

Workshop manual RANGE ROVER VOLUME 1

**This manual covers vehicles from
introduction 1995**

| | |
|----|-----------------------------------|
| 01 | INTRODUCTION |
| 04 | GENERAL SPECIFICATION DATA |
| 05 | ENGINE TUNING DATA |
| 06 | TORQUE VALUES |
| 07 | GENERAL FITTING REMINDERS |
| 09 | LUBRICANTS, FLUIDS AND CAPACITIES |
| 10 | MAINTENANCE |
| 12 | ENGINE BMW DIESEL |
| 12 | ENGINE LANDROVER V8 |
| 17 | EMISSION CONTROL |
| 19 | FUEL SYSTEM BMW DIESEL |
| 19 | FUEL SYSTEM LANDROVER V8 |
| 19 | CRUISE CONTROL |
| 26 | COOLING SYSTEM BMW DIESEL |
| 26 | COOLING SYSTEM LANDROVER V8 |
| 30 | MANIFOLD AND EXHAUST SYSTEM |
| 33 | CLUTCH |
| 37 | MANUAL GEARBOX |



01
04
05
07
09



10



12



17
19



30



33











37

Workshop manual RANGE ROVER VOLUME 2

**This manual covers vehicles from
introduction 1995**

| | |
|----|--------------------------------|
| 41 | TRANSFER BOX |
| 44 | AUTOMATIC GEARBOX |
| 47 | PROPELLER SHAFTS |
| 51 | REAR AXLE AND FINAL DRIVE |
| 54 | FRONT AXLE AND FINAL DRIVE |
| 57 | STEERING |
| 60 | FRONT SUSPENSION |
| 64 | REAR SUSPENSION |
| 70 | BRAKES |
| 75 | SUPPLEMENTARY RESTRAINT SYSTEM |
| 76 | CHASSIS AND BODY |
| 77 | PANEL REPAIRS |
| 78 | SEATS |
| 80 | HEATING AND VENTILATION |
| 82 | AIR CONDITIONING |
| 84 | WIPERS AND WASHERS |
| 86 | ELECTRICAL |
| 87 | NAVIGATION SYSTEM |
| 88 | INSTRUMENTS |

| | |
|---|----------------------|
|  | 41 44 47 |
|  | 51 54 |
|  | 57 |
|  | 60 64 |
|  | 70 |
|  | 75 76 77 78 |
|  | 80 82 |
|  | 84 86 87 88 |

This manual supersedes:
Workshop manual VDR100370
Body Repair Manual LRL0085

Published by Rover Technical Communication

© 1999 Rover Group Limited
Publication part no. LRL0326ENG



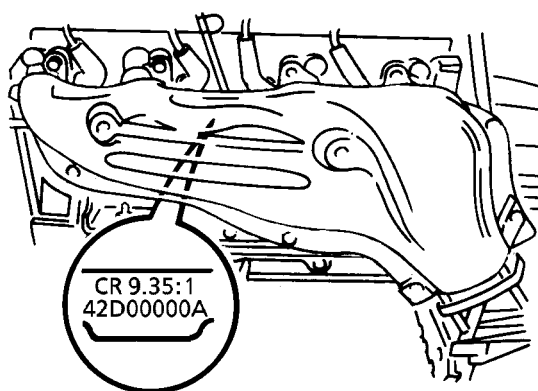
LOCATION OF IDENTIFICATION NUMBERS

Engine serial number - V8 engine

Stamped on a cast pad on the cylinder block, between numbers 3 and 5 cylinders.



NOTE: The engine compression ratio is stamped above the serial number.



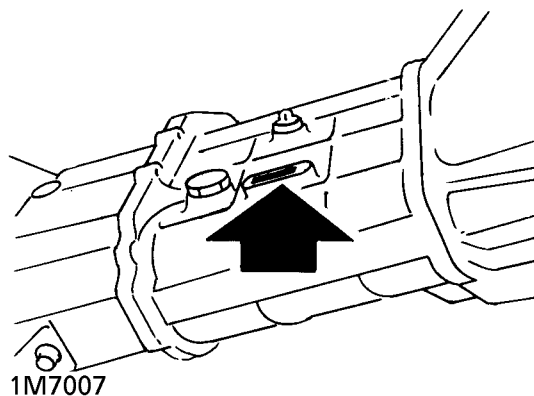
1M7006

Engine serial number - BMW Diesel engine

Stamped on the LH side of the cylinder block above the sump.

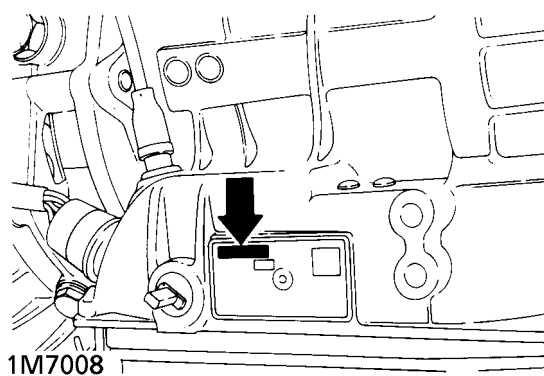
Main gearbox R380 - 5 speed

Stamped on a cast pad on the bottom right hand side of the gearbox.



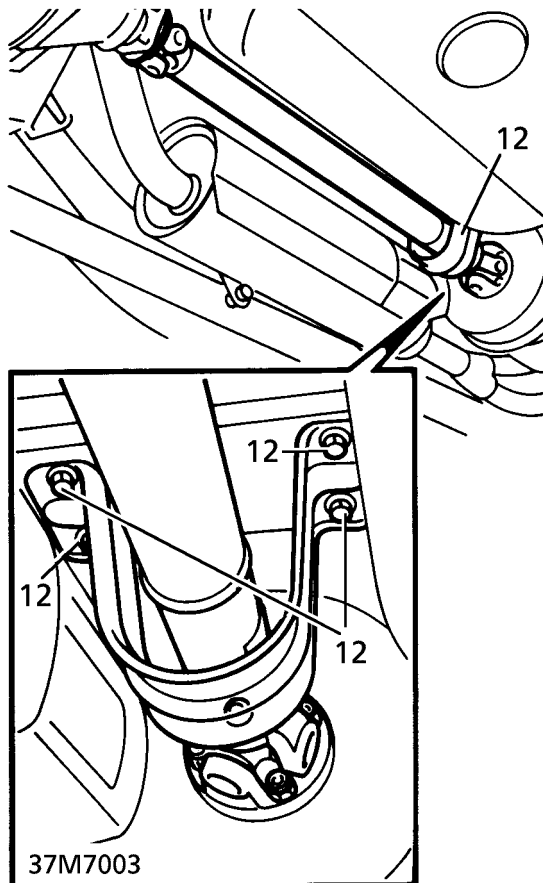
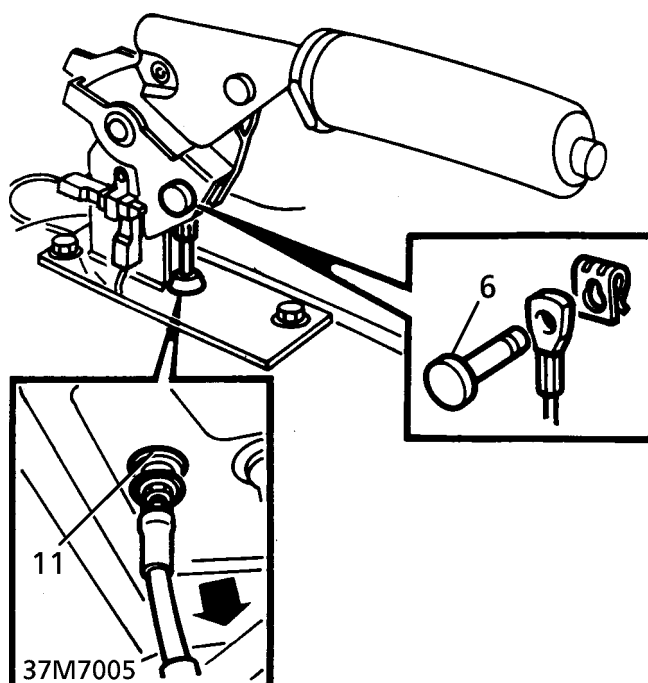
Automatic gearbox ZF4HP22/ZF4HP24

Stamped on a plate riveted to the bottom left hand side of the gearbox casing.



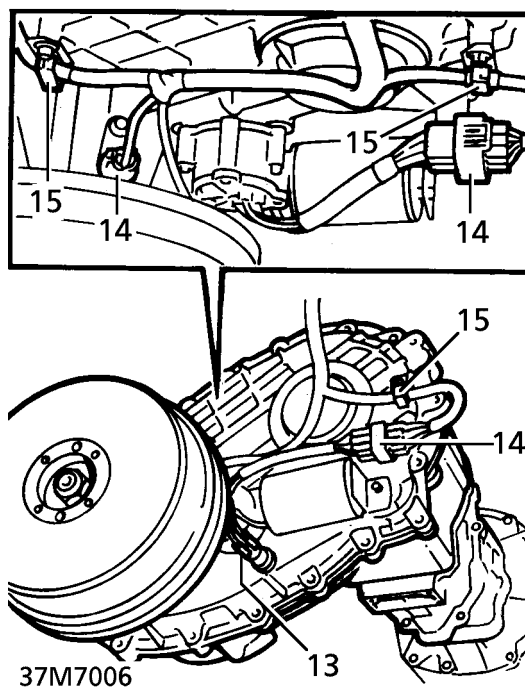


6. Remove handbrake cable clevis pin.



7. Raise lift.
 8. Support gearbox using transmission jack.
 9. Remove exhaust front pipe. **See MANIFOLD AND EXHAUST SYSTEM, Repair.**
 10. **Diesel Vehicles.** Remove chassis cross member. **See CHASSIS AND BODY, Repair.**
 11. Release hand brake cable from grommet in tunnel. Refit grommet to tunnel.
 12. Remove 4 bolts securing propeller shaft guard. Remove guard.

13. Disconnect 2 Lucars from transfer box oil temperature sensor.

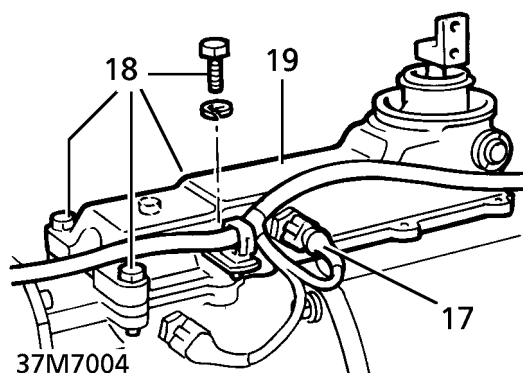


14. Disconnect multiplugs from High/Low motor and output shaft speed sensor.
15. Release harness from 2 clips on transfer gearbox brackets.
16. Lower gearbox for access.



CAUTION: Ensure engine does not foul bulkhead.

17. Disconnect neutral switch multiplug.



18. Remove 4 bolts securing remote housing to gearbox. Position harness bracket aside.
19. Remove selector remote housing from 2 location dowels.

Refit

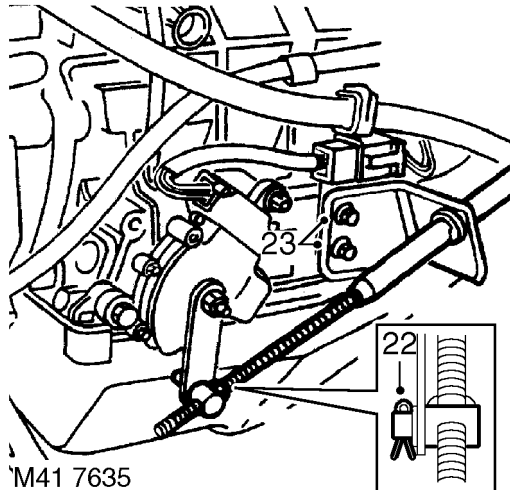
20. Ensure all mating faces are clean.
21. Apply a uniform bead of Hylogrip 2000 to sealing face of remote housing as shown.
22. Position remote housing. Engage remote spigot into selector yoke.
23. Engage housing to location dowels. Align harness bracket.
24. Secure remote housing with bolts. Tighten to **25 Nm (18 lbf.ft)**
25. Connect neutral switch multiplug.
26. Connect multiplugs to High/Low motor and output shaft speed sensor.
27. Connect Lucars to transfer box fluid temperature sensor.
28. Secure harness in clips.
29. Position propeller shaft guard. Secure with bolts.
30. Route hand brake cable through grommet in transmission tunnel.
31. Fit exhaust front pipe. **See MANIFOLD AND EXHAUST SYSTEM, Repair.**
32. **Diesel Vehicles.** Fit chassis cross member. **See CHASSIS AND BODY, Repair.**
33. Remove jack. Lower lift.
34. Connect handbrake cable to lever. Secure with clevis pin and clip.
35. Fit seal around gearbox remote housing to transmission tunnel aperture.
36. Position gear lever. Secure with bolts. Tighten to **25 Nm (18 lbf.ft)**
37. Fit gaiter and ring. Secure with nuts.
38. Fit centre console. **See CHASSIS AND BODY, Repair.**
39. Reconnect battery negative lead.



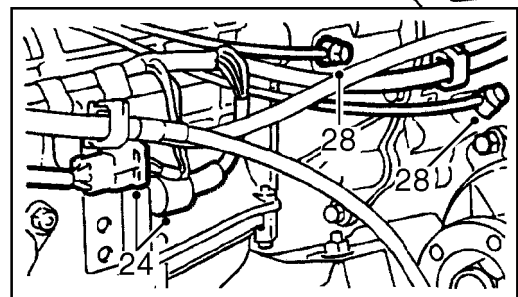
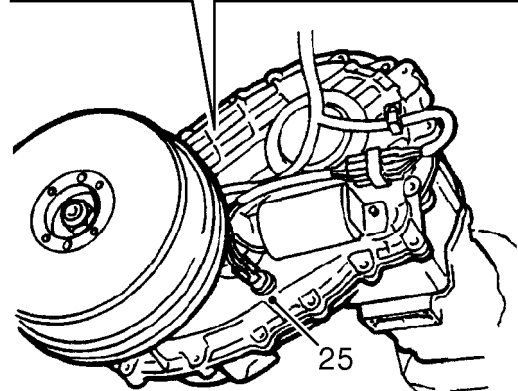
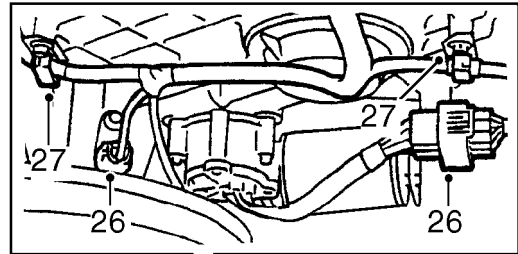
20. Remove 4 nuts from each propeller shaft flange.
21. Release propeller shafts and tie aside.
22. Lower gearbox for access.



CAUTION: Position jack and wooden block under sump to support engine.



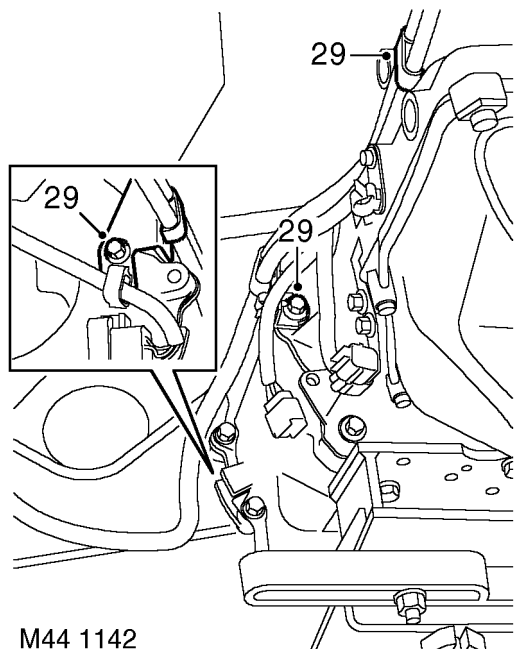
23. Remove split pin securing gear selector cable trunnion to gearbox lever and release trunnion.
24. Remove 2 bolts securing gear selector cable abutment bracket and harness support bracket to gearbox, and position selector cable and brackets aside.



25. Disconnect multiplugs from gear selection position switch and gearbox speed sensor.
26. Disconnect 2 Lucars from transfer box fluid temperature sensor.
27. Disconnect multiplugs from High/Low motor and output shaft speed sensor.
28. Release harness from 3 clips.
29. Remove 2 banjo bolts securing breather pipes to gearbox and transfer box, remove and discard sealing washers.

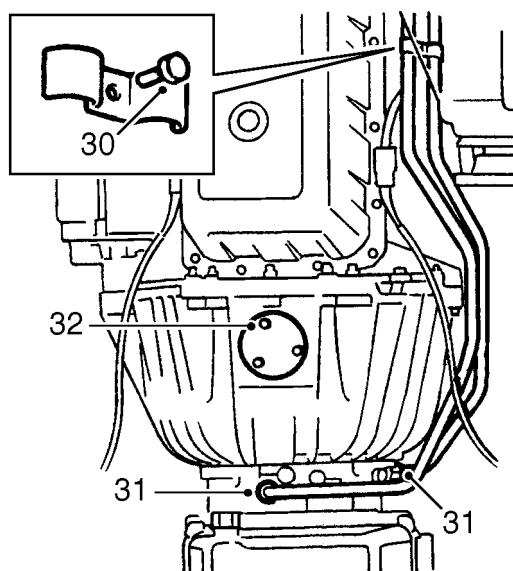


CAUTION: Plug the connections.



M44 1142

30. Remove 2 bolts and release 1 clip securing fuel and purge pipe retaining brackets to gearbox and transfer box.



M44 1143

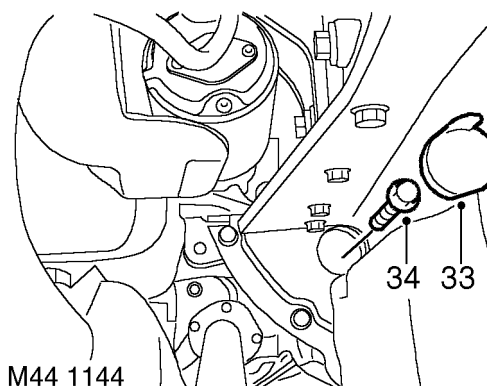
31. Remove bolt from clamp securing gearbox fluid cooler pipes to engine.
32. Loosen unions and release gearbox oil cooler pipes, discard 'O' rings.



CAUTION: Plug the connections.

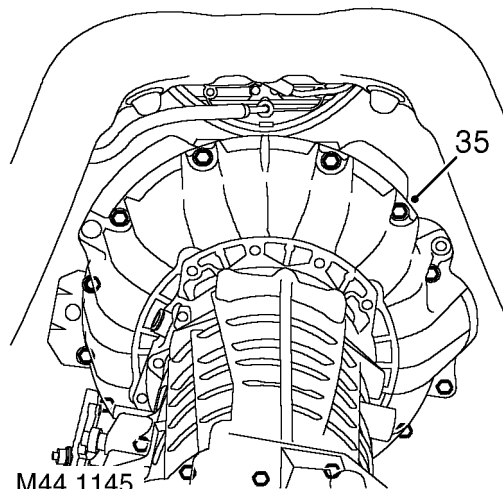
33. Remove 3 bolts securing converter housing lower access cover, remove cover and discard

gasket.



M44 1144

34. Remove access plug and mark drive plate and torque converter to aid re-assembly.
35. Rotate engine to gain access and remove 4 bolts securing drive plate to converter.



M44 1145

36. Remove 14 bolts securing gearbox to engine and collect crash bracket.
37. With assistance remove transmission assembly.



CAUTION: Ensure converter does not become detached from gearbox.

38. Fit retaining strap to converter and secure with 2 nuts and bolts.

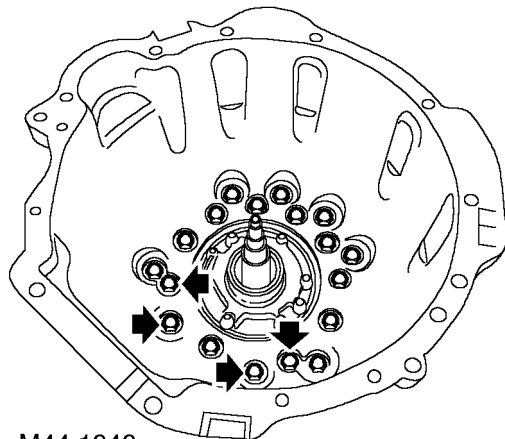


HOUSING - TORQUE CONVERTER

Service repair no - 44.17.01

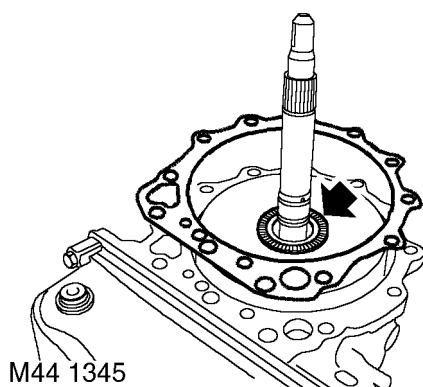
Remove

1. Remove torque converter oil seal. *See this section.*



M44 1343

2. Remove 18 bolts and plain washers securing torque converter and intermediate plate to gearbox casing. Note the position of the 4 bolts that have sealant applied to the bolt threads and 6 bolts, (outer ring), which are shorter.
3. Hold input shaft in position and carefully remove the converter housing and intermediate plate from gearbox casing. Note

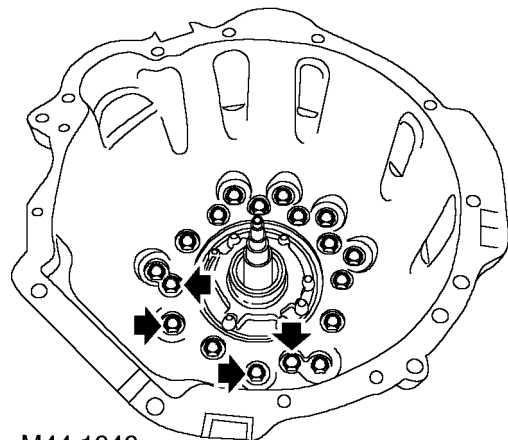


M44 1345

4. Note the position of the Torrington race on the forward clutch hub and the thrust washer which will stay attached to the intermediate plate by fluid adhesion.
5. Remove and discard intermediate plate gasket.
6. Remove thrust washer from intermediate plate.
7. Separate converter housing from intermediate plate.

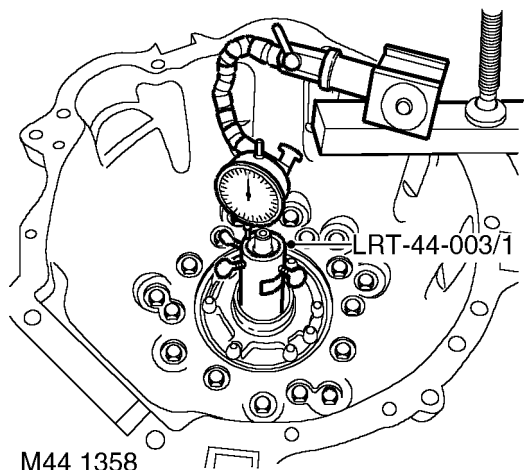
Refit

8. Clean converter housing, intermediate plate and gearbox casing mating faces.
9. Clean bolts and plain washers and sealant from 4 bolt threads.
10. Apply Petroleum Jelly to new gasket and position on gearbox casing.
11. Apply Petroleum Jelly to thrust washer and Torrington race.
12. Correctly position Torrington race and thrust washer to forward clutch hub.
13. Position intermediate plate and converter housing to gearbox casing.



M44 1343

14. Apply High Formula Hylomar sealant to 4 longer bolt threads and fit bolts in the positions shown.
15. Fit remaining bolts and tighten progressively in a diagonal sequence to **50 Nm (37 lbf. ft)**.



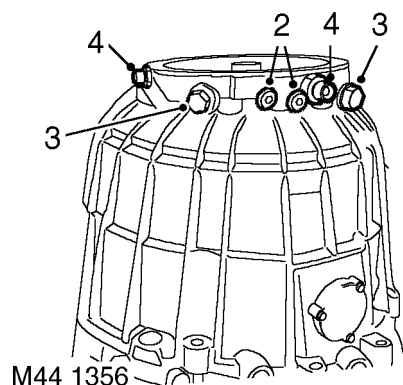
M44 1358

INTERMEDIATE PLATE

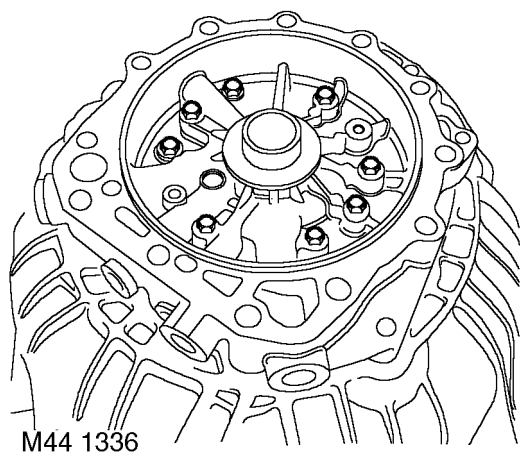
Service repair no - 44.17.20

Remove

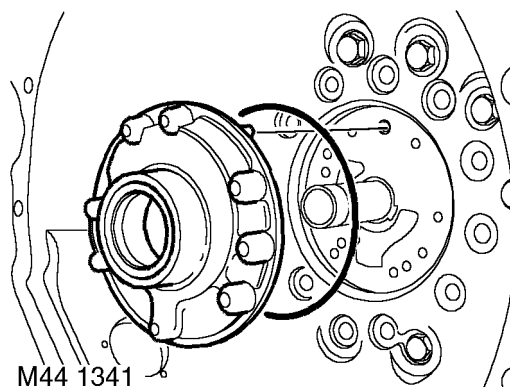
1. Remove intermediate plate gasket. **See this section.**
2. Remove selective thrust washer from intermediate plate.



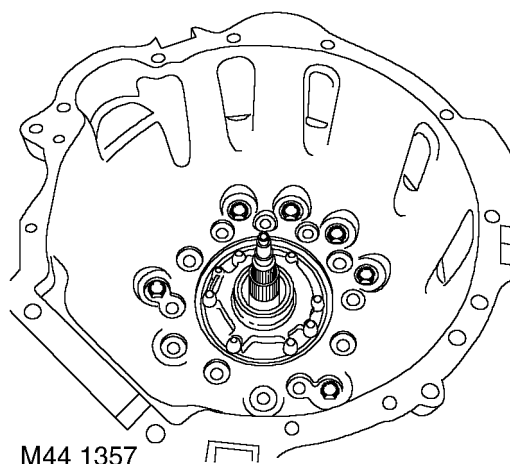
3. Remove 2 M14 Allen plugs from intermediate plate, remove and discard sealing washers.
4. Remove 2 M20 plugs from intermediate plate, remove and discard sealing washers.
5. Remove 2 oil cooler pipe adaptors from intermediate plate.



6. Remove 8 bolts securing fluid pump to intermediate plate and carefully remove pump from intermediate plate.



7. Note position and remove pump locating dowel.
8. Remove and discard 'O' ring from pump housing.

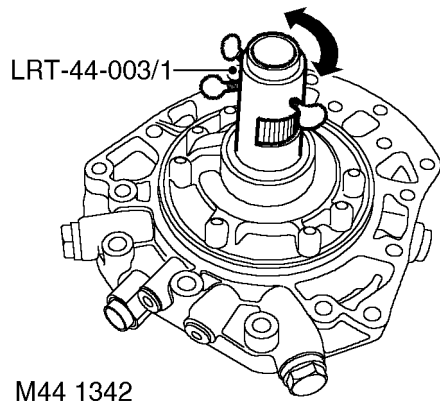


9. Remove 6 bolts securing converter housing to intermediate plate, and release intermediate plate from converter housing.



Refit

10. Clean intermediate plate and mating faces with a lint free cloth.
11. Position intermediate plate to converter housing, fit bolts and tighten evenly to **50 Nm (37 lbf.ft)**
12. Fit new sealing washers to M14 allen plugs, fit plugs and tighten to **40 Nm (30lbf. ft)**.
13. Fit new sealing washers to M20 plugs, fit plugs and tighten to **50 Nm (37lbf. ft)**.
14. Fit oil cooler adaptors and tighten to **42 Nm (30lbf.ft)**.
15. Clean pump housing and mating face on intermediate plate with lint free cloth.
16. Lubricate new 'O' ring with transmission fluid and fit to pump housing.
17. Position pump locating dowel into intermediate plate.
18. Align pump to dowel and position in intermediate plate.
19. Fit bolts and tighten in a diagonal sequence to **10 Nm (7lbf.ft)**.



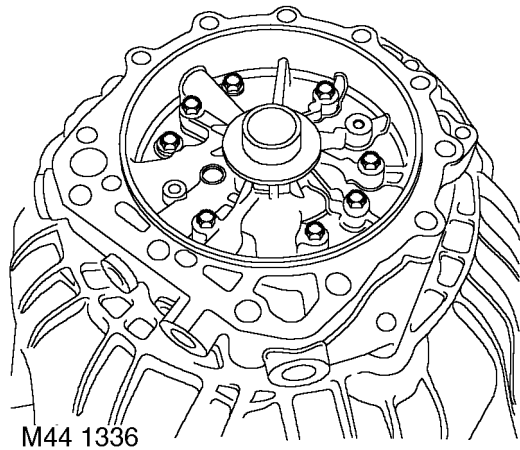
20. Position LRT-44-003/1 into pump and check that the pump rotors turn freely.
21. Fit intermediate plate gasket. **See this section.**

PUMP - FLUID

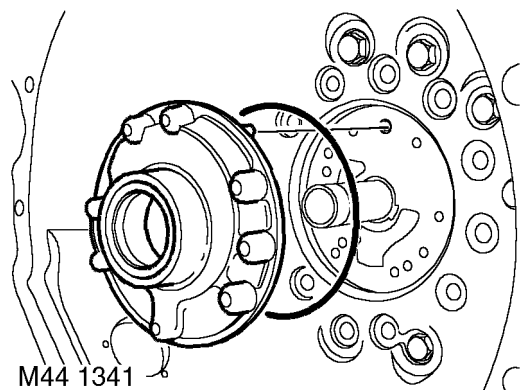
Service repair no - 44.32.01

Remove

1. Remove intermediate plate gasket. **See this section.**



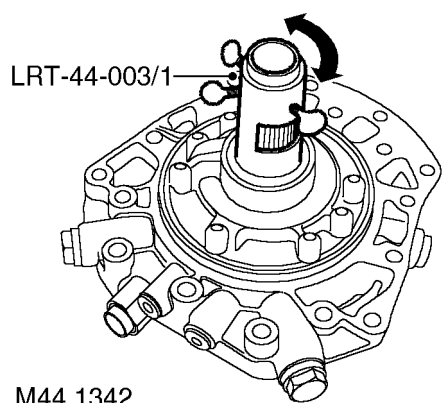
2. Remove 8 bolts securing fluid pump to intermediate plate and carefully remove pump from intermediate plate.



3. Note position and remove pump locating dowel.
4. Remove and discard 'O' ring from pump housing.

Refit

5. Clean pump housing and mating face on intermediate plate with lint free cloth.
6. Lubricate new 'O' ring with transmission fluid and fit to pump housing.
7. Position pump locating dowel into intermediate plate.
8. Align fluid pump to dowel and position in intermediate plate.
9. Fit bolts and tighten in a diagonal sequence to **10 Nm (7lbf.ft)**.



10. Position LRT-44-003/1 into pump and check that the pump rotors turn freely.
11. Fit intermediate plate gasket. **See this section.**

OUTPUT SHAFT SEAL

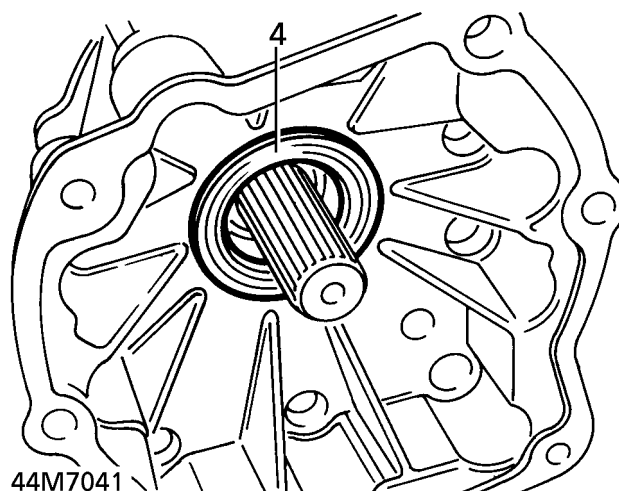
Service repair no - 44.20.18

Remove

1. Disconnect battery negative lead.
2. Remove transfer box. **See TRANSFER BOX, Repair.**
3. Drain fluid from gearbox. **See SECTION 10, Maintenance.**
4. Remove seal from gearbox casing using a suitable lever.



CAUTION: Ensure location does not become damaged as seal is levered from casing.



Refit

5. Clean seal location and running surface on transfer gearbox input shaft.
6. Lubricate seal lip with clean transmission fluid.
7. Fit seal to gearbox casing using LRT-44-001
8. Fit transfer box. **See TRANSFER BOX, Repair.**
9. Reconnect battery negative lead.
10. Replenish transmission fluids. **See LUBRICANTS, FLUIDS AND CAPACITIES, Information.**

FRONT AXLE

Service repair no - 54.15.01

Remove



WARNING: When lowering or repositioning axle, an additional two persons are required.



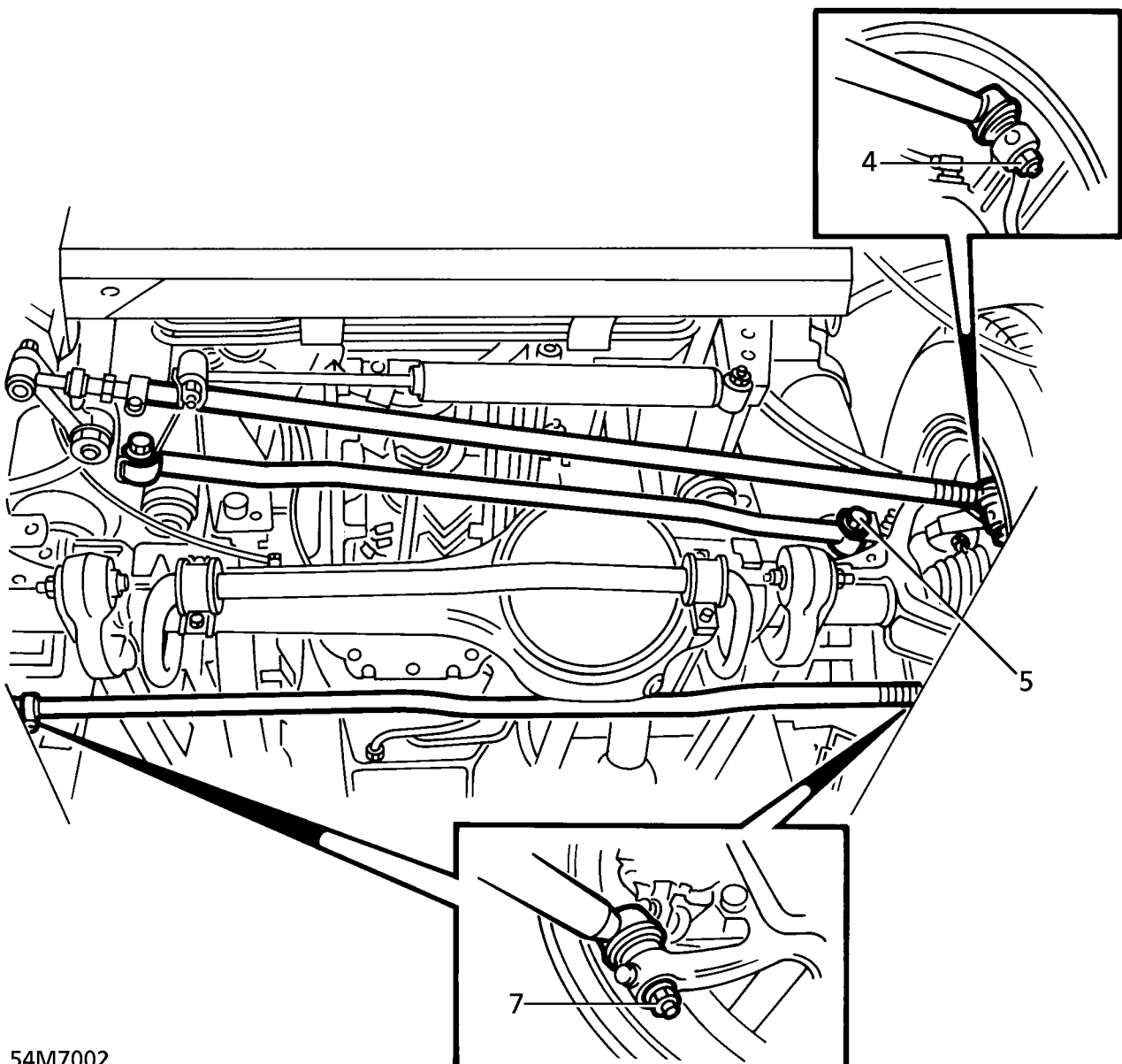
WARNING: Before commencing work, depressurise air suspension. *See FRONT SUSPENSION, Repair.*

1. Remove brake pads. *See BRAKES, Repair.*
2. Remove 2 bolts securing each brake caliper assembly to steering knuckles. Release caliper. Tie aside.



CAUTION: If a sensor is removed for any reason, a **NEW** sensor bush must be fitted.

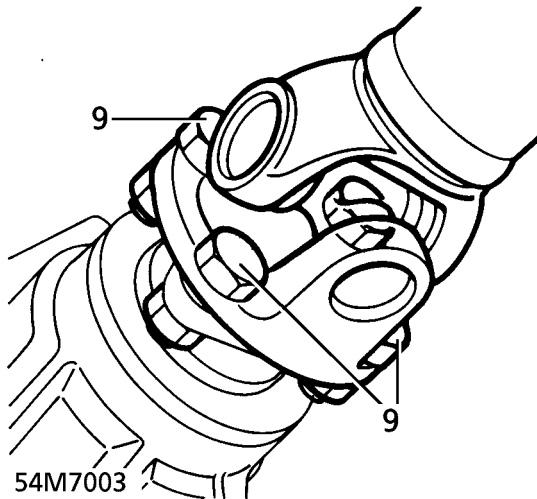
3. Remove ABS sensors and brake hoses from steering knuckles.
4. Remove nut securing drag link to steering knuckle. Release taper joint.



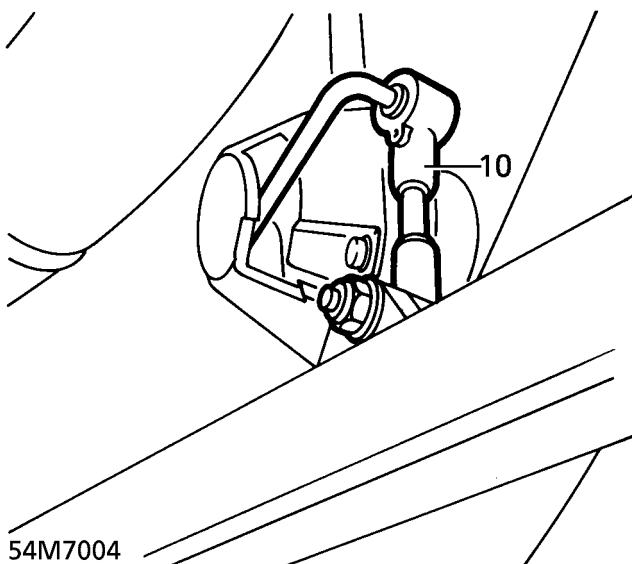
54M7002



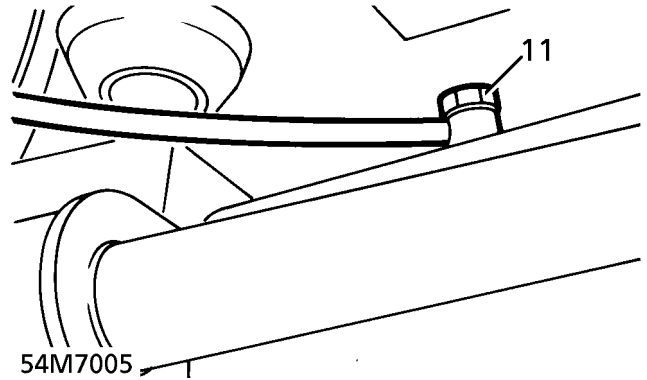
5. Remove bolt securing Panhard rod to axle. Release panhard rod. Tie aside.
6. Remove anti roll bar. **See FRONT SUSPENSION, Repair.**
7. Remove 2 nuts securing track rod ball joints to steering knuckles. Release taper joints. Remove track rod.
8. Mark differential and propeller shaft flanges to aid reassembly.
9. Remove 4 nuts and bolts securing propeller shaft to differential; discard nuts. Release shaft and tie aside.



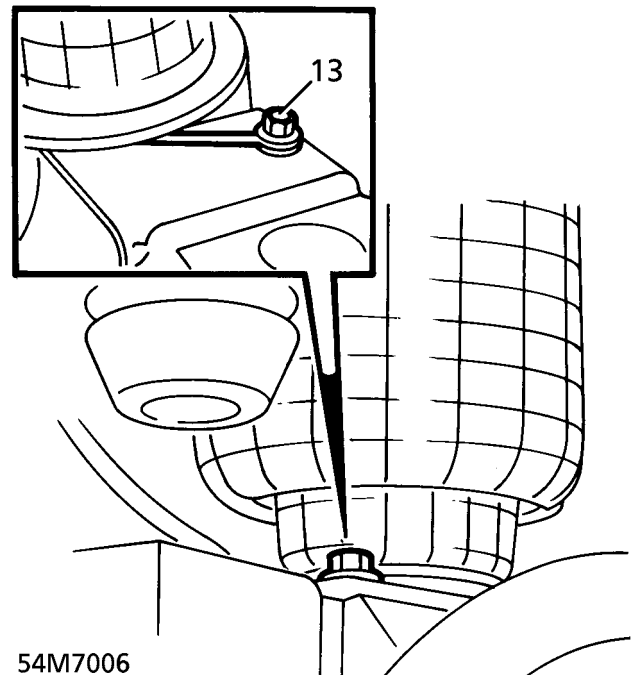
10. Release height sensors from radius arms.



11. Remove banjo bolt securing breather hose to axle case. Collect sealing washers. Plug hose and connection.

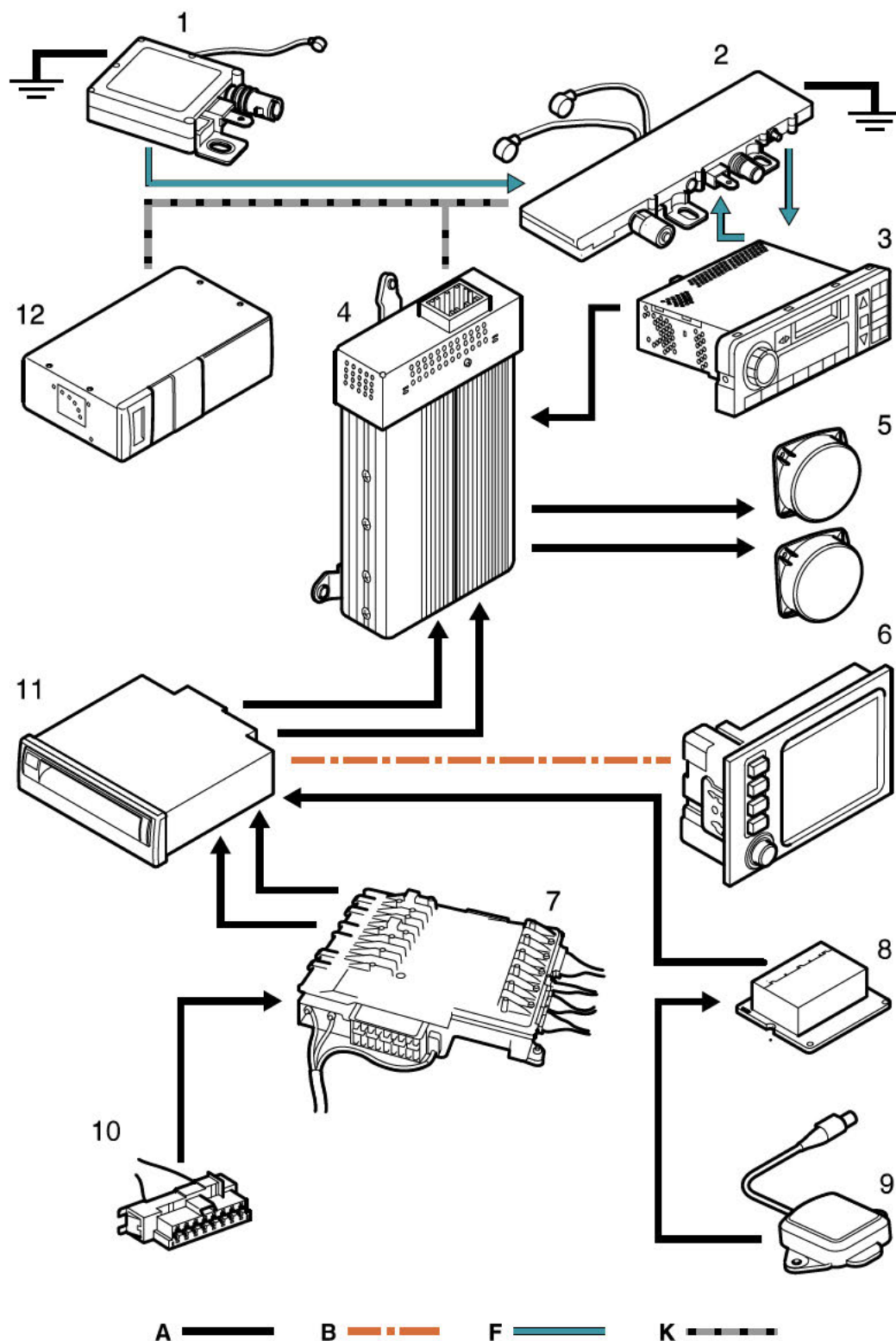


12. Support front axle.
13. Remove bolts securing air spring retaining pins. Remove pins.



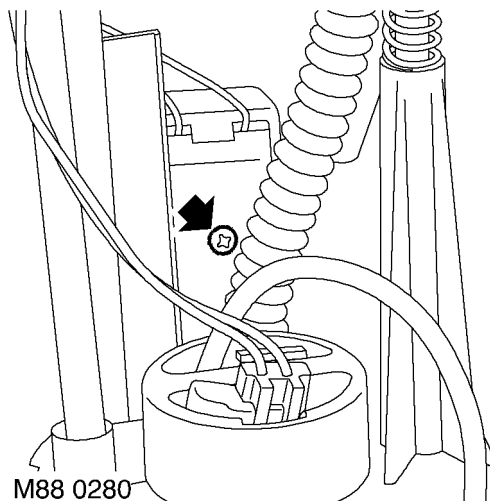
14. Release air springs from axle.
15. Remove 2 nuts securing shock absorbers to axle. Release shock absorbers. Collect mounting rubbers.

NAVIGATION SYSTEM CONTROL DIAGRAM



M86 5091

A=Hardwired connections; B=K Bus; F=RF Transmission; K=I Bus



4. Carefully pivot the pump assembly, enabling access past fuel pipe to pozidrive screw retaining sender unit.
5. Remove 1 pozidrive screw from sender unit and move sender aside.

Refit

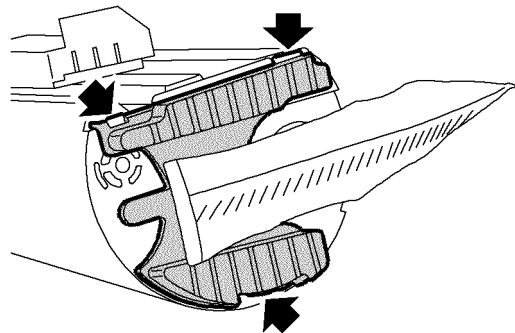
6. Fit sender unit to mounting on fuel pump assembly, locate and tighten pozidrive screw
7. Align fuel pump with lugs inside fuel pump housing.
8. Align housing male and female connectors with main body, carefully push fully home.
9. Fit sender unit lucar connections
10. Fit Fuel Tank **See FUEL SYSTEM, Repair.**

FUEL TANK SENDER UNIT - ADVANCED EVAPS

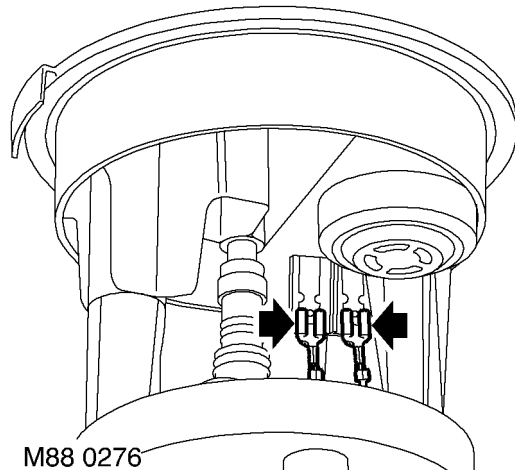
Service repair no - 88.25.32

Remove

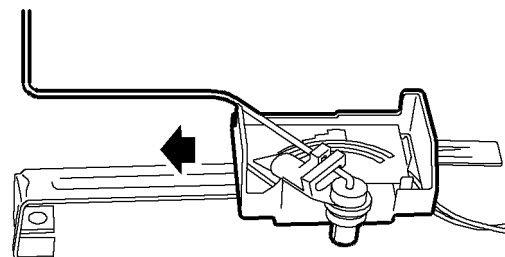
1. Remove fuel tank. **See FUEL SYSTEM, Repair.**



2. Carefully release 3 clips retaining fuel gauge tank unit rubber foot and move aside.



3. Release 2 lucar connections from top of fuel tank unit, difficult to remove.



4. Carefully slide sender unit toward filter until bracket clears main assembly then move aside.