

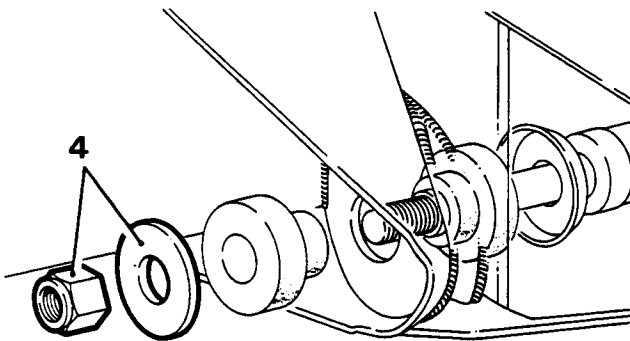
## FRONT AXLE ASSEMBLY

## Remove and refit

## Removing

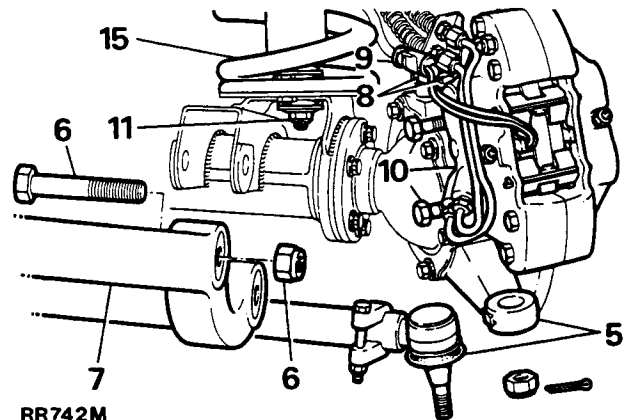
**Note:** The removal of the axle from the vehicle will require the assistance of two further personnel to steady the axle when lowering from the vehicle.

1. Jack up the front of the vehicle and support the chassis.
2. Remove the front road wheels.
3. Support the axle weight with a suitable hydraulic jack.
4. Remove the nuts securing the radius arms to the chassis side members.



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5. Disconnect the steering damper at the track rod and using a suitable extractor remove the track rod complete from the hub arms.
6. Remove the four nuts and bolts securing the radius arms to the axle brackets.
7. Lower the radius arms and withdraw them from the chassis side members.
8. Remove the two bolts from the top of the swivel pin housings securing the brake pipe brackets. Remove the brackets and refit the bolts to prevent oil leakage.
9. Disconnect the brake pad wear electrical multi-plug at the rear of the caliper (where applicable).
10. Remove the bolts securing the brake calipers and tie the calipers to one side.
11. Remove the nuts and washers securing the shock absorbers to the axle.
12. Using a suitable extractor disconnect the drag link from the hub arm.
13. Remove the two nuts and bolts securing the panhard rod to the axle bracket and lift the rod clear of the axle.
14. Mark the differential and propeller shaft drive flanges with identification marks to aid re-assembly. Remove the four nuts and bolts, tie the propeller shaft to one side.
15. Carefully lower the axle assembly and remove the road springs.
16. Withdraw the axle assembly.



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## Refitting

17. Position the axle under the vehicle, supporting the left hand side of the axle.
18. Reverse the removal instructions.
19. Tighten the propeller shaft to differential bolts to the specified torque.
20. Tighten the panhard rod to axle bracket to the specified torque.
21. Tighten the drag link to hub arm to the specified torque.
22. Tighten the upper swivel pin retaining bolts to the specified torque.
23. Tighten the radius arms to axle bolts to the specified torque.
24. Tighten the radius arms to chassis side member nuts to the correct torque.
25. Tighten the track rod end to the specified torque and fit a NEW split pin.

## FRONT DIFFERENTIAL—OVERHAUL

The front and rear differentials fitted to Range Rover are the same type. When overhauling the front differential refer to the rear differential overhaul procedure in section 51 of this manual.

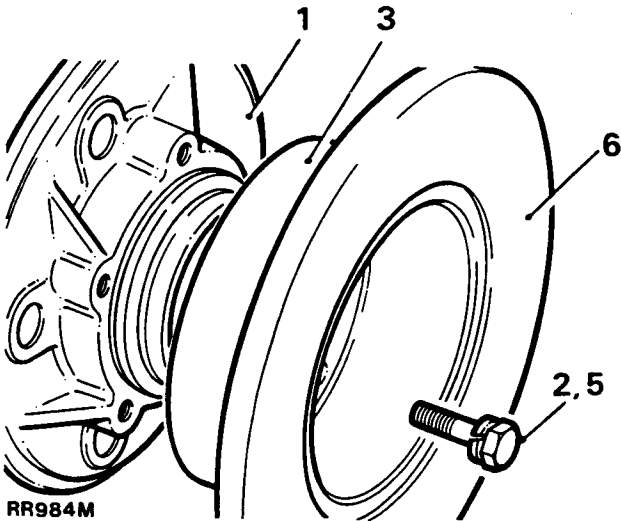
## FRONT DISCS

## Remove and refit

## Removing

1. Remove the front hub assembly.
2. Remove the front disc fixing bolts.
3. Tap the disc off the front hub.

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**Refitting**

4. Locate the disc onto the front hub.
5. Fit the disc fixing bolts. See 'Data section' for tightening torques.
6. Using a dial test indicator, check the total disc run-out, this must not exceed 0,15 mm (0.006 in.). If necessary, reposition the disc.
7. Fit the front hub assembly.

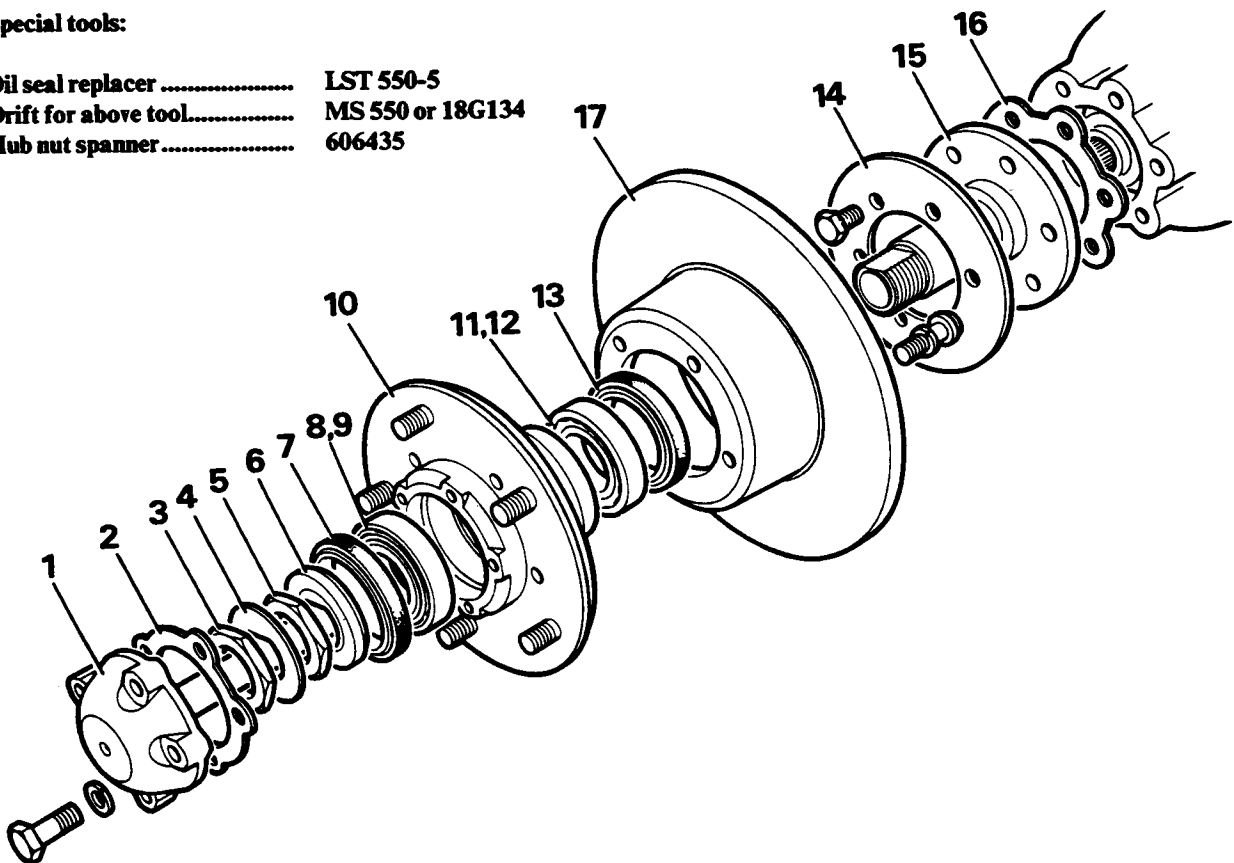
**REMOVE AND OVERHAUL FRONT HUB**

**Special tools:**

- |                           |                  |
|---------------------------|------------------|
| Oil seal replacer .....   | LST 550-5        |
| Drift for above tool..... | MS 550 or 18G134 |
| Hub nut spanner.....      | 606435           |

**KEY TO FRONT HUB COMPONENTS**

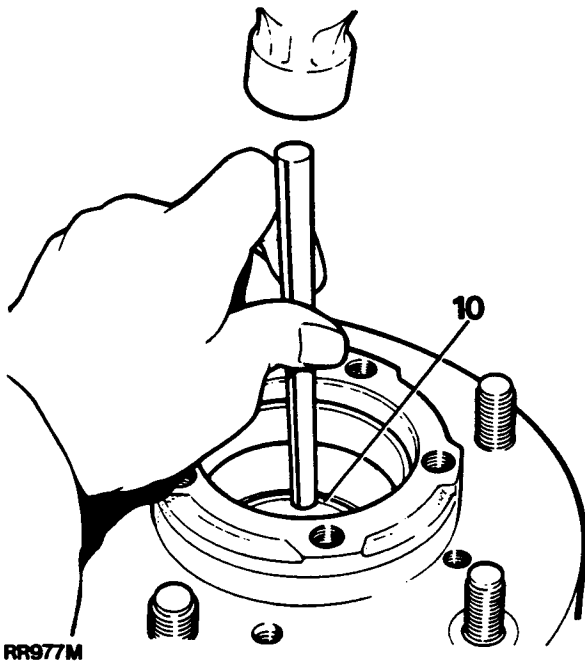
1. Hub driving shaft.
2. Joint washer.
3. Locknut.
4. Lock washer.
5. Adjusting nut.
6. Seal track spacer.
7. Outer oil seal.
8. Outer bearing cone.
9. Outer bearing cup.
10. Hub.
11. Inner bearing cup.
12. Inner bearing cone.
13. Inner oil seal.
14. Mudshield.
15. Stub axle.
16. Stub axle joint washer.
17. Brake disc.



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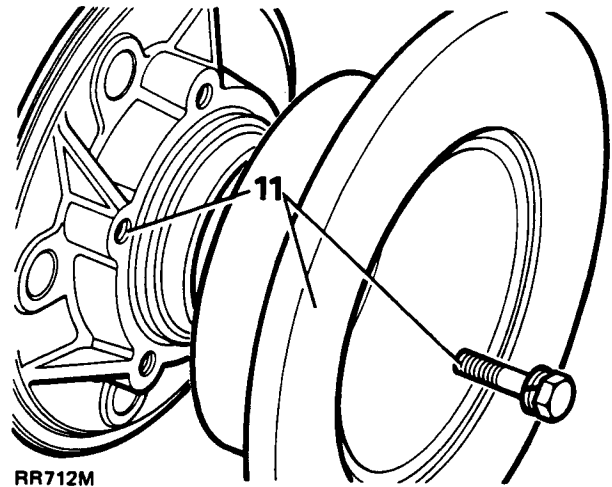
**Remove**

1. Jack-up the vehicle, lower on to axle stands and remove the road wheels.
2. Remove the swivel housing top bolt to release the brake hose bracket.
3. Remove the brake caliper retaining bolts and release the assembly from the brake disc and secure to one side.
4. Remove the five bolts retaining the hub driving shaft and withdraw the shaft from the hub.
5. Bend back the lock-tab and remove the outer nut using spanner 606435 and remove the locker. Similarly, remove the inner nut.
6. Remove the seal track spacer.
7. Withdraw the hub complete with bearings, oil seals and brake disc.
8. Remove the inner and outer oil seals.
9. Remove the inner and outer bearing cones.
10. Drift-out the inner and outer bearing cups.



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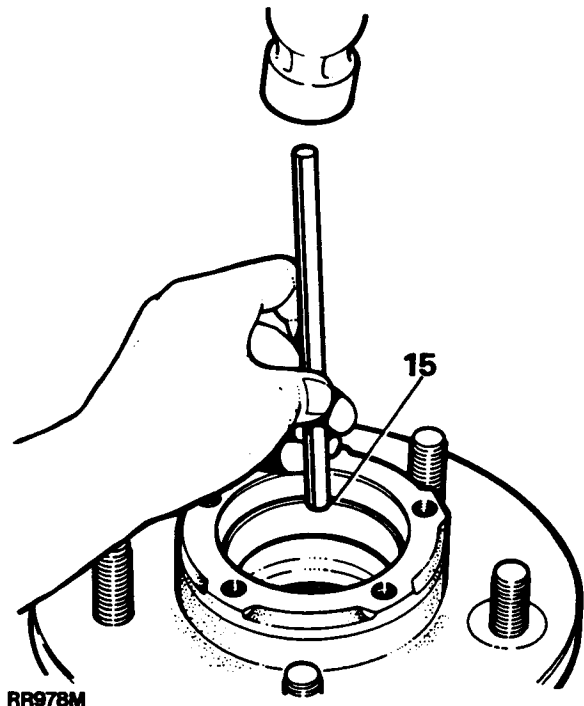
11. Degrease and examine the hub and brake disc and renew both or whichever part is unserviceable. The brake disc is attached to the hub by five bolts. Mark relation of hub to disc before separating.
12. Clean and examine the stub axle and in particular check that the inner seal track diameter is smooth and free from blemishes.
13. If necessary remove the retaining bolts and withdraw the stub axle. Complete with the mudshield and joint washer.



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**Assemble**

14. Using a new joint washer fit the stub axle and mudshield. Coat the threads of the retaining bolts with Loctite 270 and tighten evenly to the correct torque.
15. Fit the new inner and outer bearing cups to the hub.
16. Fit the new inner bearing cone and pack with one of the recommended hub greases.

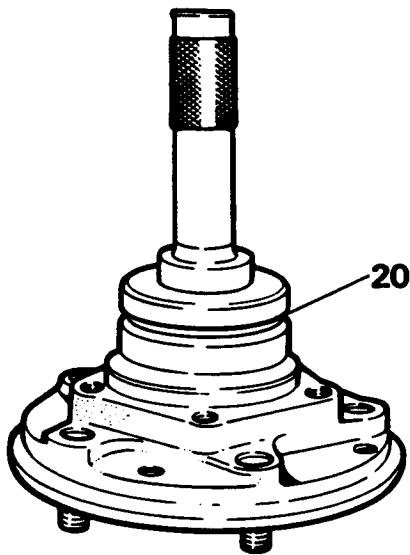


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**Fitting new oil seal—inner**

17. Clean the hub oil seal housing and ensure that the seal locating surface is smooth and the chamfer on the leading edge is also smooth and free from burrs.
18. Examine the new seal and ensure that it is clean and undamaged and that the garter spring is properly located. Even a small scratch on the seal lip could impair its efficiency.
19. Although the new seal is already pre-greased by the manufacturer, apply one of the recommended hub bearing greases to the outside diameter of the seal before fitting.
20. Place the seal, lip side leading, squarely on the hub and using the 76 mm end of seal replacer tool LST 550-5 and drift 550 or 18G 134, drive the seal into position flush with the end face of the hub.



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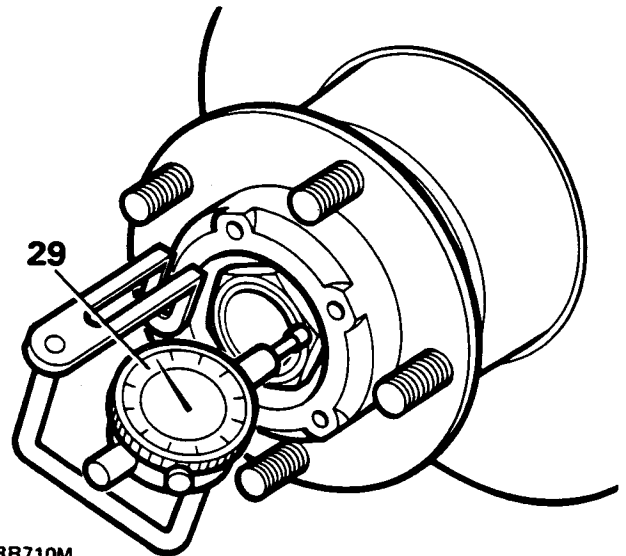
**Fitting outer oil seal**

21. Fit the new outer bearing cone and pack with one of the recommended hub greases.
22. Carry out instructions 17 to 19.
23. Place the seal, lip side leading, squarely on the hub and using the 72 mm end of seal replacer tool LST 550-5 and drift 550 or 18G 134, drive the seal into position to the depth determined by the tool.
24. Smear the lips of both seals with one of the recommended greases. This is important since a dry seal can be destroyed during the first few revolutions of the hub.

**Fitting hub to stub axle**

25. Select a new seal track spacer and check that the outer diameter is smooth and free from blemishes and that there are no burrs on the chamfered leading edge.

26. Taking care not to damage the seal lips fit the hub assembly to the stub axle. Do not allow the weight of the hub to rest even temporarily on the outer seal otherwise damage and distortion could occur. Therefore hold the hub clear of the stub axle until the seal track spacer is fitted.
27. Carefully fit the seal track spacer, seal lip leading.
28. Fit the hub inner nut and using spanner 606435 tighten the adjusting nut whilst slowly revolving the hub until all end-float is removed then back-off the nut approximately half a turn.
29. Mount a dial test indicator and bracket on the hub so that the stylus rests in a loaded condition on the nut. Check the end-float which must be 0,013 to 010 mm (0.0005 to 0.004 in). Adjust the nut as necessary to achieve this.



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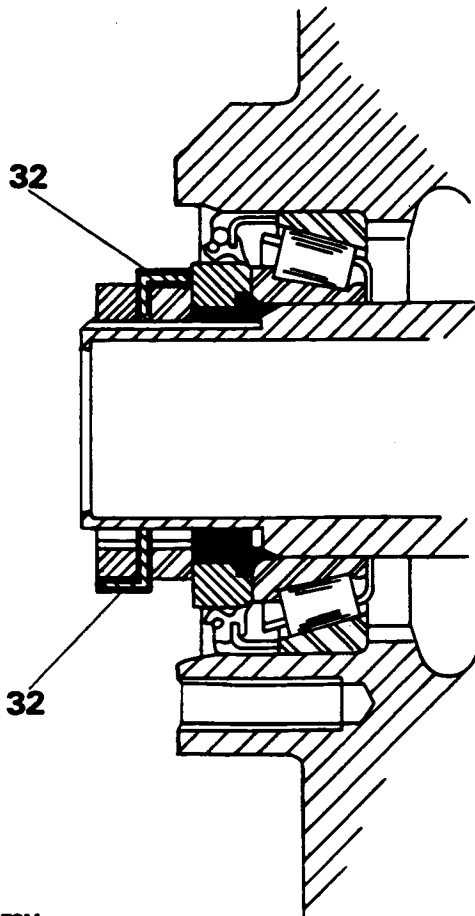
30. Fit the locker tab and locknut and tighten against the adjusting nut.
31. Rotate the hub several times to settle the bearings then re-check the end-float.
32. Bend one segment of the locker over the adjusting nut and another, diametrically opposite, over the locknut.
33. Using a new joint washer, fit the hub driving shaft and evenly tighten the retaining bolts to the correct torque.
34. Fit the brake caliper and secure with the retaining bolts and tighten to the correct torque.
35. Fit the swivel housing top bolt and brake hose bracket and tighten to the correct torque.
36. Fit the road wheels, jack-up the vehicle, remove the axle stands, lower the vehicle to the ground and tighten the road wheel nuts evenly to the correct torque.

### OVERHAUL STUB AXLE, AXLE SHAFT, CONSTANT VELOCITY JOINT AND SWIVEL ASSEMBLY

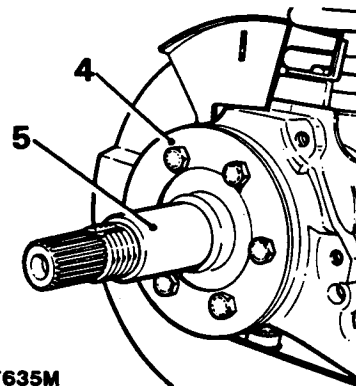
**Special tool: 18G 284AAH bush extractor**

#### Remove stub axle, axle shaft and constant velocity joint

1. Remove the hub complete as described in the operation to overhaul the hub assembly instructions 1 to 14.
2. Drain the swivel pin housing and refit plug.
3. Remove the six bolts retaining the stub axle to the swivel housing.
4. Remove the mud shield.
5. Remove the stub axle and joint washer.

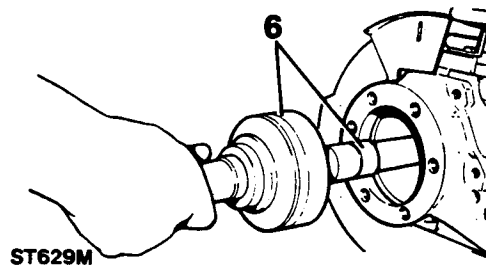


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6. Pull-out the axle shaft and constant velocity joint from the axle casing.

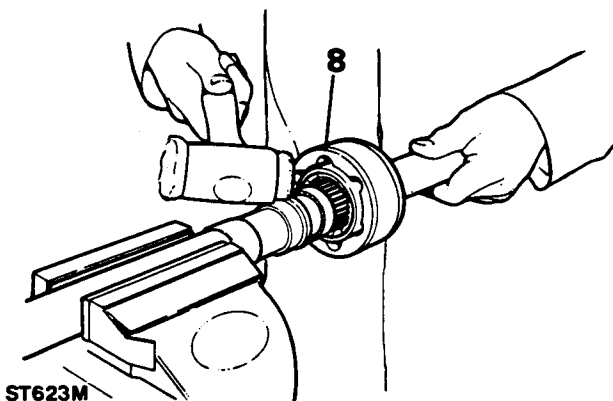


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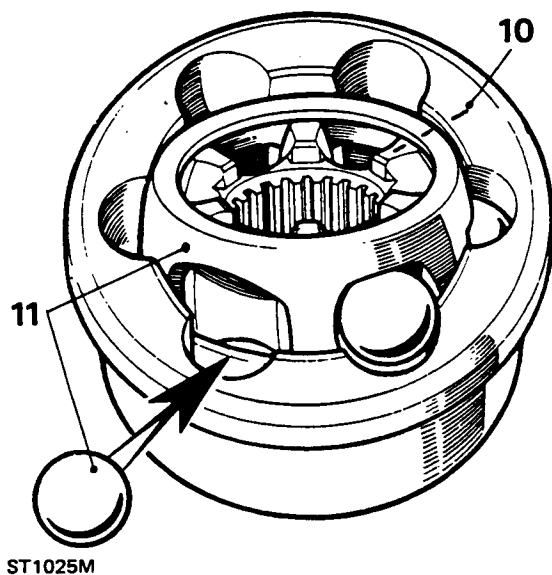
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**Remove constant velocity joint from axle shaft**

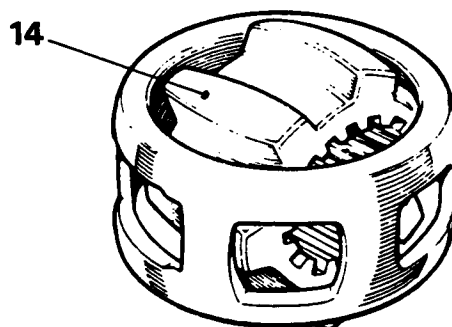
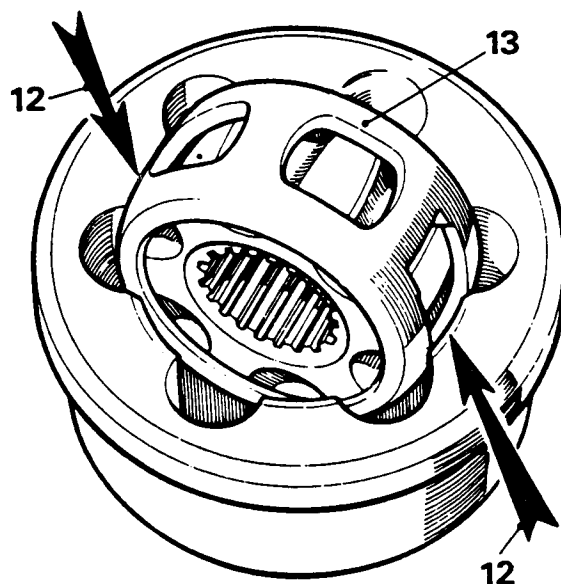
7. Hold the axle shaft firmly in a soft jawed vice.
8. Using a soft mallet drive the constant velocity joint from the shaft.
9. Remove the circlip and collar from the axle shaft.

**Dismantle the constant velocity joint**

10. Mark the relative positions of the constant velocity joint inner and outer race and the cage for correct reassembly.
11. Tilt and swivel the cage and inner race to remove the balls.

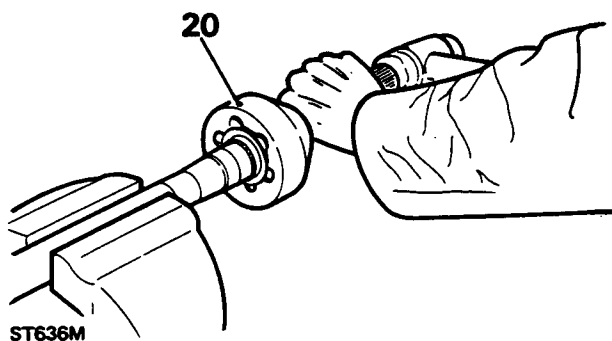


12. Swivel the cage into line with the axis of the joint and turn it until two opposite windows coincide with two lands of the joint housing.
13. Withdraw the cage.
14. Turn the inner track at right angles to the cage with two of the lands opposite the cage openings and withdraw the inner race.
15. The roller bearings must be a light push fit onto the swivel pins. If necessary, drive out the bearing outer tracks and press in replacements.
16. The surface of the bearing housing must be free of corrosion and damage.
17. Examine all components for general condition and examine the inner and outer track, cage balls and bearing surfaces of the constant velocity joint for damage and excessive wear. Maximum acceptable end-float on the assembled joint 0,64 mm (0.025 in).
18. To assemble the constant velocity joint reverse the dismantling instructions and lubricate with a recommended EP oil.

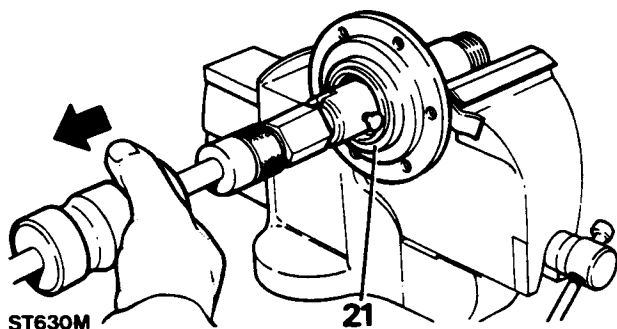


**Fit constant velocity joint to axle**

19. Fit the collar and new circlip.
20. Engage the constant velocity joint on the axle shaft splines and using a soft mallet, drive the joint home.

**Renew stub axle intermediate oil seal and bush**

21. To remove the bronze bush and oil seal use special tool 18G 284AAH and a slide hammer. Ensure that the fingers of the tool locate behind the oil seal so that the seal and bush are driven-out together.



22. With the cavity side leading and using a suitable tube, press-in a new intermediate oil seal and apply grease to the lip.
23. Using a suitable block, press or drive-in the bush up to the shoulder.

**Remove swivel pin housing**

24. Remove the brake disc shield secured by one nut and bolt at the bottom front, and one single bolt, behind the shield, in the swivel housing.
25. Disconnect the track-rod end ball joint from the housing.
26. Disconnect the drag-link ball joint.
27. Remove the seven bolts securing the swivel pin housing oil seal and retaining plate and joint washer and release the assembly from the swivel pin housing. Note that whilst the joint washer can be removed at this stage, the oil seal and retaining plate must remain until the swivel pin bearing housing is removed.
28. Remove the two bolts, complete with the brake disc shield bracket, securing the lower swivel pin to the housing.
29. Withdraw the lower swivel pin and joint washer by tapping the small protruding lug.
30. Remove the top swivel pin retaining bolts complete with the brake jump hose bracket.
31. Withdraw the top swivel pin and shims.
32. Remove the swivel pin housing whilst retrieving the lower taper bearing.
33. If the swivel pin housing is to be renewed, remove the drain and level plugs and lock-stop bolt and nut.

**Remove swivel pin bearing housing**

34. Remove the seven bolts securing the swivel pin bearing housing to the axle case and remove the housing and joint washer.
35. Remove and discard the swivel pin oil seal and joint washer.

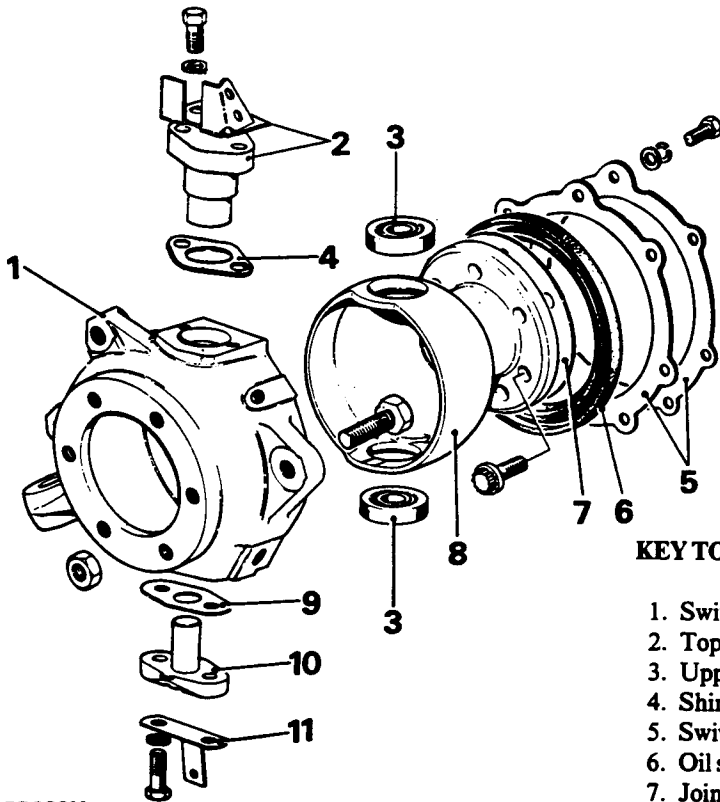
**Overhaul swivel pin bearing housing**

36. Prise-out the oil seal from the back of the housing.
37. Drift-out the lower swivel pin bearing track.
38. Drift-out the upper swivel pin bearing track.
39. If worn, pitted or damaged, renew the housing.
40. Press-in the lower swivel pin bearing track.
41. Press-in the upper swivel pin bearing track.
42. With the cavity side trailing press the axle shaft oil seal into the housing and grease.

**Fit swivel pin bearing housing to axle**

43. Coat the swivel pin bearing housing to axle casing bolts with Loctite 270.
44. Coat both sides of a joint washer and place in position on the swivel pin bearing housing to axle mating face.
45. Hang the swivel pin bearing housing oil seal, retainer and joint washer over the back of the housing.
46. Fit and secure the swivel pin bearing housing to the axle with the seven bolts tightening evenly to the specified torque.

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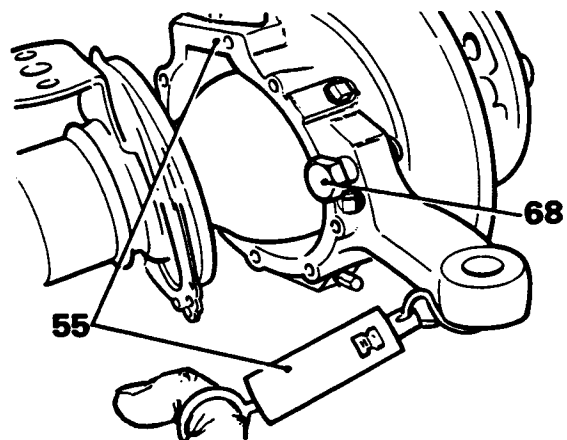
## KEY TO SWIVEL ASSEMBLY

1. Swivel pin housing.
2. Top swivel pin and jump hose bracket.
3. Upper and lower swivel pin bearings.
4. Shim.
5. Swivel pin bearing housing—oil seal plate and washer.
6. Oil seal.
7. Joint washer.
8. Swivel pin bearing housing.
9. Joint washer.
10. Lower swivel pin.
11. Brake disc mudshield bracket.

**Fit swivel pin housing**

47. Grease and fit the upper swivel pin bearing to the bearing housing.
48. Grease and place the lower swivel pin bearing onto the swivel pin housing.
49. Place the swivel pin housing in position over the swivel in bearing housing.
50. Coat a joint washer both sides with sealing compound and place in position on the lower swivel pin.
51. Fit the lower pin with lip outboard. Do not secure with bolts at this stage.
52. Fit the top swivel pin with existing shims and fit the securing bolts, jump hose bracket and locking washer (do not tighten the bolts at this stage).
53. Coat the threads of the lower swivel pin bolts with Loctite 270 and fit, together with the brake disc shield bracket, tighten the bolts to the specified torque and bend over the lock tabs of the mudshield bracket.
54. Tighten the top swivel pin securing bolts to the specified torque.

55. To check the top swivel pin pre-load attach a spring balance to the track-rod ball joint bore and pull the balance to determine the effort required to turn the swivel. The resistance, once the initial inertia has been overcome, should be 1,16 to 1,46 kg (2.6 to .2 lb). If necessary, adjust by removing or adding shims to the top swivel pin as required. When the setting has been achieved coat the bolts with Loctite 270 and re-tighten the bolts to the specified torque and bend over the lock tabs of the locking washer.



RR982M



56. Liberally apply—but do not pack—a recommended grease between the lips of the swivel oil seal (2,5 to 4,0 grams).
57. Secure the oil seal and joint washer with the retaining plate and securing bolts tightening evenly to the correct torque.
58. Fit the track-rod and drag link and secure with new split pins.
59. Fit the brake disc shield.
60. Loosely fit the lock stop bolt and nut for later adjustment.

#### **Fit drive shaft and stub axle**

61. Place a new joint washer in position on the swivel pin housing to stub axle mating face.
  62. Taking care not to damage the axle shaft oil seals, insert the axle shaft, and when the differential splines are engaged, push the assembly home.
  63. Fit the stub axle with the keyway uppermost at 12 o'clock. At this stage it is most important to ensure that the constant velocity joint bearing journal engages fully into the bronze bush in the rear of the stub axle before the stub axle is secured with bolts. Damage to the bush can occur if this precaution is not observed. To ensure proper engagement, grasp the stub axle with one hand and with the other pull the axle shaft into the bush. The shaft and bush are correctly engaged when the end of the axle shaft splines are flush with the end of the stub axle. This condition must be maintained during all ensuing assembly operations.
  64. Place the mudshield in position and secure the stub axle to the swivel pin housing with the six bolts using Loctite 270 and evenly tighten to the specified torque.
  65. To complete the reassembly, follow instructions 25 to 41 covering front hub overhaul.
  66. Check that the swivel pin housing drain plug is tightly fitted and remove the filler and level plug.
  67. Inject approximately 0.35 litre (0.6 pint) of recommended EP oil until the oil begins to run out of the level hole. Fit and tighten the plug and wipe away any surplus oil.
  68. Set the steering lock-stop bolts to provide a minimum clearance of 40,5 mm (1.59 in) between the tyre wall and radius arm. Tighten the locknut.
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