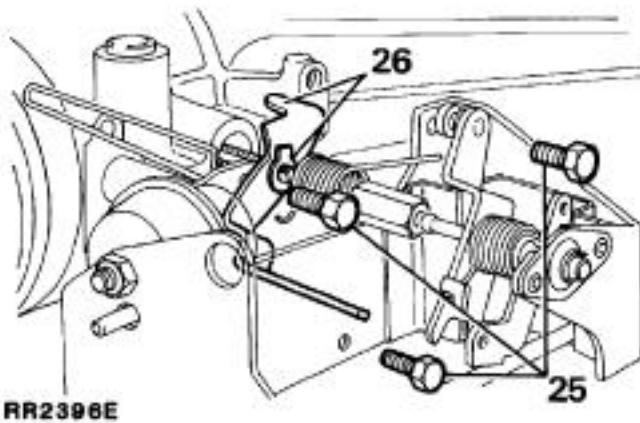


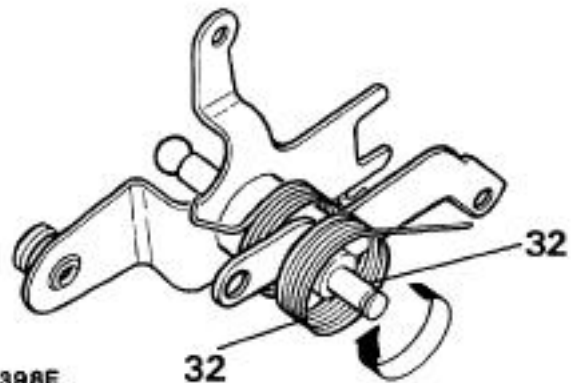


25. Remove three bolts securing throttle bracket to plenum chamber, withdraw bracket assembly.
26. Remove tab washer and throttle stop lever from throttle shaft.



RR2398E

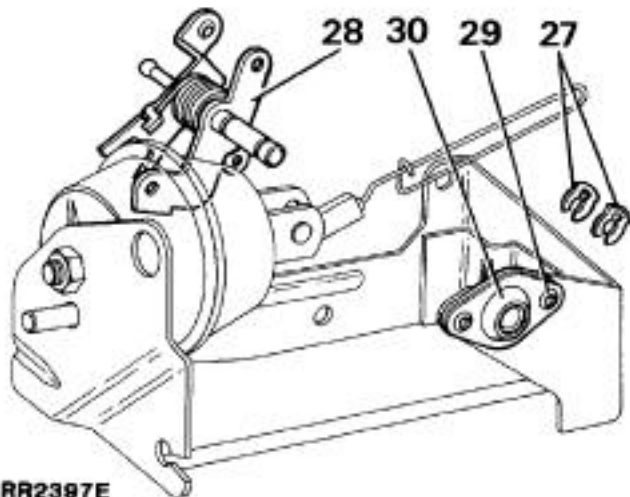
31. Grease new bush with Admax L3 or Energrease LS3. Assemble bush into housing. Assemble to throttle bracket using two 4.7 mm (3/16 in) diameter domed head rivets.
32. Examine bearing surface of countershaft assembly. If worn fit new assembly, otherwise wind throttle return spring off levers.



RR2398E

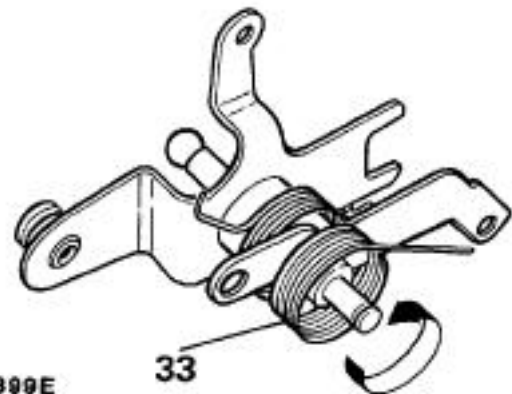
Throttle lever assembly - inspect and overhaul

27. Remove two retaining clips from spherical bush.
28. Remove the countershaft assembly.
29. If spherical bush worn, drill out two securing rivets (4,7 mm, (3/16 in) diameter drill).
30. Split assembly, discard worn bush.



RR2397E

33. Wind new spring onto countershaft assembly, small hooked end of spring is wound on first.



RR2399E

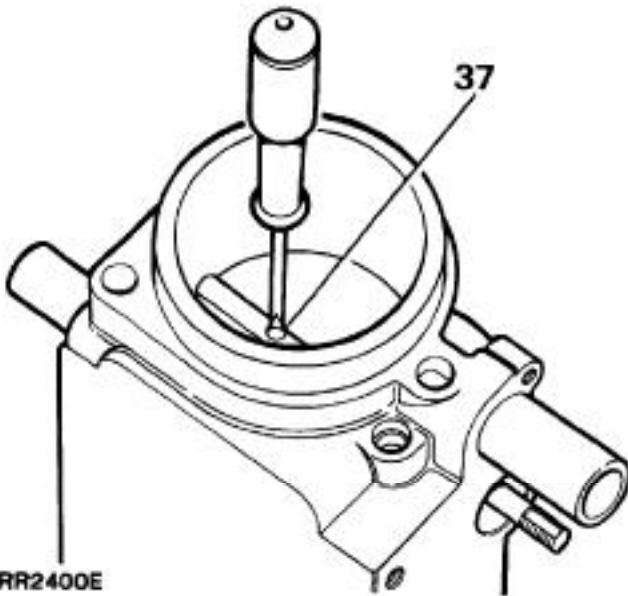
34. Grease shaft with Admax L3 or Energrease LS3, fit countershaft assembly to spherical bearing, secure with two clips.
35. Examine throttle stop lever for wear, fit a new lever if necessary.

Throttle disc - inspect and overhaul

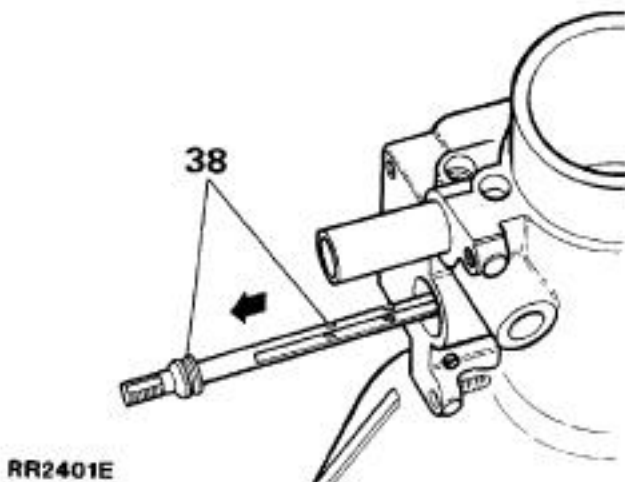
36. Examine throttle shaft for excessive wear between bushes in plenum chamber and shaft. A small amount of clearance is permissible. If excessive wear is evident fit new shaft and bushes as follows.
37. Remove two split screws securing throttle disc and withdraw disc.



CAUTION: Take care not to damage shaft.



38. Remove shaft and air seal from plenum chamber.



39. Using suitable drift, drive out bushes.

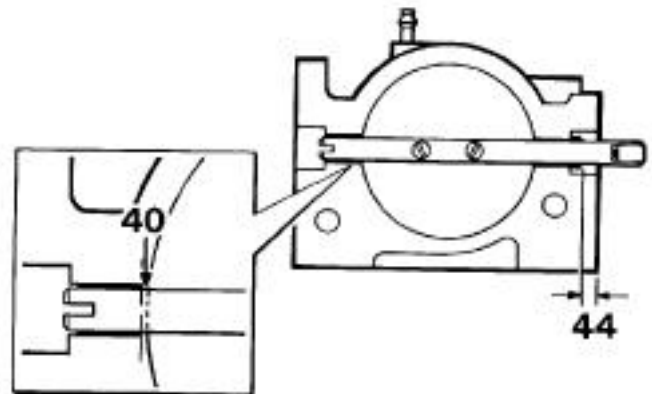


CAUTION: Take care not to damage plenum chamber bores

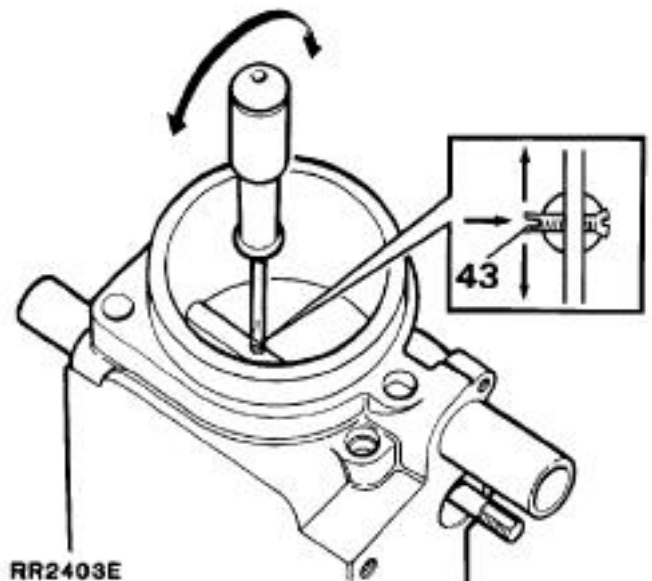
40. Press in new bushes until flush with throttle disc bore.



CAUTION: Ensure that bushes do not protrude into bore, as they will interfere with movement of throttle disc.



41. Fit throttle shaft and disc, secure with two split screws. Do not fully tighten screws.
42. Rotate throttle shaft 360° once or twice to centralise disc in bore. Tighten split screws.
43. Rotate shaft. Use screw driver to spread split.

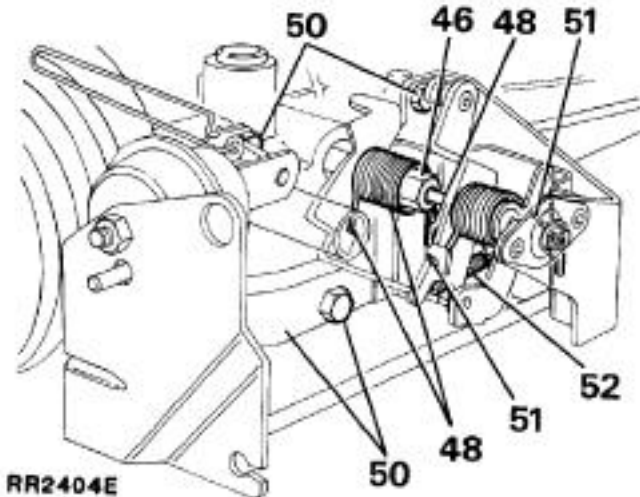




44. Grease new air seal with Admax L3 or Energrease LS3. Push seal down shaft, into counterbore until seal is 6.0 mm (0.236 in) below face of plenum.

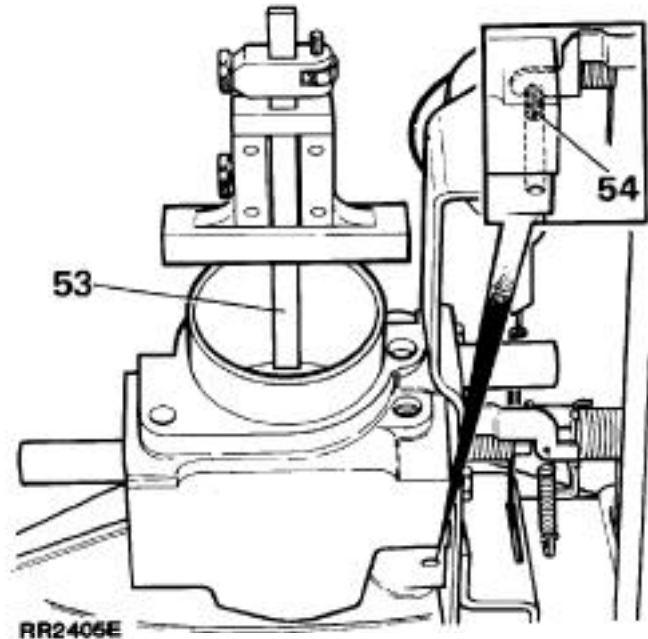
Throttle levers and bracket - assemble

45. Fit stop lever to throttle shaft, a new tab washer and secure with throttle shaft nut.
 46. Holding stop lever on stop, tighten throttle shaft nut securely, bend over tabs to lock nut in position.
 47. Fit inboard throttle return spring noting that small hooked end of spring is nearest plenum.
 48. Locate hooked end of inboard spring on stop lever. Wind up straight end one full turn and locate in appropriate slot.
 49. Fit countershaft to interconnecting nut of throttle valve shaft.
 50. Secure throttle bracket assembly to plenum. Secure with three retaining bolts.
 51. Ensure hooked end of outboard spring is retained by lever, wind spring up one full turn and locate free end in appropriate slot.
 52. Fit overtravel spring.
 Lightly grease throttle return and overtravel springs with Admax L3 or Energrease LS3.



NOTE: If new throttle levers have been fitted, minimum throttle setting of disc must be checked to ensure it is 90° to bore.

53. Using a depth vernier or depth micrometer, check dimension from mouth of bore to top and bottom of valve disc. Dimension must be within 0.5 mm (0.019 in) total indicator reading across diameter of disc.
 54. If dimension is out of limits, adjust small set screw below stop lever.



Refit

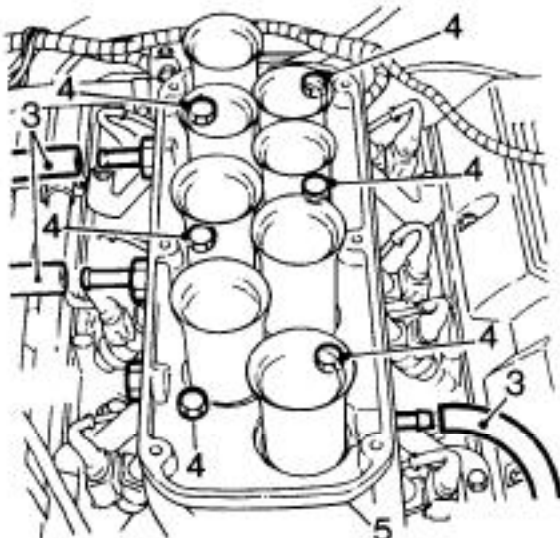
55. Reconnect and adjust cruise control actuator link. **See Actuator Link Setting**
 56. Clean joint faces of plenum and ram housing. Apply 'Hylomar' sealant, refit plenum chamber. Tighten bolts to **26 Nm**.
 57. Reverse removal procedure.

RAM HOUSING

Service repair no - 19.70.04

Remove

1. Disconnect battery negative lead.
2. Remove plenum chamber. *See Plenum Chamber*
3. Release hoses from ram housing.
4. Remove six through bolts (with plain washers) securing ram housing to intake manifold.



J5436

5. Remove ram housing from intake manifold.
6. Place a protective cover over inlet bores to prevent ingress of dirt.

Refit

7. Clean all mating faces.
8. Apply 'Hylomar' sealant to intake manifold face.
9. Fit ram housing. Tighten bolts, working from two centre bolts, diagonally towards outer four bolts.
10. Tighten to **26 Nm**.

INTAKE MANIFOLD

Service repair no - 30.15.08

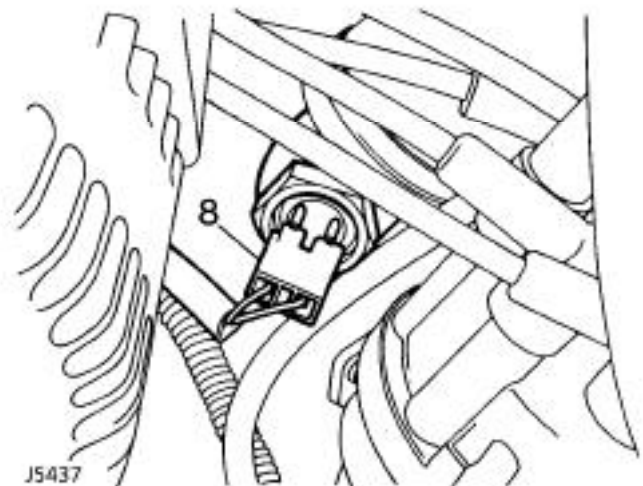
Remove

1. Depressurise fuel system. *See Depressurising Fuel System*
2. Disconnect battery negative lead.
3. Drain cooling system. *See COOLING SYSTEM, Repair, Radiator*
4. Remove plenum chamber. *See Plenum chamber*
5. Remove ram housing. *See Ram Housing*



CAUTION: Place a protective cover over intake manifold openings to prevent the ingress of dirt.

6. Disconnect the fuel temperature sensor and injector multiplugs.
7. Remove fuel pressure regulator. *See Fuel Pressure Regulator*

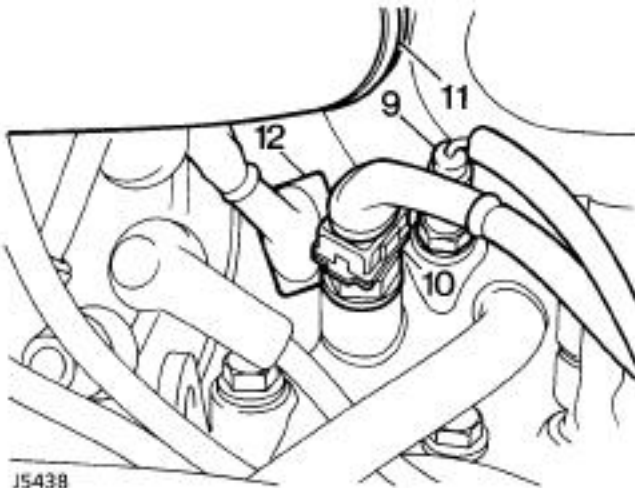


J5437

8. Disconnect multiplug from coolant temperature sensor.
9. Disconnect instrument pack temperature thermistor.
10. Disconnect coolant sensor multiplug.



11. Loosen clip and disconnect top hose from thermostat housing.
12. Disconnect multiplug from distributor amplifier module.



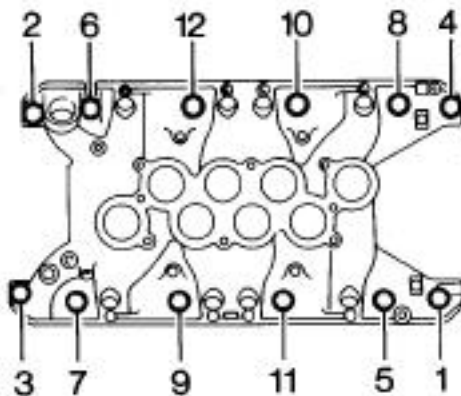
J5438

13. Loosen clip and disconnect hose from heater valve.
14. Remove injector harnesses from behind fuel rail and lay to one side.
15. Loosen union and disconnect fuel return hose from fuel rail.



NOTE: The intake manifold can be removed from the cylinder block without removing the fuel rail and injectors.

16. Using the sequence shown, remove 12 bolts securing the intake manifold to cylinder block.



J5439

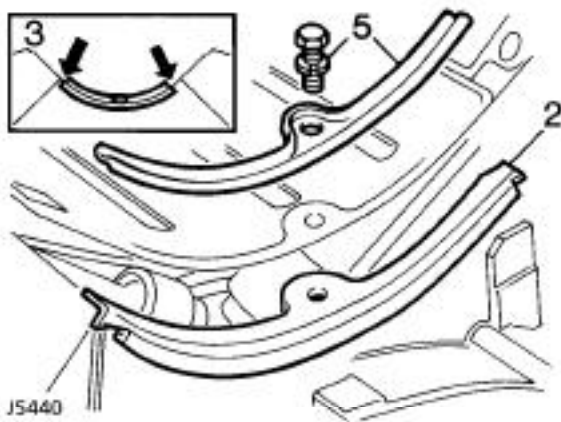
17. Remove the intake manifold.
18. Noting their fitted position, remove bolts and clamps securing intake manifold gasket to cylinder block.
19. Remove and discard gasket.
20. Remove and discard gasket seals.

Do not carry out further dismantling if component is removed for access only.

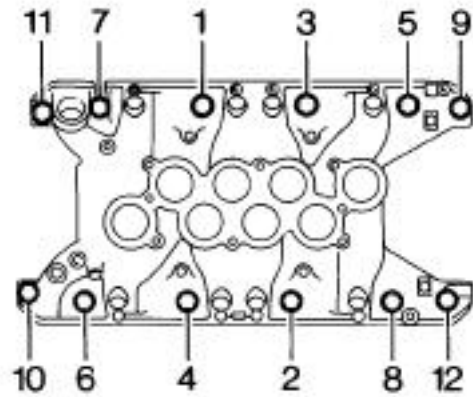
21. Remove 5 nuts securing fuel rail support brackets to intake manifold.
22. Remove fuel rail and injectors.
23. Remove 2 bolts securing thermostat housing to intake manifold.
24. Remove thermostat housing.
25. Remove bolt securing coolant pipe to intake manifold. Loosen union and remove coolant pipe. Remove and discard 'O' ring.
26. Fit new 'O' ring to coolant pipe. Position coolant pipe to intake manifold. Fit bolt securing coolant pipe support bracket to intake manifold and tighten pipe union.
27. Clean mating faces of thermostat housing and intake manifold.
28. Fit thermostat housing to intake manifold using a new gasket, fit and tighten bolts.
29. Position fuel rail to intake manifold, fit and tighten retaining bolts.

Refit

1. Clean mating faces of cylinder heads, cylinder block and intake manifold.
2. Locate NEW seals in position with ends engaged in notches formed between the cylinder heads and block.
3. Apply RTV sealant between ends of seals, cylinder head and block.
4. Fit intake manifold gasket with the word 'FRONT' to the front and open bolts hole to the front RH side.
5. Fit gasket clamps and tighten bolts finger tight.



6. Locate intake manifold onto cylinder heads, clean threads of manifold securing bolts.
7. Allow 10 minutes for RTV sealant to cure.
8. Fit manifold bolts finger tight. Working in the sequence shown tighten the bolts to **38 Nm**.



J5441

9. Tighten the gasket clamp bolts to **18 Nm**.
10. Reverse removal procedure.
11. Fill cooling system. **See COOLING SYSTEM, Repair, Radiator**
12. Start engine check for water and fuel leaks.



FUEL FILTER

Service repair no - 19.25.02

Remove



WARNING: Spilling of fuel is unavoidable during this operation. Ensure all necessary precautions are taken to prevent fire and explosion.

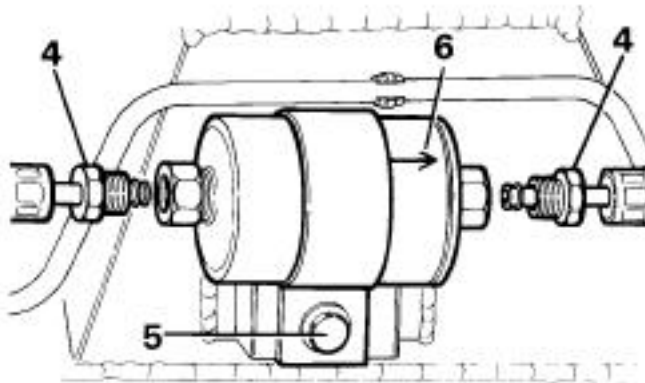


WARNING: Ensure fuel handling precautions given in Section 01 - Introduction are strictly adhered to when carrying out following instructions.

1. Depressurise fuel system. *See Depressurising Fuel System*
2. Access to filter is gained through right hand rear wheel arch.
3. Clean area around hose connections to prevent ingress of foreign matter into fuel system. Clamp inlet and outlet hoses to prevent fuel spillage when disconnecting hoses.
4. Loosen two fuel line unions and remove hoses. Plug ends of hoses to prevent ingress of dirt.
5. Release securing bolt and bracket and remove filter from chassis side member.

Refit

6. Fit a new filter observing direction of flow arrows stamped on canister.
7. Tighten securing nut and bolt.
8. Fit inlet and outlet hoses. Tighten to **30Nm**.
9. Refit fuel pump relay module, reconnect battery.
10. Start engine and inspect for fuel leaks around hose connections.



RR2966E

19 FUEL SYSTEM

FUEL PIPES

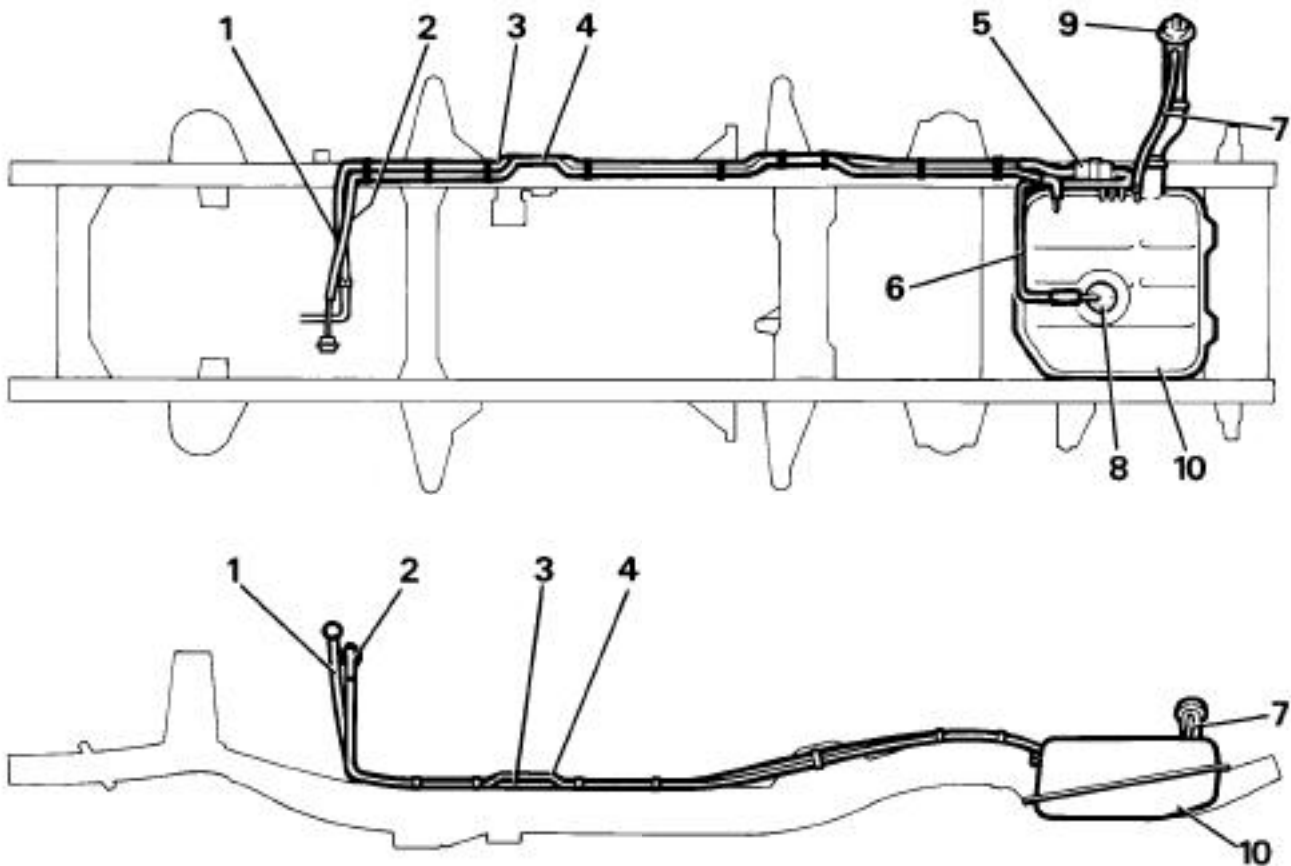
Service repair no - 19.40.92



WARNING: Depressurise fuel system. See *Depressurise Fuel System* before disconnecting any fuel pipes ensure that all necessary precautions are taken against fuel spillage



WARNING: Ensure fuel handling precautions given in Section 01 - introduction are strictly adhered to when carrying out following instructions.



J5442

KEY

- | | |
|-----------------------------------|------------------------------------|
| 1. Fuel feed hose to fuel rail. | 6. Rigid fuel feed pipe to filter. |
| 2. Fuel return hose to fuel tank. | 7. Breather hose. |
| 3. Rigid fuel feed pipe. | 8. In-tank fuel pump. |
| 4. Rigid fuel return pipe. | 9. Fuel filler neck. |
| 5. Fuel filter. | 10. Fuel tank. |

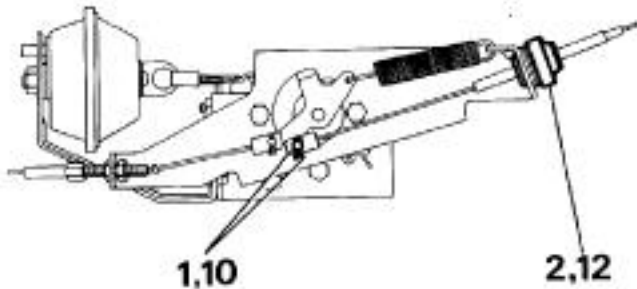


THROTTLE CABLE

Service repair no - 19.20.06

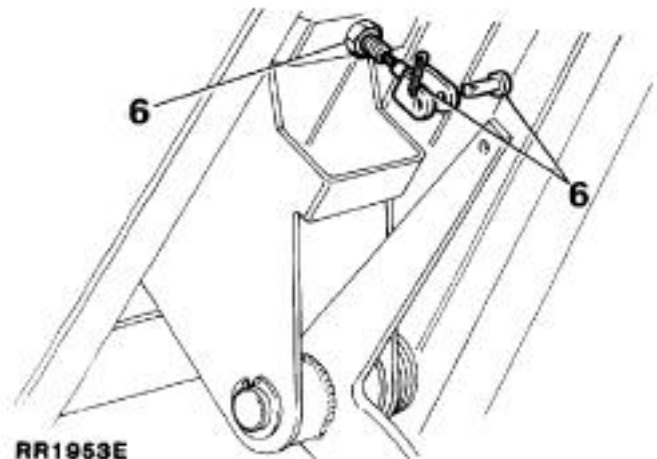
Remove

1. Remove clevis pin securing cable to lever.
2. Carefully pry throttle cable adjustment nut out of mounting bracket.
3. Remove cable from mounting bracket.



RR1954E

4. Release outer cable from retaining clips in engine compartment.
5. Remove lower dash panel.
6. Disconnect cable from accelerator pedal and release cable locknut.
7. Feed cable through bulkhead grommet into engine compartment.



RR1953E

Refit

8. Feed new cable from engine compartment through bulkhead grommet.
9. Connect cable to accelerator pedal.
10. Connect cable to throttle linkage, using a new cotter pin.
11. Clip outer cable adjustment nut into mounting bracket.
12. Adjust outer cable to give 1.57 mm free play in inner cable. Check throttle operation.

ACCELERATOR PEDAL

Service repair no - 18.30.35

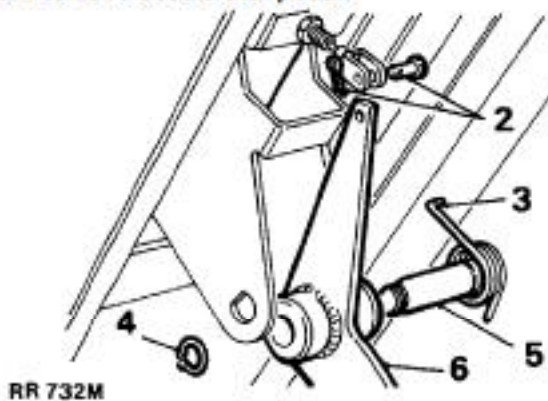
Remove

1. Remove lower dash panel.
2. Remove clevis pin securing throttle cable to accelerator pedal.
3. Release tension from pedal return spring.
4. Remove circlip from pedal pivot pin.
5. Withdraw pivot pin.



NOTE: It may be necessary to lower steering column to gain access to pivot pin circlip.

6. Remove accelerator pedal.



Refit

7. Lightly grease pivot and clevis pins.
8. Fit clevis pin using a **NEW** cotter pin.
9. Reverse removal procedure.

FUEL PUMP AND SENDER UNIT

Service repair no - 19.45.03

A plastic fuel tank with a combined fuel pump/sender unit is fitted. The fuel pump/sender unit is accessed through a panel in the load space floor.

Fuel pump/sender unit



WARNING: Ensure that fuel handling precautions given in Section 01 - Introduction are strictly adhered to when carrying out following instructions.



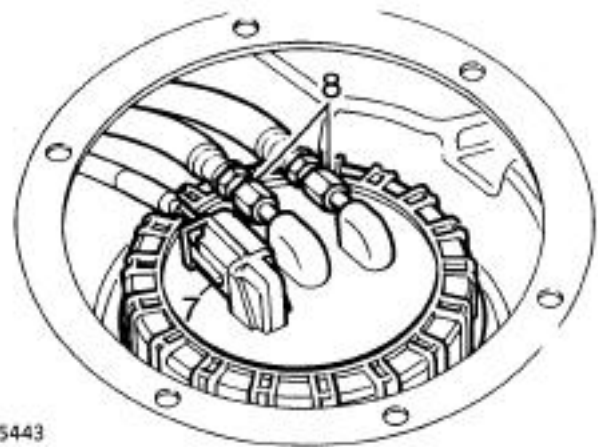
CAUTION: Before disconnecting any part of fuel system, it is imperative that all dust, dirt and debris is removed from around components to prevent ingress of foreign matter into fuel system.

Service Tools:

- LRT-19-001 wrench - pump retaining ring
- LRT-19-002 'Speedfit' disconnecter

Remove

1. Depressurise fuel system. *See Depressurising Fuel System*
2. Disconnect battery negative lead.
3. Syphon at least 9 litres (2 gallons) of fuel from fuel tank into a suitable container that can be sealed.
4. Remove carpet from loadspace floor and tailgate.
5. Fold back loadspace sound insulation to reveal access panel.



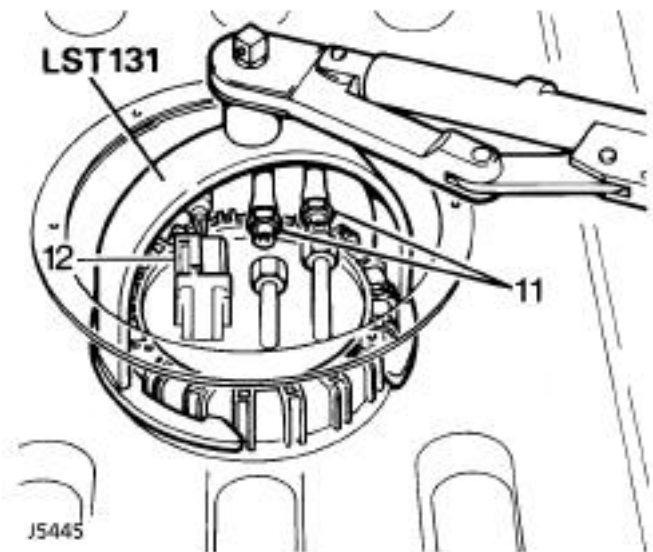
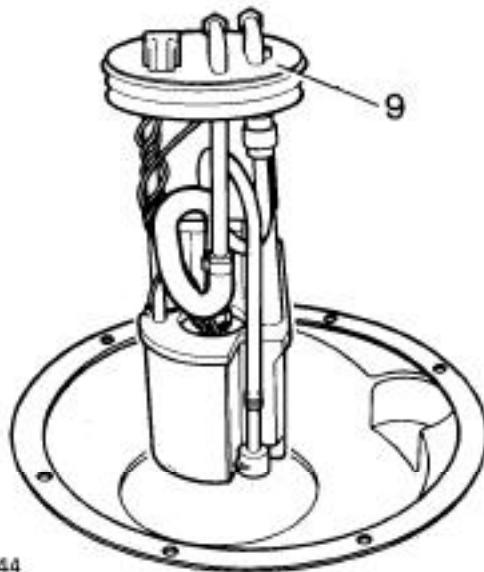
J5443



6. Remove access panel from floor.
7. Disconnect multi-plug from fuel sender unit.
8. Disconnect two fuel line unions from fuel pump.
9. Using service tool no. LRT-19-001, remove pump unit retaining ring. Withdraw unit from fuel tank.



WARNING: A quantity of fuel will be retained in body of unit, care must be taken to prevent fuel spillage when unit is removed.



Refit

10. Insert fuel pump into tank. Fit retaining ring. Tighten to **48 Nm**.
11. Connect fuel lines to pump.
12. Connect multi-plug to sender unit.
13. After assembly, check all fuel pipes, sealing rings and hose connections are secure.
14. Run engine to check for fuel leaks.
15. Inspect access panel seal, fit a new seal if necessary.
16. Fit access panel and tighten screws.
17. Reverse removal procedure. 4 - 5. Fit insulation and carpet.

FUEL TANK

Service repair no - 19.55.01



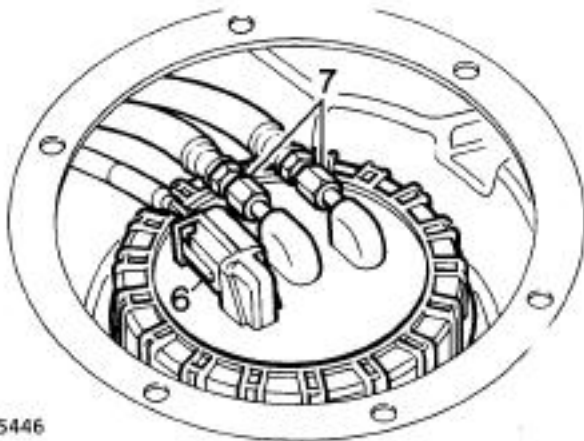
WARNING: Ensure that fuel handling precautions given in Section 01 - introduction are strictly adhered to when carrying out following instructions.



CAUTION: Before disconnecting any part of fuel system, it is imperative that all dust, dirt and debris is removed from around components to prevent ingress of foreign matter into fuel system.

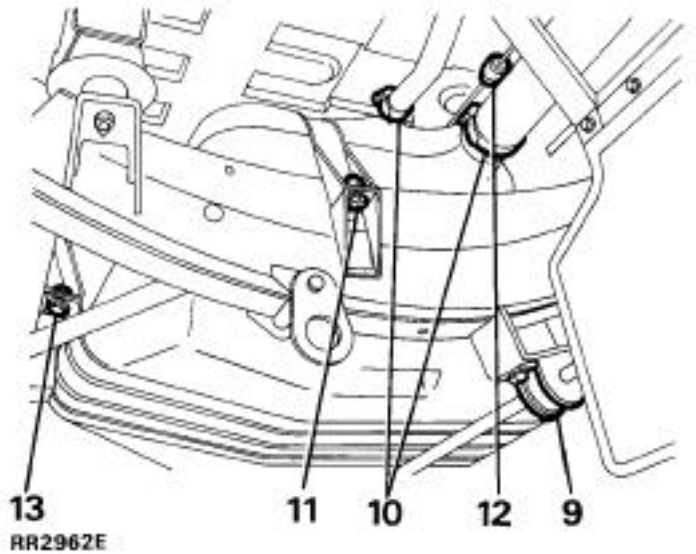
Remove

1. Depressurise fuel system. Disconnect battery negative lead.
2. Syphon fuel tank into a suitable container that can be sealed afterwards.
ENSURE TANK IS DRAINED COMPLETELY. (refer to Warning concerning fuel vapour and spillage at start of procedure).
3. Remove carpet loadspace floor and tailgate.
4. Fold back sound insulation to reveal access panel.



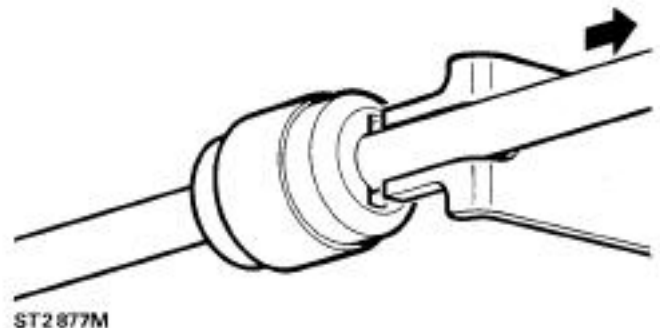
J5446

5. Remove access panel.
6. Disconnect electrical multi-plug.
7. Disconnect two fuel line unions from fuel pump.
8. Working underneath vehicle mark location of anti-roll [sway] bar straps.
9. Remove rear anti-roll [sway] bar straps, and allow bar to swing down clear of tank.



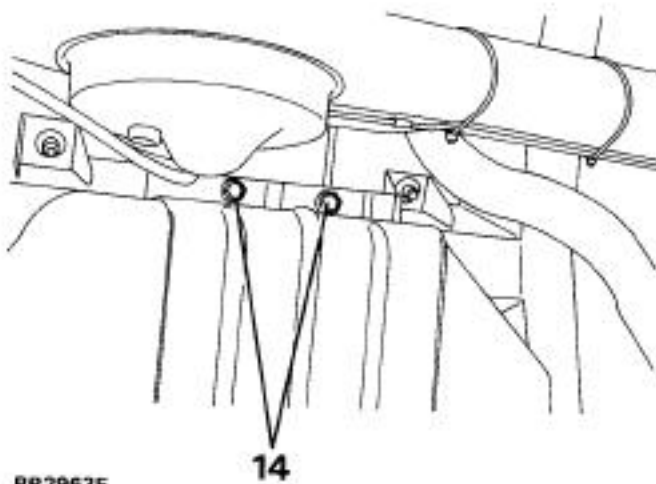
RR2962E

10. Remove tank filler and vent hoses at fuel tank.
11. Remove nut and bolt securing right hand side fuel tank strap.
12. Disconnect evaporative control pipe at green end of 'speedfit' connector.



ST2877M

NOTE: To disconnect 'speedfit' connector, insert forked end of LRT-19-002 into slots of connector see illustration. Press down on collet and simultaneously pull pipe from connector.



RR2963E

13. Remove back two bolts and nut plates securing fuel tank cradle.
14. Remove front nuts, bolts and washers. Remove fuel tank cradle.
15. With assistance, tilt right hand side of tank upwards and manoeuvre tank through chassis to remove.

Refit

16. Reverse removal procedure. Ensuring sealing ring, fuel pipe and hose connections are secure.
17. Run engine, check all connections for fuel leaks.



TORQUE VALUES



NOTE: Torque wrenches should be regularly checked for accuracy to ensure that all fixings are tightened to the correct torque.

| | Nm |
|--|-----|
| Air-Bypass valve (stepper motor) | 20 |
| All flexible hose securing clamps | 1,3 |
| Fuel feed pipe - hose to fuel rail | 22 |
| Fuel filter | 31 |

EVAPORATIVE LOSS CONTROL SYSTEM

| | |
|---|-----|
| All flexible hose securing clamps | 1,7 |
|---|-----|

| METRIC | Nm |
|-----------|-----|
| M5 | 6 |
| M6 | 9 |
| M8 | 25 |
| M10 | 45 |
| M12 | 90 |
| M14 | 105 |
| M16 | 180 |

| UNC / UNF | Nm |
|------------|-----|
| 1/4 | 9 |
| 5/16 | 24 |
| 3/8 | 39 |
| 7/16 | 78 |
| 1/2 | 90 |
| 5/8 | 136 |

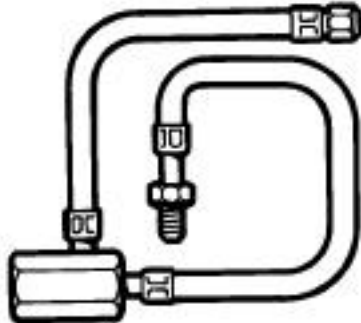


NOTE: Torque values above are for all screws and bolts used except for those specified.

**FUEL SYSTEM**

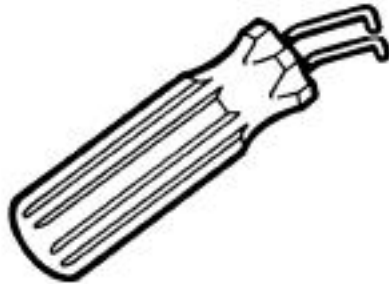
18G1500

LRT-19-004 Test equipment fuel pressure
18G 500



LST143

LRT-19-003 MFI pressure test adaptor
LST 143



LST 144

LRT-19-002 Connector splitter
LST 144



LST 131

LRT-19-001 Fuel pump remover
LST 131