

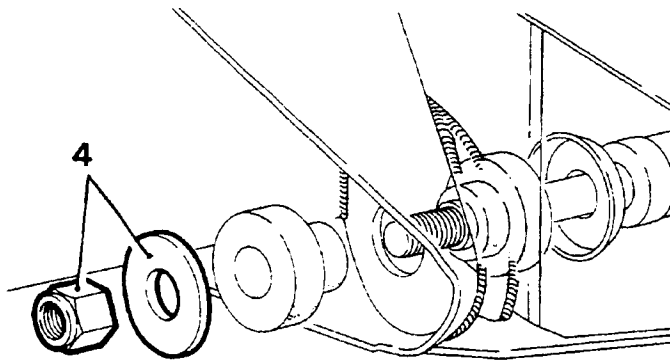
FRONT AXLE ASSEMBLY

Remove and refit

Removing

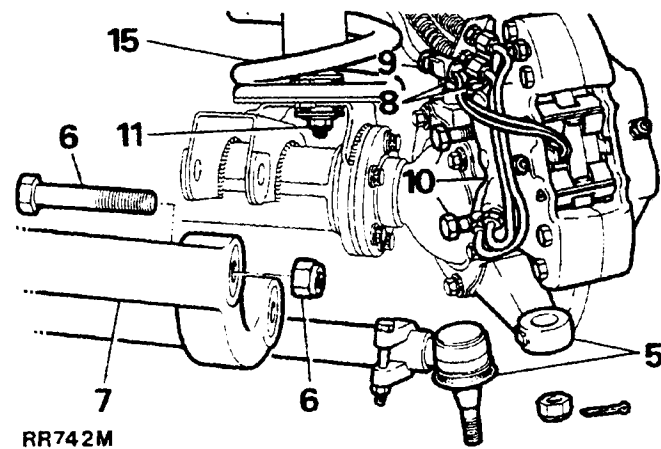
WARNING: The removal of the axle from the vehicle will require the assistance of two further personnel to steady the axle when lowering from the vehicle.

1. Jack up the front of the vehicle and support the chassis frame.
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 frame side members.



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5. Disconnect the steering damper at the tie rod and using a suitable extractor remove the tie rod ends from the swivel pin housing arm.
6. Remove the four nuts and bolts securing the radius arms to the axle bracket.
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 hose 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.



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11. Remove the nuts and washers securing the shock absorbers to the axle.
12. Using a suitable extractor disconnect the drag link from the swivel pin housing 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 drive shaft flanges with identification marks to aid re-assembly. Remove the four nuts and bolts, tie the drive shaft to one side.
15. Carefully lower the axle assembly and remove the road springs.
16. Withdraw the axle assembly.

Refitting

17. Position the axle under the vehicle, supporting the left hand side of the axle.
18. Reverse the removal instructions.
19. Tighten the drive shaft to differential bolts to the specified torque (see section 06-Torque values).
20. Tighten the panhard rod to axle bracket to the specified torque (see section 06-Torque values).
21. Tighten the drag link to hub arm to the specified torque (see section 06-Torque values).
22. Tighten the upper swivel pin retaining bolts to the specified torque (see section 06-Torque values).
23. Tighten the radius arms to axle bolts to the specified torque (see section 06-Torque values).

24. Tighten the radius arms to chassis side member nuts to the specified torque (see section 06-Torque values).
25. Tighten the track rod end to the specified torque and fit a **NEW** cotter pin (see section 06-Torque values).

FRONT DIFFERENTIAL-OVERHAUL

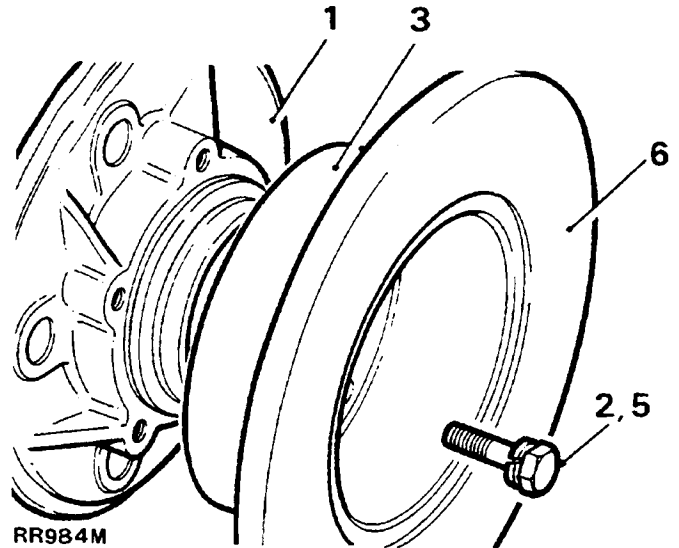
The front and rear differentials are the same type. When overhauling the front differential refer to the rear differential overhaul procedure in Section 51 of this manual.

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.



Refitting

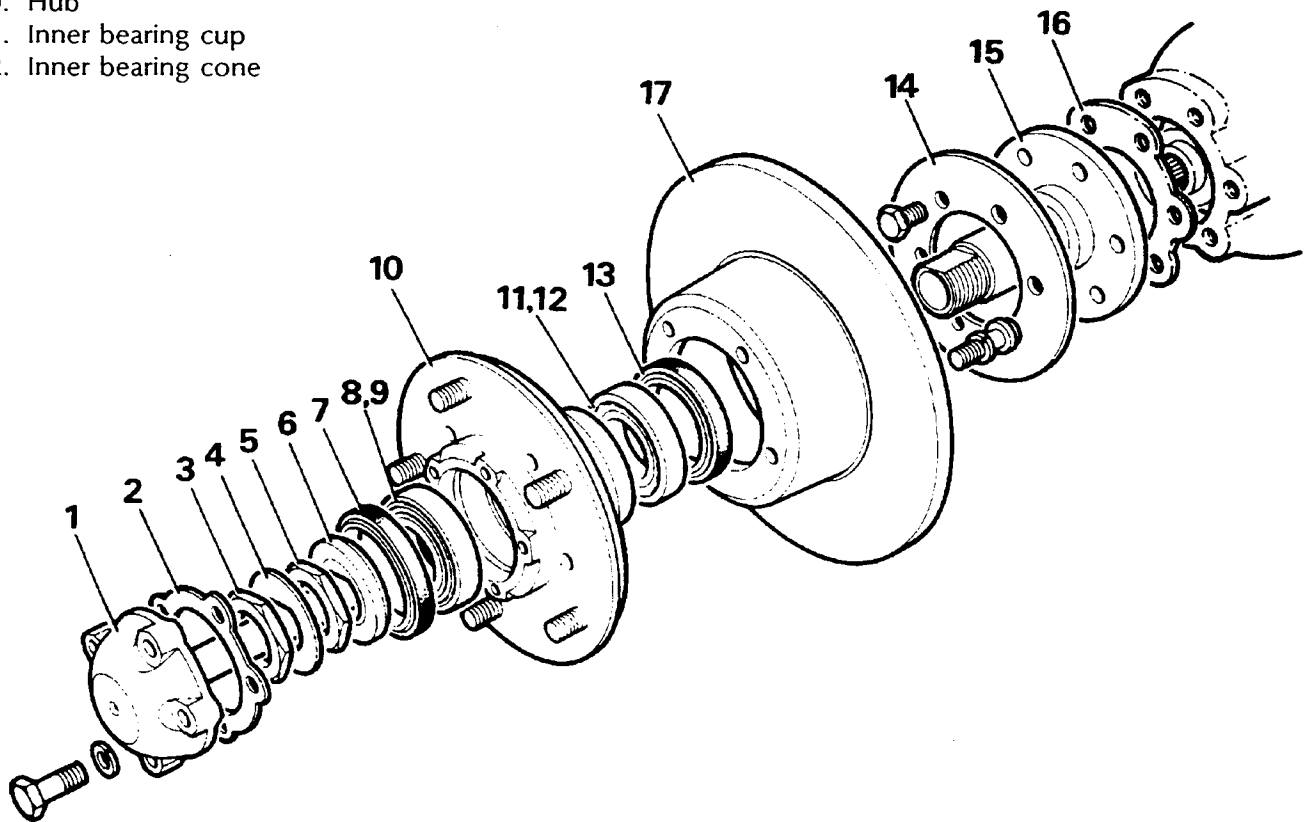
4. Locate the disc onto the front hub.
5. Fit the disc fixing bolts. See Section 06 for tightening torques.
6. Using a dial indicator, check the total disc run-out, this must not exceed 0.15 mm (0.006 in). If necessary, reposition the disc.
7. Fit the front hub assembly.

REMOVE AND OVERHAUL FRONT HUB**Service tools:**

Oil seal replacer LST550-5
 Drift for above tool MS550 or 18G134
 Hub nut wrench 606435

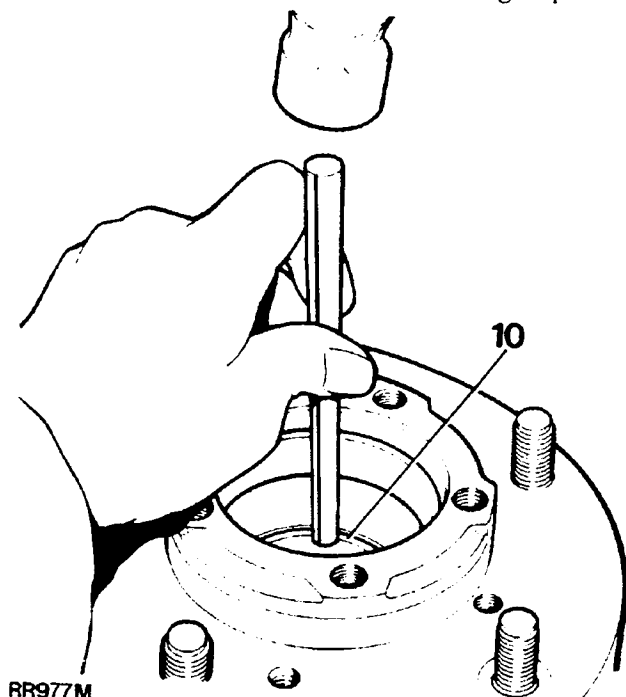
KEY TO FRONT HUB COMPONENTS

- | | |
|------------------------|----------------------------|
| 1. Hub driving shaft | 13. Inner oil seal |
| 2. Gasket | 14. Mudshield |
| 3. Locknut | 15. Stub axle |
| 4. Lock washer | 16. Stub axle joint washer |
| 5. Adjusting nut | 17. Brake disc |
| 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 | |

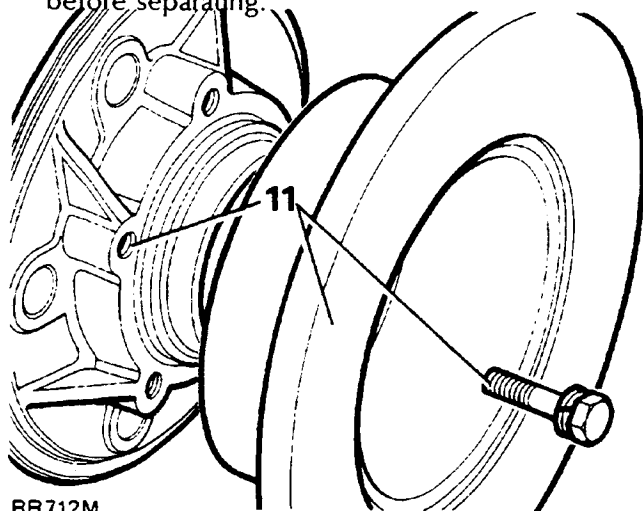
**RR707M****Remove**

1. Jack-up the vehicle, lower onto 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 wrench 606435 and remove the lock washer. 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. Drive out the inner and outer bearing cups.



11. Degrease and examine the hub and brake disc and fit new components where necessary. The brake disc is attached to the hub by five bolts. Mark relation of hub to disc as necessary before separating.

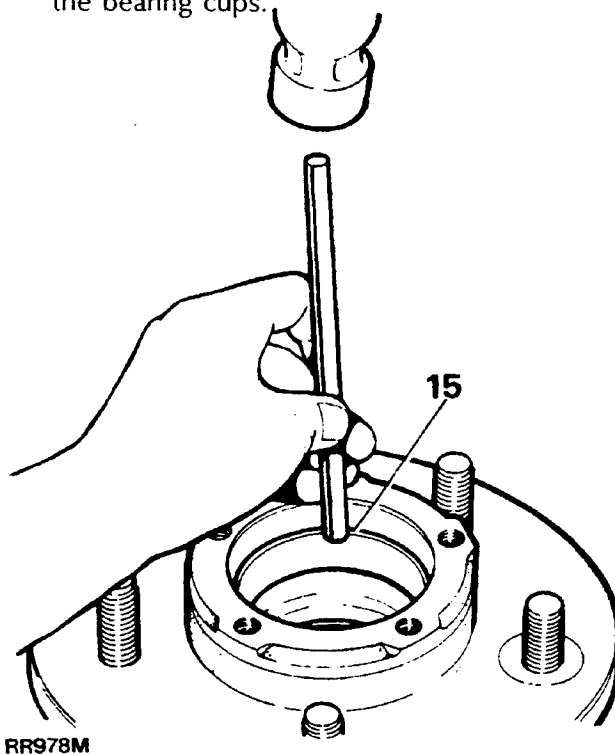


12. Clean and examine the stub axle and in particular check that the inner seal track diameter is smooth and free from blemishes.

13. If necessary remove the retaining bolts and withdraw the stub axle. Complete with the mudshield and joint washer.

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 specified torque (see section 06-Torque values).
15. Fit the new inner and outer bearing cups to the hub, use a suitable brass drift or commercial race driver to prevent damage to the bearing cups.

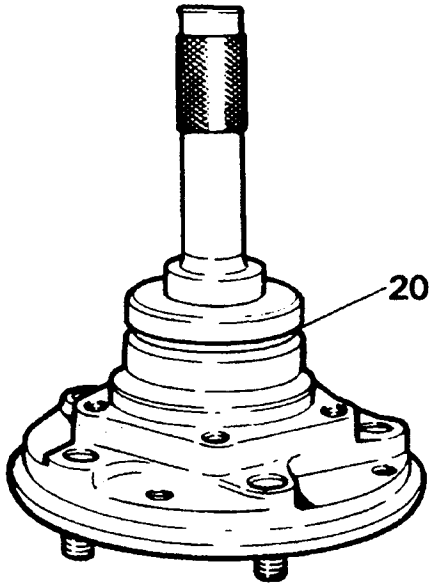


16. Fit the new inner bearing cone and pack with one of the recommended hub greases.

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 LST550-5 and drift 550 or 18G134, 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 LST550-5 and drift 550 or 18G134, drive the seal into position to the depth determined by the tool.
24. Coat 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.

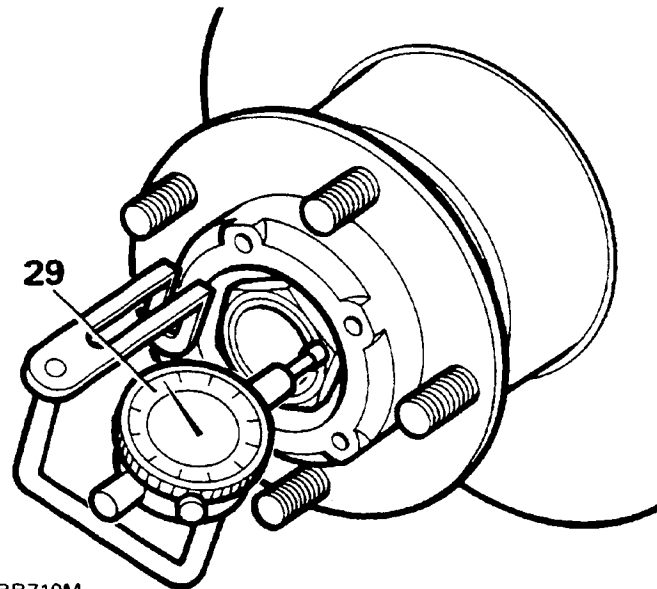
Fitting hub to stub axle

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, chamfered side leading.

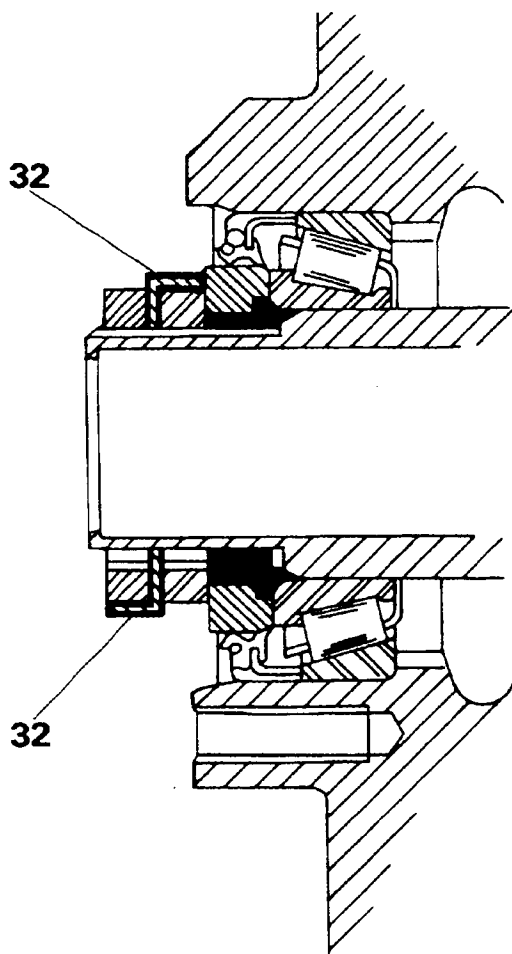
NOTE: Instruction 28 is applicable to hubs that have been fitted with new components throughout. If original components are being refitted instruction 29 must be followed using the adjustment nut to achieve the required end-float.

28. Fit the hub inner nut and using wrench 606435 tighten the adjusting nut while slowly revolving the hub until all end-float is removed then back-off the nut approximately half a turn and retighten the nut to 13-15 in lb which will automatically allow for compression of the rubber on the new seal track spacer giving the required hub end-float of 0.013 to 0.10 mm (0.0005 to 0.004 in).
29. If the rubber on the seal track spacer has previously been compressed the hub end-float can be checked by mounting a dial indicator and bracket on the hub so that the trace pin rests in a preloaded condition on the nut. Rotate the hub to settle the bearings and check the end-float by pushing and pulling the hub. End-float must fall within the limits given in the previous instruction.



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30. Fit a new lock washer and locknut. Restraining the inner adjustment nut, tighten the outer lock nut to 70 to 80 ft lb (95 to 108 Nm).
31. If original components have been refitted rotate the hub several times to settle the bearings then recheck the end-float, refer to previous instruction 29.
32. Bend one segment of the lock washer over the adjusting nut and another, diametrically opposite, over the locknut.

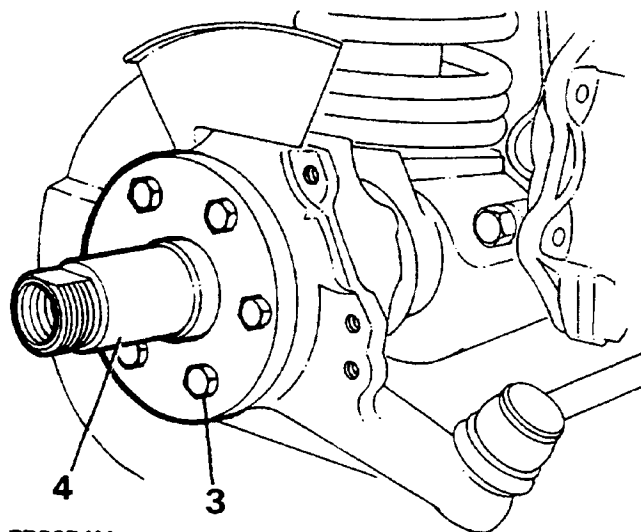


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OVERHAUL STUB AXLE, AXLE SHAFT, CONSTANT VELOCITY JOINT AND SWIVEL PIN ASSEMBLY

Removing hub assembly, stub axle, constant velocity joint and axle shaft.

1. Remove the hub complete as described in the hub assembly overhaul operation instructions 1 to 7.
2. Drain the swivel pin housing and refit plug.
3. Remove the six bolts retaining the stub axle to the swivel pin housing.
4. Remove the mud shield, stub axle and joint washer.
5. Remove the brake disc shield secured by one nut and bolt at the bottom front, and one bolt, behind the shield, in the swivel pin housing.

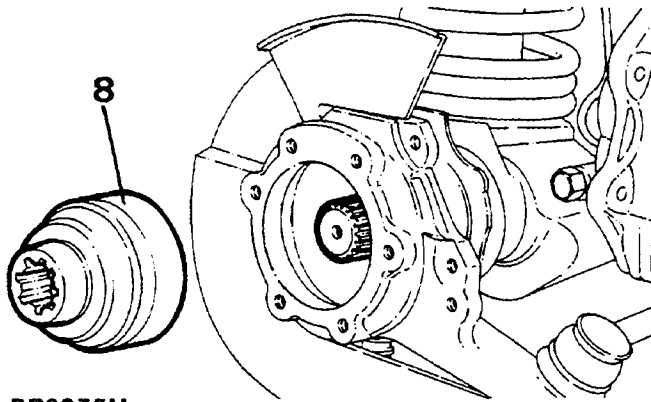


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33. Using a new gasket, fit the hub driving shaft and evenly tighten the retaining bolts to the specified torque (see section 06-Torque values).
34. Fit the brake caliper and secure with the retaining bolts and tighten to the specified torque (see section 06-Torque values).
35. Fit the swivel housing top bolt and brake hose bracket and tighten to the specified torque (see section 06-Torque values).
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 specified torque (see section 06-Torque values).

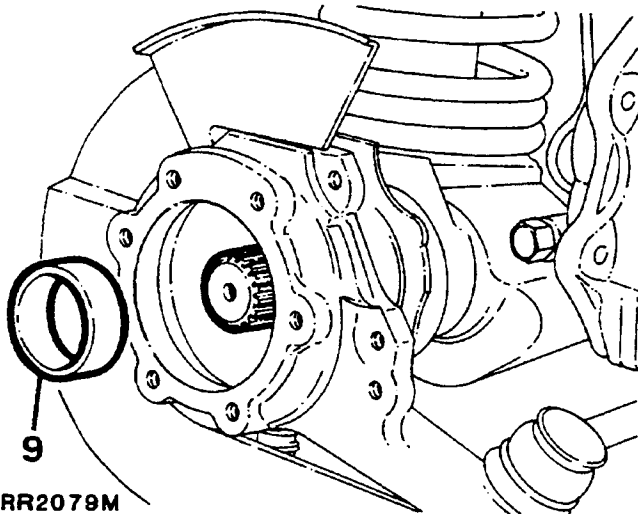
6. Disconnect the tie-rod end ball joint from the swivel pin housing.
7. Disconnect the drag-link ball joint.

8. Remove the constant velocity joint from the axle shaft.



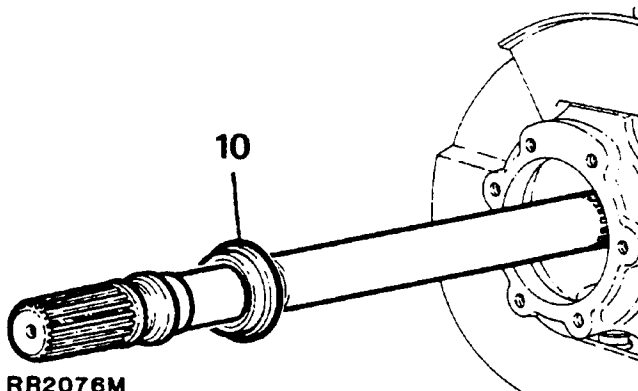
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9. Remove the spacer from the axle shaft and then the axle shaft from the axle tube.



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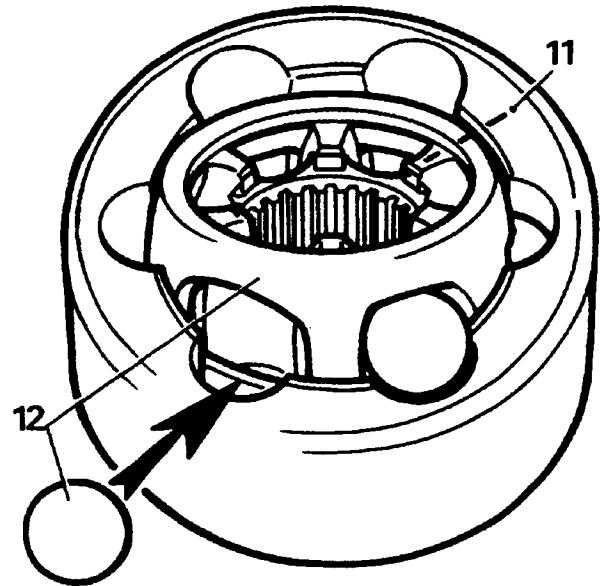
10. Remove the phosphor bronze bush from the axle shaft.



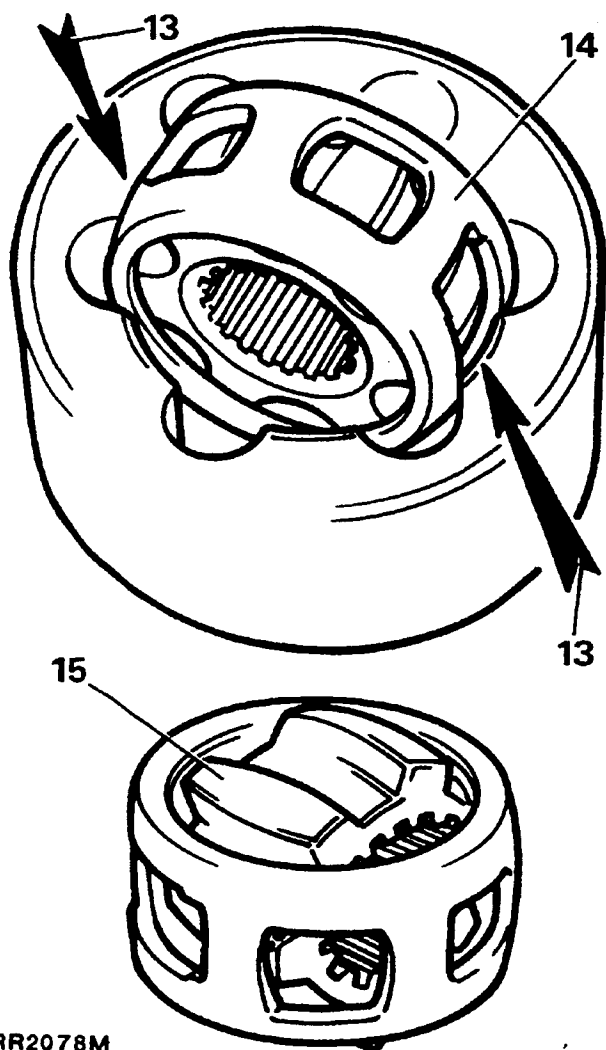
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Dismantling the constant velocity joint

11. Mark the relative positions of the constant velocity joint, inner and outer race and the cage to ensure correct re-assembly.
12. Tilt and swivel the cage and inner race to remove the ball bearings.



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13. Swivel the cage into line with the axis of the joint until the two opposite windows coincide with the two lands of the joint housing.
14. Withdraw the cage.
15. Turn the inner track at right angles to the cage with two of the lands opposite the cage openings, and withdraw the inner race.
16. 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 0.64mm (0.025 in).
17. To assemble the constant velocity joint reverse the dismantling instructions and lubricate with a recommended oil, ensuring that the inner and outer race marks are aligned during assembly.

Overhaul of stub axle

18. Remove the phosphor bronze bush using a suitable hammer and drift.
19. Clean and examine the stub axle. In particular check that the inner seal track diameter is smooth and free from blemishes.
20. Using a suitable block, press or drive-in a new bush up to the shoulder of the stub axle.

Removing the swivel pin housing assembly

21. Remove the seven bolts securing the swivel pin housing oil seal, retaining plate and joint washer. Release the assembly from the swivel pin housing.

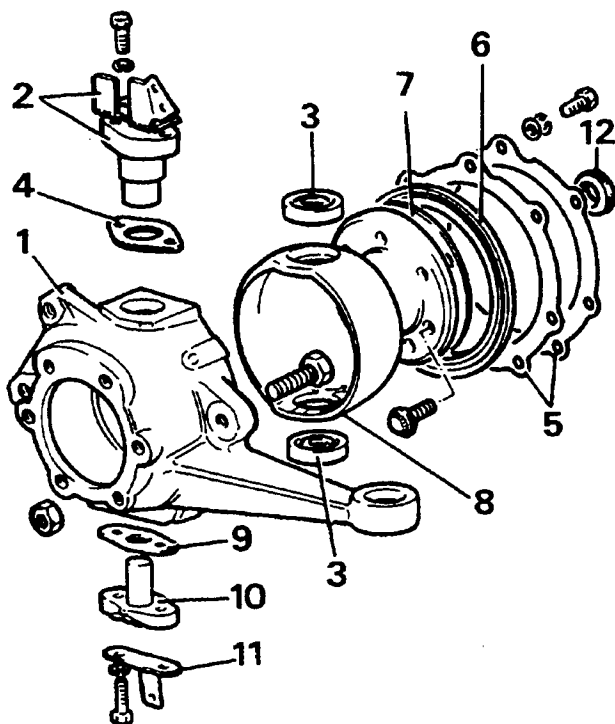
NOTE: While the joint washer can be removed at this stage, the oil seal and retaining plate must remain until the swivel bearing housing is removed.

22. Remove the two bolts, retaining the brake disc shield bracket, and lower swivel pin to the housing.
23. Remove the brake disc shield bracket.
24. Tapping the small protruding lug remove the lower swivel pin and joint washer.
25. Remove the two bolts retaining the brake hose bracket and top swivel pin.
26. Remove the brake hose bracket, top swivel pin and shims.
27. Remove the swivel pin housing while retrieving the lower and upper tapered roller bearings.
28. If the swivel pin housing is to be replaced, remove the drain and level plugs and lock-stop bolt and nut.

Overhaul of swivel bearing housing

29. Using a suitable drift ease the lower bearing track out of the swivel bearing housing.

NOTE: Use the upper bearing opening for the drift to gain access to the lower bearing track.



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KEY TO SWIVEL ASSEMBLY

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

30. Remove the seven bolts retaining the swivel bearing housing to the axle case.
31. Pry out the oil seal from the back of the housing also remove the joint washer and discard both.
32. Bolt the swivel bearing housing onto the axle case with the upper bearing track located at the bottom.
33. Drive out the top bearing track from the swivel bearing housing.

NOTE: Use the lower bearing opening for the drift to gain access to the upper bearing track.

34. Remove the bolts from the housing.
35. If worn, pitted or damaged, fit a new housing.
36. Using a suitable tool, seat the upper and lower bearing tracks into the swivel bearing housing.

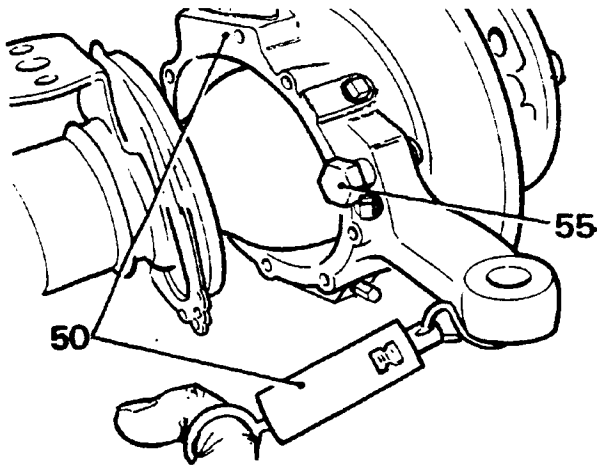
NOTE: Ensure the bearing tracks are fitted square or damage could occur.

37. With the seal lips trailing press the axle shaft oil seal into the rear of the housing, also grease the lips.

Reassembling the swivel pin housing assembly

38. Coat the swivel bearing housing to axle casing bolts with Loctite 270.
39. Coat both sides of the joint washer with a sealing compound and place in position on the swivel bearing housing to axle mating face.
40. Place the swivel pin housing cover plate joint washer and oil seal over the axle flange ready for assembly.
41. Fit and secure the swivel bearing housing to the axle flange with the seven bolts tightening evenly to the specified torque (see section 06-Torque values).
42. Grease and fit the upper and lower swivel pin taper roller bearings to the swivel bearing housing.

43. Place the swivel pin housing in position over the swivel bearing housing.
44. Coat a joint washer on both sides with a sealing compound and place in position on the lower swivel pin.
45. Fit the lower swivel pin with the lug outboard to the swivel pin housing. (**DO NOT tighten the bolts at this stage.**)
46. Fit the top swivel pin with existing shims and brake hose bracket onto the swivel pin housing, securing with the two bolts and locking washers. (**DO NOT tighten the bolts at this stage.**)
47. Coat the threads of the two lower swivel pin bolts with Loctite 270.
48. Fit the brake disc shield bracket and secure with the two bolts to the specified torque (see Section 06) and bend over the lock tabs of the mudshield bracket.
49. Tighten the top swivel pin bolts to the specified torque (see Section 06-Torque values).



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50. To check the top swivel pin pre-load, attach a spring balance to the track-rod and ball joint bore and pull the balance to determine the effort required to turn the swivel pin housing. The resistance, once the initial inertia has been overcome, should be 1.16 to 1.46 kg (2.6 to 3.2 lb). If necessary, adjust by removing or adding shims to the top swivel pin as required. When the correct setting has been achieved undo the bolts, coat the threads with Loctite 270 and retighten the bolts to the specified torque (see Section 06-Torque values), and bend over the tabs of the locking washer.
51. Liberally apply (but do not pack) 2.5 to 4.0g of recommended grease between the lips of the swivel oil seal.

52. Secure the oil seal, joint washer and cover plate with the seven bolts and spring washers to the specified torque (see Section 06-Torque values).
53. Fit the tie-rod and drag link and secure with new cotter pins, where applicable. Tighten to the specified torque. (See Section 06 Torque Values)
54. Fit the brake disc shield.
55. Loosely fit the lock stop bolt and nut for later adjustment.

Constant velocity, stub axle and axle shaft reassembly

56. Fit a new phosphor bronze bush onto the axle shaft.
57. Place axle shaft into axle tube, ensuring the splines are engaged push the shaft home.

CAUTION: When inserting the axle shaft care should be taken not to damage the oil seal.

58. Fit the constant velocity bearing journal into the phosphor bronze bush at the rear of the stub axle.
59. Fit the spacer onto the axle shaft.
60. Place the joint washer in position on the swivel pin housing to stub axle mating surface.
61. Fit the stub axle with the machined flat on the splines in the 12 o'clock position, ensuring that the constant velocity bearing journal engages fully into the phosphor bronze bush.

CAUTION: Damage to this bush can occur if this precaution is not observed.

62. Place the mudshield onto the stub axle and secure to the swivel pin housing with the six bolts using Loctite 270. Evenly tighten to the specified torque (see Section 06-Torque values).
63. To complete the reassembly see instructions 25 to 36 covering front hub overhaul.

NOTE: New hub seals should be used on reassembly.

64. Check that the swivel pin housing drain plug is tightly fitted and remove the filler/level plug.
65. Inject approximately 0.35 litres (0.6 pints) of recommended oil or until the oil reaches the filler level hole. Fit and tighten the plug and wipe away any surplus oil.
66. Set the steering lock-stop bolts to provide a minimum clearance of 20 mm (0.787 in) between the tyre wall and radius arm. Tighten the locknut.