#### GROUP G TRANSMISSION

#### G 3, Dismantling and assembling transmission

#### (Transmission is removed)

- Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.
- Fig. Tools: Hammer, chisel, two big screwdrivers, open ended spanner 14 mm, socket spanners 10 and 19 mm, plastic mallet, wooden tool, cotter pin pliers, depth gauge, guiding plate for installation of transmission shafts toolkit illustration No. 30.
- Fig. 1. Locate transmission on support fixture and drain oil. (socket spanner 19 mm) 2. Withdraw clutch rod from hollow centre of drive shaft towards the clutch end. 3. Release tab washer for the coupling flange fixing screw. (hammer, chisel) 4. Unscrew coupling flange fixing screw. (socket spanner 19 mm). 5. Remove coupling flange with the aid of 2 screwdrivers.
- Fig. 6. Unscrew the nuts securing transmission rear end cover. (socket spanner 10 mm). 7. Remove rear cover by means of a wooden drift.

  Caution: Apply wooden tool only on the provided drift lobes right and left, never attempt to remove the cover by inserting a screwdriver blade or similar tool between the castings.
- Fig. Caution: When refitting the cover make certain that the pin holding reverse idler shaft enters the slot machined in bearing housing. Likewise be sure that the thrust bearing on clutch rod end applies correctly in its seating. Insert clutch rod to centralise the bearing.
- Fig. 8. Drive ball bearings out of the cover plate by gently heating the plate 5 and dropping it joint face downwards on a wooden block.

  Caution: Refore replacing the cover on reassembly fit heated hall bearings
  - Caution: Before replacing the cover on reassembly fit heated ball bearings upon the shafts and enter the bearing and shafts assemblies into their bearing housings by means of soft blows with a plastic mallet.

    (plastic mallet) 9. Measure bearing height with respect to the bearing cover by means of a depth gauge and on assembling compensate the difference by placing spacing shims behind the bearings.
- Fig. 10. Remove cotter pin from the pivot of the lever that operates the reverse selector shaft. 11. Unscrew nuts of transmission top cover bearing the gearshift selector mechanism. (socket spanner 10 mm)
- Fig. 12. When removing top cover draw reverse fulcrum lever situated at the inner side of top cover downwards.

  Caution: When replacing transmission top cover refit the fulcrum lever simultaneously from beneath.
- Fig. Caution: Before refitting the cover place the selector forks in neutral position and fulcrum lever in central position.
- Fig. 13. Remove gearshift selector ball springs and the detent balls.
- Fig. 14. Remove the two lock screws which hold selector forks to selector shafts.

  10 (socket spanner 10 mm)

Fig.

11 15. Withdraw selector shafts and lift out selector forks. 16. Unscrew slotted plug for spring and detent ball of reverse selector shaft. (screwdriver 8 mm)

Fig.

- 12 <u>Caution:</u> When assembling secure slotted plug by means of a centre punch blow. 17. Remove spring and detent ball for reverse selector shaft.

  18. Slide out reverse idler shaft with idler gear and selector shaft.
- Fig. 19. Remove all other shafts by heating transmission case to about  $60^{\circ}C = 13$  140 F upon a heating plate.
  - Caution: To replace the shafts on reassembly use template tool kit illustration No. 30 so the shaft and ball bearing assemblies will enter with proper alignment. 20. Remove ball bearings and dismantle the shafts.

Fig.

Dismantle selector (top) cover: (a) Unscrew slotted plug for detent spring. (screwdriver 8 mm). (b) Remove detent spring and ball. (c) Remove cotter pin from selector lever. (cotter pin pliers) (d) Remove selector lever. (e) Unscrew slotted head screw serving as pivot for the fulcrum lever of guide shaft sector and withdraw the fulcrum lever. (f) Remove fulcrum lever holding sector and the selector guide shaft.

Caution: Take care not to lose the two spacing shims at the right and left of the connecting sector on selector guide shaft. (g) Remove gearchange operating lever by slackening the nut on inner side of housing, remove spring. (open ended spanner 14 mm)

The reassembly is carried out in precisely the reverse order.

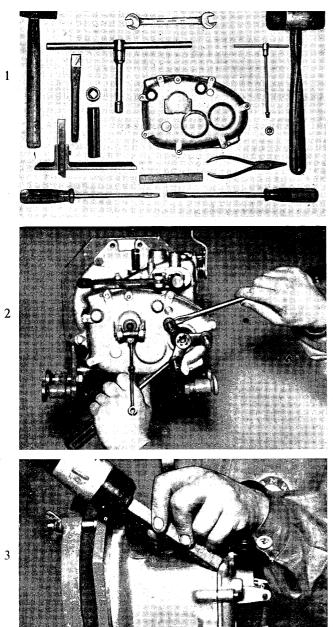
The two dog clutch units set in neutral position must have a clearance of 1.5 mm = .06 inch on either side.

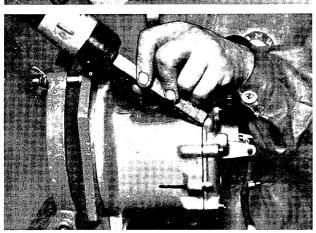
#### G 5 Adjusting gear control linkage

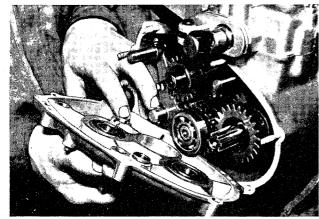
Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment

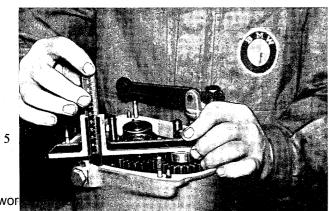
Fig. Tools: Open ended spanner 14 mm, pliers. 16

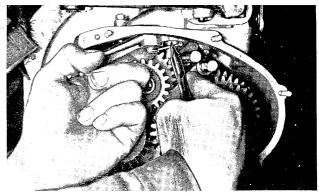
- Fig. 1. Place gear lever at the left of the seat in neutral position, the operating lever on the transmission must be placed against the engine.
- Fig. 2. Approach gear lever rod to the connecting lever, so that the toggle pin enters smoothly. If this position is not obtained, slacken lock nut and rotate toggle (clevis) until the toggle pin fits correctly.
- Fig. 3. Now adjust the two transverse rods in precisely the same manner by slackening the lock nut and turning the toggle (clevis) unit until the and desired position is obtained.

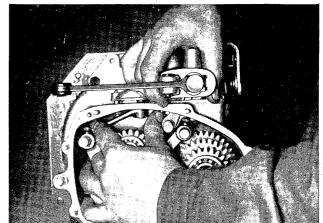


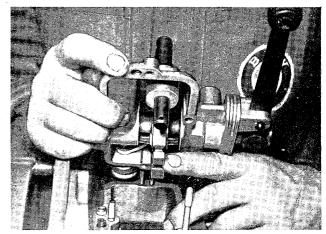


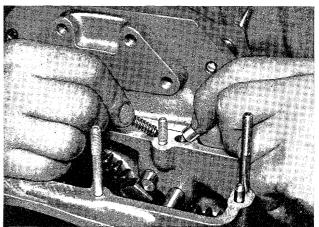


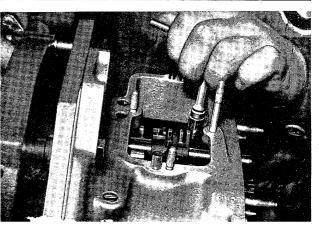


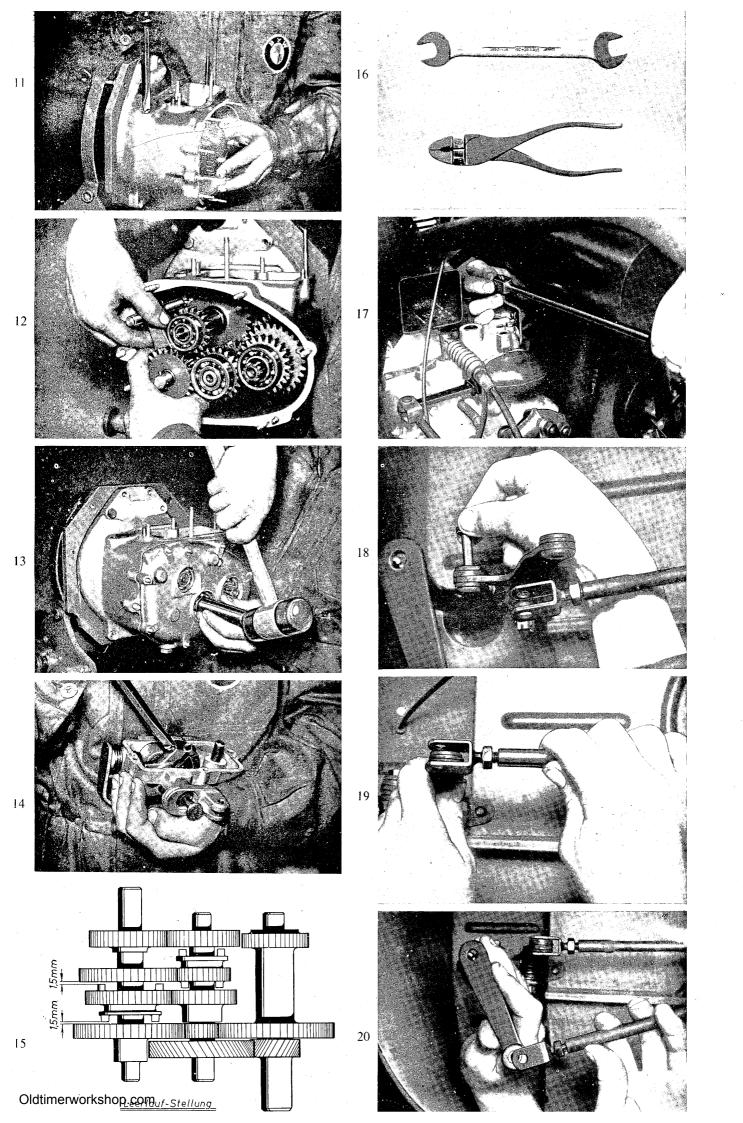












#### GROUP H REAR AXLE

#### H l Removing and refitting rear axle

- Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.
- Fig. Tools: Wheel nut spanner, open ended spanners 12/14/17 mm socket spanner 9/14/19/22, ring spanners 12/17 mm, screwdriver 6/8 mm, cotter pin pliers, circlip pliers, hammer, chisel, plastic mallet.
  - 1. Drain oil from rear axle case. (ring spanner 12 mm)
- Fig. 2. Remove cover plates from the rear wheels, slacken wheel nuts. (screw-driver, wheel nut spanner) 3. Support the vehicle at rear by applying the jack under the engine carrying cross member. 4. Unscrew the nuts from three bolts on rubber coupling at transmission end. (ring spanner 17 mm and open ended spanner 14 mm)

Caution: These three bolts must be slackened which connect the rubber ring to the three-legged coupling flange on gearbox shaft.

- Fig. 5. Detach brake cable hose from holding bracket. (open ended spanner 17 and 12 mm)
- Fig. 6. Remove cotter pins and unscrew the nuts securing telescopic shock
  4 absorbers on rear axle casing, at right and left. (cotter pin pliers,
  ring spanner 17 mm) 7. Remove cotter pin from through bolt crossing
  chaincase and swing link connecting the assembly to the chassis frame.
  Unscrew nut to through bolt. (cotter pin pliers, ring spanner 14 mm,
  open ended spanner 14 mm) 8. Unscrew speedometer drive on front end
  of chaincase. 9. Unscrew spring-eye bolt of left hand cantilever
  spring. (socket spanner 19 mm)

Caution: When assembling tighten this bolt carefully until it gets stopped as otherwise the thread in the aluminium case would be torn out. 10.

Unscrew nut of right-hand spring eye bolt, press the bolt out. 11. Remove rear axle unit rearwards by turning it in a clockwise direction.

The reassembly is carried out in precisely the reverse order.

Caution: After refitting bleed and adjust the hydraulic brake system.

# H 2 Dismantling and assembling rear axle assembly Rear axle assembly removed

- Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.
- Fig. Tools: Open ended spanner 14 mm, socket spanners 9/10/14/22 mm, ring spanners 10/19 mm, screwdriver 8/12 mm, cotter pin pliers, circlip pliers, hammmer, chisel, plastic mallet.
- Fig. 1. Remove cotter pins from rear axle nuts, right and left. (cotter pin pliers) 2. Unscrew axle nuts, right and left. (socket spanner 22 mm) 3. Remove the two hubs. (screwdriver and plastic mallet) 4. Remove screw securing wheel cylinder and brake adjuster on brake plate. (ring spanner 10 mm) 5. Remove brake shoe assemblies, unhook handbrake cable. 6. Remove the brake plate from rear axle case. (screwdriver 12 mm)
- Fig. 7. Remove adjuster plate for chain tensioner. (socket spanner 9/10 mm) 8.
  7 remove chain case bolts, 6 thorough bolts 14 mm with nuts, nine screws
  10 mm. (socket spanner and open ended spanner 14 mm, socket spanner 10 mm)

- ig. 9. Loosen case half by gentle blows of a plastic mallet against the joint line and remove the part with the shorter axle housing extension.
  - Caution: When disassembling and assembling the chain case castings never tap against the housing border, but apply soft blows with a plastic mallet against the shock absorber anchor noses as shown of figure. When assembling pay attention to the fit of eccentric for chain adjustment. Heat chain case gently on the ball bearing seat.
- ig. 10. Remove the two bearing shells from rear axle.
  - Caution: When assembling make certain that the flange end of split bearing collar faces inwards.
- ig. 11. Loosen chain lock and remove chain by turning the shafts.
  - Caution: When assembling the chain make sure to refit the chain lock in correct position. The hardened (blue) member of the connecting link must be fitted in the middle and the browned one at front. The spring fastener must always be put on with the closed end facing the forward direction of travel of the chain.
- 'ig. 12. Remove long back axle case extension from right-hand chain drive casting by means of a plastic mallet.
  - Caution: To remove this axle casing tap also against the shock absorber nose, on no account jam a screwdriver blade between the castings as this would damage the joint faces.
  - 13. Remove circlip securing rear sprocket. (circlip pliers)
  - 14. Remove rear axle sprocket frontwards by means of screwdrivers and plastic mallet. 15. Remove circlip behind the sprocket. (circlip pliers) 16. Remove rear axle in contrary direction by tapping it with a plastic mallet.
    - Caution: When carrying out these jobs the casting must be well supported on the spots where the parts in question are located. 17. Release lock tab of tab washer for screw fixing three-legged coupling flange to front sprocket drive shaft. (hammer and chisel) 18. Remove the above screw at the rubber joint. (ring spanner 19 mm) 19. Withdraw three-legged coupling flange from front sprocket drive shaft. (two screwdrivers) 20. Remove chain tensioner. 21. Detach carrier for rubber sealing washer on chain tensioner. (screwdriver 8 mm) 22. Press out front sprocket shaft.
- Fig. 23. Remove ball bearings from all castings intergrating the rear axle assembly.
  - Caution: Remember that all aluminium castings must be heated before refitting the ball bearings. Use a heating plate to heat them up to about 60 to 70°C = 140 to 160°F. Do not attempt to drive or to press out a ball bearing. The reassembly is carried out in precisely the reverse order.

#### H 4 Adjusting chain

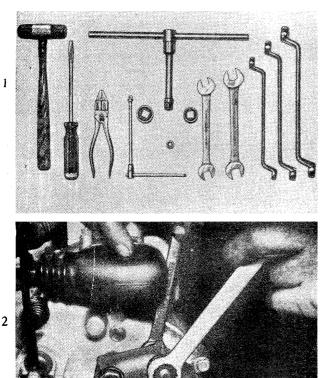
Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.

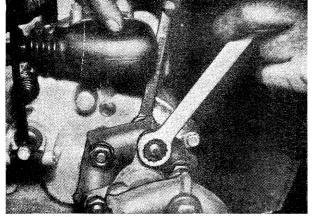
Tool: Open ended spanner 10 mm

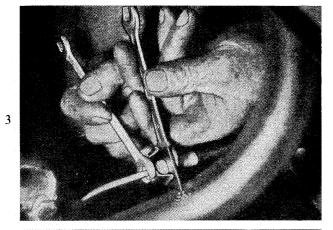
Place gears in neutral position, grasp the rubber coupling with the hand beneath and turn it with short movements in clock and anticlockwise direction. If the slack is being increased, one notes this condition by the chain's striking against the chaincase during the alternative movement.

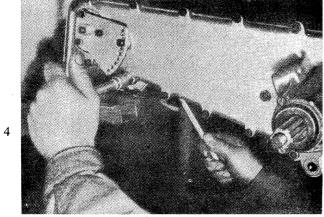
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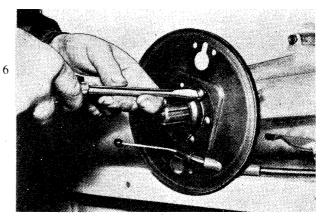
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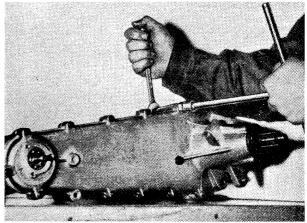


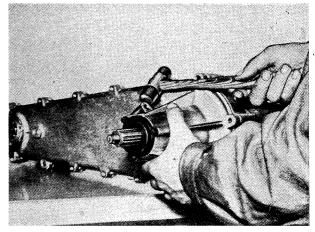


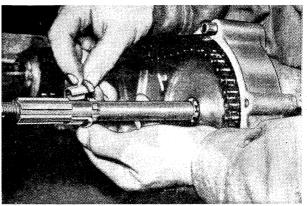


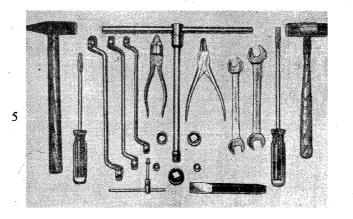


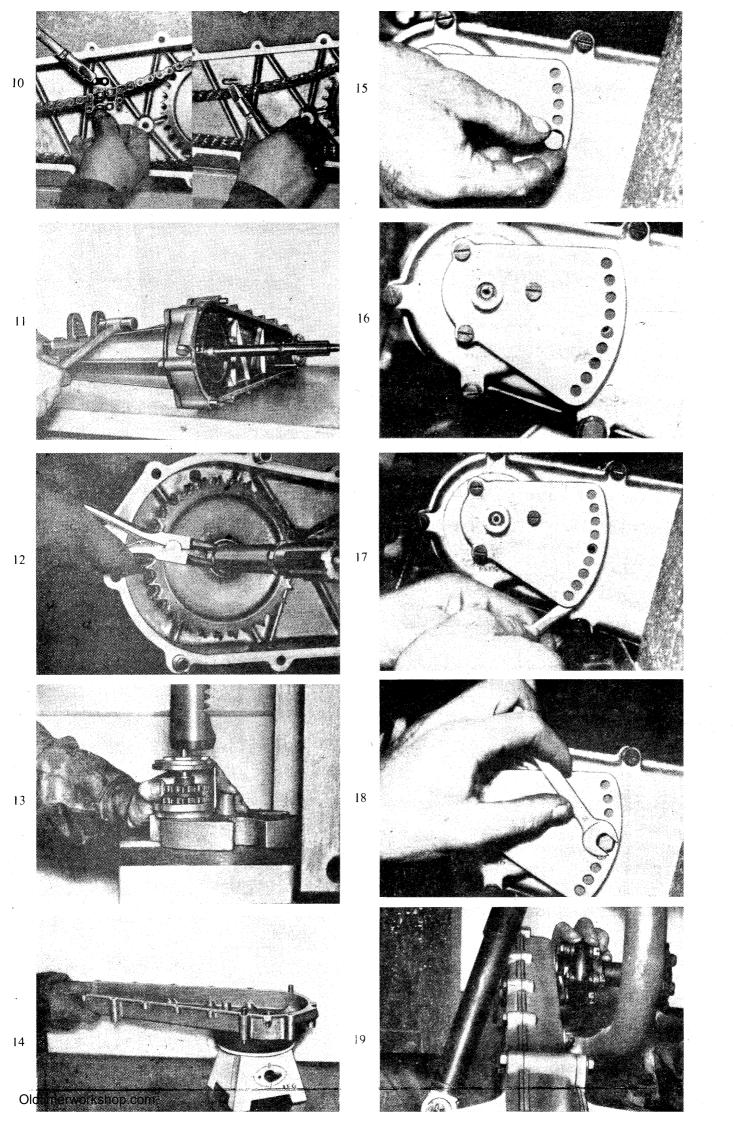












- Fig. The readjustment is then carried out in accordance to the instructions below:
  - 1. Remove adjuster plate locating screw. (open ended spanner 10 mm)

\*

- Fig. 2. Raise the adjuster plate with a screwdriver until the holes register
  17 provisorily screwed in with the hand. Never try to force in the locaand ting screw as thus one would risk to smash the thread in the aluminium
  18 casing. If the correct coincidence of the holes cannot be obtained
  return the adjuster plate to the next suitable hole.
- Fig. 3. Screw the locating screw in with the hand and tighten it with a spanner 19 (open ended spanner 10 mm) 4. Check double-roller chain again for correct tension by moving it as indicated above.

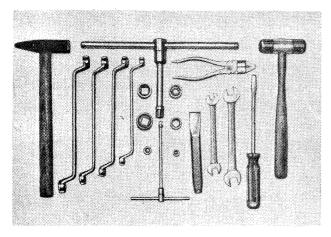
#### H 6 Replacement of chain

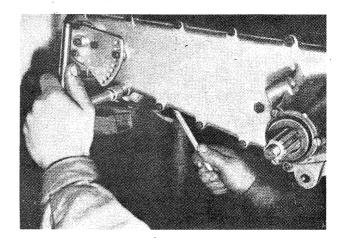
Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.

- Fig. Tools: Wheel nut spanner, open ended spanner 10/14 mm, socket spanners 20 9/10/14/17/19/22 mm, ring spanners 10/12/14/17 mm, screwdriver 6 mm, cotter pin pliers, hammer, chisel and plastic mallet.
- Fig. 1. Drain oil from rear axle case. (ring spanner 12 mm) 2. Remove cover plate from lefthand rear wheel, slacker wheel nuts. (screwdriver, and wheel nut spanner). 3. Raise the vehicle at rear by placing a suitable support under the frame member beneath the engine.
  - Caution: Do not attempt to remove the casting by inserting a screwdriver blade or a chisel between the castings as such a procedure would damage the joint faces. When removing and replacing the cover do not tap against the border of casting, but only against the noses of spring and shock absorber attachment. On reassembly make certain that the chain tensioner eccentric is fitted in correct position.
- Fig. 4. Slacken the chain completely. 5. Remove chain lock spring fastener and open the chain lock.
  - Caution: When assembling the chain make sure to refit the chain lock in correct position. The hardened (blue) member of the connecting link must be fitted in the middle and the browned one at front. The spring fastener must always be put on with the closed end facing the forward direction of travel of the chain.
- 6. Remove the chain by rotating the wheel.

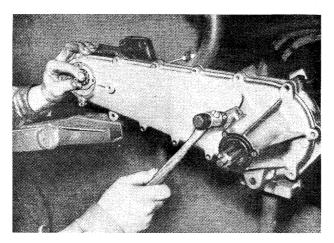
  Caution: The chain is checked for wear by bending it laterally. If the lateral bending curves are found to be too high as shown on figure 24, the chain must be discarded.

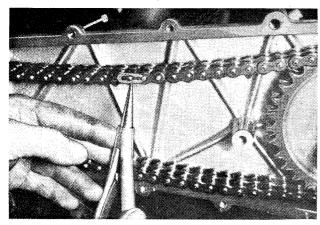
  The reassembly is carried out in precisely the reverse order.

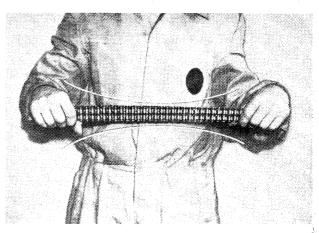












#### GROUP 3W REAR AXLE

#### 3W Removing and refitting rear axle assembly

Tools: See group H - rear axle

- 1. Drain oil from rear axle case (ring spanner 12 mm.)
- 2. Slacken rear hub nuts (21 mm. socket and ratchet). Raise vechicle clear of the ground and remove rear wheel.
- 3. Remove rear hub (30 mm. socket spanner).
- 4. Remove 6 cheese-headed screws holding brake back plate to final drive housing. The brake back plate can then be drawn off, and then tied up clear of the axle assembly. It is not necessary to disconnect the hydraulic pipes.
- 5. Remove 3 nuts retaining rubber coupling to final drive spider (17 mm. ring spanner, 14 mm. open-ended spanner).
- 6. Remove rear spring shackle bolts (19 mm. open-ended spanner).
- <u>Caution</u>: When assembling tighten nearside shackle bolt until it get stopped, otherwise thread in aluminium casing would be torn out.
- 7. Remove speedometer drive cable, raise 'U' tube swing arm with a jack under the offside until final drive unit is clear of the springs. The 4 bolts retaining unit to 'U' tube flange should then be removed and the rear axle assembly pulled back and to the left to clear flange plate. It can then be withdrawn from the rubber coupling.
- 8. Refitting is carried out in the reverse order.

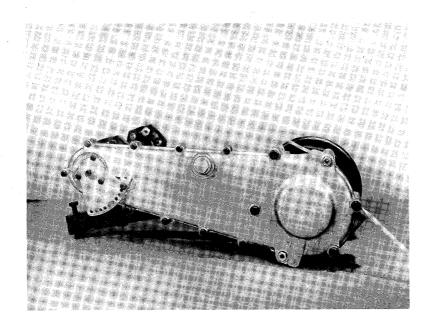
# 3W 2 Dismantling and assembling rear axle assembly Rear axle assembly removed.

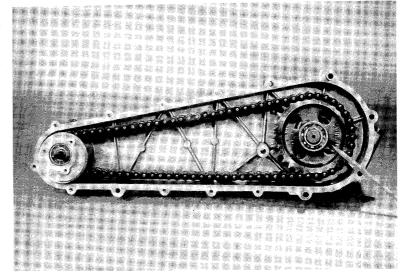
Tools: See group H 2 Group H rear axle

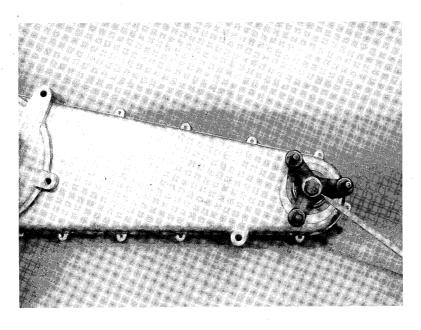
- 1. Remove adjustor plate for chain tensioner (socket spanner 10 mm.)
- Fig. 2. Remove chain case bolts, 6 through bolts, 14 mm. with nuts, 9 screws
  1 10 mm. (10 mm. socket spanner, 14 mm. open-ended spanner) Remove chain
  case cover with gentle blows of the plastic mallet applied to lugs on
  cover. When refitting heat cover to 140°F.
  - 3. Remove chain lock and chain from sprockets.
  - Caution: When assembling the chain, make sure when refitting the chain lock the hardened blue member of the connecting link be fitted in the middle and the brown one at the front. Spring fastener must always a line of the closed end facing forward in the direction of travel.

    BE FITTED
- Fig. 4. Remove bearing from axle shaft, draw off sprocket and remove circlip situated behind the sprocket. Axle can then be driven out to the offside taking main bearing with it. If the bearing is to be removed, make sure the distance piece, situated between shoulder and shaft and bearing, is replaced in the correct position.
- Fig. 5. To remove chain adjustor, bend down locking tab of spider retaining bolt and remove bolt. Withdraw 3-leg coupling flange with two screwdrivers and draw out chain tensioner.
  - Caution: Remember that all aluminium castings must be heated before refitting the ball bearings, using a heating plate to heat them up to 16°-17° C. This equals 140°-160°F. Do not attempt to drive or press out ball bearings.
  - 6. Assembly is carried out in reverse order.

    Chain adjustment as under Group H, rear axle H 4. Adjusting chain.







#### Group V Front Suspension

V 1 Removing and refitting front suspension assembly (with instructions for repair)

Note: Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.

Fig. Tools: Ring spanners SW 7/14/17/19/22/36 front suspension spring compressioner, socket SW 21, open ended spanners 14/17, 2 screw-drivers, hammer, pliers, commercial type hub puller V 5090, brass-drift torque-wrench with sockets SW 19/20, wood block (height 1.3") special reamers 20 mm Ø F 7, 22 Ø H 7, 25 \$\frac{1}{2}\$ H 7

- 1. Remove hub cap, slacken wheel nuts, jack up front end of vehicle.
- Fig. 2. Remove wheel and brake drum
  - 3. Remove dust cap
  - 4. Remove cotter pin from end of spindle and slacken the castellated nut with washer (pliers, socket SW 22)
  - 5. Remove hub assembly by using puller. Remove disk in front of brake holder.
- Fig. Note: On assembling, check that felt seal assembly is centralized on the hub. If not, loosen the screws again, centralize the and felt seal assembly by rotating the hub, retighten screws. On replacing cuter ball bearing in the hub, use the same spacer between hub and outer race of bearing, otherwise bearing race will crack or pit.
  - 6. Detach brake hose on wheel cylinder (only necessary if brake hose, wheel cylinder or backing plate have to be replaced. Bleed brake system).
  - 7. Remove brake shoes by means of a screwdriver. Keep hands clean while handling brake shoes. Do not permit oil or grease to come in contact with linings.
- Fig. 8. Prevent pistons from leaving cylinders by means of a rubber band (a).
  - 9. Remove dust cover and oil seal assembly from backing plate only if inner ball bearing is left on wheel spindle and if oil seal or ball bearing have to be checked.
    - Note: On assembling make certain that the recess serving as outlet for oil leakage is fitted downwards. Recess for right steering knuckle is different from the left-hand one.

- 10. Remove ball bearing using commercial-type puller.
- Fig. 11. After removing cotter pin, unscrew castle nut from track rod, remove bolt and 2 washers.

Note: On assembling, tighten nut when wheels are in straight ahead position.

- Fig. 12. Remove steering drag link on the left-hand front suspension.

  Note: On assembling tighten nut when wheels are in straight ahead position.
- Fig. 13. Unscrew nut from bolt of shock absorber.

Fig. Note: When assembling, put wooden block between shock absorber and swing arm and tighten nut to 55 ft/lbs. torque.

- Fig. 14. Using front suspension spring compressor tighten the 2 wing nuts until the 2 bolts of the housing can be removed easily after unand screwing the nuts. Back off the 2 wing nuts simultaneously.

  Note: Tighten nuts of the 2 bolts to 20 ft/lbs. torque
- Fig. 15. Remove housing and shock absorber.
- Fig. 16. Unscrew nut and remove backing plate.

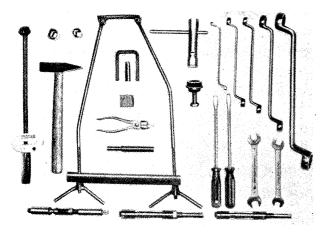
  14 Note: When assembling put wooden block between shock absorber and swing arm and tighten nut to 58 ft/lbs. torque.
- Fig. 17. Unscrew nut from taper key on steering knuckle king-pin. Turn front suspension inside and drive out taper key with a hammer.

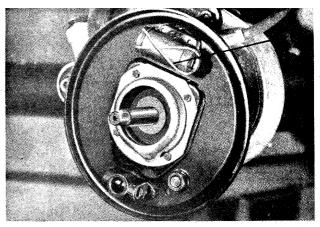
  Note: Be certain that end of taper key or nut does not contact the swing arm.
- Fig. 18. Pry out king-pin with 2 screwdrivers.

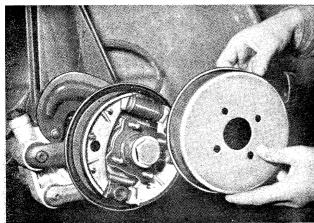
If it is impossible to pull out king-pin, even with the aid of a commercial puller, drive it out upwards by using hammer and drift. Press in upper closed end bushing because the dust cap installed before will not seal a second time.

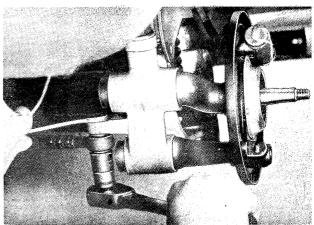
- Fig. 19. Remove backing plate and rubber seal ring.

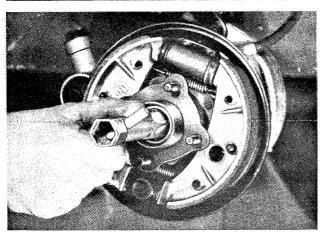
  Note: When assembling, place rubber seal ring into groove of backing plate, so as to avoid jamming of seal ring.
- Fig. 20. Remove swing arm from frame, separate upper and lower spacers.

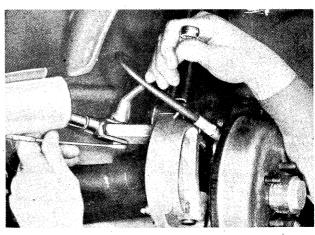


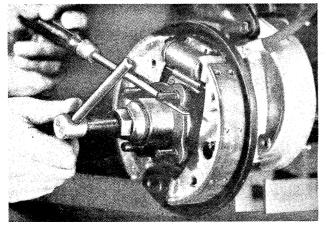


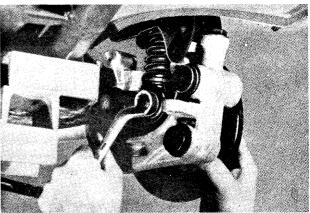


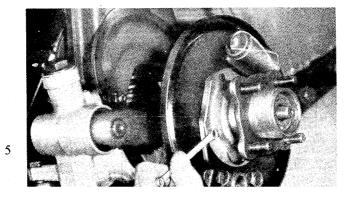


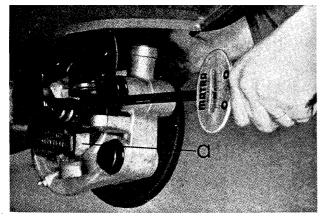


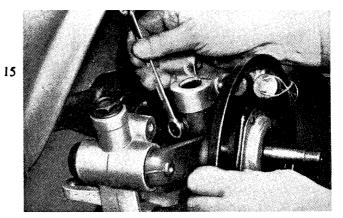


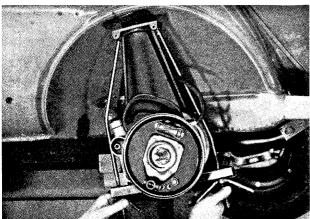


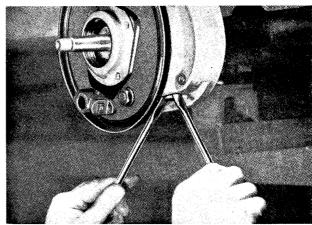




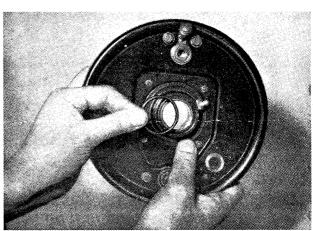


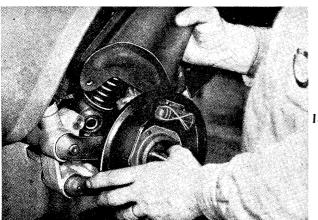


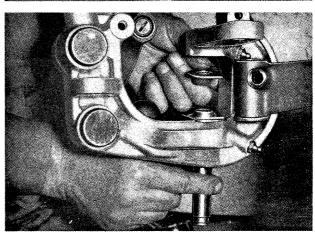


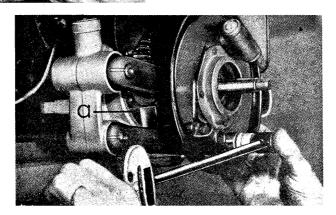












- Fig. 21. Using arbor press and press tool compress spring housing and shock absorber so far that 2 holding down nuts of shock absorber can be unscrewed. Remove washer and rubber stops
- Fig. Note: Use guide pin on installing spring housing. 21
- Fig. 22. Remove spring housing, upper rubber stop (a) washer (b) spring (c) washer (o) grommet (e) spring plate from shock absorber.

  Note: When assembling place multirate spring in position with the closed coils toward the spring plate.
  - 23. Test action of shock absorber in vertical position. Shock absorbers are permanently sealed and non-adjustable. If replacement is necessary, remove grommet, stop plate, 3 rubber stops, sleevé from worn shock absorber.
  - 24. If replacement of bushing is necessary, make certain that the bushing shell flushes with the shock absorber eye on one side.
- Fig. 25. Remove swing arm from steering knuckle housing. Remove dust cap.

  Note: Replace dust cap with sealing compound.
- Fig. Unlock lock washer, unscrew nut, remove washer and pull out swing arm.

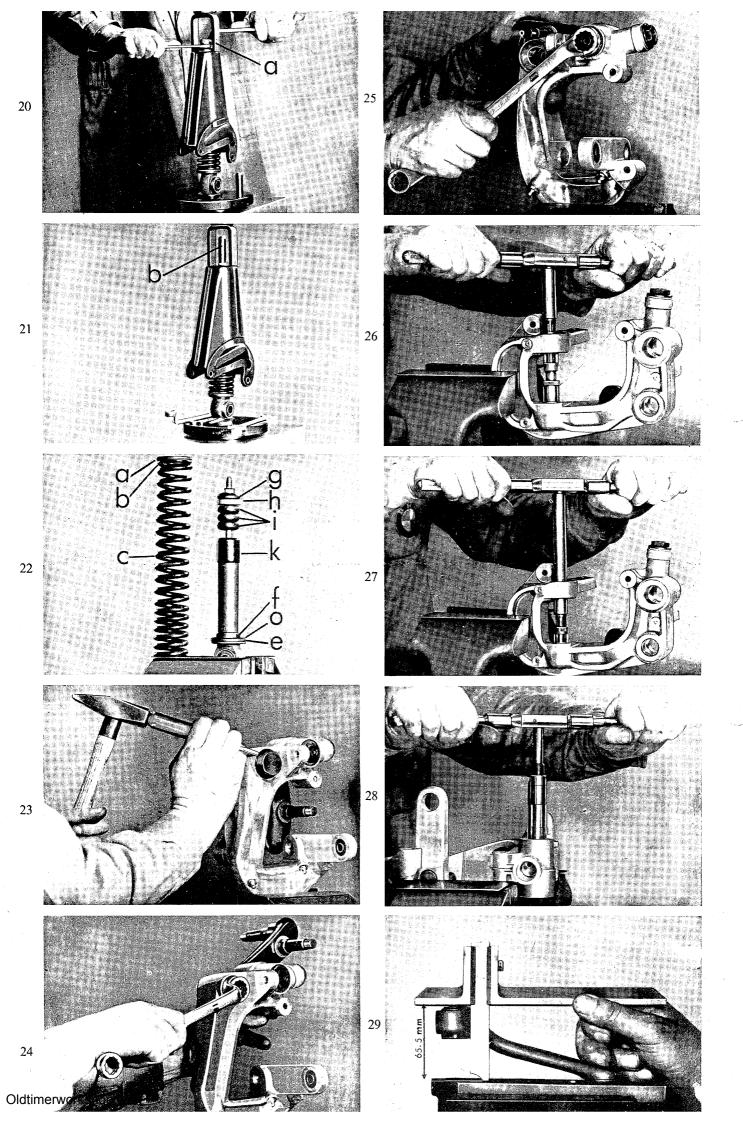
  24 Separate rubber seal ring

Note: On assembling, place rubber seal ring into groove of swing arm.

- Fig. 26. Remove backing plate support (as described under item 25). 25
- Fig. 27. Replace bushings in steering knuckle housing
  26 a) drive out dust cup from inside, press out king pin bushings.
  27 and Press in bushing and make certain that the lower bushing overlaps
  28 the housing with 1.8 mm. Ream bushings to 20.02 20.04 mm 9
- Fig. b) drive out bushings from swing arm and backing plate support.

  Press in bushings so that they will flush with the housing outside.

  Ream bushing of swing arm to 25.00-25.02 mm Ø backing plate support to 22.00 22.02 mm Ø
- Fig. 28. If replacement of rubber bushing in backing plate support is necessary, make sure that the measurement between the lower face of backing plate and face of steering knuckle is 65.5 mm ± 0.2
  - 29. Front wheel alignment as described under pictures 16 20.



#### REAR SUSPENSION

### F 10 Removing and refitting a rear spring

- Fig. Equipment required for operation but in some cases not supplied in special tool kit, as various items are universal garage equipment.

  1 Tools: Screw driver, wheel nut spanner, box spanners 14/17/19 mm, ring spanner 17 mm, hammer, chisel.
  - 1. Remove wheel cover plate, slacken wheel nuts, support the vehicle at rear, locating the support beneath the cross member. 2. Remove the wheel. 3. Straighten the tab washer for the nut of spring-leaf retainer. (hammer, chisel)
- Fig. 4. Unscrew the nut of spring-leaf retainer. (box spanner 14 mm)
- Fig. 5. Slacken nut of spring-eye bolt, withdraw the bolt downwards. (box spanner 17 mm, ring spanner 17 mm)
- Fig. 6. Unscrew the bolt fixing rear end of spring to back axle housing. (box spanner 19 mm)
  - Caution: This bolt on the lefthand side must not be tightened with extreme force, tighten it only until it is right home, for otherwise the thread would be torn out of the aluminium casing.
- Fig.
  5 Caution: The right-hand side of this bolt features a nut.
  - 7. Withdraw the leaf spring rearwards and downwards
    The reassembly is carried in exactly the reverse order.

## F 15 Removing and refitting shock absorber at rear

- Fig. Tools: Screwdriver, wheel nut spanner, ring spanner 17 mm, open ended spanner 17 mm, cotter pin pliers.
  - 1. Remove wheel cover plate, slacken wheel nuts, support the vehicle below the cross member. 2. Remove the wheel.
- Fig. 3. Remove cotter pin from nut of shock absorber lower fixing bolt and slacken the nut. (cotter pin pliers 17 mm, open ended spanner 17 mm) 4. Press out the lower fixing bolt.
- Fig. 5. Slacken lock nut and nut of shock absorber top fixation. (open ended spanner 17 mm, ring spanner 17 mm)
- Fig. 6. Withdraw shock absorber downwards.
- 9 <u>Caution</u>: When assembling remember correct order of top fixation components: Rubber ring-shock absorber support rubber ring washer nut nut.
- Fig. Caution: To check the shock absorber proceed as follows: Fix shock

  absorber to a flat steel plate, attach a weight of 3 kg 6.6 lbs. shock
  absorber must slide downwards in 16 to 19 seconds.

