Published: Jun 22, 2006

Specifications

Front axle	
Type	Spiral bevel, enclosed constant velocity joints, fully floating shafts
Ratio	3.54:1
Angularity of universal joint on full lock	32°

Sealers

Front axle and final drive	Land Rover Part No.
Hub retaining bolts	STC 50552
Swivel bearing housing to axle casing bolts	STC 50552
Stub axle bolts	STC 50552
Swivel pin housing grease	STC 3435*

*Swivel pin grease used on later vehicles with filler plug only in swivel pin housing **Lubricants**

Item	Specification / Land Rover part number
Final drive	Molytex EP90
Swivel pin	Molytex EP90 OR 80

Do not use any lubricant other than that specified **Capacities**

Item	Capacity
Front differential	1.70 litres (3.00 pints) (1.80 US quarts)
Swivel pin housing oil/grease (each)	0.35 litres (0.60 pints) (0.37 US quarts)

Torque Specifications

Description	Nm	lb-ft
Hub driving member to hub	65*	48
Brake disc to hub	73	53
Stub axle to swivel pin housing	65*	48
Brake caliper to swivel pin housing	82	61
Upper swivel pin to swivel pin housing	65*	48
Lower swivel pin to swivel pin housing	25*	18
Oil seal retainer to swivel pin housing	11	8
Swivel bearing housing to axle case	73*	53
Pinion housing to axle case	41	30
Crown wheel to differential housing	58	43
Differential bearing cap to pinion housing	90	65
Differential drive flange to drive shaft	47	34
Mudshield to bracket lower swivel pin	11	8
Bevel pinion nut	130	
Draglink to hub arm	40	30
Panhard rod to axle bracket	88	65
Radius arm to axle	190	140
Radius arm to chassis side member	190	140

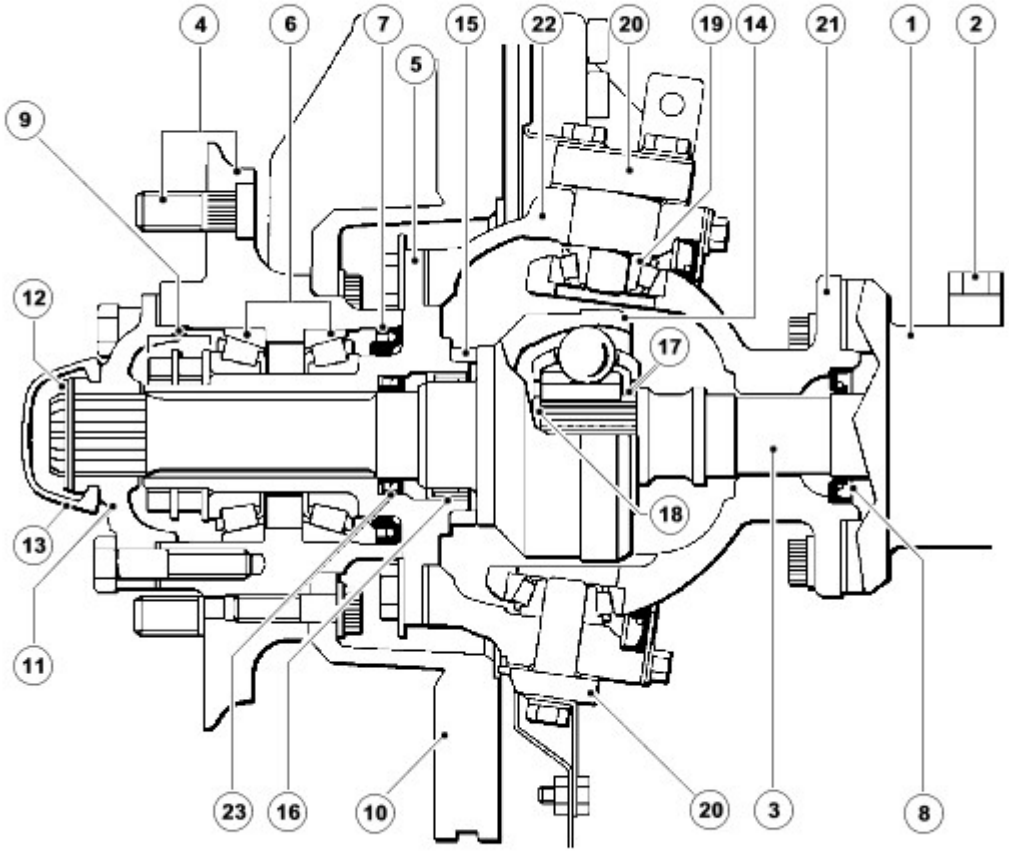
* Apply sealant, Part No. STC 50552 To bolt threads

Published: Apr 14, 2006

Front Drive Axle and Differential

GENERAL

Front axle hub and swivel housing



J6267A

Item	Part Number	Description
1	-	Axle casing
2	-	Ventilation pipe
3	-	Axle shaft
4	-	Wheel studs and hub
5		Stub axle
6		Wheel bearings
7		Inner and outer hub seals
8		Axle shaft seal
9		Hub lock plate, thrust washer and nuts
10		Brake disc
11		Drive flange
12		Shim washer and circlip
13		Dust cap

14		Constant velocity joint/shaft
15		Thrust collar for CV joint
16		Roller bearing
17		Spacer
18		Circlip
19		Top and bottom swivel taper bearing
20		Top and bottom swivel pins
21		Spherical housing, seal and retainer
22		Swivel housing
23		Constant velocity shaft seal

The front differential is mounted on the LH side of the chassis.

Operation

The welded steel front axle casing houses a separate spiral bevel type differential unit, which is off-set to the right of the vehicle centre line. The differential unit drives the front wheels via the axle shafts and constant velocity joints which are totally enclosed in the spherical and swivel housings.

The front wheels are pivoted on tape roller bearings at the top and bottom of the swivel housing. The wheel hubs on all axles are supported by two taper bearings and driven by drive flanges which are splined to the one piece, stub shaft/constant velocity joint.

Lubrication

The differential, swivel pin housing and wheel hubs are individually lubricated and separated by oil seals (7) and (8), see J6267A, to prevent oil transfer across the axle when the vehicle is traversing steep inclines. The wheel bearings are lubricated with grease and the swivel housing and differential with oil. On later vehicles, identified by having only a filler plug in the swivel housing, grease is used to lubricate the housing assembly,

Ventilation

Ventilation of the differential is through a plastic pipe (2) which terminates at a high level in the vehicle axle. The swivel housings ventilate through axle shaft oil seals (8) into the differential and the hub bearings vent via the oil seals into the swivel housing.

Published: May 2, 2006

Front Drive Axle

Complaint - Oil leaks

An external leak of lubrication from the hub seals can be caused by a faulty internal seal. For example, if the seals which separate the differential from the hubs are faulty and the vehicle is operating or parked on an embankment, oil from the differential may flood one hub resulting in a lack of lubrication in the differential.

When a seal is found to be leaking check the axle ventilation system, as a blockage can cause internal pressure to force oil past the seals.

Illustrations of oil seal locations are given in Description and Operation.
Front Drive Axle and Differential

When investigating hub seal leaks check the grease for dilution with oil. Also check the differential oil level, for signs of metal particles in the oil and the condition of internal seals.

If the vehicle is driven in deep water with defective oil seals, water may contaminate the lubricants and raise the differential oil level, giving a false impression that the housing has been over filled. **Do not assume that a high oil level in the differential is due to over filling or, that a low level is because of an external leak.**

Published: Apr 14, 2006

Axle Assembly (54.10.01)

Removal

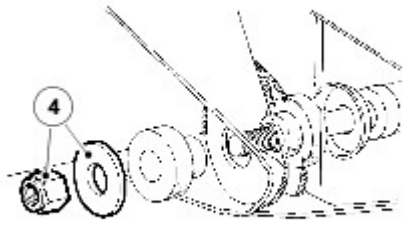
WARNING: Remove and refit of axle requires a further two persons to steady axle when lowering or repositioning axle.

1 . Support chassis front.

2 . Remove road wheels.

3 . Support axle weight with hydraulic jack.

4 . Remove radius arms to chassis frame nuts.



RR983

5 . Disconnect steering damper from track rod. Using a extractor remove track rod links from swivel pin arms.

6 . Remove four nuts and bolts securing radius arms to axle bracket.

7 . Remove radius arms.

8 . Remove bolts securing brake hose brackets . Refit bolts to prevent oil leakage.

9 . Remove bolts from brake calipers and tie to one side.

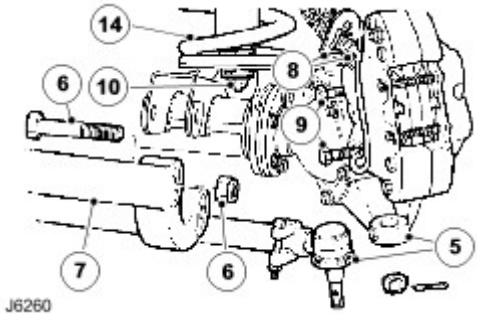
10 . Remove nuts and washers securing shock absorbers to axle.

11 . Disconnect drag link from swivel pin housing arm.

12 . Remove two nuts and bolts securing panhard rod to axle bracket. Lift rod clear of axle.

13 . Mark for reassembly drive shaft flanges. Remove four nuts and bolts, tie propeller shaft to one side.

14 . Release axle ventilation pipe banjo and lower axle assembly. Remove road springs.



15 . Disconnect stabilizer bar link.
For additional information, refer to Front Stabilizer Bar Link (60.10.02/60.10.04)

16 . Remove axle assembly.

17 . Transfer components to new axle, if appropriate.

Installation

1 . Position axle under vehicle, supporting left side of axle, and Instal anti-roll bar links.

For additional information, refer to Front Stabilizer Bar Link (60.10.02/60.10.04)

2 . Instal propeller shaft. Tighten bolts to 47 Nm (35 lbf.ft).

3 . Instal panhard rod to axle bracket. Tighten bolts to 88 Nm (65 lbf.ft).

4 . Instal drag link to swivel pin arm. Tighten fixings to 40 Nm (30 lbf.ft).

5 . Instal shock absorbers to axle.

6 . Instal brake calipers. Tighten bolts to 82 Nm (60 lbf.ft).

7 . Tighten upper swivel pin bolts to 78 Nm (58 lbf.ft).

8 . Instal radius arms to axle brackets. Tighten bolts to 197 Nm (145 lbf.ft).

9 . Instal steering damper to track rod.

10 . Instal radius arms to chassis side member. Tighten fixings to 197 Nm (145 lbf.ft).

11 . Tighten track rod end to 40 Nm (30 lbf.ft) and Instal new split pin.

12 . Remove chassis supports, Instal road wheels and tighten to correct torque:

1) Alloy wheels - 130 Nm (96 lbf.ft)
2) Steel wheels - 100 Nm (80 lbf.ft)
3) Heavy duty wheels - 170 Nm (125 lbf.ft)

Published: Apr 16, 2007

Differential Carrier

Special Service Tools

Ball joint separator
205-754 (LRT-54-027)

Removal

1 . **CAUTION: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

2 . **NOTE:**
Clean the area around the front axle assembly filler plug and the front axle assembly drain plug.

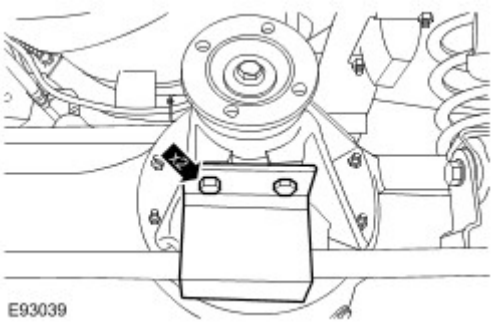
Drain the front axle assembly.

- Position a container to collect the fluid.
- Remove the filler plug.
- Remove the drain plug.

3 . Remove the front wheels and tires.

4 . Remove the tie rod protector.

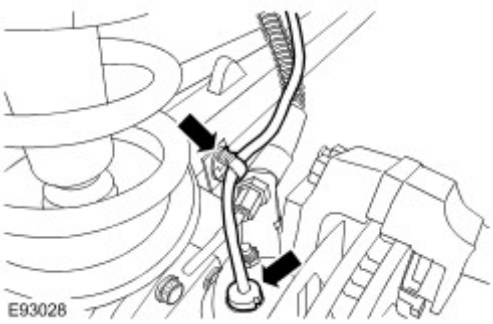
- Remove the 2 bolts.



5 . **CAUTION: Before disconnecting or removing components, make sure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.**

Release the LH front wheel speed sensor.

- Release the harness from the clip.

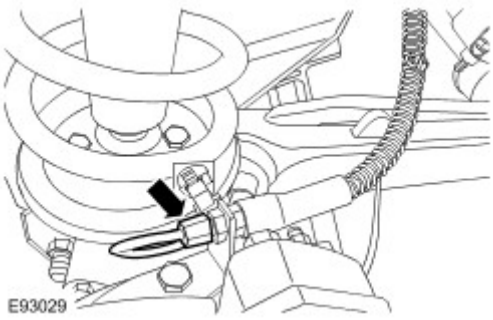


6 .

CAUTION: Before disconnecting or removing components, make sure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.

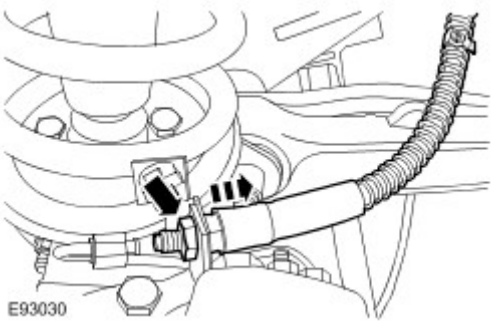
Disconnect the LH front brake pipe.

- Clamp the brake hose to prevent fluid loss.



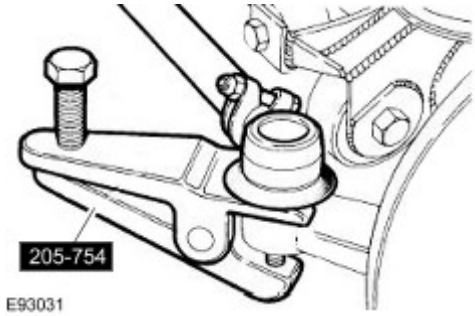
7 . Release the LH front brake hose.

- Remove the nut.



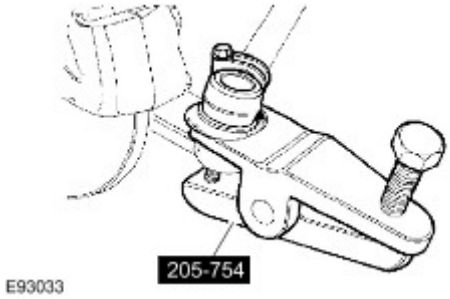
8 . Using the special tool, release the drag link end.

- Remove and discard the split pin.
- Remove the nut.
- Collect the washer.



9 . Using the special tool, release the LH tie rod end.

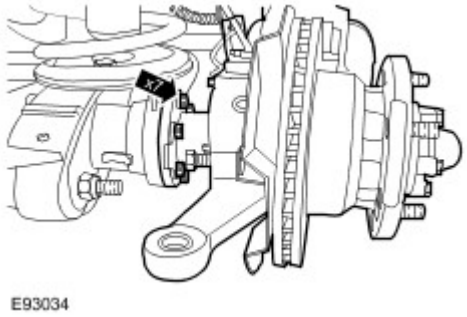
- Remove and discard the split pin.
- Remove the nut.
- Collect the washer.



10 . **CAUTION: Do not allow the swivel pin housing to hang on the halfshaft, failure to follow this instruction may result in damage to the vehicle.**

With assistance, remove the LH swivel pin housing.

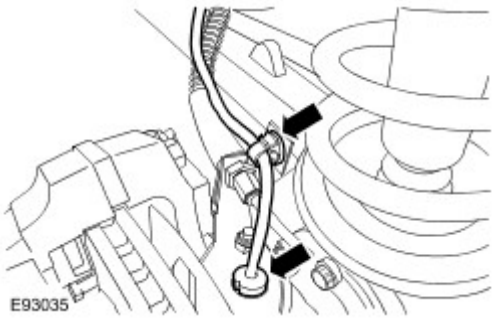
- Remove the 7 bolts.
- Remove and discard the gasket.



11 . **CAUTION: Before disconnecting or removing components, make sure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.**

Release the RH front wheel speed sensor.

- Release the harness from the clip.

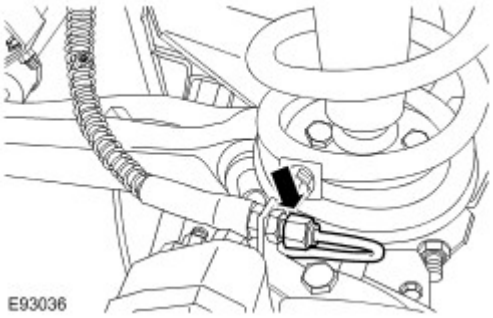


12 .

CAUTION: Before disconnecting or removing components, make sure the immediate area around joint faces and connections are clean. Plug open connections to prevent contamination.

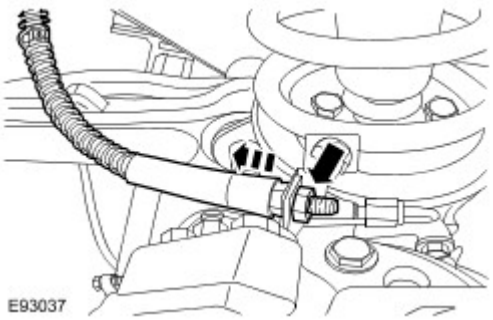
Disconnect the RH front brake pipe.

- Clamp the brake hose to prevent fluid loss.



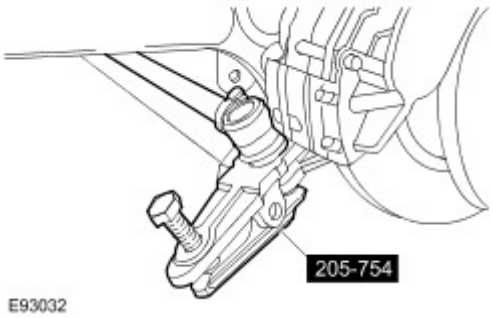
13 . Release the RH front brake hose.

- Remove the nut.



14 . Using the special tool, release the RH tie rod end.

- Remove and discard the split pin.
- Remove the nut.
- Collect the washer.

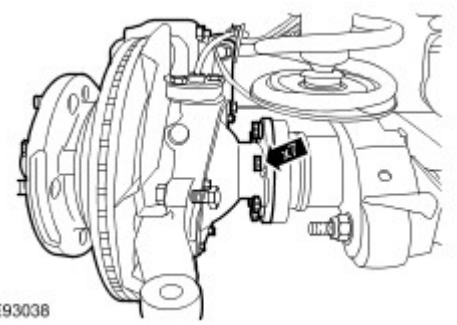


E93032

15 . **CAUTION: Do not allow the swivel pin housing to hang on the halfshaft, failure to follow this instruction may result in damage to the vehicle.**

With assistance, remove the RH swivel pin housing.

- Remove the 7 bolts.
- Remove and discard the gasket.

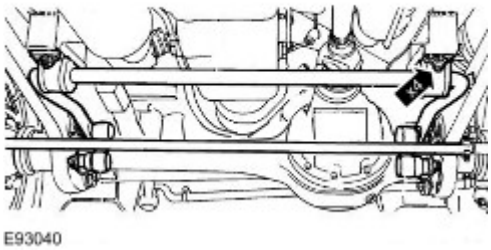

E93038

16 . **NOTE:**

Discard the nuts.

Reposition the front stabilizer bar.

- Remove the 4 nuts and bolts.

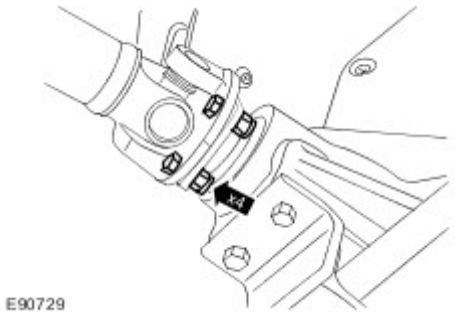

E93040

17 . **NOTE:**

Discard the nuts.

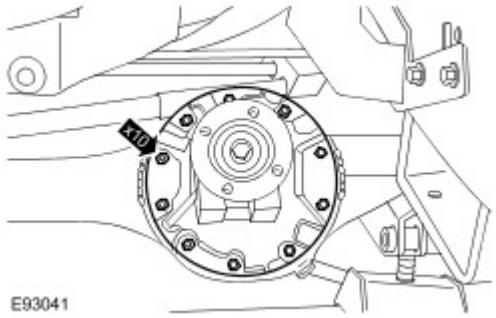
Release the front driveshaft.

- Remove the 4 nuts and bolts.
- Support the driveshaft using a suitable tie strap.



18 . Remove the front differential carrier.

- Remove and discard the 10 nuts.



Installation

1 . **NOTE:**

Clean the component mating faces.

NOTE:

Install new nuts.

Install the front differential carrier.

- Apply a bead of the specified sealant to the differential carrier mating face.
- Tighten the nuts to 41 Nm (30 lb.ft).

2 . **NOTE:**

Install new nuts.

Secure the front driveshaft.

- Tighten the nuts and bolts to 47 Nm (35 lb.ft).

3 . **NOTE:**

Install new nuts.

Secure the front stabilizer bar.

- Tighten the nuts and bolts to 68 Nm (50 lb.ft).

4 . **CAUTION: Support the weight of the halfshaft when installing the swivel pin housing, failure to follow this instruction may result in damage to the vehicle.**

NOTE:

Clean the component mating faces.

With assistance, install the RH swivel pin housing.

- Install a new gasket.
- Apply the specified sealant to the bolts.
- Tighten the bolts to 73 Nm (54 lb.ft).

5 . Secure the RH tie rod end.

- Install the washer.
- Tighten the nut to 40 Nm (30 lb.ft).
- Install a new split pin.

6 . Secure the RH front brake hose.

- Tighten the nut to 10 Nm (7 lb.ft).

7 . **NOTE:**

Remove and discard the blanking caps.

Connect the RH front brake pipe.

- Tighten the union to 15 Nm (11 lb.ft).
- Remove the hose clamp.

8 . **NOTE:**

Remove and discard the blanking caps.

Secure the RH front wheel speed sensor.

- Secure the harness in the clip.

9 . **CAUTION: Support the weight of the halfshaft when installing the swivel pin housing, failure to follow this instruction may result in damage to the vehicle.**

NOTE:

Clean the component mating faces.

With assistance, install the LH swivel pin housing.

- Install a new gasket.
- Apply the specified sealant to the bolts.
- Tighten the bolts to 73 Nm (54 lb.ft).

10 . Secure the LH tie rod end.

- Install the washer.
- Tighten the nut to 40 Nm (30 lb.ft).
- Install a new split pin.

11 . Secure the drag link end.

- Install the washer.
- Tighten the nut to 40 Nm (30 lb.ft).
- Install a new split pin.

12 . Secure the LH front brake hose.

- Tighten the nut to 10 Nm (7 lb.ft).

13 . **NOTE:**
Remove and discard the blanking caps.

Connect the LH front brake pipe.

- Tighten the union to 15 Nm (11 lb.ft).
- Remove the hose clamp.

14 . **NOTE:**
Remove and discard the blanking caps.

Secure the LH front wheel speed sensor.

- Secure the harness in the clip.

15 . Install the tie rod protector.

- Tighten the bolts 30 Nm (22 lb.ft).

16 . Fill the front axle assembly with the correct amount of the specified oil.

- Install and tighten the drain plug to 60 Nm (44 lb.ft).
- Install and tighten the filler plug to 60 Nm (44 lb.ft).
- Remove the container.

17 . Bleed the front brakes.
For additional information, refer to Brake System Bleeding (70.25.02)

18 . Install the front wheels and tires.

- Tighten the wheel nuts to 140 Nm (103 lb.ft).

Published: Feb 14, 2006

Drive Pinion Seal - 90 (54.10.20)

Removal

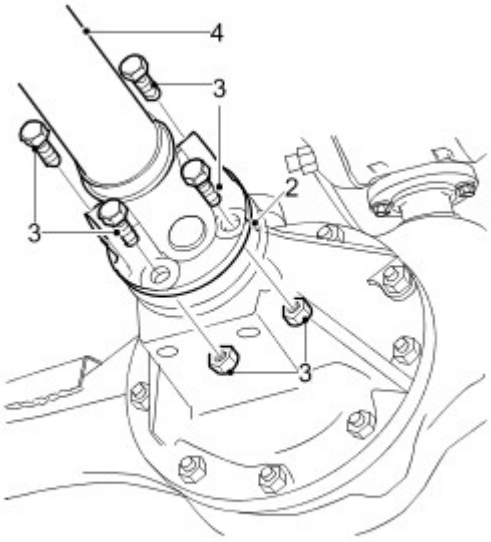
1 . **WARNING: Do not work under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise front of vehicle.

2 . Reference mark the drive shaft flanges for reassembly.

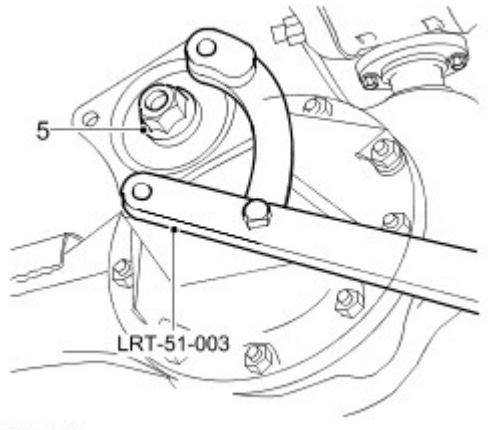
3 . Remove 4 nuts and bolts securing drive shaft to differential housing.

4 . Release drive shaft and tie aside.



51M0048

5 . Using LRT-51-003 to restrain the pinion flange, remove bolt securing pinion flange.



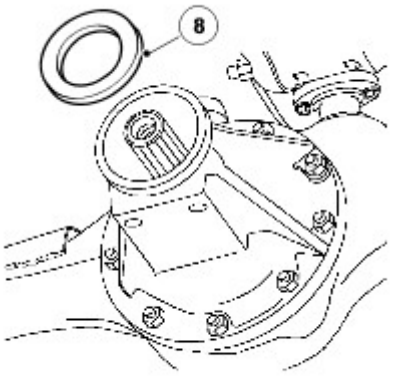
51M0049

6 . Remove pinion flange.

7 . Position container to catch oil spillage.

8 . **CAUTION: Take care to avoid damage to oil seal recess.**

Using a suitable lever, remove and discard pinion oil seal.



51M0050A

Installation

1 . Clean pinion oil seal recess and pinion flange.

2 . Lubricate oil seal lip with clean oil.

3 . Using LRT-51-010 fit pinion oil seal.

4 . Fit pinion flange.

5 . Restrain flange using LRT-51-003 and fit bolt. Tighten bolt to 100 Nm (74 lbf.ft).

6 . Position drive shaft to differential housing and align reference marks.

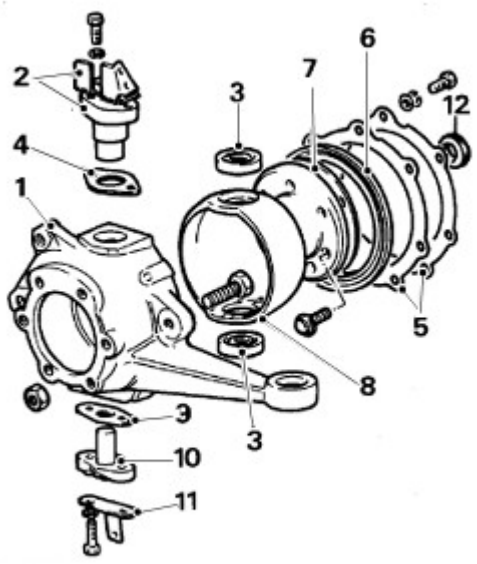
7 . Fit flange bolts and tighten to 48 Nm (35 lbf.ft).

8 . Remove stands and lower vehicle.

9 . Top-up differential oil level.

Published: May 23, 2008

Front Stub Axle, Constant Velocity (CV) Joint and Swivel Pin Housing



RR980M

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

Disassembly

1 . Remove front hub assembly.
For additional information, refer to
For additional information, refer to Front Wheel Bearing and Wheel Hub (60.25.14)

2 . **NOTE:**

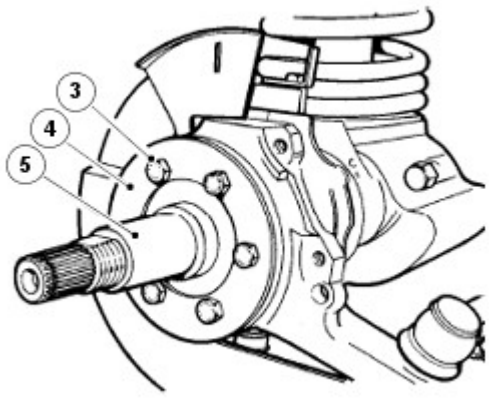
On later vehicles the swivel pin housing is filled with grease for life, the level and drain plugs being deleted.

Drain swivel pin housing and refit plug.

3 . Remove 6 bolts retaining stub axle to swivel housing.

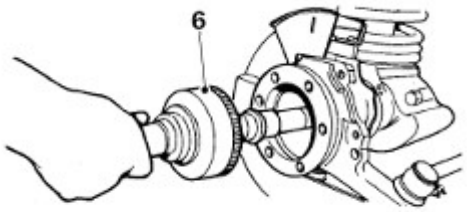
4 . Remove mud shield.

5 . Remove stub axle and joint washer.



J5372M

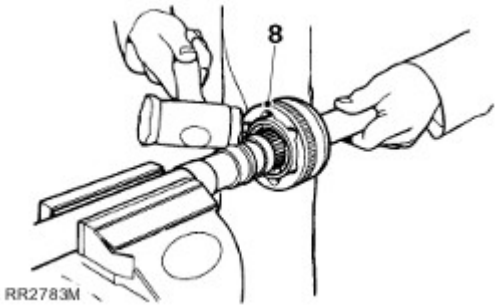
6 . Withdraw axle shaft and constant velocity joint from axle casing.



RR2782M

7 . Hold axle shaft firmly in a soft jawed vice.

8 . Using a soft mallet drive constant velocity joint from shaft.

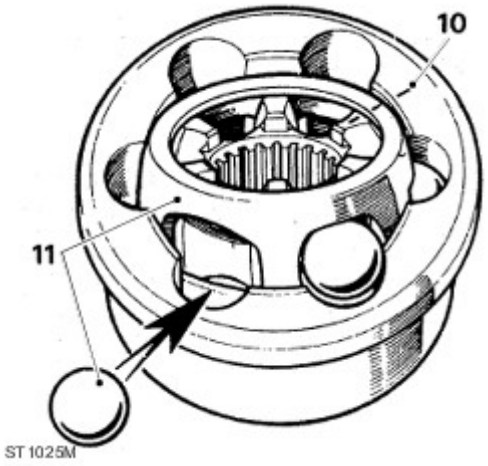


RR2783M

9 . Remove circlip and collar from axle shaft.

10 . Mark positions of constant velocity joint, inner and outer race and cage for reassembly.

11 . Swivel cage and inner race to remove balls.



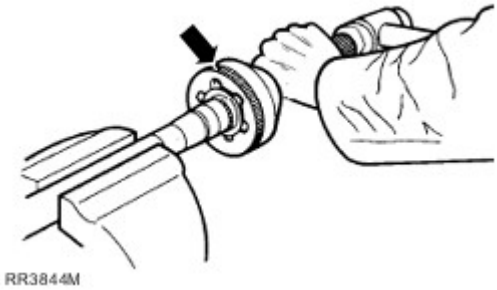
12 . Examine all components, in particular, inner and outer track, cage balls and bearing surfaces for damage and excessive wear.

13 . Maximum acceptable end-float on assembled joint 0,64mm. Renew if worn or damaged. Lubricate with a recommended oil during assembly.

Assembly

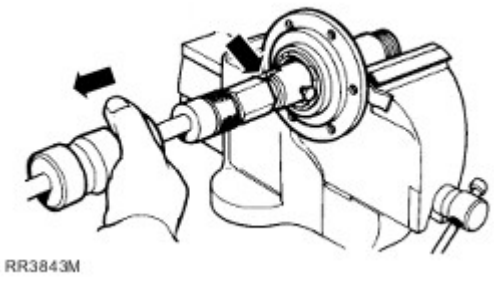
1 . Install collar and a new circlip.

2 . Engage constant velocity joint on axle shaft splines and using a soft mallet, drive joint in fully.



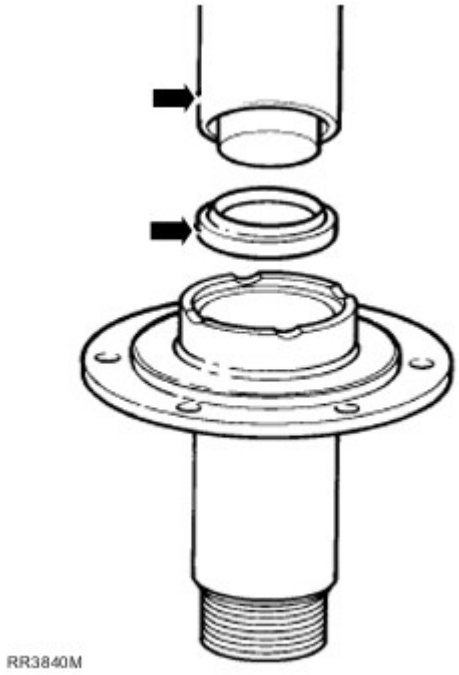
3 . Drill and chisel off thrust ring taking care to avoid damaging stub axle.

4 . Remove bearing and oil seal using special tool LRT-37-004 and slide hammer LRT-99-004. Ensure lip of tool locates behind bearing to drive it out.

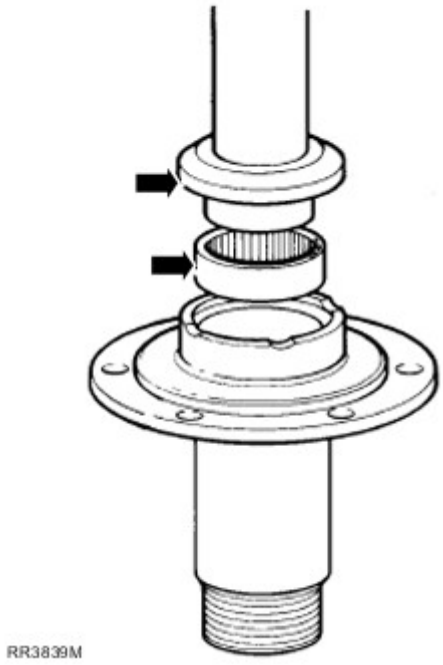


5 . Repeat instruction for removal of oil seal.

6 . Lubricate seal and lip with EP90 oil and with cavity side leading press in a new oil seal using special tool LRT-54-004.



7 . Using special tool LRT-54-005, fit bearing with its part number visible when fitted, and flush with end face of stub axle.



8 . Press fit a new thrust ring onto stub axle.

9 . **NOTE:**

Removal of oil seal and retaining plate is achieved when swivel bearing housing is removed.

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

10 . Remove 2 bolts, retaining lower swivel pin to housing.

11 . Remove brake disc shield bracket.

12 . Tap lug to remove lower swivel pin and joint washer.

13 . Remove two bolts retaining brake hose bracket and top swivel pin.

14 . Remove bracket, top swivel pin and shims.

15 . Remove swivel pin housing while retrieving lower and upper bearings.

16 . **NOTE:**
Use upper bearing opening to gain access to lower bearing track.

Remove lower bearing track from swivel bearing housing.

17 . Remove 7 bolts retaining swivel bearing housing to axle case.

18 . Remove inner oil seal from back of housing.

19 . **NOTE:**
Use lower bearing opening to gain access to upper bearing track.

Remove top bearing track from swivel bearing housing.

20 . If worn, pitted or damaged, renew housing.

21 .  **CAUTION: Ensure bearing tracks are fitted square or damage could occur.**

Install upper and lower bearing tracks into swivel bearing housing.

22 . With seal lips trailing, install swivel housing inner oil seal into rear of housing. Grease seal lips.

23 . Coat swivel bearing housing to axle casing bolts with sealant, Part No. STC 50552.

24 . Coat both sides of joint washer with a sealing compound. Position swivel bearing housing to axle mating face.

25 . Place retaining plate, joint washer and oil seal over axle flange ready for assembly.

26 . Install swivel bearing housing to axle flange with 7 bolts. Tighten to 73 Nm (54 lbf.ft).

27 . Grease and install upper and lower swivel pin taper roller bearings.

28 . Position swivel pin housing over swivel bearing housing.

29 . Coat joint washer both sides with sealing compound and position on lower swivel pin.

30 . Loosely install brake shield bracket plus lower swivel pin with lug outboard to swivel pin housing.

31 . Loosely install top swivel pin plus existing shims and brake hose bracket to swivel pin housing.

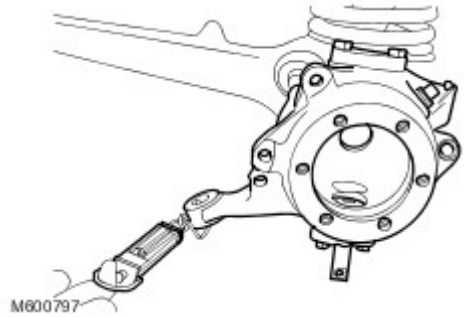
32 . Apply sealant, Part No. STC 50552 to threads of lower swivel pin bolts; tighten bolts to 25 Nm (18 lbf.ft), bend over lock tabs.

33 . Apply sealant Part No. STC 50552 to threads of top swivel pin bolts, install bolts and tighten to 65 Nm (48 lbf.ft).

34 . **NOTE:**

Swivel housing oil seal and axle should not be fitted.

Attach a spring balance to track rod ball joint bore and pull balance to determine effort required to turn swivel pin housing. Resistance, once initial inertia has been overcome, should be 1.16 to 1.46 kg. Adjust by removing or adding shims to top swivel pin.



35 . When setting is correct remove top swivel bolts, apply sealant, Part No. STC 50552 to threads of bolts. Refit bolts and tighten to 65 Nm (48 lbf.ft), and bend over lock tabs.

36 . Apply recommended grease between lips of swivel oil seal.

37 . Install oil seal, joint washer and retaining plate with 7 bolts and spring washers. Tighten to 10 Nm (7 lbf.ft).

38 . Install tie rod and drag link and secure with new cotter pins. Tighten fixing to 40 Nm (30 lbf.ft).

39 . Install brake disc shield.

40 . Loosely install lock stop bolt and nut.

41 . Apply a recommended grease between lips of swivel housing oil seal.

42 . Secure oil seal with retaining plate and securing bolts. Tighten to 10 Nm (7 lbf.ft).

43 . Install track-rod and drag link and secure with new cotter pins.

44 . Loosely install lock stop bolt for later adjustment.

45 . Install brake disc shield.

46 . **CAUTION: Take care not to damage axle shaft oil seals.**

Insert axle shaft, and when differential splines are engaged, push assembly in fully.

47 . Place a new joint washer in position on swivel pin housing to stub axle mating face. Coat threads of stub axle bolts with sealant, Part No. STC 50552.

48 . **CAUTION: Ensure that constant velocity joint bearing journal is butted against thrust ring on stub axle before stub axle is secured.**

Install stub axle with flat at 12 O'clock position.

49 . Place mud shield in position and secure stub axle to swivel pin housing with 6 bolts and tighten evenly to 65 Nm (48 lbf.ft).

50 . Install brake jump hoses to brake jump hose bracket.

51 . Install complete front hub assembly.
For additional information, refer to
For additional information, refer to Front Wheel Bearing and Wheel Hub (60.25.14)

52 . Check swivel pin housing oil drain plug is fitted.

53 . Remove swivel pin level and filler plugs.

54 . **NOTE:**

On later vehicles fill swivel pin housing with 0.33 Litres of Molytex EP 00 grease.

Check and top up with new oil until oil runs out from level hole. Allow excess oil to drain and wipe clean.

For additional information, refer to Specifications

55 . Install swivel pin level and filler plugs.

56 . Set steering lock stop bolts.
For additional information, refer to Steering Lock Stop Adjustment