# BSA SERVICE SHEET No. 212

**A Group Models before Engine No. ZA7-101**

*Oct.*, 1948
*Reprinted Jan.*, 1958

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF HUBS AND BRAKES

Both wheels are of the quickly detachable type and are interchangeable.

### Front Wheel Removal and Replacement

Slacken the pinch bolt A, Fig. A31, at the front of the nearside fork end. Insert a tommy bar in the hole in the spindle end B and unscrew. Note that the spindle has a left hand thread, and therefore unscrews clockwise. The spindle can then be pulled right out, and the wheel should be pulled sideways toward the nearside of the machine, so as to disengage the coupling splines on the hub from the brake. As this is done, the distance bush C will slide into the fork end. The wheel can now be dropped out.

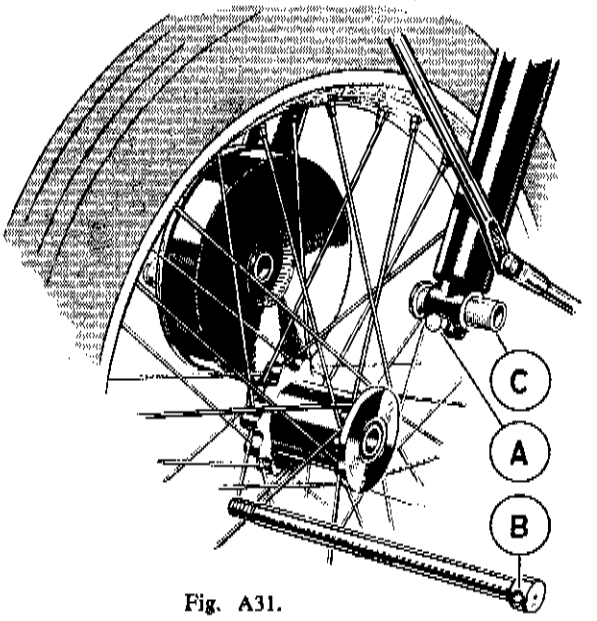

Fig. A31.

To replace the wheel the above operations are carried out in the reverse order. The action of tightening the wheel spindle restores the bush C to its correct position. **Do not forget finally to tighten the pinch bolt A.**

### Rear Wheel Removal and Replacement

The rear wheel is removed in a somewhat similar manner. The spindle A, Fig. A32, has a right hand thread and therefore unscrews in an anti-clockwise direction. The distance bush B falls clear of the machine when the spindle is removed, or alternatively the spindle can be pulled out until it is clear of the hub and then slid backwards out of the slotted chainstay end, carrying the bush with it.

This is the most convenient way of dealing with the bush when refitting the wheel. When detaching the rear wheel, it is quite unnecessary to touch the hexagon nut C on the nearside.

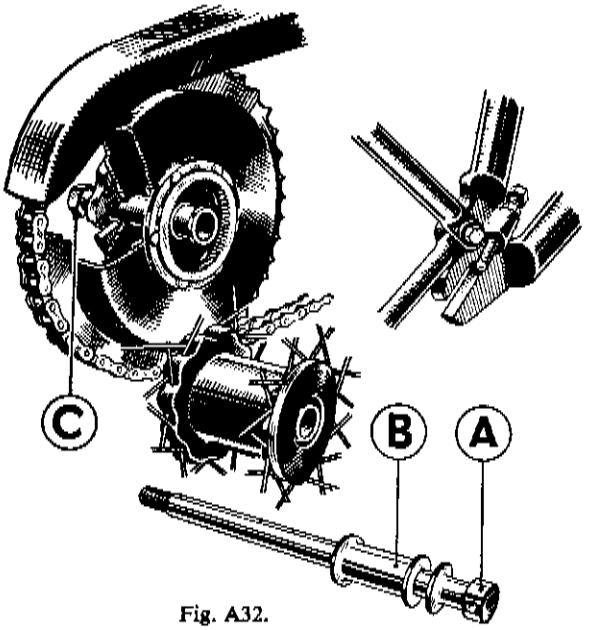

Fig. A32.

## Dismantling and Re-assembly of the Hubs

The hubs are fitted with two ballraces which are a light press fit on the hollow spindle and in the hub shell. Remove the dust cap A, Fig. A33 and felt washer B. Unscrew the ballrace retaining ring C. This ring has a left hand thread and therefore unscrews in a clockwise direction.

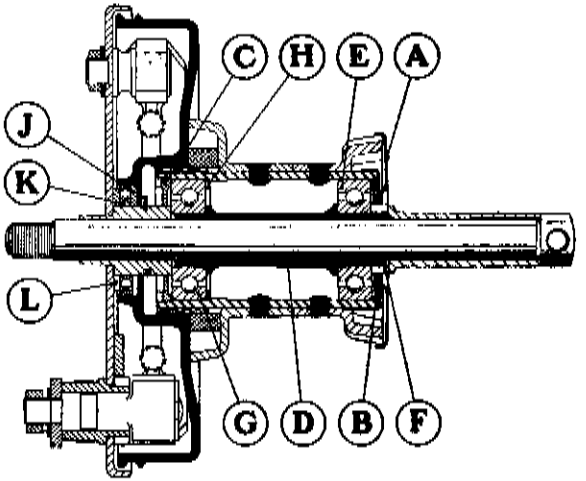


Fig. A33. Section through the front hub.

With the aid of a suitable soft drift applied to the end of the hollow spindle D, drive out the spindle and ballrace E. As the spindle comes away the distance bush F will be released. The only parts remaining in the hub are the ballrace G and the shim H, and these need not be disturbed unless the ballrace is suspected of being faulty. Wash it thoroughly in paraffin to remove all trace of grease when any play will be immediately detected. If it is decided to replace the race it can be driven from the hub shell with the aid of a soft drift.

## Removal and Dismantling of the Front Brake Drum

After removal of the wheel the brake drum is held in position in the frame by means of a stud which passes through a lug on the fork leg. With the nut removed the complete drum can be withdrawn.

The brake drum cover plate can be withdrawn from the brake drum after removal of the spring circlip J, Fig. A33. The plate will be seen to carry the brake shoes together with their fulcrum pin and operating arm and a thrust race with its accompanying washers. Note that the smaller diameter washer goes next to the cover plate.

It is unlikely that the brake shoes, fulcrum pin and operating arm will require attention, although the latter should be checked for freedom of movement and greased if necessary.

To remove the brake shoes, lay the drum cover plate flat on a bench (shoes uppermost) and lever the shoes upwards. They can then be drawn over and free of the cam and fulcrum pin. To replace, attach the springs and reverse the method of removal. If the cam pads show excessive wear, new shoes should be fitted. If only the brake linings are worn, these alone need be replaced.

If examination of the brake drum shows that the splines have become worn and the braking surface scored, a new drum must be fitted. The drum must not be machined to produce a new braking surface. To do so is only a temporary cure and further attention would be required later.

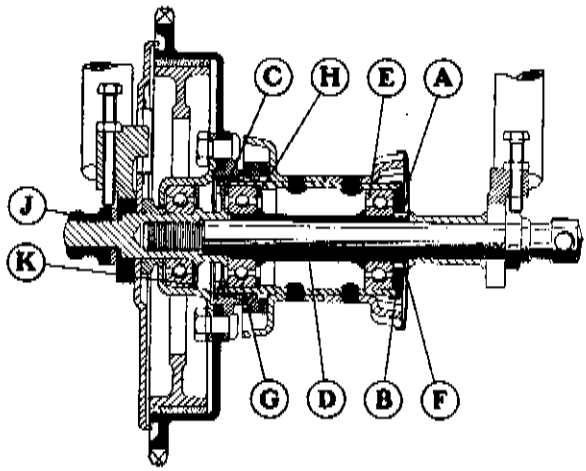


Fig. A34. Section through the rear hub.

When new linings or new shoes have been fitted, the brakes must be centralised after refitting the wheel. To do this, replace the brake cover plate, complete with shoes, fulcrum pin and cam, in the brake drum. Slacken the fulcrum pin nut, and turn the cam so as to open the brake shoes in the normal manner. The fulcrum pin will then move in its slot until both shoes are pressing equally on to the drum. Tighten the fulcrum pin nut firmly and release the brake.

## Removal and Dismantling of the Rear Brake Drum

After removal of the rear wheel the brake drum is held in position in the wheel by nut J, Fig. A34. To remove the drum disconnect the chain and rear brake rod, slacken nut J, move the drum towards the offside of the machine until the lug on the frame disengages from the slot in the brake anchor plate, and then slide the drum to the rear, until it is clear of the chainstay ends.

With the brake drum removed from the frame, the brake drum cover plate, to which are attached the brake shoes, can be withdrawn, together with their fulcrum pin and operating arm. It will be seen that these are similar in construction to those of the front brake, and the instructions given for the front brake will apply.

The hub ballrace, which is totally enclosed in the brake drum, should not normally require attention. If it has been decided to replace this race, however, its housing can be removed from the brake drum by unscrewing the nuts and withdrawing the bolts that pass through the splined ring, the brake drum and the ballrace housing. Note that the nuts are locked in position by three locking strips: it is essential that these are fitted on re-assembly.

The brake drum ballrace is held in position in its housing by means of a spring circlip K, which can be removed with the aid of a screwdriver. The replacement ballrace should be well greased before fitting the washer in place to prevent grease entering the brake drum. When replacing the bearing housing in the drum, make sure that its face is clean and free from burrs, as failure to do this may result in the brake drum running out of truth.

**Brake Adjustment**

The front brake is adjusted by means of the screwed sleeve on the cable stop, fitted to the brake cover plate.

The rear brake is adjusted by means of a knurled nut on the end of the brake rod.

**Brake Re-lining**

After removal of the brake shoes (see Dismantling of Brake Drums), the old lining is easily taken off by gripping the shoe in a vice, inserting a chisel under one end and shearing the rivets off in sequence. The rivet ends can then be punched out of the shoe.

New linings are die-pressed to suit the curvature of the shoes, but will require drilling and counter-boring for the rivets. Position the lining and hold it in place at one end by means of clamps. Using the holes in the shoes as guides, drill holes of the correct size ($\frac{5}{32}$ in. dia.) for the rivets adjacent to the clamp. Turn the shoe over, and counterbore the holes just drilled sufficiently deep so that the rivet heads will stand below the lining surface; this is important, since the rivets will otherwise score the brake drum.

Insert rivets into the holes and rivet them over on the inside of the shoe. This is easily accomplished by holding in a vice a short length of rod, whose diameter is equal to that of the rivet head, and using it as an anvil upon which to rest the rivet head while hammering the shank over. This will also make sure that the rivets do not stand proud of the lining.

Move the clamps to the next pair of holes, taking care that the lining is kept in firm contact with the shoe the whole time, and repeat the above procedure. When the lining is finally riveted down, bevel off the ends of the linings and file off any local high spots.

Precautions to be observed when fitting the relined shoes to the hubs are given in the chapter on 'Dismantling of the Brake Drums.'

J.U.B1283

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# BSA SERVICE SHEET No. 212A

*May* 1954
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## A, B and M Group Models

(For A7 Models before Engine No. ZA7 101. See Service Sheet 212)

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF FRONT HUB AND BRAKE (7 in. Brake)

### Wheel Removal and Replacement

To remove the front wheel, first disconnect the brake cable, then slacken the pinch bolt *A* (Fig. A31(a)). Insert a tommy bar in the hole in the head of the spindle at *B* and unscrew the spindle, noting that it has a left hand thread and therefore unscrews in a clockwise direction. With the spindle withdrawn the bush *C* should be pulled out to its fullest extent. This will leave the wheel free to be pulled away from the right hand fork leg and withdrawn from the machine.

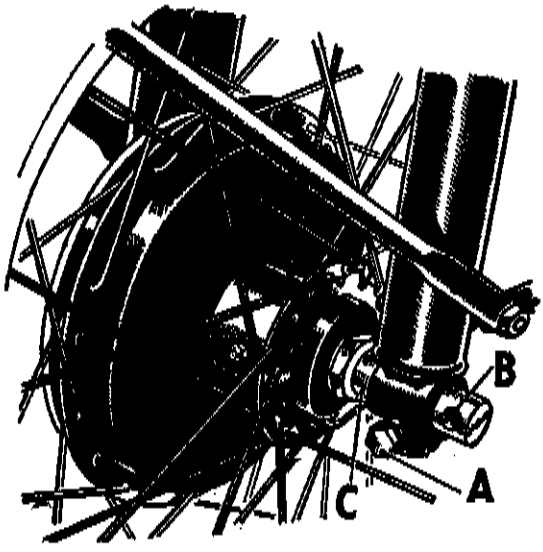


Fig. A31(a). Wheel Removal

The wheel is replaced in the reverse order, noting that the brake plate stop must be located in its recess at the rear of the right hand fork leg. It is most important that after the spindle has been tightened and before the pinch bolt is tightened, the forks are depressed once or twice to enable the left hand fork end to position itself on the distance bush. If this precaution is not observed, the fork leg may be clipped out of position and will not function correctly.

### Dismantling and Re-assembly of the Hub

This is fitted with ball journal bearings and therefore no adjustment is necessary or provided for. The only attention required is periodical grease gun lubrication.

If it becomes necessary to replace the bearings unscrew the nut retaining the brake anchor plate and remove the plate together with the brake mechanism.

Unscrew the cap *A* (Fig. 32(a)) noting that this has a left hand thread and therefore unscrews in a clockwise direction. Using a hide mallet from the brake drum side, drive out the hollow spindle *B* which will carry with it the nearside ballrace *C*, dust Cap *D*, and distance piece *E*.

Only the offside ballrace *F* now remains in the hub and this should be driven out with the aid of a soft drift.

During re-assembly ensure that the ballrace *F* is fully home and that the retaining collar *A* is quite tight.

**Brake Relining**

To remove the brake shoes lay the drum cover plate flat on a bench and lever the shoes upwards. They can then be drawn over, and free of the cam and fulcrum pin. If the cam pads show excessive wear the brake shoes should be renewed.

When the brake shoes are removed the linings can be replaced as described in Service Sheet 612.

When new linings or new shoes have been fitted, the brakes must be centralised after refitting the wheel. To do this, replace the brake cover plate, complete with shoes, fulcrum pin and cam in the brake drum. Slacken the fulcrum pin nut, and turn the cam so as to open the brake shoes in the normal manner. The fulcrum pin will then move in its slot until both shoes are pressing equally on to the drum. Tighten the fulcrum pin nut firmly and release the brake.

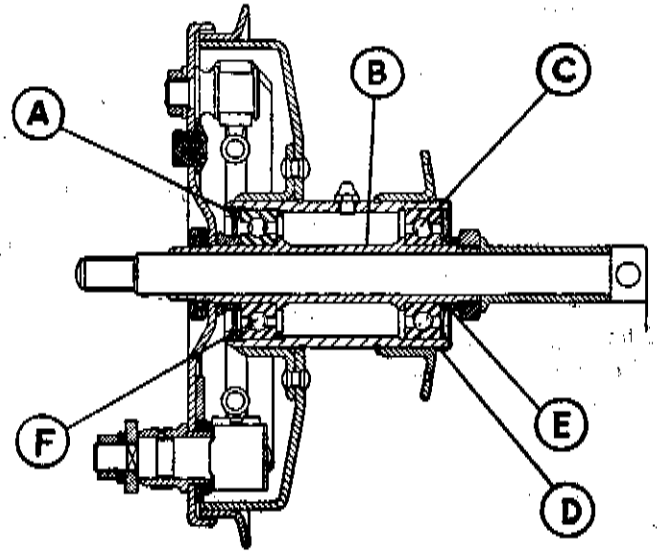


Fig. A32(a). Section of Front Hub (7 in. Brake)

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# BSA SERVICE SHEET No. 212B

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# A, B and M Group Models

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF FRONT HUB AND BRAKE (8 in. Brake)

### Wheel Removal and Replacement

To detach the wheel, first disconnect the brake cable by pushing it out of the brake clip at *E* and unscrewing it from the bracket at *F*. Remove the torque arm nut *C* and undo the pinch bolt *A*. Insert a tommy bar in the hole in the head of the spindle at *B* and unscrew the spindle, noting that it has a left hand thread and therefore unscrews in a clockwise direction. Support the wheel as the spindle is withdrawn, and when it is clear the wheel can be pulled away from the right hand fork leg and removed from the machine.

After removal do not let the wheel fall on to the bush which projects from the brake drum side of the hub. Although the bush is pressed in, it may, if subjected to a sharp blow, be forced back into the hub. If this should happen the bush can be retrieved and re-positioned with the aid of the wheel spindle.

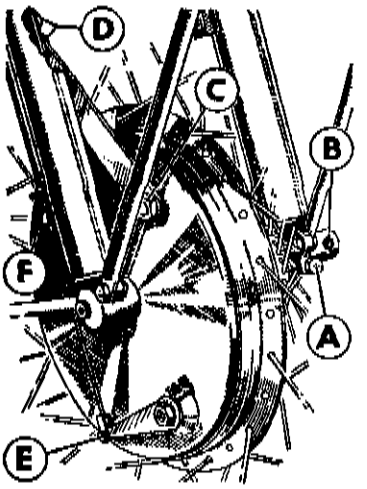


Fig. A31(b). Wheel Removal

The wheel is replaced in the reverse order to that for removal. It is most important that after the spindle has been tightened and before the pinch bolt is tightened, the forks are depressed once or twice to enable the left hand fork end to position itself on the spindle shank. If this precaution is not observed, the fork leg may be clipped out of position and will not function correctly.

### Dismantling and Re-assembly of the Hub

Withdraw the brake plate which is a push fit on the bush *B* (Fig. A32(b)). Remove the locking split pins and unscrew the bearing retaining collars *C* and *D*, which have normal right hand threads. Replace the spindle and drive out the brake side ball race *E* together with the bush *B* by striking the end of the spindle with a hide mallet. Only the ball race *F* now remains in the hub and can be removed with a suitable soft drift.

Before replacing the bearing retaining collars ensure that the rubber oil seals in them are in good condition. The collars should be done up quite tight and if necessary fresh holes should be made for the locking split pins.

**Brake Relining**

To remove the brake shoes lay the drum cover plate flat on a bench and lever the shoes upwards. They can then be drawn over, and free of the cam and fulcrum pin. If the cam pads show excessive wear the brake shoes should be renewed.

When the brake shoes are removed the linings can be replaced as described in Service Sheet 612.

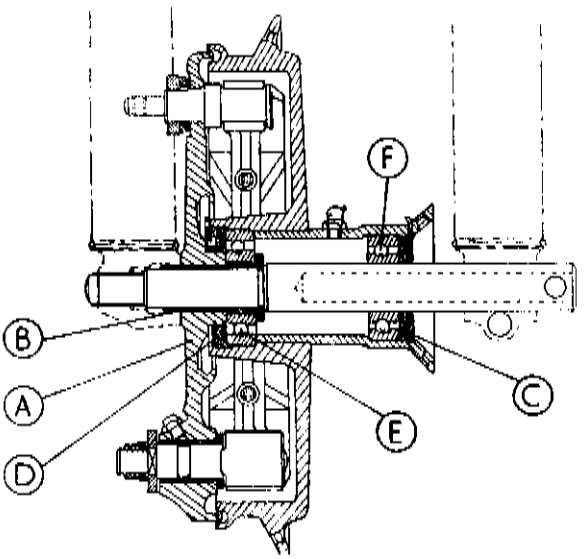


Fig. A32(b). Section of Front Hub (8 in. Brake)

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# BSA SERVICE SHEET No. 212C

*Reprinted June 1959*

# A, B and M Group Models

(With Plunger Type Rear Suspension)

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF REAR HUB AND BRAKE

### Rear Wheel Removal and Replacement

Remove the smaller outer nut *C* (Fig. A.31(c)) on the left hand side of the rear wheel spindle, and withdraw the spindle *A*, from the right hand side of the machine.

The distance bush *B* will normally fall clear when the spindle is removed. The wheel should then be pulled towards the right hand side of the machine until it is free from the spline engaging it with the brake drum. When the hub is free from the drum the wheel can be dropped out. To replace the wheel the operations are carried out in the reverse order. When detaching the rear wheel, it is quite unnecessary to touch the larger of the two hexagonal nuts on the left hand side of the spindle.

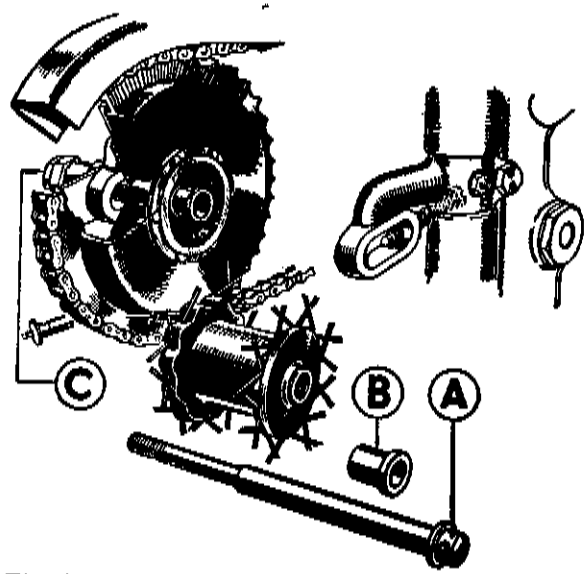


Fig. A31(c) Rear Wheel Removal (Spring Frame)

### Dismantling and Re-assembly of the Rear Hub

The hub is fitted with two ballraces which are a light press fit in the hub shell. Remove the dust cap *A* (Fig. 32(c)). Unscrew and remove the two screwed rings *C* and *M*. These rings are left hand threaded, and therefore unscrew clockwise. Remove distance piece *F*.

Place the wheel spindle through the hub from the offside. Using a hide mallet tap the head of the spindle so as to drive the offside ballrace toward the centre of the hub shell. By this means the brake drum side race will be driven out, after which the distance pieces *D* and *H* can be removed.

The only part now remaining in the shell will be the offside ballrace which can be driven out with a soft drift.

### Removal and Dismantling of the Brake Drum

After removal of the rear wheel the brake drum is held in position in the wheel by nut *J* (see Fig. A32(c)). To remove the drum disconnect the chain and rear brake rod, remove nut *J* and withdraw the drum.

With the brake drum removed from the frame, the brake drum cover plate, to which are attached the brake shoes, can be withdrawn, together with their fulcrum pin and operating arm.

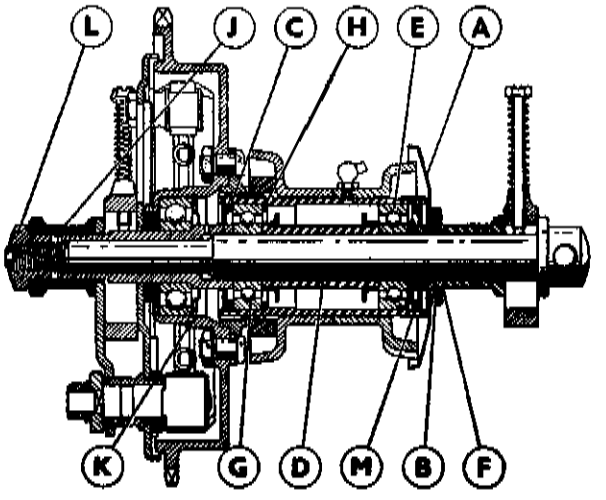


Fig. A32(c). Section through the Rear Hub

The brake drum ballrace is held in position in its housing by means of a spring circlip *K*, which can be removed with the aid of a screwdriver. The replacement ballrace should be well greased before fitting the washer in place to prevent grease entering the brake drum.

If examination of the brake drum shows that the teeth have become worn and the braking surface scored, a new drum must be fitted. The drum must not be machined to produce a new braking surface. To do so is only a temporary cure and further attention would be required later. The spline bolted to the brake drum should be replaced if there is any play between it and the spline on the wheel hub.

**Brake Relining**

To remove the brake shoes lay the drum cover plate flat on a bench, and lever the shoes upwards. They can then be drawn over, and free of the cam and fulcrum pin. If the cam pads show excessive wear the brake shoes should be renewed. When the brake shoes are removed the linings can be replaced as described in Service Sheet 612.

**Rear Chain Adjustment**

Put the machine on its stand. The rear wheel must be at its lowest point in the suspension unit when the adjustment is made. Undo nut *A* (Fig. A33(c)) several turns and slacken nut *B* just sufficiently to allow the wheel to move.

Screw in the adjusters *D* to tighten the chain. There should be a total up and down movement of half an inch at the centre of the chain span. See that the wheel spindle is up against the adjusters and that the wheels are in line. Check the alignment by means of a taut piece of string, which should be equidistant from the front and rear of each wheel.

Tighten the large hexagon nut *B* very firmly, followed by the smaller nut *A*. Readjust the rear brake.

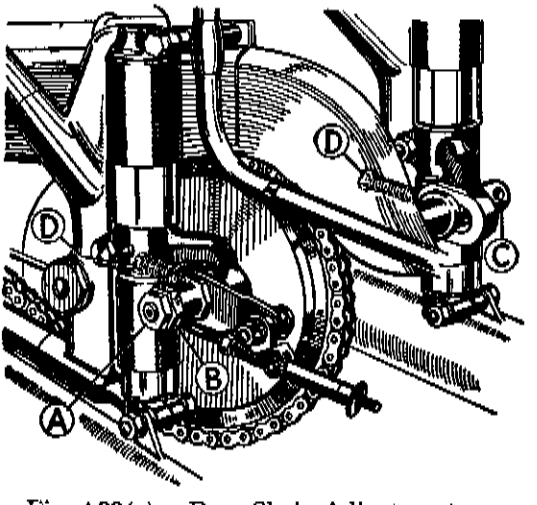


Fig. A33(c). Rear Chain Adjustment

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# BSA SERVICE SHEET No. 212D

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## A and B Group Models

(With Welded Type Frame)

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF REAR HUB AND BRAKE

*(FOR FULL WIDTH TYPE HUB SEE SHEET No. 212E)*

### Wheel Removal

Removal of the wheel does not affect the chain or brake adjustment. Remove the spindle *B* (Fig. A31(d)), it has a normal right hand thread and therefore unscrews in an anti-clockwise direction. The distance bush *E* falls clear when the spindle is removed and the wheel can then be pulled away from the brake drum and withdrawn from the machine.

When detaching the rear wheel it is quite unnecessary to touch the hexagon nut *A* on the left hand side.

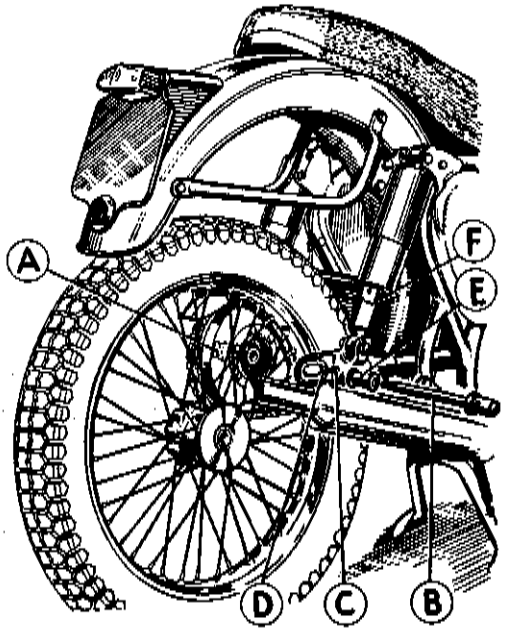


Fig. A31(d). Rear Wheel Removal

### Hub Dismantling and Re-assembly

The hub is fitted with two ballraces which are a light press fit on the hollow spindle and in the hub shell. Remove the dust cap *A* (Fig. A32(d)), and felt washer *B*. Unscrew the ballrace retaining ring *C*. This ring has a left hand thread and therefore unscrews in a clockwise direction.

With the aid of a suitable soft drift applied to the brake drum end of the hollow spindle *D*, drive out the spindle and ballrace *E*. Then tap the spindle from the bearing, as the spindle comes away the distance bush *F* will be released. The only parts remaining in the hub are the ballrace *G* and the spacing washer *H*, and these need not be disturbed unless the ballrace is suspected of being faulty. Wash it thoroughly in paraffin to remove all trace of grease when any play will be immediately detected. If it is decided to replace the race it can be driven from the hub shell with the aid of a soft drift. During re-assembly ensure that this bearing is fully home and that the locking ring *C* is quite tight.

### Removal and Dismantling of the Brake Drum

After removal of the rear wheel the brake drum is held in position by the nut *J* and by the nut securing the brake anchor strap. To remove the drum, first disconnect the rear chain and brake rod, then remove the nut *J* and the nut retaining the torque arm to the brake plate. The brake drum can then be pulled away from the brake plate and

removed from the machine. Pivot the brake plate support strap on the cam lever boss so that the brake plate is free to be withdrawn from the fork leg.

To remove the brake shoes lay the brake plate on a bench (shoes uppermost) and lever the shoes upwards. They can then be drawn over and free of the cam and fulcrum pin. The operating cam and fulcrum pin should be inspected but it is unlikely that more than greasing will be necessary. If the cam pads on the brake shoes show excessive wear then new shoes should be fitted. To replace the shoes, attach the springs and push the shoes over the cam and pivot by reversing the dismantling procedure.

If examination of the brake drum shows that the teeth have become worn and the braking surface scored, a new drum must be fitted. The drum must not be machined to produce a new braking surface. To do so is only a temporary cure and further attention would be required later.

The brake drum ballrace, which is totally enclosed in the drum, should not normally require attention. The ballrace is held in position in its housing by a dished washer and a spring circlip *K*, which can be removed with the aid of a screwdriver. The replacement ballrace should be well greased before fitting the dished washer which prevents the entry of grease into the brake drum.

**Brake Shoe Relining**

After removal of the brake shoes (See Dismantling of Brake Drum) the old lining can be removed as described in Service Sheet 612.

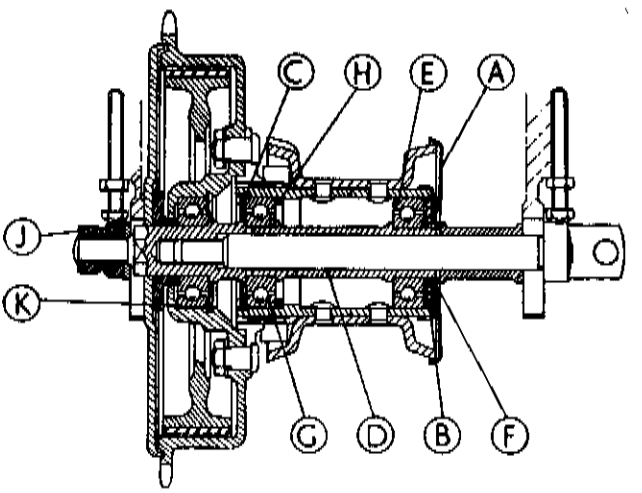


Fig. A32(d). Section through the Rear Hub

**Wheel Re-assembly**

Wheel re-assembly involves no difficulty and should be carried out in the reverse order to dismantling.

**Rear Chain Adjustment**

First put the machine on its centre stand. Whenever the rear wheel is adjusted, the nut securing the torque arm to the brake plate must be slackened slightly so that the plate may pivot freely. Undo the spindle *B* (Fig. A31(d)), on the right hand side of the machine, a few turns, and slacken nut *A* just sufficiently to allow the wheel to move.

Slacken the locknuts *C* and screw out the adjusters *D* to tighten the chain. With the wheel in its lowest position there should be a total up and down movement of 1¼ ins. in the centre of the chain at its tightest point. Ensure that the wheel spindle is against the adjusters and that the wheels are in line. Check the alignment by means of a taut piece of string which should be equidistant from the front and rear of each wheel.

Tighten the nut *A*, the spindle *B* and the nut securing the torque arm to the brake plate. Re-check the chain adjustment and the wheel alignment.

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# BSA SERVICE SHEET No. 212D

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## A and B Group Models

(With Welded Type Frame)

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF REAR HUB AND BRAKE

*(FOR FULL WIDTH TYPE HUB SEE SHEET No. 212E)*

### Wheel Removal

Removal of the wheel does not affect the chain or brake adjustment. Remove the spindle *B* (Fig. A31(d)), it has a normal right hand thread and therefore unscrews in an anti-clockwise direction. The distance bush *E* falls clear when the spindle is removed and the wheel can then be pulled away from the brake drum and withdrawn from the machine.

When detaching the rear wheel it is quite unnecessary to touch the hexagon nut *A* on the left hand side.

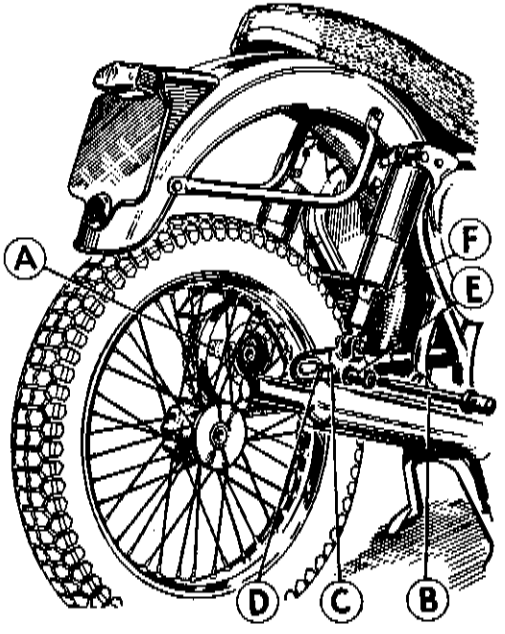


Fig. A31(d). Rear Wheel Removal

### Hub Dismantling and Re-assembly

The hub is fitted with two ballraces which are a light press fit on the hollow spindle and in the hub shell. Remove the dust cap *A* (Fig. A32(d)), and felt washer *B*. Unscrew the ballrace retaining ring *C*. This ring has a left hand thread and therefore unscrews in a clockwise direction.

With the aid of a suitable soft drift applied to the brake drum end of the hollow spindle *D*, drive out the spindle and ballrace *E*. Then tap the spindle from the bearing, as the spindle comes away the distance bush *F* will be released. The only parts remaining in the hub are the ballrace *G* and the spacing washer *H*, and these need not be disturbed unless the ballrace is suspected of being faulty. Wash it thoroughly in paraffin to remove all trace of grease when any play will be immediately detected. If it is decided to replace the race it can be driven from the hub shell with the aid of a soft drift. During re-assembly ensure that this bearing is fully home and that the locking ring *C* is quite tight.

### Removal and Dismantling of the Brake Drum

After removal of the rear wheel the brake drum is held in position by the nut *J* and by the nut securing the brake anchor strap. To remove the drum, first disconnect the rear chain and brake rod, then remove the nut *J* and the nut retaining the torque arm to the brake plate. The brake drum can then be pulled away from the brake plate and

removed from the machine. Pivot the brake plate support strap on the cam lever boss so that the brake plate is free to be withdrawn from the fork leg.

To remove the brake shoes lay the brake plate on a bench (shoes uppermost) and lever the shoes upwards. They can then be drawn over and free of the cam and fulcrum pin. The operating cam and fulcrum pin should be inspected but it is unlikely that more than greasing will be necessary. If the cam pads on the brake shoes show excessive wear then new shoes should be fitted. To replace the shoes, attach the springs and push the shoes over the cam and pivot by reversing the dismantling procedure.

If examination of the brake drum shows that the teeth have become worn and the braking surface scored, a new drum must be fitted. The drum must not be machined to produce a new braking surface. To do so is only a temporary cure and further attention would be required later.

The brake drum ballrace, which is totally enclosed in the drum, should not normally require attention. The ballrace is held in position in its housing by a dished washer and a spring circlip *K*, which can be removed with the aid of a screwdriver. The replacement ballrace should be well greased before fitting the dished washer which prevents the entry of grease into the brake drum.

**Brake Shoe Relining**

After removal of the brake shoes (See Dismantling of Brake Drum) the old lining can be removed as described in Service Sheet 612.

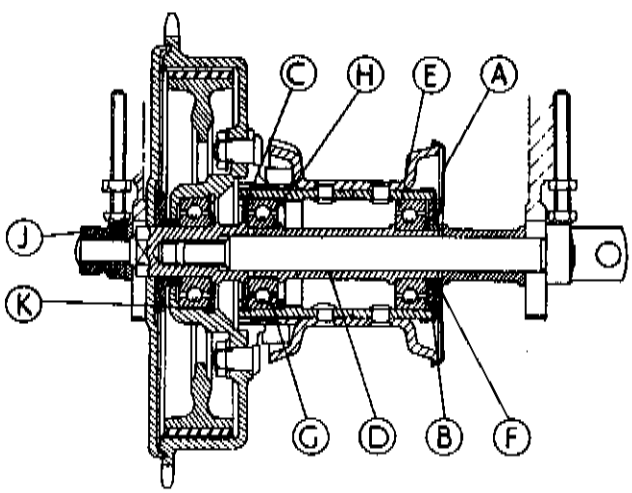


Fig. A32(d). Section through the Rear Hub

**Wheel Re-assembly**

Wheel re-assembly involves no difficulty and should be carried out in the reverse order to dismantling.

**Rear Chain Adjustment**

First put the machine on its centre stand. Whenever the rear wheel is adjusted, the nut securing the torque arm to the brake plate must be slackened slightly so that the plate may pivot freely. Undo the spindle *B* (Fig. A31(d)), on the right hand side of the machine, a few turns, and slacken nut *A* just sufficiently to allow the wheel to move.

Slacken the locknuts *C* and screw out the adjusters *D* to tighten the chain. With the wheel in its lowest position there should be a total up and down movement of 1¼ ins. in the centre of the chain at its tightest point. Ensure that the wheel spindle is against the adjusters and that the wheels are in line. Check the alignment by means of a taut piece of string which should be equidistant from the front and rear of each wheel.

Tighten the nut *A*, the spindle *B* and the nut securing the torque arm to the brake plate. Re-check the chain adjustment and the wheel alignment.

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# BSA SERVICE SHEET No. 212E

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# A and B Group Models

(With Full Width Hubs)

## ADJUSTMENT, DISMANTLING AND RE-ASSEMBLY OF HUBS AND BRAKES

### FRONT WHEEL REMOVAL AND REPLACEMENT

To remove the wheel, place the machine on both front and centre stands, take out the two bolts securing the brake anchor strap to the fork leg, and unscrew the large nut from the right-hand side of the wheel spindle. Disconnect the brake cable completely from the brake plate. If sufficient slack cannot be obtained by screwing down the cable adjuster, the outer casing may be released from its holder at the handlebar end.

Next, slacken the pinch bolt in the left-hand fork leg and draw out the spindle by inserting a tommy bar in the hole provided, and using a pulling and twisting motion. At the same time support the weight of the wheel to avoid damaging the bush which projects through the brake plate and partly enters the right-hand fork leg. Should this bush be pushed inadvertently back inside the hub, it can be re-positioned by inserting the wheel spindle from the left-hand side.

There is no distance piece fitted outside the hub, location being maintained by means of a shoulder formed on the spindle meeting the bush already referred to. Once the spindle has been removed, the wheel can be pulled away from the right-hand fork leg and withdrawn.

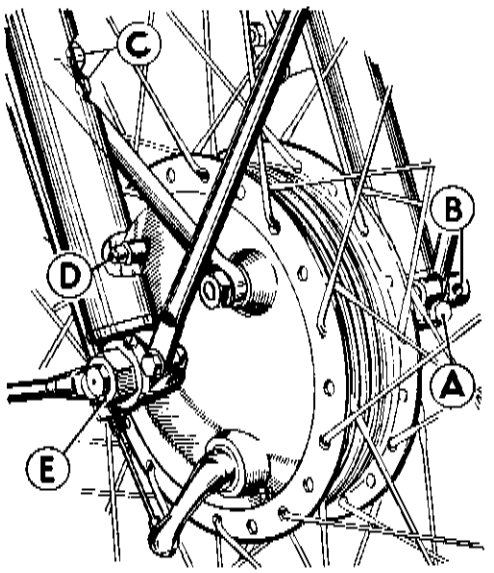



Fig. A31 (e). Front Wheel Removal.

A. Fork Leg Pinch Bolt
B. Wheel Spindle
C. Anchor Strap Securing Bolts
D. Brake Fulcrum Adjuster
E. Wheel Spindle Nut

Refitting is carried out by reversing the procedure for removal, except that tightening the pinch bolt must be left until the machine has been taken off the stands. The forks should then be fully depressed and released several times to ensure that the left-hand leg takes up the correct position on the wheel spindle. The inner edge of the tommy bar hole should be approximately level with the outer face of the fork leg. Finally, tighten the pinch bolt and check the tightness of all other bolts and nuts which have been disturbed.

### Models with Frame prefix letters FA or FB

### FRONT WHEEL REMOVAL AND REPLACEMENT

To remove the wheel, place the machine on the stand, disconnect the brake cable by removing the split pin and clevis pin on the brake arm. Unscrew the four bolts holding the fork end caps when the wheel will then drop to the ground. Note that there is a register at each end of the spindle to clear the bolts, these also serve to locate the wheel in the forks.

### REFITTING

This is simply the reverse of the above procedure but care must be taken to locate the the lug on the R/H leg in the groove on the brake cover plate.

Do not omit the split pin when re-connecting the brake cable.

## REAR WHEEL REMOVAL AND REPLACEMENT

Place the machine on the centre stand, and remove the right-hand silencer. Unscrew the four nuts securing the sprocket to the hub. Where the rear chain is totally enclosed, access to these nuts is gained by removing the rearmost of the two rubber plugs in the chaincase. Disconnect the brake cable completely from the brake plate. It may be necessary to disengage the ferrule of the outer casing from the frame lug, in order to obtain enough slack in the inner cable. Take off the brake anchor strap by removing the nut holding it to the brake plate, and loosening the bolt fixing the forward end to the swinging arm fork.

Next, unscrew and take out the wheel spindle from the right-hand side, and extract the distance piece. The large nut on the left-hand fork end should not be disturbed, as this holds the fixed spindle of the sprocket, which remains in position. The wheel can now be pulled away from the sprocket. By standing on the left-hand side of the machine and tilting it in that direction, the wheel can be taken out. If the rear part of the wheel is brought clear of the mudguard first, this is a simple operation.

The wheel is replaced by reversing the order of the instructions given for removal. Make sure that the four sprocket retaining nuts are fully and evenly tightened, and that the washer beneath the head of the wheel spindle has not been omitted.

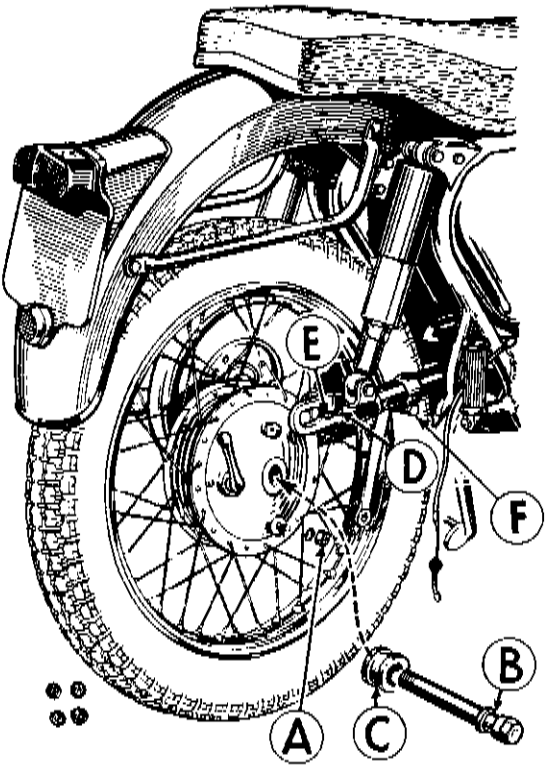



Fig. A32 (e). Rear Wheel Removal and Rear Chain Adjustment

A. Anchor Strap Securing Nut
B. Wheel Spindle
C. Distance Piece
D. Chain Adjuster Locknut
E. Chain Adjuster Screw
F. Anchor Strap Bolt

## REAR CHAIN ADJUSTMENT

The chain must be adjusted while the machine is on the centre stand, with the swinging arm fork at the lower limit of its travel. When a chaincase is fitted, access to the chain is gained by removing the foremost of the two rubber plugs. Rotate the wheel several times to find the position in which the chain is tightest. The total up and down movement in the centre of the top run should be 1¼". If the setting varies appreciably from this, the chain should be readjusted as follows :—

Slacken the wheel spindle and the fixed spindle nut. Release the two locknuts and screw the adjusting screws in or out as required. Take care that both are turned an equal amount to avoid putting the wheel out of line.

When the tension is correct, secure the locknuts, press the wheel forward in the fork ends and tighten, first the fixed spindle nut and finally the wheel spindle.

## WHEEL ALIGNMENT

It is advisable to check the alignment of the wheels periodically, particularly after the chain has been adjusted. A long straight-edge is placed alongside and close to, the two wheels, and supported as high up from the ground as possible. The distances from the straight-edge to the rims, measured at the front and rear of each wheel, should all be equal.

Tyres are unreliable guides in checking wheel alignment, since tyres of different section will give the appearance of error when, in fact, everything is in order.

## BRAKE ADJUSTMENT

A fulcrum type adjuster is provided on each brake (except those models with engine prefix letters FA or FB, where adjustment is carried out by screwing in or out, as required, the finger adjusters on the brake cables), in addition to the usual cable adjuster. The adjusting pin should be turned in a clockwise direction until it will turn no further, then slackened off until the wheel rotates freely. The adjusters have a click action, each click representing one-twelfth of a turn.

The brake shoes must not be allowed to bind even slightly, as this may generate sufficient heat to distort the drum, or cause the grease to melt and impregnate the linings.

## BRAKE SHOE RECONDITIONING

After the brake plate has been taken from the hub, the adjusting pin should be slackened right off, and the plate laid flat with the shoes uppermost. They can then be levered up at right angles to the plate, pivoting on their ends, until the tension of the springs has been relieved.

Should new linings be required, full instructions for fitting are contained in Service Sheet No. 612.

## SPROCKET ASSEMBLY—REMOVING AND DISMANTLING

Before the sprocket assembly can be removed, the chaincase must first be taken off. The rear section is held by two hexagon-headed set screws, while the top and bottom sections are secured by two bolts in each, passing through lugs on the swinging arm fork. The large nut on the fixed spindle must also be loosened.

If a chainguard instead of a chaincase is fitted, the four bolts holding it to the swinging arm fork can be taken out to allow the guard to be raised sufficiently to clear the sprocket.

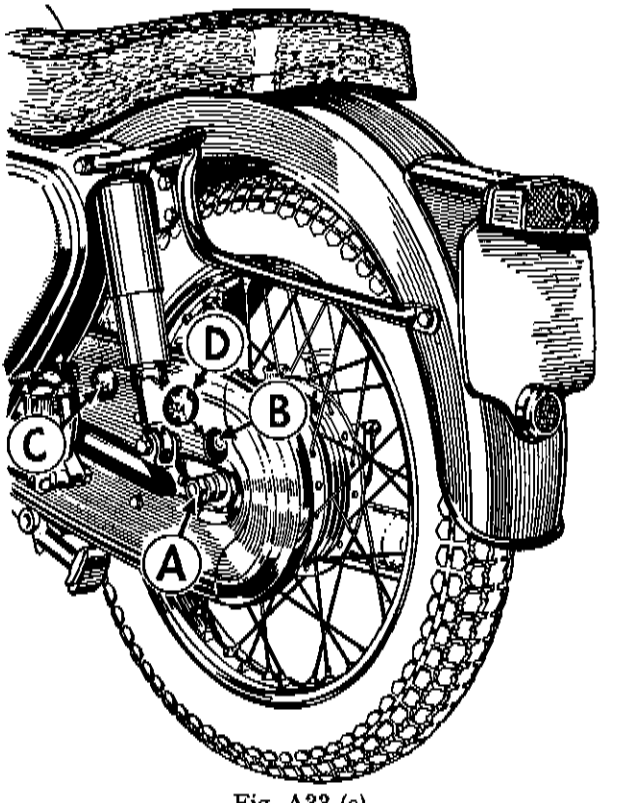



Fig. A33 (e)

A. Fixed Spindle Nut
B. Rear Sprocket Retaining Nut
C. Chain Inspection Rubber Grommet
D. Sprocket Nut Rubber Grommet

After parting the chain at the spring link, the large nut on the end of the fixed spindle is screwed off. The sprocket can then be dismounted and the spindle tapped out. The bearing and the grease retainer are pressed in, and may be driven out with a suitable drift.

When reassembling note that there should be a large washer between the sprocket and the fork end, and also a smaller washer between the fork end and the fixed spindle nut.

## HUB DISMANTLING AND REASSEMBLY

The front hub contains two ball journal bearings which require no adjustment. They are secured by locking rings on the outside, and are located by circlips in the hub shell on the inside. Both locking rings have a right-hand thread, the one on the brake drum side being split-pinned to the hub for additional security. A special peg spanner (Part No. 61-3542), is used to unscrew the locking rings, which incorporate felt grease seals. Early models had separate seals and steel retainers, the concave sides of which should face the bearings. The bearings themselves are pressed into the hub shell, and can be tapped out with a soft metal drift, taking care not to damage the circlips.

When reassembling, make sure that the circlips are properly seated in their grooves before refitting the bearings. Do not omit the bush from the right-hand bearing, as this has a shoulder on the inner end and cannot be replaced from outside the hub. Note that the locking rings have different sized centre holes, the larger being for the right-hand side.

The rear hub carries only one bearing, on the right-hand side, which is held by a locking ring and split pin in exactly the same way as already described for the front hub. It is removed and replaced in a similar manner.

On the left-hand side is a pressed in grease retainer. There is also a loose distance piece inside the hub.

If the bearing locking rings have been renewed it will be necessary to drill fresh split pin holes.

The other rear wheel bearing is housed in the sprocket itself. All four bearings are identical, the Part No. being 89-3022. No grease nipples are provided on these hubs; the bearings are packed with grease during assembly and they should be re-packed at intervals of 10,000 to 15,000 miles.

The brake cam spindle housings have grease nipples, but these should be used sparingly to avoid forcing grease into the brakes.

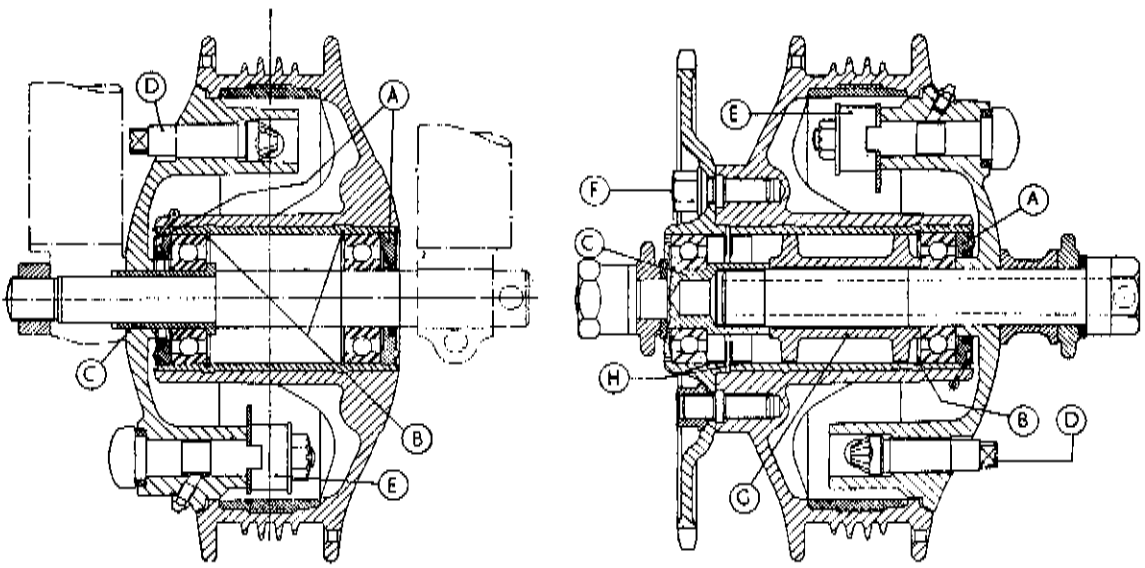



Fig. A34 (e). Front and Rear Hub Arrangement

A. Bearing Locking Ring
B. Bearing Locating Circlips
C. Bearing Sleeve
D. Brake Fulcrum Adjuster
E. Brake Operating Cam
F. Sprocket Retaining Nut
G. Hub Distance Piece
H. Grease Retainer

## HUB DISMANTLING AND RE-ASSEMBLY

(Models with engine prefix letters FA or FB)

The front hub has two bearings Part No. 42-5819, the R/H side can be driven out from the L/H side using the spindle as a drift, after the brake cover plate and bearing lockring have been removed.

To remove the L/H side bearing, take out the circlip and dust cover and drive out the bearing from the R/H side using the spindle reversed.

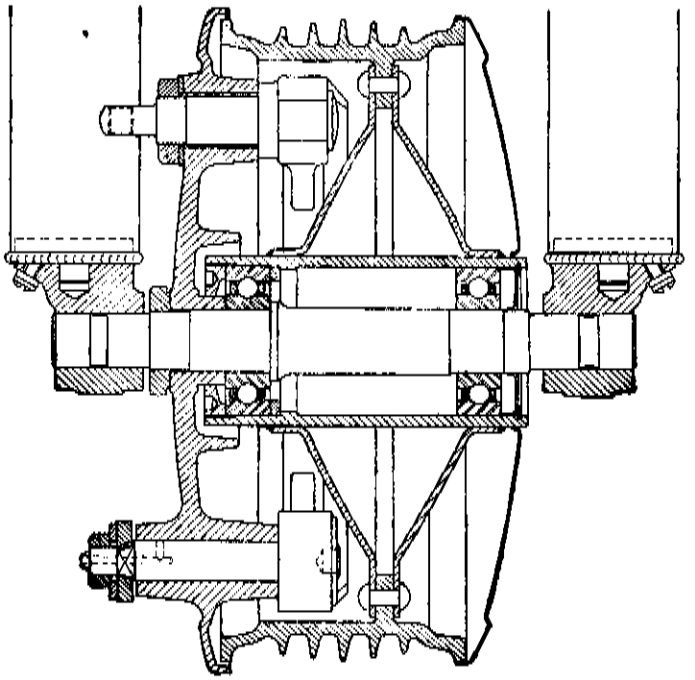
When replacing the bearings do not omit the ring behind the bearing on the R/H side.

## REAR HUB

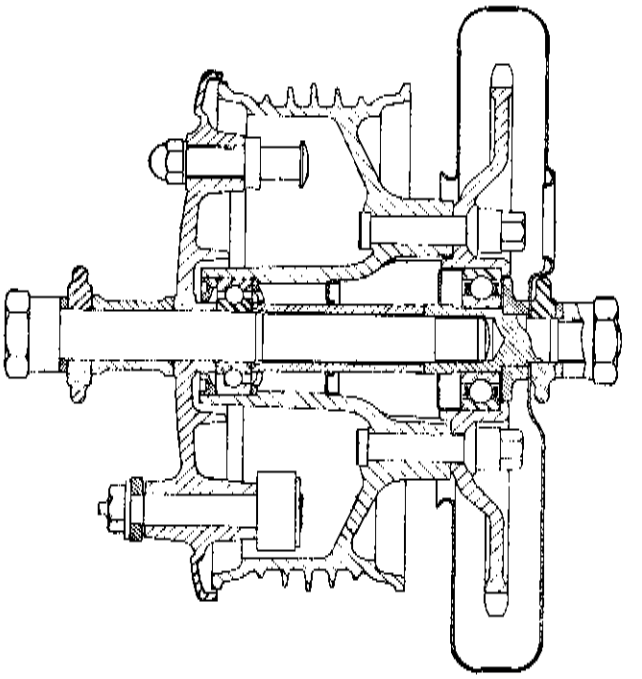
The rear hub is similar to the earlier type except that there is only one grease retainer on the sprocket side (Bearing No. 89-3022) and the R/H bearing is Part No. 42-5819, no split pin being used to secure the lockring.

There is a smaller grease retainer midway along the centre distance tube.

NEW SERIES HUBS



Front hub arrangement



Rear hub arrangement

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