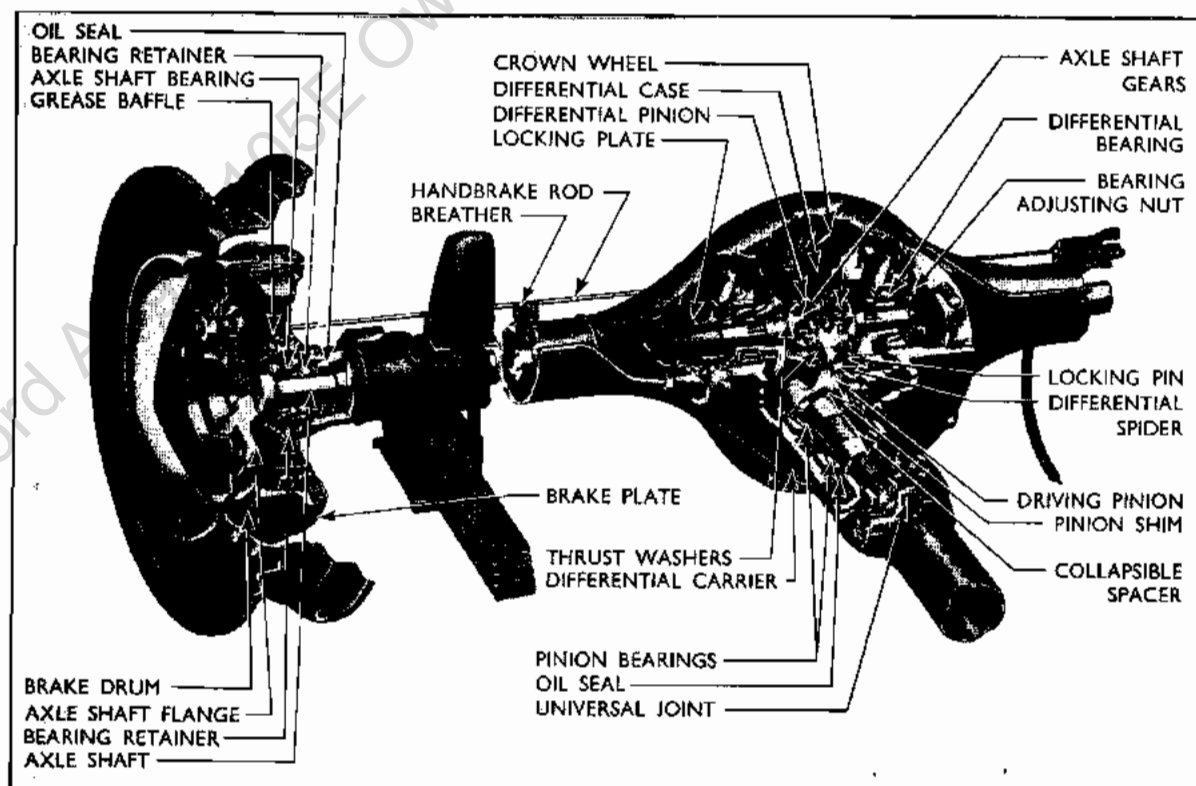


THE REAR AXLE



**Fig. 1
Cutaway View of Rear Axle**

Description

The rear axle is of the semi-floating type, incorporating a hypoid crown wheel and pinion and a two-pinion differential. The crown wheel and pinion are mounted in the differential carrier, which is bolted to the front face of the banjo-type axle housing.

Adjustments are provided for pinion bearing preload, crown wheel and pinion backlash and pinion depth of mesh. All repairs can be carried out to the component parts without removing the axle housing from the vehicle.

Lubrication and Maintenance

Each rear hub bearing is a pre-packed and sealed unit and normally does not require attention. The universal joints are the needle roller type, welded to each end of the tubular drive shaft, and should be lubricated every 1,000 miles (1,600 kilometres) with

S.A.E. 250 oil or multi-purpose grease of the lithium base type.

The combined filler and level plug for the axle is situated in the rear of the banjo housing (see Fig. 2), whilst the drain plug is in the underside of the housing.

After the first 300 miles (500 kilometres) the axle oil should be drained, by removing the drain plug when the oil is hot. Refill the axle with the correct grade of hypoid gear oil (see Specification).

At each 1,000 miles (1,600 kilometres) interval, check the lubricant level with the vehicle standing on level ground. Remove the level plug and the oil should be to the bottom of the hole, add oil if necessary to bring it to this level. Replace the level plug and tighten it securely.

Note that only hypoid and not ordinary gear oil is to be used ; refer to the Specification for the correct grade of oil.

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At each 5,000 miles (8,000 kilometres) interval, drain off the lubricant when the oil is hot, and refill the axle to the correct level with approved oil.

If a new crown wheel and pinion or differential carrier assembly have been fitted, fill the axle to the correct level with 'running-in type hypoid gear oil,' and run-in the axle as for a new vehicle for 500 miles (800 kilometres). After 300 miles (500 kilometres) drain the axle and refill it with the correct grade hypoid gear oil as described previously.

Drive Shaft and Universal Joints

The drive shaft and universal joints can be removed as an assembly and should be treated with care as it is balanced to fine limits.

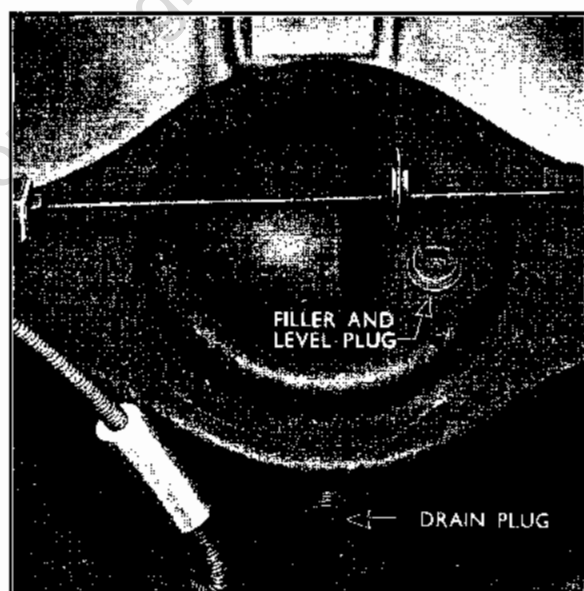


Fig. 2
Drain and Level Plugs

To Remove

1. Mark the drive shaft and pinion drive flanges to ensure correct alignment on replacement, remove the four self-locking nuts and bolts and push the shaft forward slightly to separate the two flanges.
2. Lower the rear end of the drive shaft and ease it to the rear to disengage the gearbox main shaft splines.

NOTE.—When the drive shaft is removed, a small quantity of oil may leak from the gearbox extension housing. The oil level of the gearbox must be checked and topped-up, if necessary, after road test.

Overhauling the Universal Joints

The universal joint spider, bearings, oil seals and retainers are serviced as a kit.

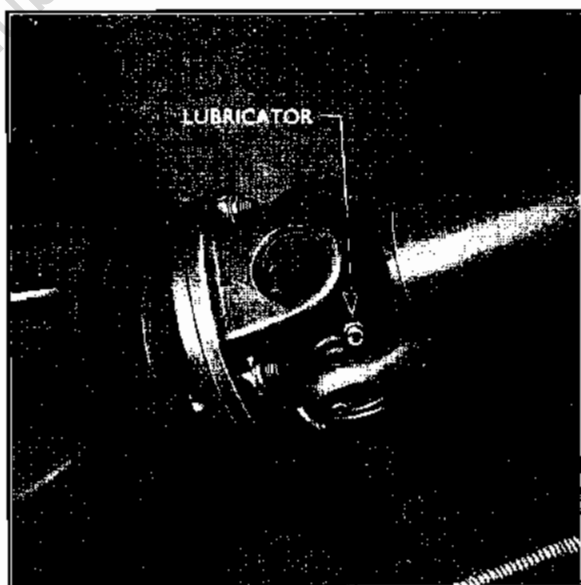


Fig. 3
Universal Joint Lubrication

1. To dismantle, extract each spider bearing snap ring (see Fig. 4), and remove the bearing cups and rollers by gently tapping the yoke at each bearing.
2. Remove the spider and detach the oil seal and seal retainer from each spider journal.
3. To reassemble, fit new oil seals to the retainers and locate them on the shoulders of the spider journals with the oil seals outwards. Position the spider in the drive shaft yoke, assemble the needle rollers in each bearing cup and refit the bearings, tapping them squarely into place. Take care not to dislodge the needle rollers.

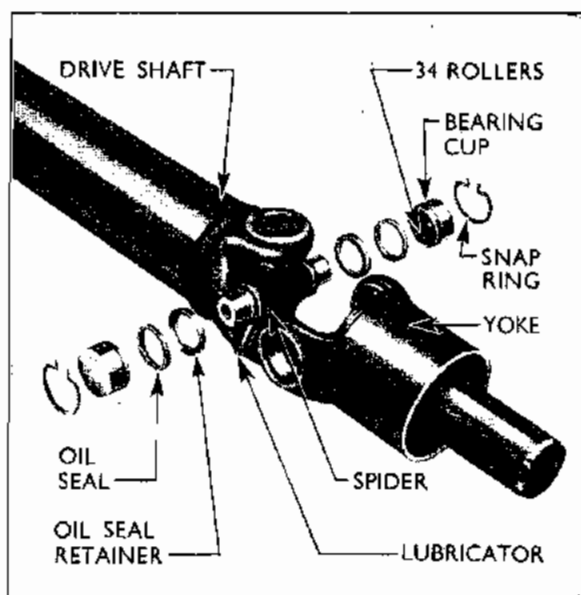


Fig. 4
Universal Joint—Exploded View

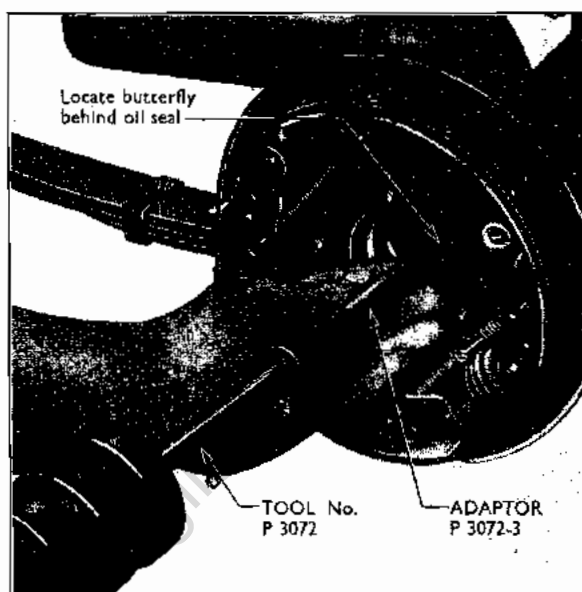


Fig. 5
Removing an Oil Seal

4. Similarly, refit the other half of the joint.
5. Refit the snap rings to each bearing and replace the lubricator in the spider. Lubricate the bearings thoroughly with S.A.E. 250 oil or a multi-purpose lithium base grease.

To Replace

1. Slide the front universal joint onto the gearbox

mainshaft splines, taking care not to damage the extension housing rear oil seal or bearing.

2. Lift the rear end of the drive shaft and align the mating marks on the drive flanges. Fit the four bolts and self-locking nuts, tightening the nuts securely.

3. Road test the vehicle and then check the gearbox oil level.

Axle Shafts and Oil Seals

The axle shafts may be withdrawn without disturbing the differential assembly.

Axle shaft oil seals, to retain the differential lubricant, are provided at the outer ends of the axle casing. If leakage indicates that a seal requires renewal, then, provided the remover, Tool No. P.3072-3 is available, this may be accomplished after first withdrawing the axle shaft. The procedure forms part of the axle shaft removal instructions, see Fig. 5.

To Remove an Axle Shaft

1. Jack up the vehicle and fit stands. Suitable points for placing stands are just in front of the rear springs, under the frame side members.

2. Remove the road wheel from the side on which the shaft is to be withdrawn. Unscrew the one cheesehead screw retaining the brake drum to the axle shaft flange release the hand brake and pull off the brake drum. If necessary, first back off the brake shoe adjustments.

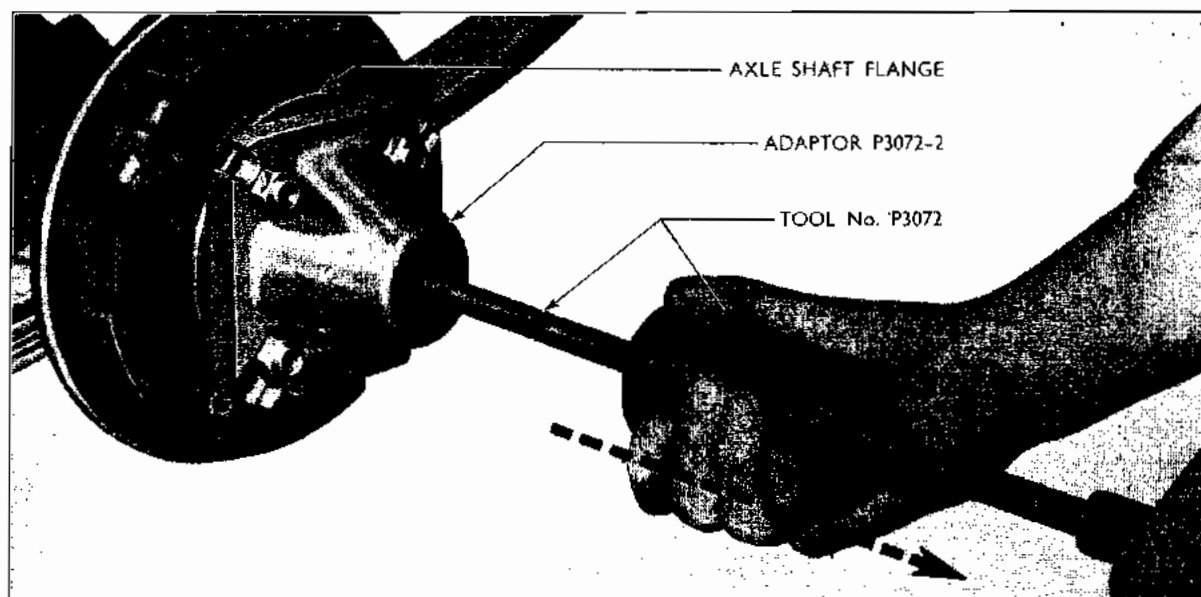


Fig. 6
Withdrawing an Axle Shaft

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3. Remove the four self-locking nuts which secure the axle shaft bearing retainer to the axle housing. These nuts are accessible through the holes in the axle shaft flange illustrated in Fig. 7.

4. Withdraw the axle shaft. Secure the base of the axle shaft removing tool (Tool No. P.3072-2, see Fig. 6) to the axle shaft flange by means of the wheel nuts, screw the centre bolt of the tool into the base already secured to the axle shaft flange and, by operating the slide hammer mounted on the centre bolt, withdraw the axle shaft.

5. Remove the axle shaft bearing (if required) :

(a) Locate the adaptors (Tool No. P.4090-1) and slave ring between the bearing and axle shaft flange. Support the assembly in the base plate (Tool No. 370) on the bed of a hydraulic press. Remove the press ram pad and fit the ram adaptor to the press ram. Press on the splined end of the axle shaft and push the shaft out of the bearing and retainer.

(b) Remove the bearing retainer plate and baffle from the axle shaft.

6. Renew the axle shaft oil seal :

(a) Screw the oil seal remover (Tool No. P.3072-3) on to the centre bolt and slide hammer assembly, and pass the oil seal remover through the seal so that the wings locate behind the metal casing, see Fig. 5. Hold the centre bolt and operate the slide hammer to extract the oil seal.

(b) Locate the new seal on the adaptor (Tool No. P.4078) so that its sealing edge will be towards the differential assembly when it is installed in the axle casing.

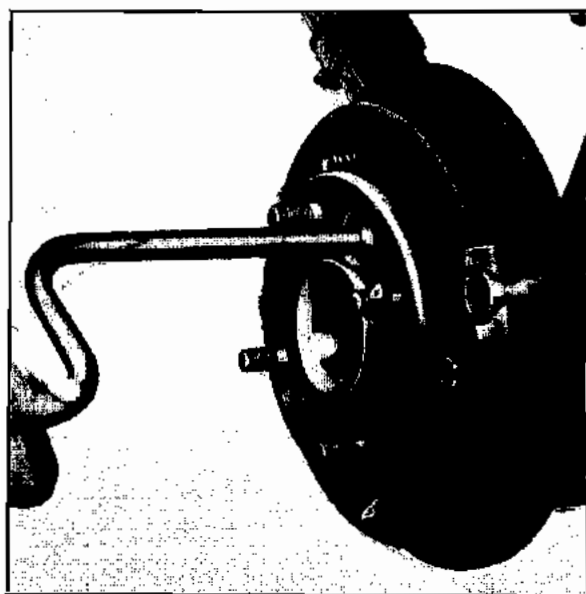


Fig. 7
Fitting an Axle Shaft

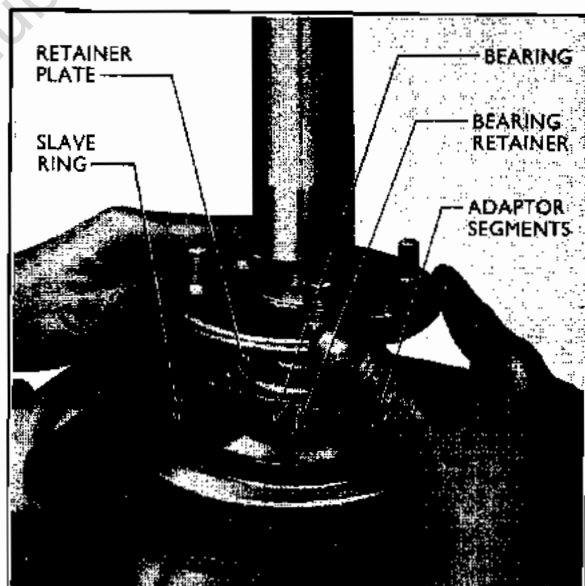


Fig. 8
Fitting an Axle Shaft Bearing

(c) Fit the adaptor on the handle (Tool No. 550) and drive the oil seal into place in the axle casing.

To Replace

1. (a) Locate the baffle and the bearing retainer plate on the axle shaft and fit the bearing.

(b) Support the assembly on the spacer ring in the adaptors (Tool No. P.4090-2), slave ring and base plate (Tool No. 370) on the bed on a hydraulic press, and, by pressing on the axle shaft flange, press the bearing right home. A minimum pressure of 1,200 lb. (545 kg.) should be required to do this; a pressure below this figure indicates an incorrect fit between shaft and bearing.

(c) Similarly, using the tools in operation (b) with the exception of the spacer ring, fit a bearing retaining ring to abut the bearing. A minimum pressure of 800 lb. (363 kg.) should be used.

2. Check that the oil drain hole in the brake back plate is unobstructed.

3. Fit the axle shaft, taking care not to damage the oil seal in the axle housing, when the splined end of the shaft passes through it.

4. Locate the axle shaft in the axle shaft gear and enter the bearing into the axle housing journal. Drive the axle shaft right home and fit the bearing retainer plate and baffle on the four studs.

5. Fit the four self-locking nuts to secure the bearing retainer and baffle to the axle casing and tighten the nuts securely.

6. Refit the brake drum, securing it in place with the drum retaining screw and refit the road wheel. If required, readjust the brake, lower the vehicle to the ground, recheck the wheel nuts and refit the hub cap.

Drive Pinion Oil Seal

To Renew

1. Withdraw the differential carrier assembly as described below and mount the assembly on the dismantling stand using adaptor, Tool No. P.4077.
2. Remove the differential bearing caps and lift out the differential assembly as explained on this sheet.
3. Withdraw the drive pinion assembly, also see continuation sheet 3.
4. Lever out the existing oil seal and, using Tool No. P4013-3, see Fig. 18, fit a new seal with the sealing edge facing into the carrier.
5. Lightly oil the seal, fit a new collapsible spacer to the pinion and adjust the pinion bearing pre-load as described in operation 9c onwards, see continuation sheet 3.
6. Reassemble the differential assembly to the carrier and set the crown wheel and pinion backlash and differential bearing pre-load, see operation 10, continuation sheet 5.
7. Complete the axle build up.

Differential Carrier Assembly

To Remove

1. Remove both brake drums and withdraw the axle shafts as described previously, see sheet 2.
2. Drain the oil from the axle housing.
3. Disconnect the drive shaft at the rear end, see continuation sheet 1.
4. Unscrew the eight self-locking nuts securing the differential carrier to the axle casing and withdraw the hydraulic brake pipe three-way connector from its locating stud.
5. Withdraw the carrier, complete with crown wheel and differential assembly.

To Replace

1. Before reassembly, check the mating flanges of the axle housing and carrier for burrs and place a new gasket on the axle housing studs.
2. Position the differential carrier with the pinion to the bottom, and locate it on the studs of the axle housing. Fit the eight self-locking nuts ensuring

that the hydraulic brake pipe three-way connector is located on the correct stud and tighten the nuts to a torque of 15 to 18 lbs. ft. (2.074 to 2.489 kg.m.).

3. Reassemble the drive shaft, axle shafts, brake drums and road wheels.

4. Refill the axle to the level plug with 2 Imp. pints (2.4 U.S. pints, 1.14 litres) of the correct grade of hypoid gear oil (see continuation sheet 1). After a road test, check the gearbox oil level as some oil may have been lost if the drive shaft was completely removed from the vehicle.

To Dismantle

1. Remove the differential carrier assembly and, using the adaptor (Tool No. P.4077) mount it on the dismantling stand.
2. Check the mating marks on the differential bearing caps, unscrew the adjusting nut locking plate bolts and detach the locking plates.
3. Slacken the differential cap bolts and then using the spanner (Tool No. P.4079) back off the differential bearing adjusting nuts. Remove the differential bearing cap bolts and lockwashers and carefully detach the bearing caps (see Fig. 10).
4. Lift out the crown wheel assembly, together with the differential bearings and adjusting nuts. Take care to keep the bearings and cups as assemblies.

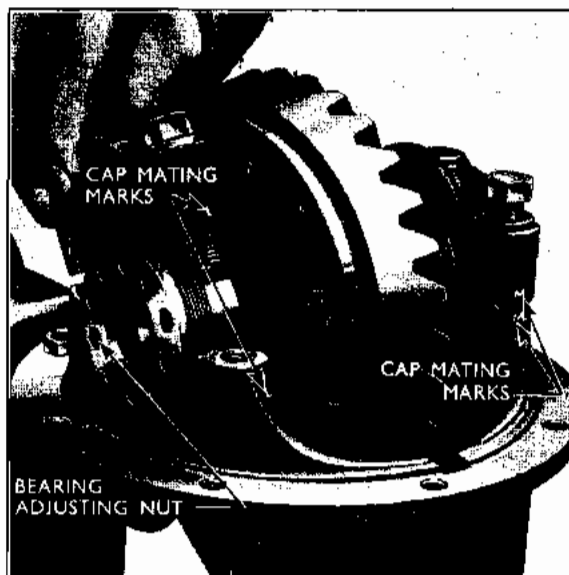


Fig. 9

Differential Bearing Cap Mating Marks

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5. Withdraw the drive pinion. This is secured by a retaining nut which presses the coupling flange against the inner face of the front pinion bearing. A tubular spacer is fitted between the pinion bearings and the length of this spacer controls the pinion bearing preload. The drive flange retaining nut is staked to the pinion to lock it in position.

(a) Relieve the staking, then holding the pinion flange with the spanner (Tool No. P.4028), unscrew the drive flange retaining nut.

(b) Pull the drive flange from the pinion splines. The pinion with its tubular spacer and rear bearing cone can now be withdrawn from the carrier (see Fig. 11).

6. Remove the pinion bearing cups, front bearing and oil seal. Drive out the front bearing and oil seal

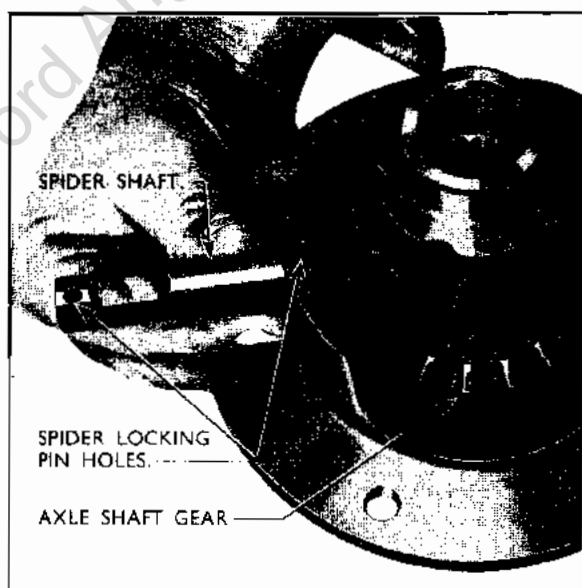


Fig. 10

Spider Shaft Location

first, using the special driver (Tool No. P.4015), passing the body of the tool through the rear bearing cup. Ensure that the spring-loaded legs of the driver are located in the notches provided behind the bearing cone, as shown in Fig. 12. Drive out the rear pinion bearing cup from the front, in the same manner.

7. Dismantle the pinion assembly :

(a) Detach and discard the collapsible bearing spacer from the pinion shaft.

(b) Locate the pinion assembly in the support ring with the lips of the adaptor segments (Tool No. P.4000-28) behind the bearing cone. Mount the assembly in the base plate on the bed of a press, check that the bearing cage is free to rotate and press out the pinion. Remove the spacer from the pinion shaft.

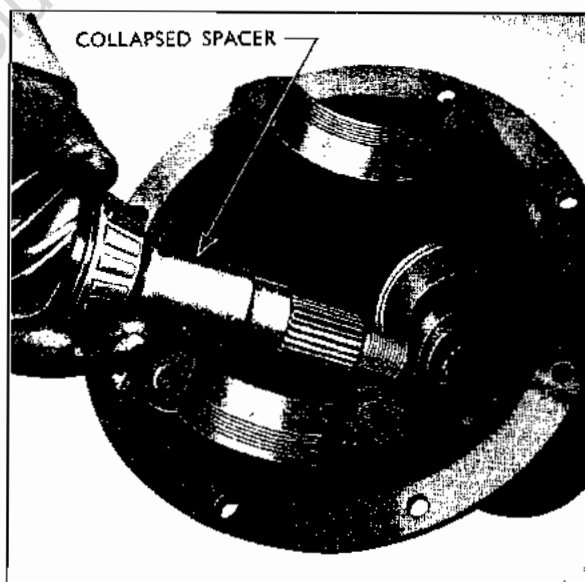


Fig. 11

Removing the Pinion

8. Dismantle the crown wheel and differential assembly :

(a) Unscrew the six self-locking bolts securing the crown wheel to the differential case.

(b) Suitably support the crown wheel and press the differential case through the crown wheel.

(c) Drive out the differential spider shaft locking pin. This pin is tapered at one end and must be driven out from the crown wheel side of the differential case.

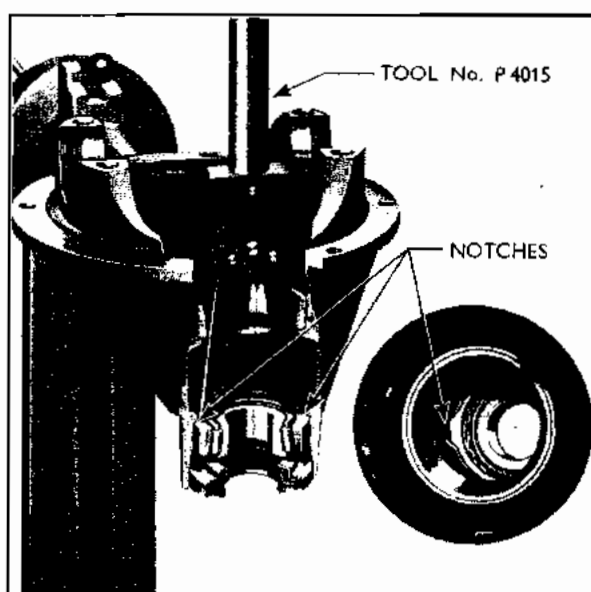


Fig. 12

Removing Front Pinion Bearing and Oil Seal

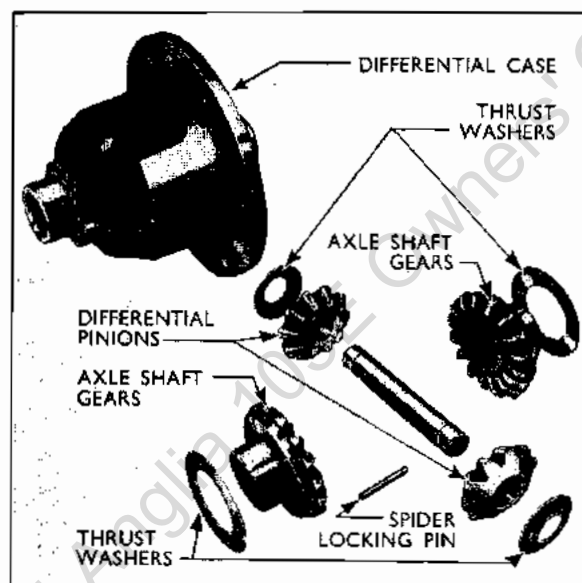


Fig. 13

Differential Assembly—Exploded

(d) Push the differential pinion shaft out of the case and rotate the pinions around the axle shaft gears so that they may be extracted through the apertures in the case. Spherical thrust washers are fitted between the pinions and the case; if these are not removed with the pinions they should be withdrawn afterwards.

(e) Lift out the axle shaft gears and flat thrust washers located between the gears and differential case.

(f) Remove the differential bearing cones. Locate the bearing removing adaptors (Tool No. P.4000-27) around the differential bearing cones and in the support ring, support the assembly on the bed of a press and, using the driver press off the bearing cones. Ensure that the adaptors are correctly located under the cone and in the support ring to prevent damage to the roller cage.

(g) Clean and examine all parts renewing where necessary.

To Reassemble

1. Lubricate the flat thrust washers and position them on the backs of the axle shaft gears, then locate the gears in the differential case, see Fig. 13.

2. Lubricate the spherical thrust washers and locate them on the backs of the differential pinions. Position the differential pinions diametrically opposite each other in the cut-away portions of the differential

case and rotate the axle shaft gears so that the pinions line up with the holes for the spider shaft.

3. Check that the thrust washers are not misplaced and, taking care that the hole in the spider shaft lines up with the locking pin hole in the differential case enter the shaft into the gears and push it right home (see Fig. 10).

4. Fit the locking pin (tapered end first) from the differential side of the case. Drive it right home and lightly peen the case to prevent the pin working out in service.

5. Refit the crown wheel. Examine the mating faces of the crown wheel and differential case for burrs; any burrs found on these faces should be removed by lightly stoning. Locate the crown wheel on the differential case so that the retaining bolt holes are in line.

Enter three suitable bolts through the case flange into the crown wheel to ensure correct alignment and support the crown wheel, teeth downwards on the bed of a press. Using the differential bearing cone driver (Tool No. P.4080), press the differential case onto the crown wheel. Remove the three pilot bolts and fit six new self-locking bolts, tightening them evenly to a torque of 30 to 35 lb. ft. (4.148 to 4.839 kg.m.).

6. Refit the differential bearing cones. Suitably support the differential assembly and press or drive the bearing cones on to the differential case using the driver (Tool No. P.4080).

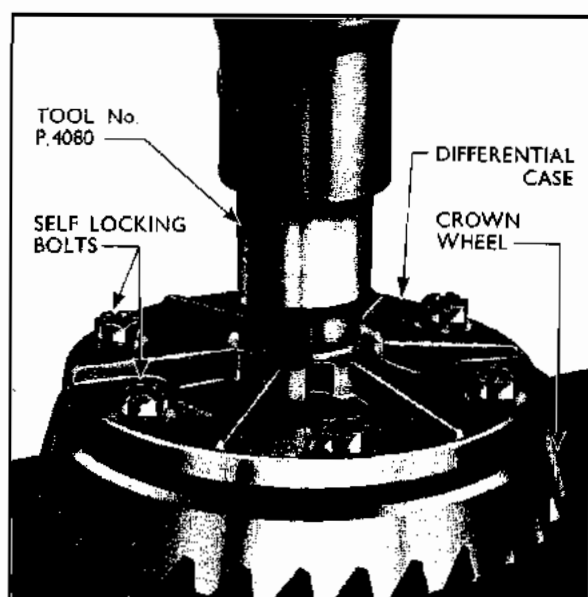


Fig. 14

Fitting the Crown Wheel to the Differential Case

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7. Fit the pinion bearing cups :

(a) Place the rear bearing cup on the body of the tool (Tool No. P.4013-3) and pass it through the carrier throat from the rear.

(b) Assemble the front bearing cup, loose adaptor and wing nut to the centre bolt of the tool at the front of the housing.

(c) Tighten the wing nut and press the bearing cups fully home. Unscrew the wing nut and remove the tool and adaptors from the carrier throat.

The axle is now ready for adjustment. Quietness depends on the following adjustments, and every care should be taken to ensure that they are carried out in the proper order, carefully and conscientiously. The correct equipment properly used will ensure satisfactory results.

8. First select the pinion bearing shim to control depth of mesh.

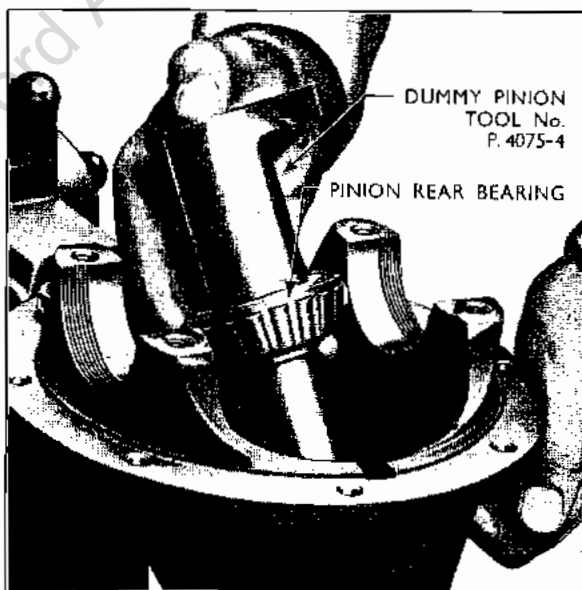


Fig. 15
Fitting the Dummy Pinion

(a) Slide the rear bearing cone onto its location on the dummy pinion (Tool No. P.4075-4), with the large diameter of the bearing towards the pinion flange and fit the assembly to the throat of the differential carrier (see Fig. 15).

(b) Slide the front bearing cone with its smaller diameter inwards, onto the dummy pinion, fit the drive shaft flange to the pinion splines and screw the pre-load gauge adaptor nut (Tool No. P.4030-2) onto the threaded end of the pinion.

(c) Pre-load the pinion bearings. Hold the pinion drive flange with the special spanner (Tool No. P.4028) and gradually tighten the flange retaining nut, rocking the pinion backwards and forwards whilst tightening the nut to ensure that the bearing rollers are correctly seated and continue to rock the

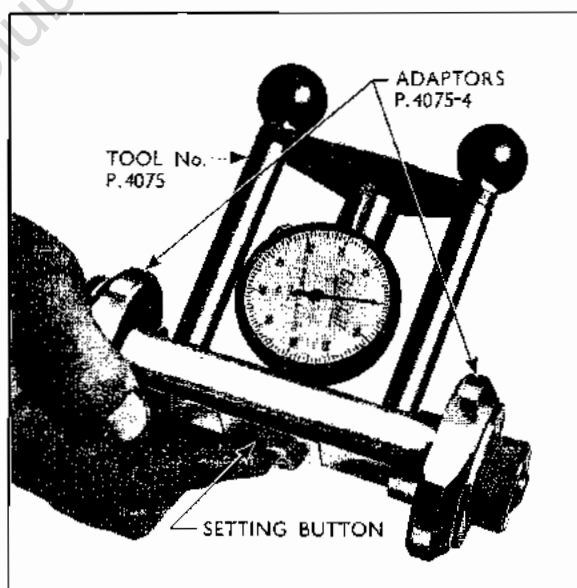


Fig. 16
Zeroing the Depth of Mesh Gauge

pinion until the bearing drag remains constant, indicating that the bearings are fully seated. Ensure that the dummy pinion flange does not strike and damage the differential bearing cap supports.

Fit the pre-load gauge (Tool No. P.4030) and as described previously, set the pinion bearing pre-load to a running torque of between 9 and 11 lbs. in. (0.104 to 0.127 kg.m.). If this pre-load is exceeded, first slacken the drive flange retaining nut to remove all pre-load from the bearings and then gradually retighten the nut to give the correct pre-load.

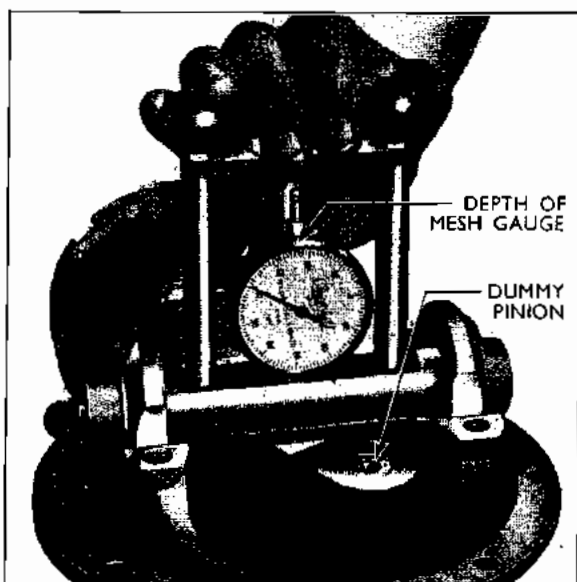


Fig. 17
Checking Pinion Depth of Mesh

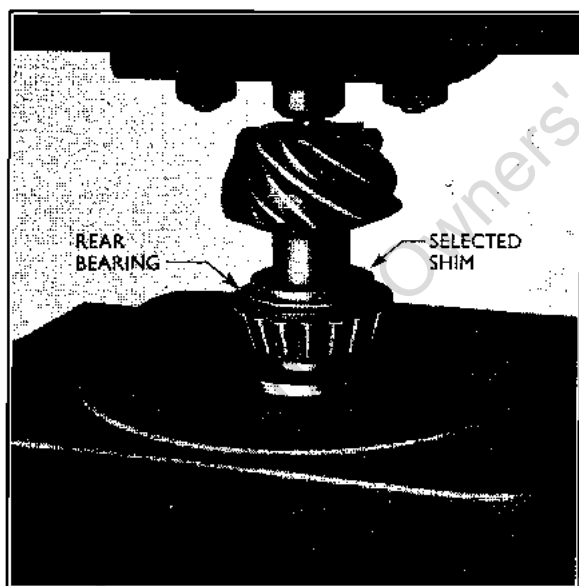


Fig. 18
Fitting Pinion Rear Bearing

(d) Check the pinion depth of mesh in the crown wheel. For correct tooth contact the pinion must be moved in or out in relation to the centre line of the crown wheel by fitting a suitable shim between the rear pinion bearing cone and the front face of the pinion. Depth gauge (Tool No. P.4075) in conjunction with adaptors (Tool No. P.4075-4) is used to determine the thickness of the shim required to give the correct depth of mesh.

Set the dial gauge to zero by sliding the setting button across the machined under-face of the gauge and adjust the dial as necessary to give a zero reading (see Fig. 16). Ensure that both machined faces are clean and free from grit or burrs, etc.

(e) Clean the differential bearing locations then position the gauge so that the dial plunger rests on the upper face of the dummy pinion. Rock the gauge slightly backwards and forwards to ensure that a minimum reading is obtained (see Fig. 17).

(f) Add 0.10 in. (2.54 mm.) to the gauge reading to obtain the exact thickness shim to be fitted between the pinion and the rear bearing cone. Referring to Fig. 17, the dial reading is 39 so a shim 0.139 inches thick is required. Where, however, etched markings exist on the tapered portion of the pinion shaft between the two bearing locations, alter the shim thickness accordingly. If the pinion is marked with a plus figure, this figure should be added to the gauge reading, if the marking is a minus figure, this should be subtracted from the gauge reading.

Shims in several thicknesses are available in service, identified by the Part Number suffix marked on one of the faces. Full details of these shims are given in the Specification at the end of this Bulletin.

(g) Dismantle the dummy pinion from the differential carrier. Unscrew the pre-load gauge adaptor nut, pull off the drive flange and front bearing cone and extract the dummy pinion and rear bearing cone from the housing.

9. Adjust the pinion bearing pre-load :

(a) Fit the shim selected in the previous operations to the drive pinion, with the internal chamfer on the shim towards the gear teeth. Fit the rear bearing cone to the pinion shaft, support the bearing in the adaptors (Tool No. P.4000-28), ensure that the bearing cage is free to revolve, then press the bearing right home on the pinion.

(b) Refit the front pinion bearing cone to its cup. Locate the oil seal in the axle throat with its lip towards the bearing, pass the centre bolt of Tool No. P.4013 through the carrier throat and fit the adaptor (Tool No. P.4013-3) so that its flat face is towards the oil seal. Tighten the wing nut to press the oil seal right home in its seating. Unscrew the wing nut and remove the tool.

(c) Lightly oil the seal and then assemble the pinion to the differential carrier. Fit a new collapsible spacer to the pinion shaft and fit the pinion into the front pinion bearing (see Fig. 20). Fit the drive flange retaining nut, then gradually tighten the nut until only very slight end-float can be felt on the pinion shaft.

(d) Locate the pre-load gauge adaptor (Tool No. P.4030-1) on the drive flange and fit the pre-load gauge. Check the running torque required to rotate the assembly, allowing the pre-load gauge to drop through the horizontal position. This torque is the resistance



Fig. 19
Assembling the Pinion Oil Seal

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offered by the oil seal to the drive flange, and when finally setting the pinion bearing pre-load this figure must be added to the pre-load figure of 9 to 11 lbs. ins. (0.104 to 0.127 kg.m.) for the pinion bearings alone. Therefore, if the torque required to rotate the drive flange within the oil seal is 5 lbs. ins. (0.058 kg.m.) the drive flange retaining nut must be tightened so that the assembly turns under a running torque of 14 to 16 lbs. ins. (0.162 to 0.185 kg.m.) gauged as above.

(e) Gradually tighten the drive flange retaining nut, rotating the pinion throughout the operation to ensure that the bearing rollers are correctly seated until the established pinion bearing pre-load is obtained. Frequent checks on the pre-load must be made whilst tightening the nut, as if the pre-load is exceeded, the assembly must be dismantled, the collapsible spacer removed and discarded and a new spacer fitted to the pinion.

(f) Once the correct pinion bearing pre-load has been obtained, stake the drive flange retaining nut securely to the pinion, using a suitable punch.

10. Adjust crown wheel and pinion backlash and differential bearing pre-load.

The adjustment of crown wheel and pinion backlash and differential bearing pre-load is of extreme importance for correct tooth contact.

(a) Locate the differential bearing cups on their bearing cones and position the assembly in the carrier housing. Ensure that the bearing cups are positioned squarely on the rollers.

(b) Refit the bearings caps ensuring that the mating marks on the caps and support brackets correspond (see Fig. 9), and replace the bearing cap bolts so that they nip the caps in position. Do not fully tighten the bolts.

(c) Refit the differential bearing adjusting nuts.



Fig. 21

Cap Spread and Backlash Gauges

(d) Install the bearing cap spread gauge (Tool No. P.4009) by bolting the gauge to the differential cap as shown in Fig. 21. Invert one of the adjusting nut locking plates and secure it on the bearing cap with a bolt, so that the plunger of the cap spread gauge locates on the vertical face of the locking plate. Set the dial face of the cap spread gauge to zero and screw in the bearing adjusting nuts, without spreading the caps, so that only slight backlash can be felt between the crown wheel and pinion. Rotate the crown wheel during this operation to ensure that the differential bearing rollers are correctly seated.

(e) Mount the backlash gauge (Tool No. P.4008-1) on a suitable hole on the differential carrier flange and fit the gauge plunger so that it is resting on the heel of a crown wheel tooth at right angles to it (again see Fig. 21). Zero the gauge and by means of the differential bearing adjusting nuts, adjust the backlash between the crown wheel and pinion until a reading of 0.001 to 0.002 in. (0.025 to 0.050 mm.) backlash is obtained. The adjusting nut on the crown wheel side must be tightened last.

(f) Swing the backlash gauge out of position, and rotating the crown wheel all the time, screw in the bearing adjusting nut on the differential side with the spanner (Tool No. P.4079), until a constant cap spread reading of between 0.005 and 0.007 in. (0.127 and 0.178 mm.) is obtained.

(g) Swing the backlash gauge back into position and zero the gauge. Hold the pinion and rock the crown wheel backwards and forwards noting the maximum and minimum readings on the gauge. The correct and final backlash between the crown wheel and pinion should be 0.005 to 0.007 in. (0.127 and 0.178 mm.).

If the backlash is outside these limits, adjust the position of the crown wheel relative to the pinion by slackening the adjusting nut on one side and



Fig. 20

Assembling the Pinion



Fig. 22
Correct Tooth Marking

tightening the nut on the other side by a corresponding amount so that the cap spread is unaffected. (The final tightening must be made from the crown wheel side).

(h) Refit the adjusting nut locking plate ; noting that both left- and right-hand off-set locking plates are available as required. Tighten the locking plate retaining bolts to a torque of 12 to 15 lbs. ft. (1.659 to 2.074 kg.m.) and the differential cap retaining bolts to a torque of 45 to 50 lbs. ft. (6.221 to 6.913 kg.m.).

(i) Check the tooth contact at the crown wheel and pinion (see Fig. 22). Apply a thin coating of red lead or yellow ochre to the crown wheel teeth. Fit the axle shafts to the differential gears, hold the shafts to apply a load, and rotate the pinion in both directions.

If the pinion pre-load and crown wheel backlash have been correctly set the area of contact should be as shown in Fig. 22. Margins above and below the area of contact should be the same and contact markings should run approximately for three-quarters of the tooth length. Check the patterns on both sides of the gear teeth.

Fig. 24 shows four ways in which the contact pattern may be incorrect and the method of rectification.

11. Reassemble the differential carrier to the axle casing.

12. Refit the drive shaft, axle shafts, brake drums and road wheels as described earlier in this Bulletin.

13. Refill the axle with 2 pints of correct grade hypoid oil (see Specification).

If a new crown wheel and pinion have been fitted the run-in lubricant must be used and the axle drained after the first 300 miles (500 kilometres).

14. Road test the vehicle.

To Remove and Replace the Rear Axle

1. Jack up the vehicle, placing supports under the frame sidemembers in front of the rear springs.

2. Remove the wheels and support the axle.

3. Disconnect the drive shaft from the pinion drive flange.

4. Disconnect the handbrake cable at the left-hand brake plate, the rod at the right-hand brake plate, and the fabric strap from the axle casing.

5. Disconnect the shock absorber links from the spring seats and unscrew the union on the flexible brake pipe above the differential carrier. Fit a blanking plug on the end of the flexible pipe to prevent loss of fluid.

6. Remove the spring clip self-locking nuts and spring clip plates fitted below the road springs.

NOTE.—Whenever the rear spring clips are removed in service it should be noted that the inner

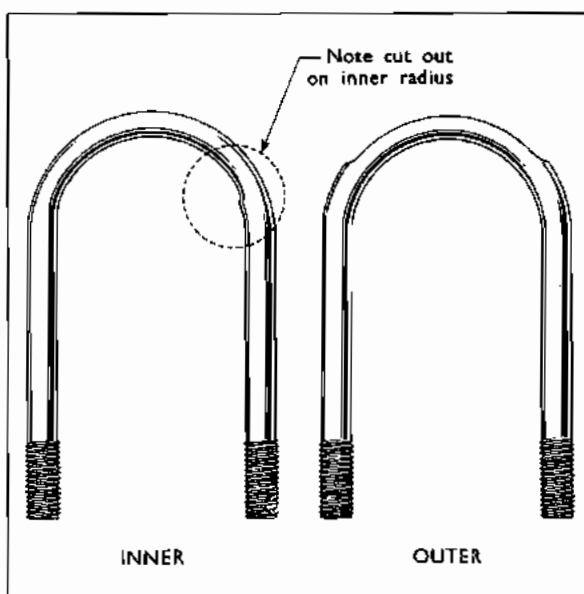


Fig. 23
Rear Spring Clip Identification

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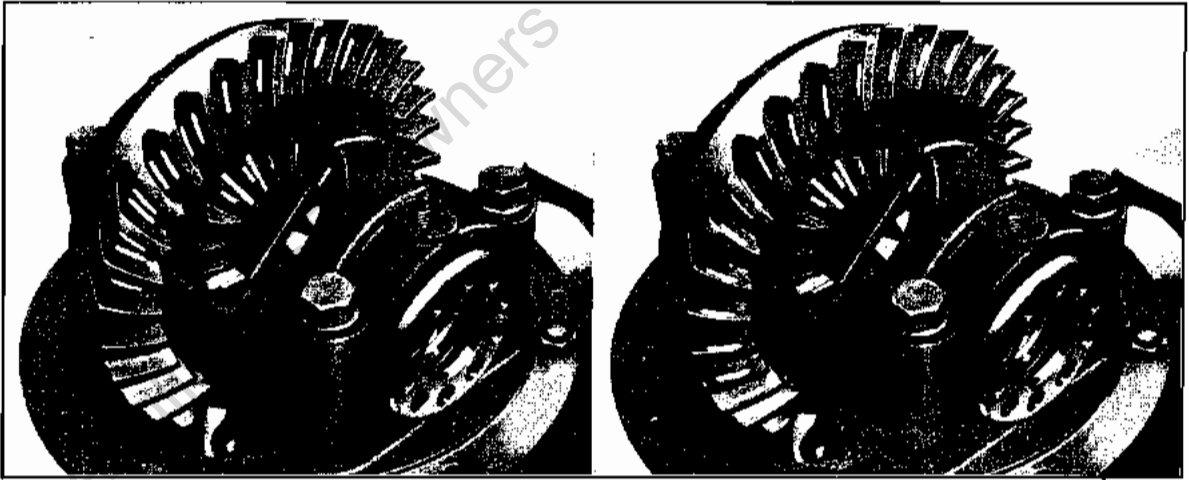
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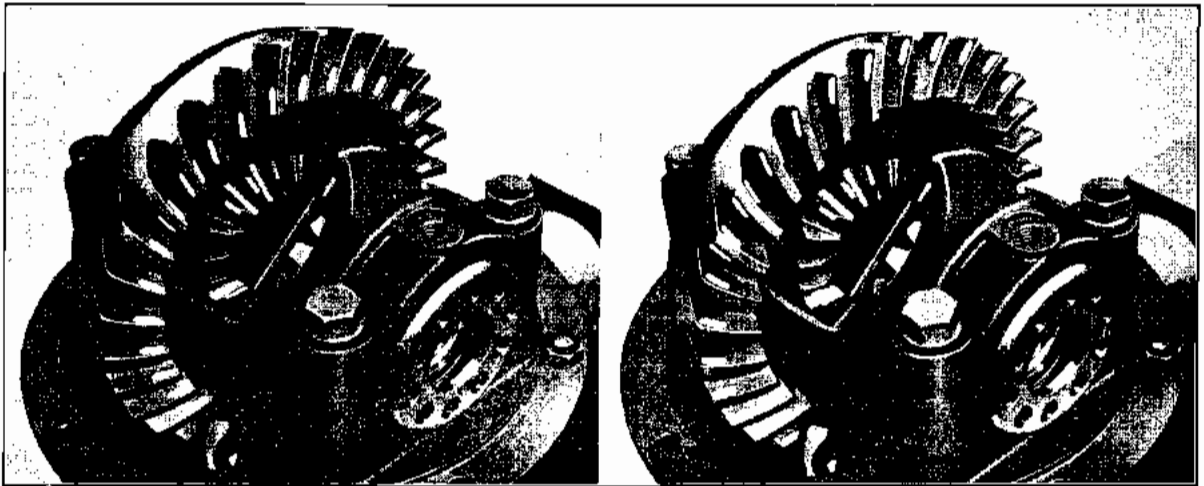
Continued overleaf

INCORRECT TOOTH MARKINGS**Heavy Flank Contact**

In this case the area of contact is below the centre line of the tooth, and the condition should be rectified by moving the pinion away from the crown wheel, using a thinner shim behind the pinion. Reset the backlash and differential bearing pre-load.

Heavy Face Contact

In this case the area of contact is above the centre line of the tooth, due to the pinion being too far away from the crown wheel. Use a thicker pinion bearing shim to lower the contact area and reset the backlash and differential bearing pre-load.

**Contact on Toe**

When the area of contact is running off the toe of the pinion, move the crown wheel away from the pinion. Slacken the crown wheel side adjusting nut and screw in the differential side nut an equal amount. It may also be necessary to use a thicker shim behind the pinion in order to keep the backlash within the correct limits.

Contact on Heel

In this case the crown wheel is too far out from the pinion. Slacken the differential side adjusting nut and tighten the crown wheel side nut, re-check the backlash and differential bearing pre-load readings. If the backlash is reduced below the minimum specified, use a thinner shim behind the pinion and using a new collapsible spacer, readjust pinion bearing pre-load.

Fig. 24

and outer clips are not identical. In addition, the inner clip is not symmetrical.

The inner clip can be identified by an offset cut out on the inside of the curved end, see Fig. 23; the outer clip is plain on the inside of the curve.

When fitting the inner clip it should be passed through the hole in the base of the bump-stop with the cut-out described above towards the front of the vehicle. When correctly installed it will be found that the leading edge of the bump-stop mounting plate locates in this cut-out.

7. Withdraw the axle from the right-hand side of the vehicle.

8. To replace the axle, reverse this procedure. Fit the spring locating plate on top of each spring and ensure that the spring centre bolt heads engage in the mounting pads on the axle housing. Fit the spring clip plates and tighten the nuts to a torque of 20 to 25 lbs. ft. (2.76 to 3.46 kg.m.).

Bleed the brakes and adjust the handbrake linkage as required.

SPECIFICATION AND REPAIR DATA

	Anglia	Prefect
Axle ratio	4.125 : 1	4.429 : 1
No. of teeth on crown wheel	33	31
No. of teeth on pinion	8	7
Crown wheel and pinion backlash	0.005 to 0.007 in. (0.127 to 0.178 mm.)	
Pinion bearing pre-load	9 to 11 lbs. in. (0.104 to 0.127 kg.m.) excluding oil seal	
Differential bearing pre-load (cap spread)	0.005 to 0.007 in. (0.127 to 0.178 mm.)	
Differential pinion thrust washer thickness	0.030 to 0.032 in. (0.762 to 0.813 mm.)	
Differential pinion I.D.	0.628 to 0.629 in. (15.953 to 15.979 mm.)	

Bolt tightening torques :

Crown wheel to differential case bolts	30 to 35 lbs. ft. (4.148 to 4.839 kg.m.)
Differential carrier to axle housing nuts	15 to 18 lbs. ft. (2.074 to 2.489 kg.m.)
Differential bearing locking plate bolts	12 to 15 lbs. ft. (1.659 to 2.074 kg.m.)
Differential bearing cap bolts	45 to 50 lbs. ft. (6.221 to 6.931 kg.m.)
Axle shaft bearing retainer nuts	15 to 18 lbs. ft. (2.074 to 2.489 kg.m.)
Drive flange nuts	15 to 18 lbs. ft. (2.074 to 2.489 kg.m.)
Axle shaft bearing assembly pressure (min.)	1,200 lbs. (545 kg.)
Axle shaft bearing retainer pressure (min.)	800 lbs. (363 kg.)
Lubricant type	S.A.E. 90 hypoid
Capacity	2 pints (1.13 litres—2.4 U.S. pints)

Pinion bearing shims :

105E-4672-A	0.1304 to 0.1308 in. (3.31216 to 3.32232 mm.)
105E-4672-B	0.1314 to 0.1318 in. (3.33756 to 3.34772 mm.)
105E-4672-C	0.1324 to 0.1328 in. (3.36296 to 3.37312 mm.)
105E-4672-D	0.1334 to 0.1338 in. (3.38836 to 3.39852 mm.)
105E-4672-E	0.1344 to 0.1348 in. (3.41376 to 3.42392 mm.)
105E-4672-F	0.1354 to 0.1358 in. (3.43916 to 3.44932 mm.)
105E-4672-G	0.1364 to 0.1368 in. (3.47456 to 3.47472 mm.)
105E-4672-H	0.1374 to 0.1378 in. (3.48996 to 3.50012 mm.)
105E-4672-J	0.1384 to 0.1388 in. (3.51536 to 3.52552 mm.)
105E-4672-K	0.1394 to 0.1398 in. (3.54076 to 3.55092 mm.)
105E-4672-L	0.1404 to 0.1408 in. (3.56616 to 3.57632 mm.)
105E-4672-M	0.1414 to 0.1418 in. (3.59156 to 3.60172 mm.)
105E-4672-N	0.1424 to 0.1428 in. (3.60496 to 3.62712 mm.)

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