onto the swivel pin, followed by the trunnion with its bore towards the hub when it is fitted. Tighten the slotted nut. Resistance should be just felt when the swivel axle is moved from lock to lock and there should be no vertical movement of the swivel axle. Increase the thickness of the shims to loosen and decrease to tighten as required.

Refitting

Wet the spring rebound bumper and push it into its hole in the bottom of the hydraulic damper mounting plate, and the hydraulic damper arm rebound buffer in the top. Wet two of the large rubber bearings and position one from inside each lower link. Lift the two arms into position, insert the fulcrum pin from the inner end so that its washer registers, position the two remaining rubber bearings from outside the lower links, locate the special washer, tighten the slotted nuts, and insert and turn back the split pins.

With the block still under the hydraulic damper arm proceed to connect the top end.

Insert the two small rubber bearings in the upper trunnion eye, tap the fulcrum pin from the rear to go through the bearings and damper arm, and see that the notch in the fulcrum pin is to the top. Tighten the slotted nut till the notch is in line with the clamp bolt hole in the damper arm, split-pin the slotted nut, and tighten the clamp bolt onto its shakeproof washer.

Refit the coil spring (Section K.4). Replace the wheel and lower the car. The block can now be removed from under the hydraulic damper arm.

Section K.4

COIL SPRINGS

Removing

Place a hardwood or metal block 1·125 in. (28·57 mm). long under the hydraulic damper arm to keep the arm

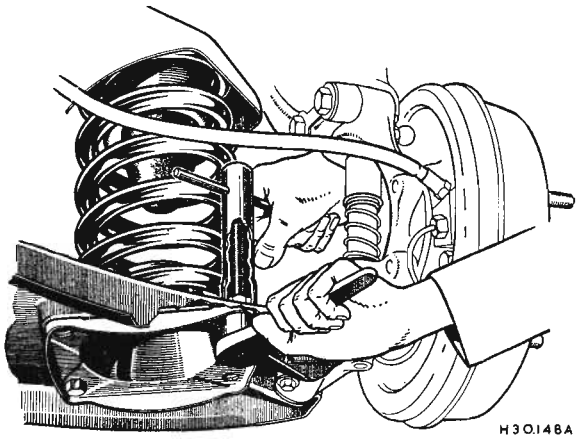


Fig. K.2

Using a pair of slave bolts to remove or replace a coil spring

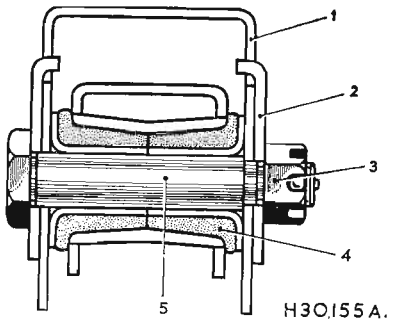


Fig. K.3

Lower link mounting (inner end)

1. Mounting bracket.
2. Special washer.
3. Slotted nut.
4. Rubber bush (bearing).
5. Fulcrum pin.

off its rubber rebound buffer when the car is in a raised position. With the vehicle raised to a workable height remove two diametrically opposite spring seat securing nuts and bolts. Using Service tool 18G 153 (or two slave bolts), compress the spring. Remove the remaining nuts and bolts from the spring seat and release the centre screw of the Service tool to allow the spring to expand.

Check the spring against makers' specifications. If it has sustained damage in any way it should be renewed.

Refitting

Reverse the removal procedure when refitting, with attention being given to inserting two guide rods in diametrically opposite holes to bring the spring seat and wishbone lower links into line when in the process of compressing the spring.

Section K.5

FRONT HUBS
(Early Cars)

Removing

Raise the car and remove the wheel. Remove the brake-drum securing screw from the countersunk hole and withdraw the drum.

Remove the hub cap by levering with a screwdriver. Wipe away any excess grease and extract the split pin. Remove the slotted nut and washer. Withdraw the complete hub assembly off the swivel axle, using the Service tool.

Should the inner bearing remain on the swivel axle, it should be carefully extracted, using Service tools 18G 8 and 18G 8 P. It is usually only the inner race of the inner bearing that is left behind, and removal will be found easier if the backplate is first removed.

With the hub removed, the outer bearing and distance piece can be tapped out, using Service tool 18G 260 together with 18G 260 A. Similarly, the inner bearing and oil seal can be detached by drifting them off from the other side of the hub, using Service tools 18G 260 and 18G 260 B.

Refitting

Pack the bearings and the cavity between them with grease.

Surplus grease must be removed after the hub has been fitted, to allow for expansion, and in no circumstances should grease be put into the retaining cap.

Reverse the removal procedure, with special attention being given to ensure that the inner and outer bearings are drifted on with their sides marked 'THRUST' towards the centre of the hub, using Service tool 18G 134 together with adaptors 18G 134 B and 18G 134 C.

Ensure also that the oil seal is pressed in with its lipped end towards the inner bearing.

Using Service tool 18G 7, refit the hub assembly on the swivel axle.

Fit the washer and nut. Tighten the nut to the torque wrench reading given in 'GENERAL DATA'.

Section K.6

FRONT HUBS (Later Cars)

Removing

Raise the car to a workable height.

Remove the road wheel and disconnect the brake calliper assembly as in Section M. Support the calliper assembly—do not allow it to hang on the hydraulic hose. Remove the split pin and nut and pull off the hub casing and disc assembly, using Service tool 18G 304 and adaptor 18G 304 B.

Brake disc removing and refitting

Remove the securing set screws and remove the hub from the disc assembly.

Refitting is a reversal of the removal procedure. Should the maximum run-out at the outer periphery of the braking surface exceed ·006 in. (·152 mm.) after fitting, the disc must be removed and repositioned on the hub.

Refitting

Pack the bearings and the cavity between them with grease.

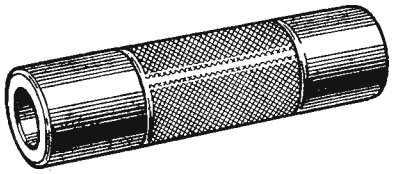
Surplus grease must be removed after the hub has been fitted, to allow for expansion, and in no circumstances should grease be put into the retaining cap.

Refitting is a reversal of the removal procedure. Ensure that the bearings are fitted with their side marked 'THRUST' adjacent to the bearing spacer.

(*For* **'SERVICE TOOLS'** *see page K.7*)

SERVICE TOOLS

18G 7. Front Hub Outer Bearing Remover



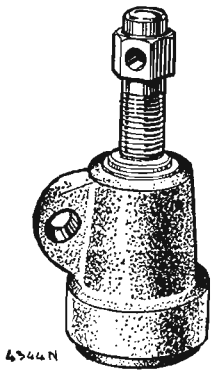
43 '6F

18G 7

18G 8. Hub Assembly Remover (basic tool)

Internally threaded for attachment to the hub and the end of the centre screw provided with a hardened-steel ball to reduce friction when engaging the stub axle. Provision is also made for the use of a tommy-bar to prevent the tool turning in operation.

Use in conjunction with adaptor 18G 8 P.

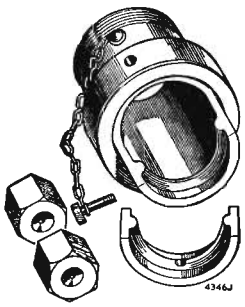


4344N

18G 8

18G 8 P. Front Hub Bearing Inner Race Remover Adaptor

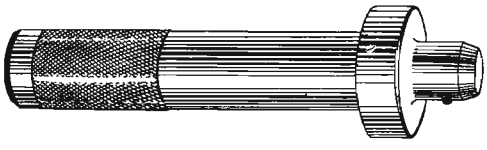
Used with hub remover 18G 8, 18G 2, or any other suitable two-legged extractor; a peg and chain is included to retain the locking ring and half-ring when not in use.



4346J

18G 8 P

18G 134. Bearing and Oil Seal Remover and Replacer (basic tool)

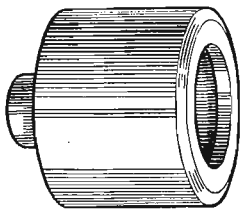


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18G 134

18G 134 B. Front Hub Outer Bearing Replacer Adaptor
For use with 18G 134.

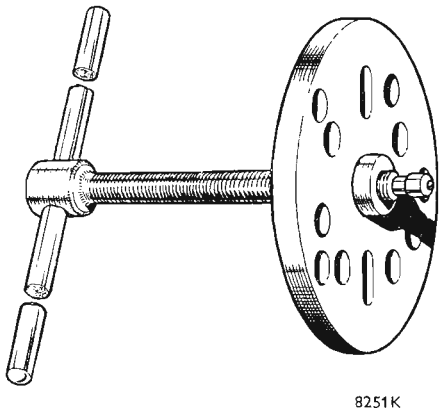
18G 134 C. Front Hub Inner Bearing Replacer Adaptor
For use with 18G 134.



18G 134 B

18G 134 C

18G 304. Front and Rear Hub Remover (basic tool)
The remover 18G 304 is a basic tool for use with various adaptor bolts supplied separately. Screw the two adaptor bolts 18G 304 F onto the wheel studs and insert the thrust pad into the axle tube. The rear hub can then be removed by screwing up the centre screw against the thrust pad.



18G 304

18G 304 F. Bolt Adaptor
For use with basic tool 18G 304.



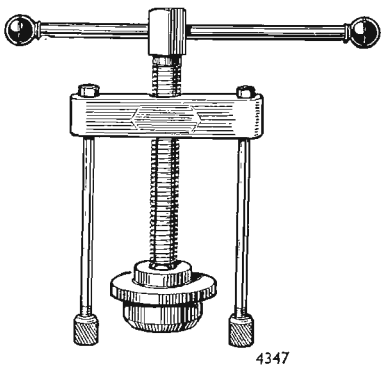
18G 304 F

18G 304 H. Hub Remover Thrust Pad
For use with basic tool 18G 304.



18G 304 H

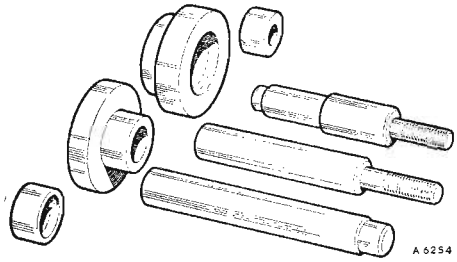
18G 153. Front Suspension Spring Compressor
The spring compressor thrust pad is ball-mounted to assist in lining up the spring and spring seat.



18G 153

18G 154 A. Swivel Axle Bush Remover and Replacer

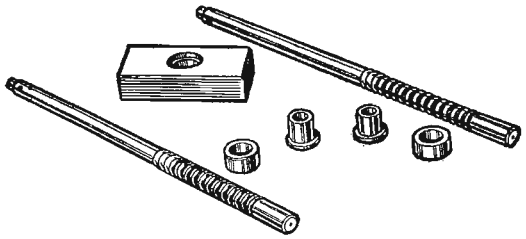
This tool enables the swivel axle bushes to be removed and fitted without the distortion which would occur if an improvised drift were used. The shoulder of the driver is recessed to prevent the split bushes from opening when being pressed into position. The tool is designed for use with a press.



18G 154 A

18G 155. Swivel Axle Bush Broaching Equipment

Consisting of an anvil, two broaches, two guide bushes, and two support adaptors. They are for use with a light press, and will ensure highly finished bores. The worn bushes can be removed, and new bushes fitted with tool 18G 154.



18G 155

18G 155 A. Swivel Axle Bush Broach Guide

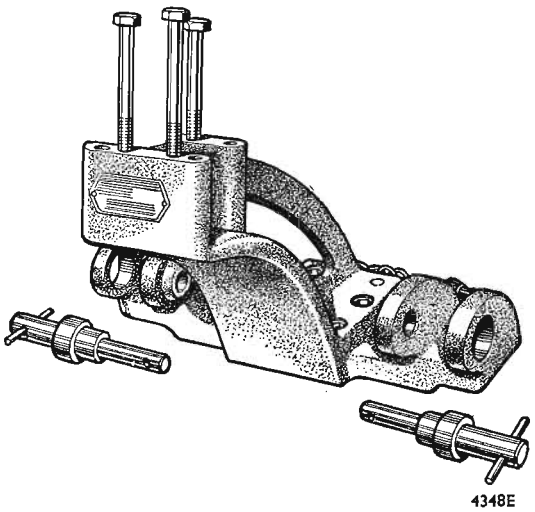
For use with 18G 155.



18G 155 A

18G 253. Front Suspension Assembly Fixture

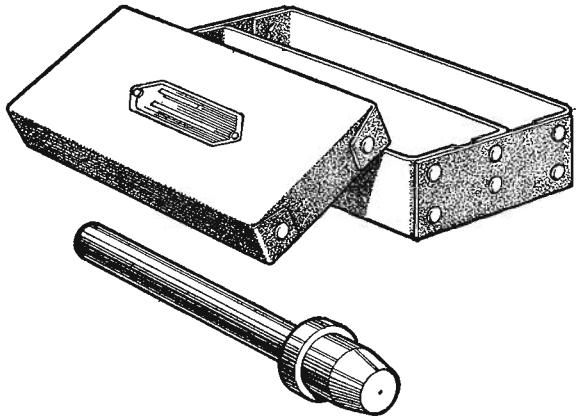
Designed to serve the dual purpose of accurately assembling a front suspension unit for fitting as a replacement to a vehicle, and also as a means of checking a unit suspected of damage or misalignment.



18G 253

18G 260. Front Hub Outer Race Remover (basic tool)

The outer race of a front hub bearing often remains inside the hub when dismantling. This remover with the appropriate adaptor will ensure easy extraction from the hub.



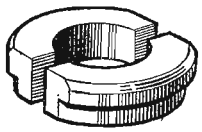
18G 260

18G 260 A. Front Hub Bearing Outer Race Remover Adaptor

For use with 18G 260 to remove the outer race of the outer bearing.

18G 260 B. Front Hub Bearing Outer Race Remover Adaptor

For use with 18G 260 to remove the outer race of the inner bearing.

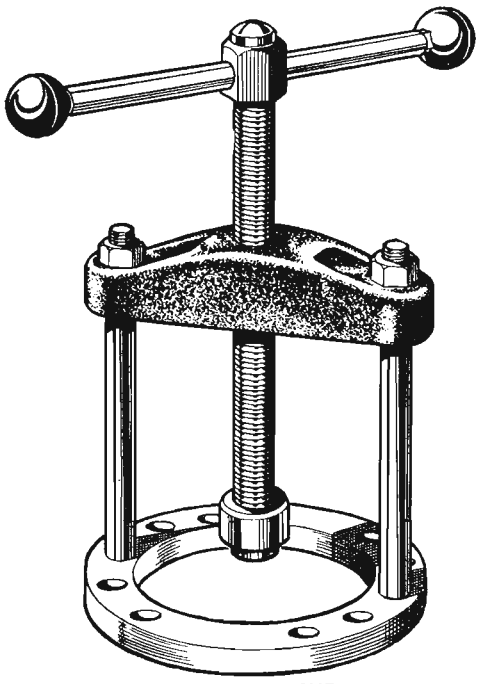


18G 260 A

18G 260 B

18G 146. Front and Rear Hub Remover

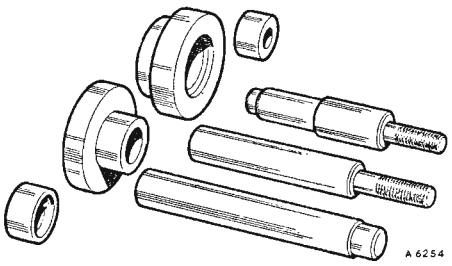
The thrust pad supplied with the tool is for use only when removing the hubs.



18G 146

18G 1006 Swivel Axle Remover and Replacer

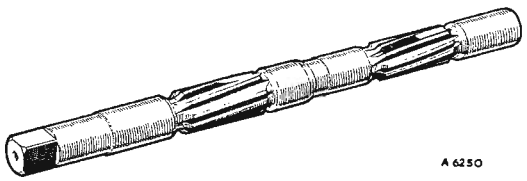
For the correct removal and replacement of the swivel axle bushes. 1098 c.c. engined cars.



18G 1006

18G 1006A Swivel Axle Bush Reamer

To ream swivel axle bushes to the correct size. 1098 c.c. engined cars.



18G 1006A