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Data, Torque & Tools

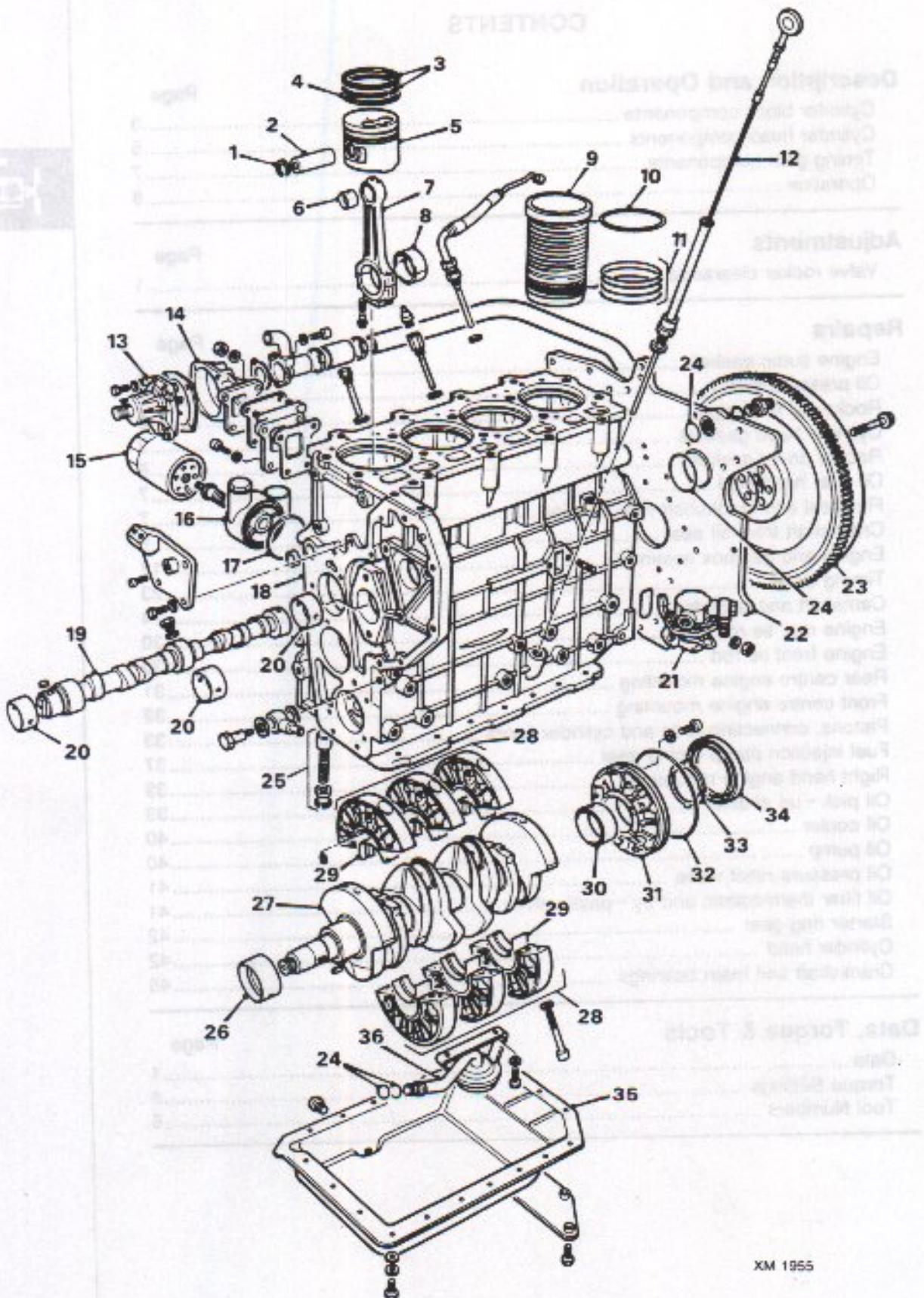
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ENGINE

Product: Alfa Romeo 2.5 TD Car Engine Service Repair Workshop Manual

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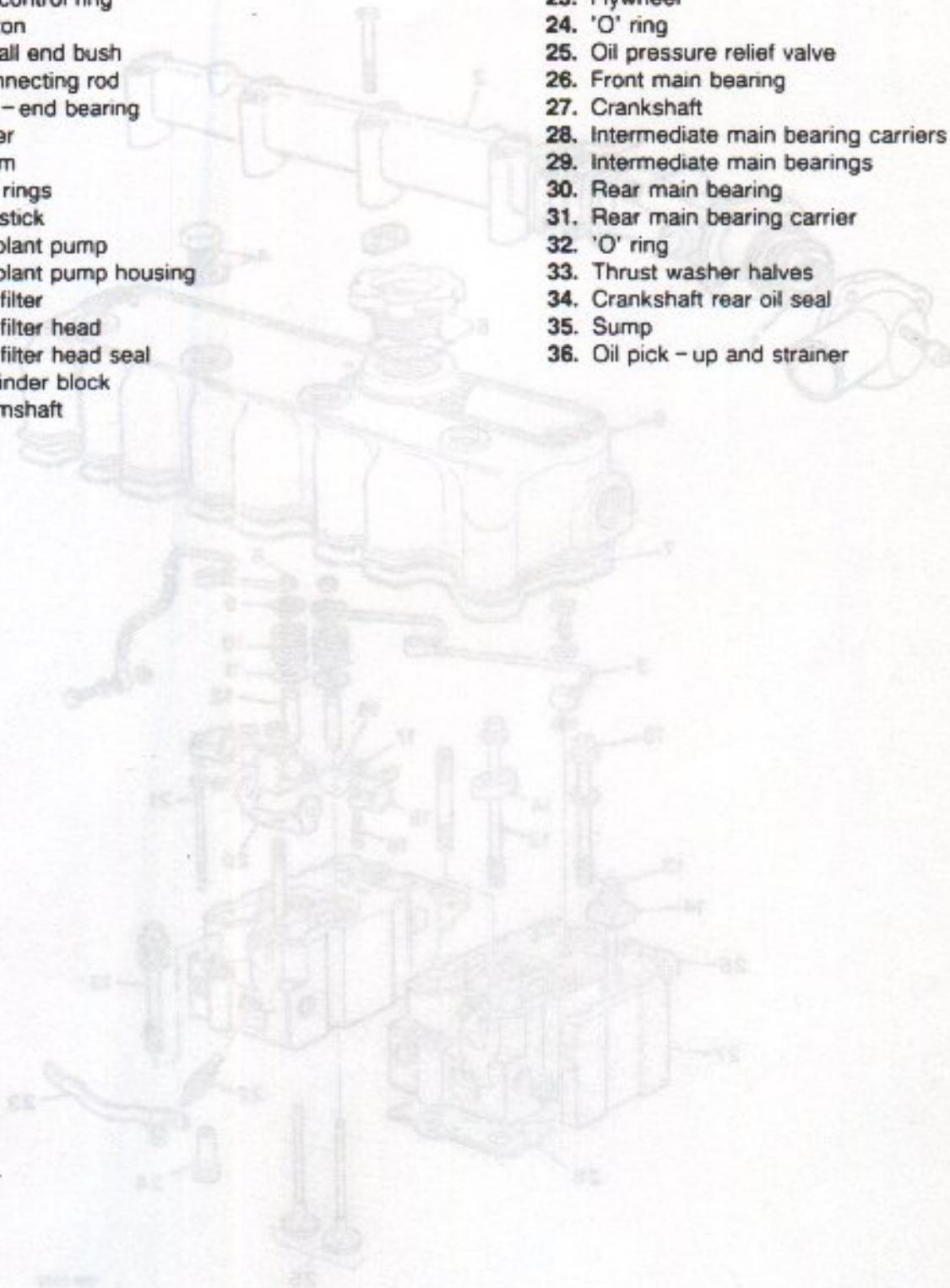


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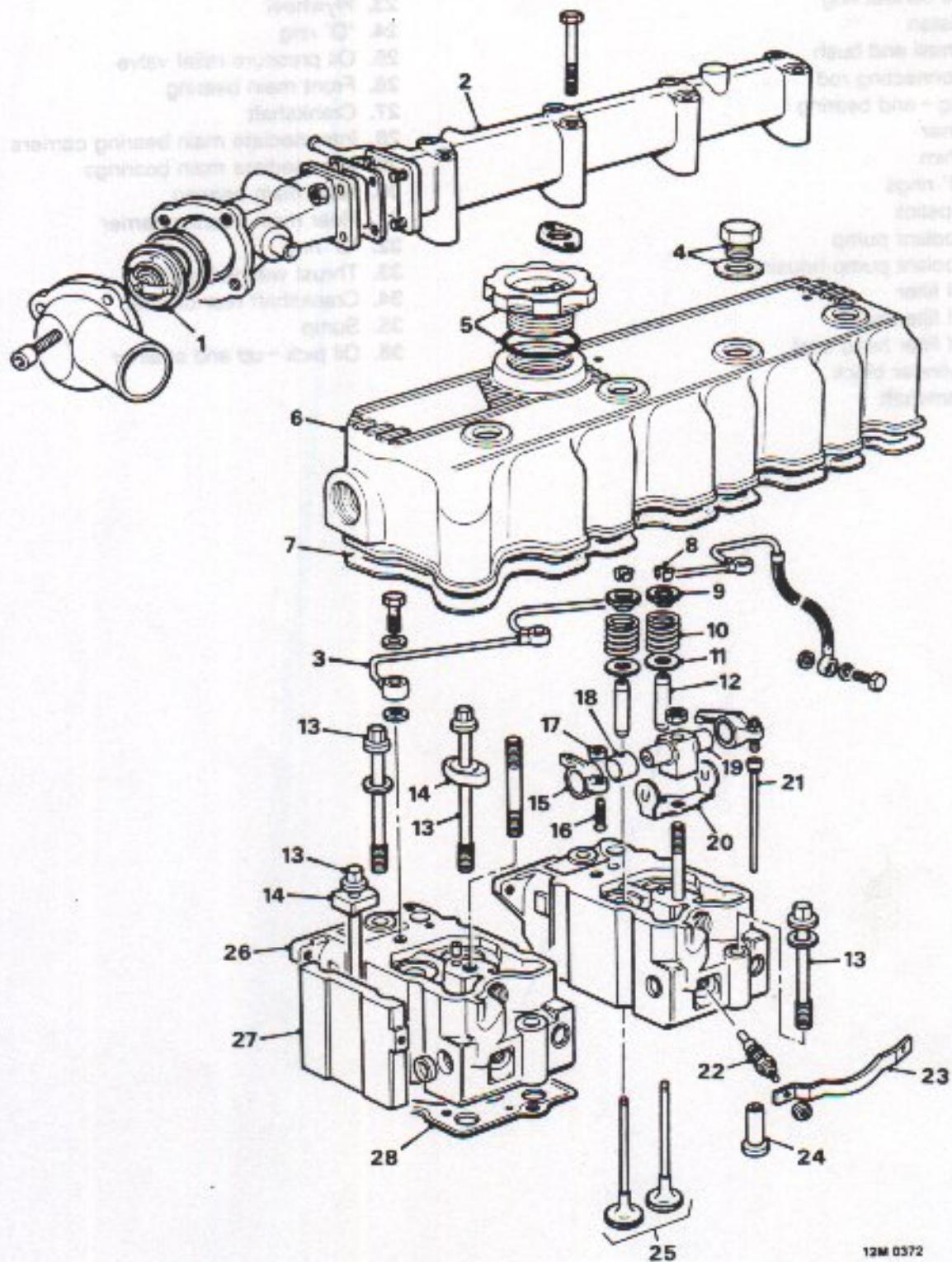
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CYLINDER BLOCK COMPONENTS



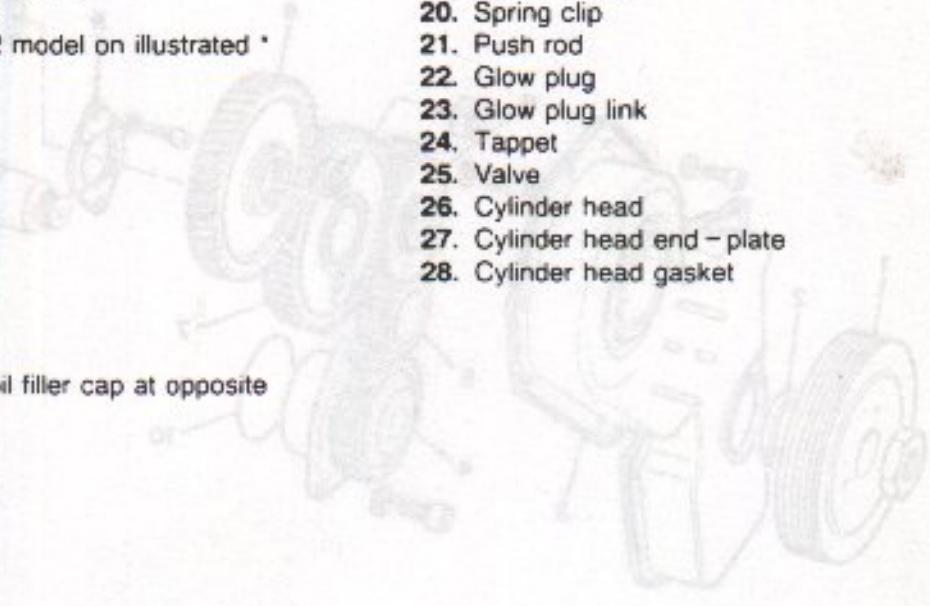
1. Snap ring
2. Gudgeon pin
3. Compression rings
4. Oil control ring
5. Piston
6. Small end bush
7. Connecting rod
8. Big - end bearing
9. Liner
10. Shim
11. 'O' rings
12. Dipstick
13. Coolant pump
14. Coolant pump housing
15. Oil filter
16. Oil filter head
17. Oil filter head seal
18. Cylinder block
19. Camshaft
20. Camshaft bearings
21. Fuel lift pump
22. Engine back plate
23. Flywheel
24. 'O' ring
25. Oil pressure relief valve
26. Front main bearing
27. Crankshaft
28. Intermediate main bearing carriers
29. Intermediate main bearings
30. Rear main bearing
31. Rear main bearing carrier
32. 'O' ring
33. Thrust washer halves
34. Crankshaft rear oil seal
35. Sump
36. Oil pick - up and strainer



12M 0372



CYLINDER HEAD COMPONENTS

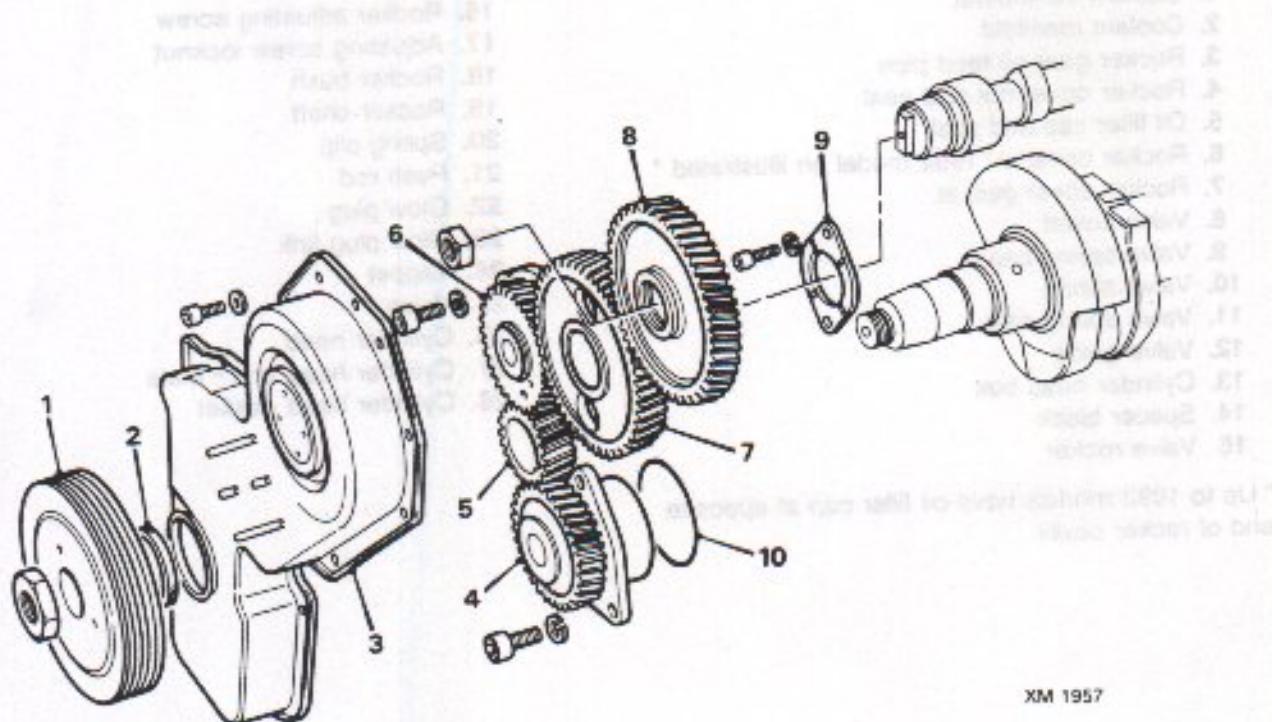


- 1. Coolant thermostat
- 2. Coolant manifold
- 3. Rocker gear oil feed pipe
- 4. Rocker cover nut and seal
- 5. Oil filler cap and seal
- 6. Rocker cover - 1992 model on illustrated *
- 7. Rocker cover gasket
- 8. Valve collett
- 9. Valve spring cap
- 10. Valve spring
- 11. Valve spring seat
- 12. Valve guide
- 13. Cylinder head bolt
- 14. Spacer block
- 15. Valve rocker
- 16. Rocker adjusting screw
- 17. Adjusting screw locknut
- 18. Rocker bush
- 19. Rocker shaft
- 20. Spring clip
- 21. Push rod
- 22. Glow plug
- 23. Glow plug link
- 24. Tappet
- 25. Valve
- 26. Cylinder head
- 27. Cylinder head end - plate
- 28. Cylinder head gasket

* Up to 1992 models have oil filler cap at opposite end of rocker cover.

ENGINE

ENGINE CASE COUPON CONNECTION



XM 1957



TIMING GEAR COMPONENTS

1. Crankshaft pulley
2. Crankshaft front oil seal
3. Timing cover
4. Oil pump drive gear
5. Crankshaft gear
6. Vacuum pump drive gear
7. Camshaft drive gear
8. Injection pump drive gear
9. Camshaft locating plate
10. Oil pump 'O' ring

OPERATION

The engine is a four cylinder water cooled unit with cast iron cylinder block, wet liners and an individual head for each cylinder.

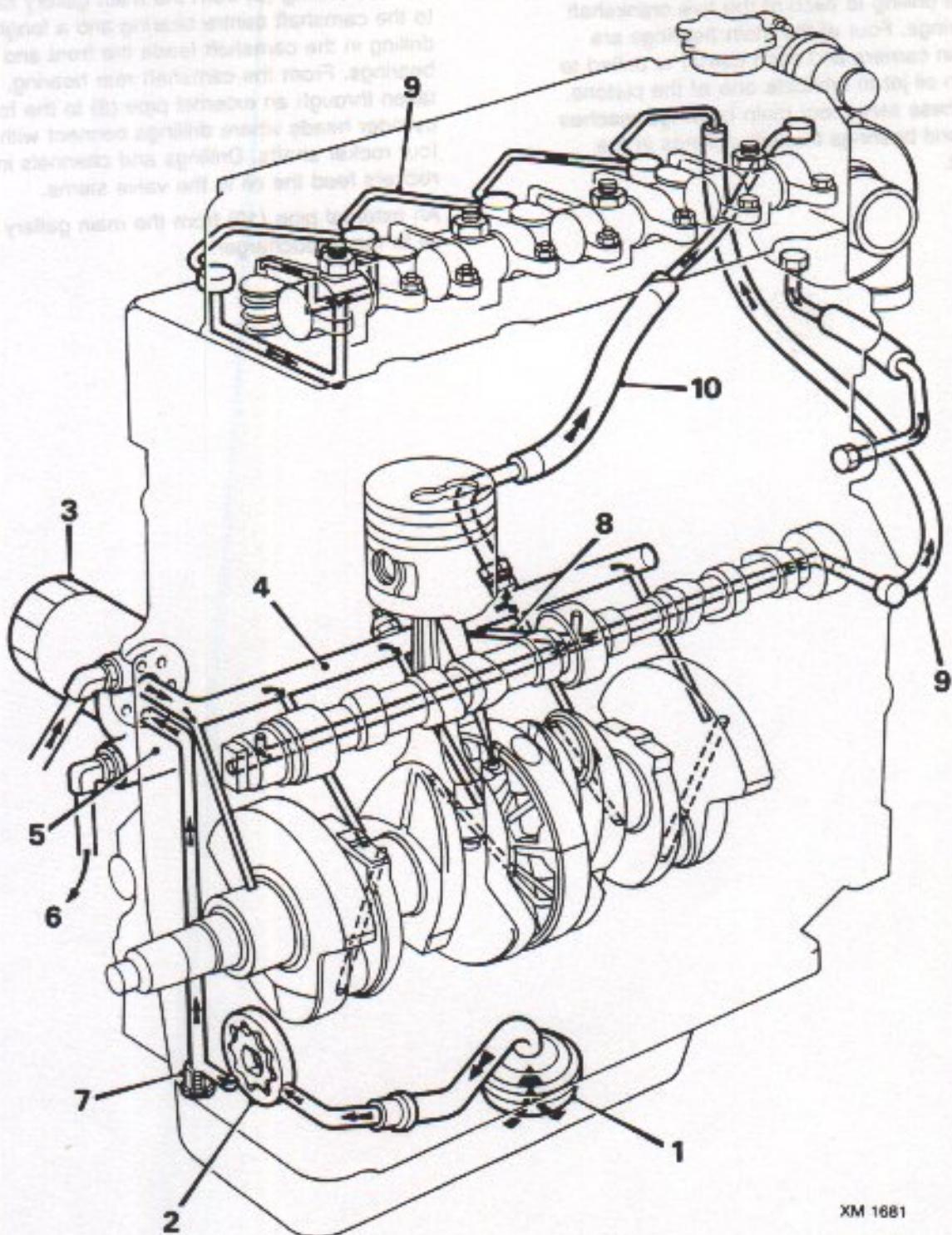
The crankshaft is supported by a one - piece bush type bearing at each end and three intermediate shell bearings located in aluminium alloy carriers. Crankshaft end - float is controlled by thrust washers mounted in the rear of the rear main bearing carrier.

Drive for the camshaft, injection pump, oil pump and vacuum pump is from the front of the crankshaft through a train of gears.

Valve operation is by push - rod and rocker, each pair of rockers being mounted on their own individual shaft which is mounted on one of the individual cylinder heads. A single rocker cover spans all four cylinder heads.

27.000000000000002 ENGINE HARD SWIMM

1. Crankshaft 1
2. Main bearing 3
3. Thrust washer 2
4. Intermediate bearing 3
5. Camshaft 1
6. Oil pump 1
7. Vacuum pump 1
8. Rocker cover 1



XM-1681

Lubrication

Oil is drawn through a strainer (1) in the sump, into the oil pump (2) mounted in the front of the crankcase. The oil is then pumped through a full flow filter (3), mounted on the side of the crankcase, and into the main oil gallery (4).

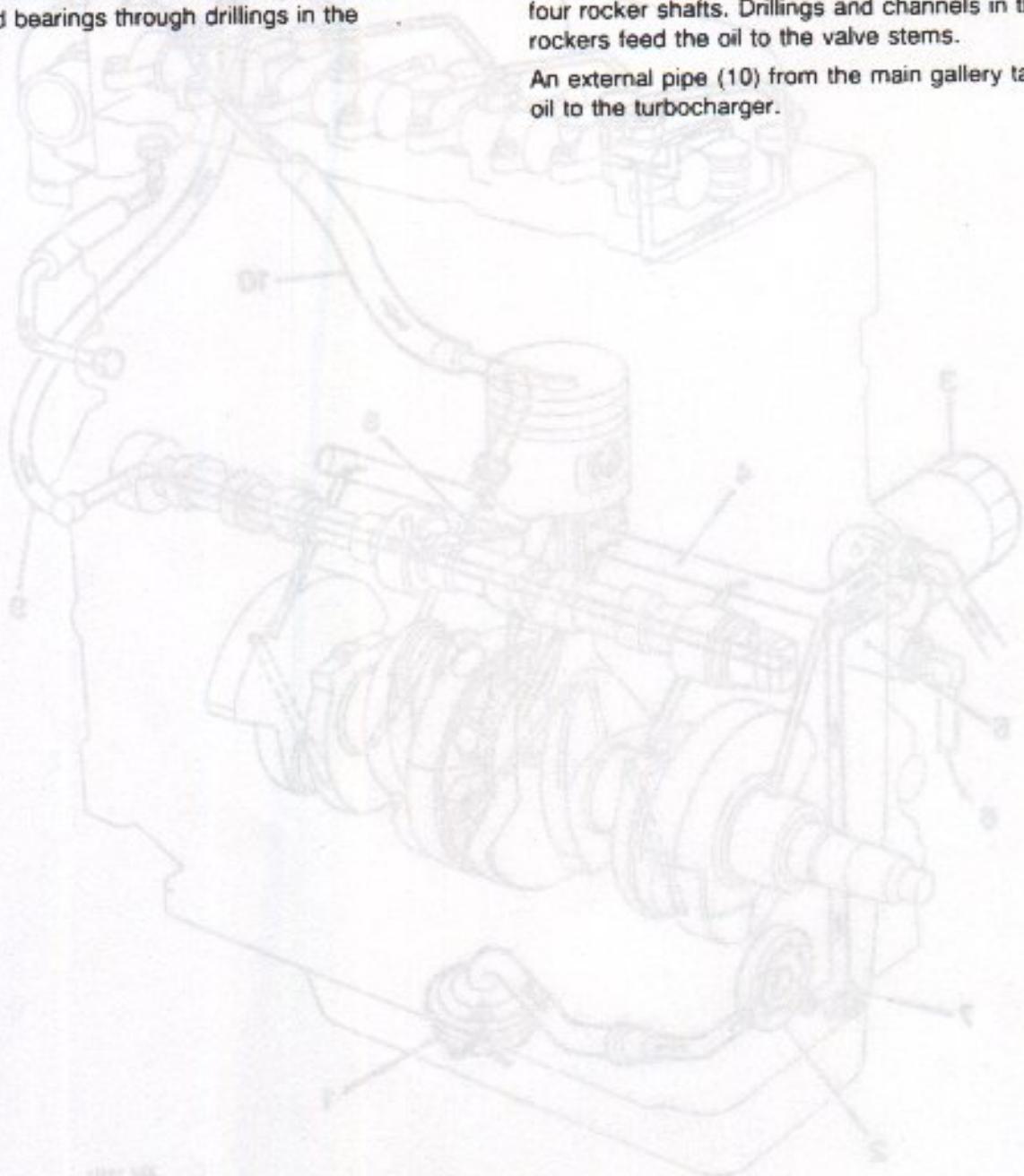
A thermostatic valve (5) in the filter head directs oil through the oil cooler (6) before filtering when oil temperature exceeds 80°C. Also incorporated in the filter head is a pressure operated by-pass valve which diverts the hot oil directly into the filter if overheating occurs in the oil cooler.

Oil pressure is controlled by a pressure relief valve (7) in the crankcase below the main oil gallery.

From the main oil gallery, oil is fed through crankcase drilling to each of the five crankshaft main bearings. Four of the main bearings are mounted in carriers and each carrier is drilled to provide an oil jet to lubricate one of the pistons. Oil from these same four main bearings reaches the big - end bearings through drillings in the crankshaft.

A cross drilling (8) from the main gallery carries oil to the camshaft centre bearing and a longitudinal drilling in the camshaft feeds the front and rear bearings. From the camshaft rear bearing, oil is taken through an external pipe (9) to the four cylinder heads where drillings connect with the four rocker shafts. Drillings and channels in the rockers feed the oil to the valve stems.

An external pipe (10) from the main gallery takes oil to the turbocharger.





VALVE ROCKER CLEARANCE

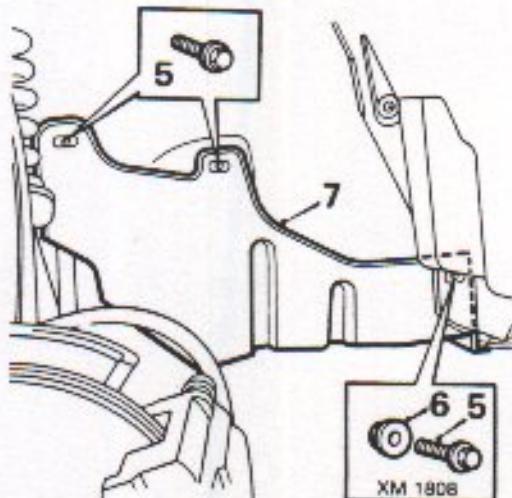
Service Repair No. 12.29.48

Check and adjust

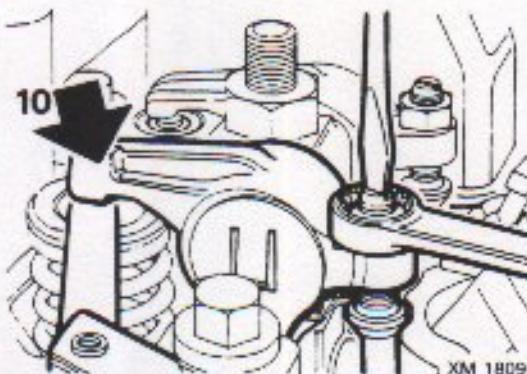
1. Remove rocker cover.
2. Remove rocker cover gasket.
3. Raise front of vehicle.

WARNING: Support on safety stands.

4. Remove R.H. front road wheel.



5. Remove 3 screws securing splash shield under R.H. front wing.
6. Remove spacer from front screw.
7. Remove splash shield.
8. Rotate crankshaft until valves of No. 4 cylinder are rocking.
9. Check and adjust inlet and exhaust valve rocker clearances on No. 1 cylinder to 0.30 mm.



10. Feeler gauge should be a sliding fit between rocker and valve stem.
11. Repeat operations 8 to 10 for remaining cylinders in the following order:
No. 2 cylinder valves rocking, adjust No. 3 cylinder rocker clearances.
No. 1 cylinder valves rocking, adjust No. 4 cylinder rocker clearances.
No. 3 cylinder valves rocking, adjust No. 2 cylinder rocker clearances.
12. Position splash shield.

13. Position spacer on front screw, fit and tighten screws securing shield.
14. Fit road wheel and tighten nuts to 110 Nm.
15. Fit rocker cover and gasket and tighten nuts to 9 Nm..
16. Remove stand(s) and lower vehicle.



ENGINE SUMP GASKET

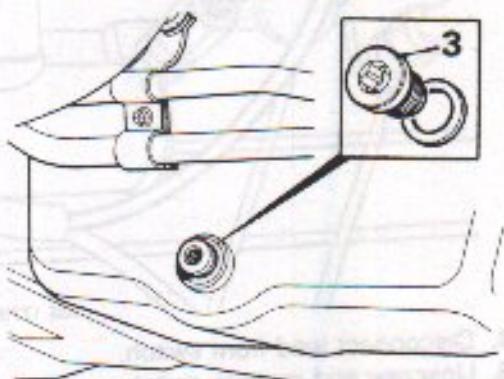
Service Repair No. 12-60-38

Remove

1. Raise front of vehicle

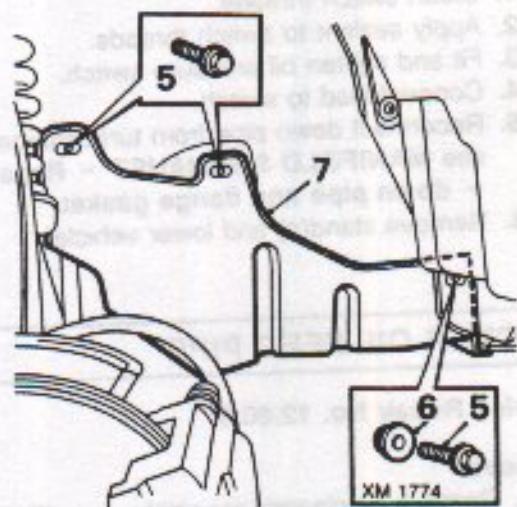
WARNING: Support on safety stands

2. Place a container under pump.



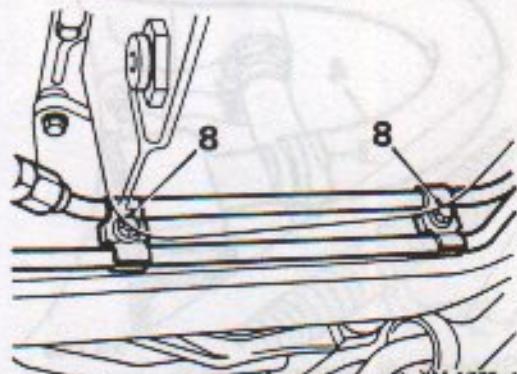
XM 1773A

3. Remove drain plug and sealing washer.
4. Allow oil to drain.



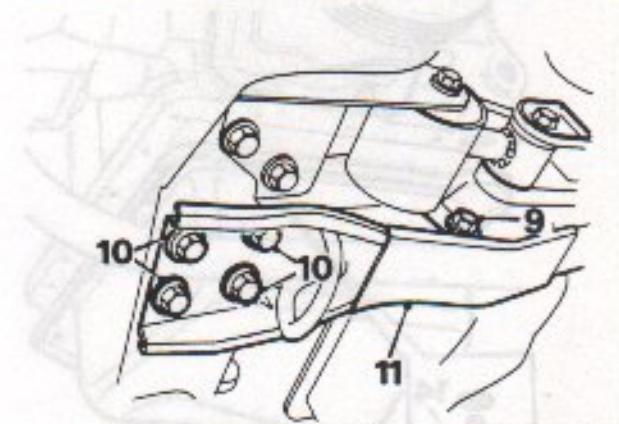
XM 1774

5. Remove 3 screws securing R.H. splash shield.
6. Remove spacer from front screw.
7. Remove shield.

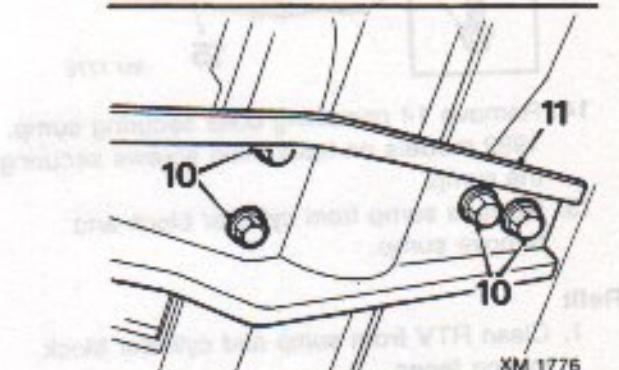


MARCH 1982

8. Remove 2 bolts securing P.A.S. pipes to longitudinal beam.

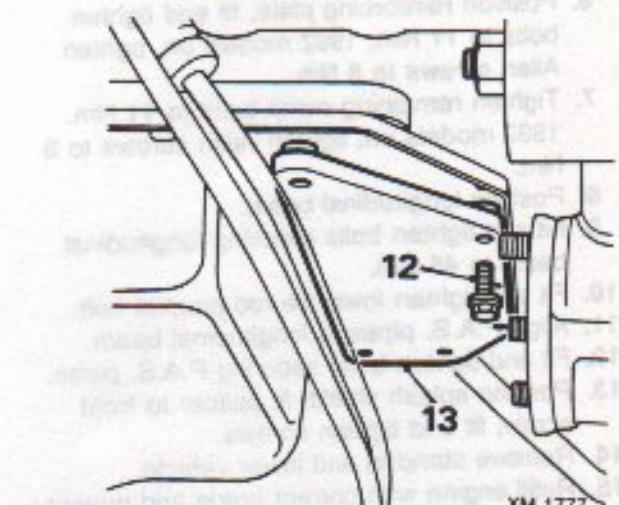


11



XM 1776

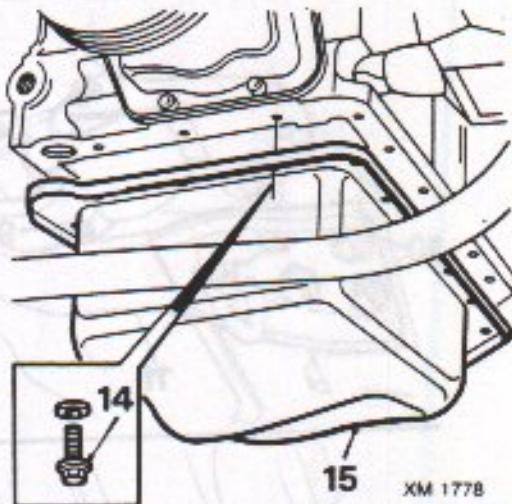
9. Remove bolt, lower tie rod bracket to longitudinal beam.
10. Remove 8 bolts securing longitudinal beam.
11. Remove longitudinal beam.



YM 1771

12. Remove 6 bolts securing reinforcing plate.
1992 models on have Allen screws securing the reinforcing plate.
13. Remove plate.

ENGINE



14. Remove 14 remaining bolts securing sump. 1992 models on have Allen screws securing the sump.
15. Release sump from cylinder block and remove sump.

Refit

1. Clean RTV from sump and cylinder block mating faces.
2. Clean inside of sump.
3. Clean reinforcing plate.
4. Apply RTV to sump joint face.
5. Position sump and fit bolts finger tight.
6. Position reinforcing plate, fit and tighten bolts to 11 Nm. 1992 models on, tighten Allen screws to 8 Nm.
7. Tighten remaining sump bolts to 11 Nm. 1992 models on, tighten Allen screws to 8 Nm.
8. Position longitudinal beam.
9. Fit and tighten bolts securing longitudinal beam to 45 Nm.
10. Fit and tighten lower tie rod bracket bolt.
11. Align P.A.S. pipes to longitudinal beam.
12. Fit and tighten bolts securing P.A.S. pipes.
13. Position splash shield, fit spacer to front screw, fit and tighten screws.
14. Remove stand(s) and lower vehicle.
15. Refill engine with correct grade and quantity of oil.

OIL PRESSURE SWITCH

Service Repair No. 12.60.50

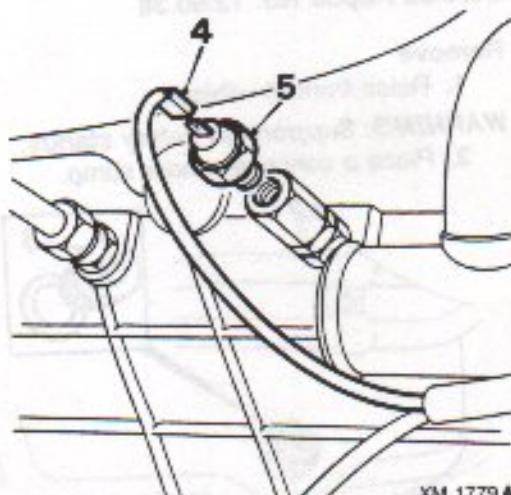
Remove

1. Raise front of vehicle.

WARNING: Support on safety stands.

2. Disconnect down pipe from turbocharger, see **MANIFOLD & EXHAUST - Repairs - down pipe and flange gasket.**

3. Move pipe aside for access to oil pressure switch.



4. Disconnect lead from switch.
5. Unscrew and remove switch.

Refit

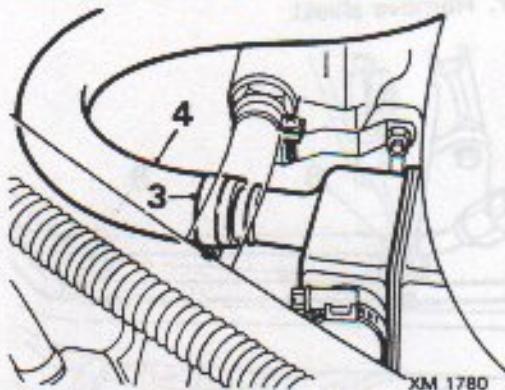
1. Clean switch threads.
2. Apply sealant to switch threads.
3. Fit and tighten oil pressure switch.
4. Connect lead to switch.
5. Reconnect down pipe from turbocharger, see **MANIFOLD & EXHAUST - Repairs - down pipe and flange gasket.**
6. Remove stand(s) and lower vehicle.

ROCKER OIL FEED PIPE

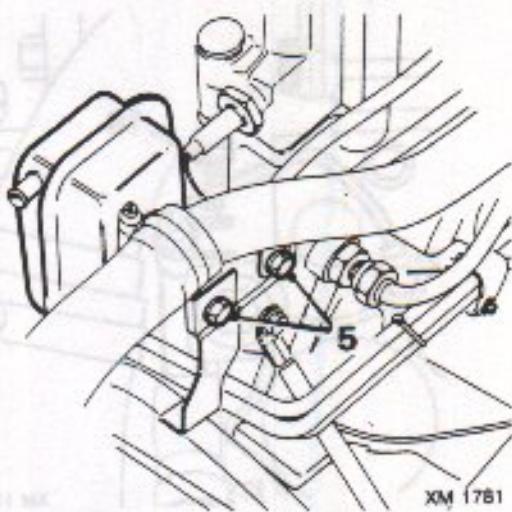
Service Repair No. 12.60.81

Remove

1. Remove air cleaner assembly, see **FUEL SYSTEM - Repairs.**
2. Remove coolant manifold assembly, see **COOLING SYSTEM - Repairs.**

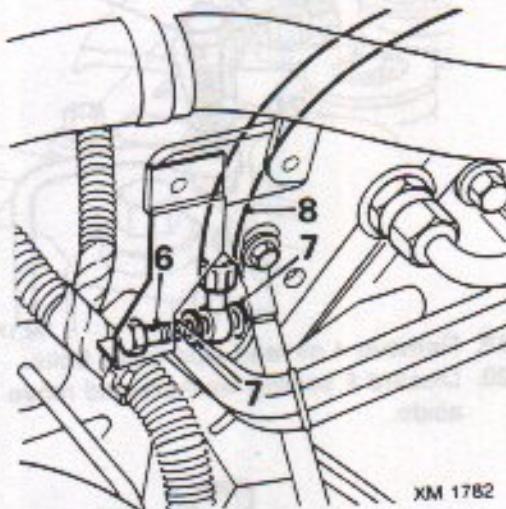


3. Slacken clip securing rocker cover hose to breather oil separator.
4. Disconnect hose from oil separator.

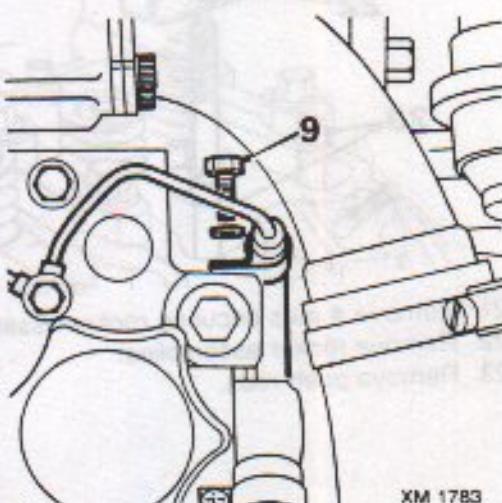


Pre 1992 model illustrated.

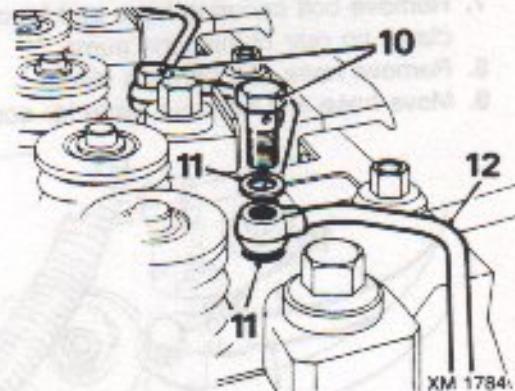
- Remove 2 bolts securing oil separator and move oil separator aside. 1992 models on have a circular oil separator.



- Remove banjo bolt from rocker oil feed pipe hose union on cylinder block.
- Discard 2 banjo union sealing washers.
- Release hose.



- Remove screw securing hose clip to No 4 cylinder head end plate.



- Remove 4 pipe union banjo bolts from cylinder heads.
- Discard 8 banjo union sealing washers.
- Remove hose and pipe assembly.
- Remove clips from hose.

Refit

- Fit clips to hose.
- Position hose and pipe assembly.
- Position 8 new sealing washers, fit and tighten 4 banjo bolts in cylinder heads.
- Renew 2 hose banjo union sealing washers.
- Position 2 new sealing washers, fit and tighten banjo bolt in cylinder block.
- Align hose clip to No 4 cylinder head end plate, fit and tighten screw.
- Position breather oil separator.
- Align harness clip bracket and rocker oil feed hose clip.
- Fit and tighten 2 bolts securing breather separator.
- Connect breather hose and tighten hose clip.
- Fit coolant manifold assembly, see **COOLING SYSTEM - Repairs**.
- Fit air cleaner assembly, see **FUEL SYSTEM - Repairs**.
- Refill cooling system, see **COOLING SYSTEM - Adjustments**.

CYLINDER HEAD GASKETS

Service Repair No. 12.29.01

Remove

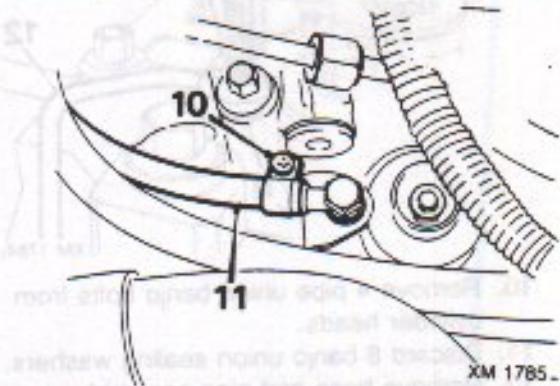
- Remove rocker cover assembly.
- Remove injectors, see **FUEL SYSTEM - Repairs**.
- Drain coolant, see **COOLING SYSTEM - Adjustments**.
- Remove coolant manifold, see **COOLING SYSTEM - Repairs**.
- Raise front of vehicle.

WARNING: Support on safety stands.

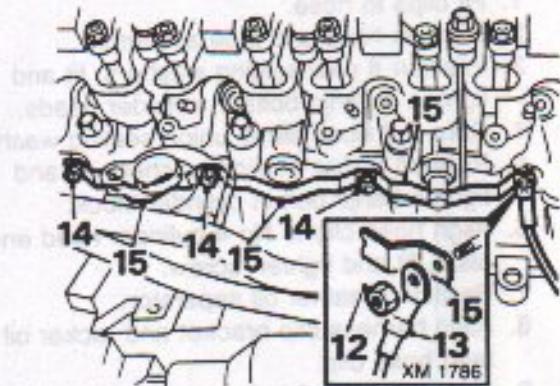
- Remove exhaust and inlet manifolds, see **MANIFOLD & EXHAUST - Repairs**.

ENGINE

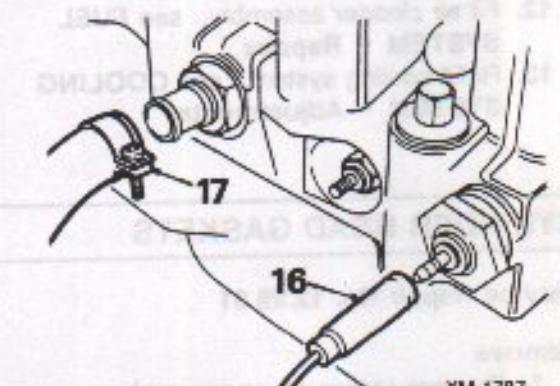
7. Remove bolt securing hose and harness clamp on rear of injection pump.
8. Remove hose and harness clamp.
9. Move hose and harness aside for access.



10. Slacken clip securing pressure sensing hose to injection pump.
11. Disconnect hose.

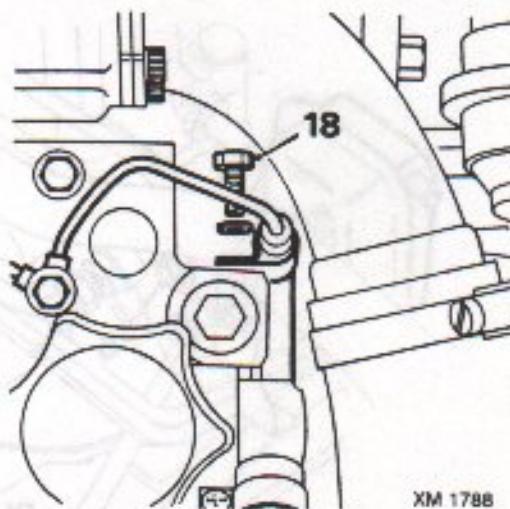


12. Remove No. 4 cylinder heater plug terminal nut.
13. Disconnect feed wire.
14. Remove remaining 3 terminal nuts.
15. Remove terminal links.

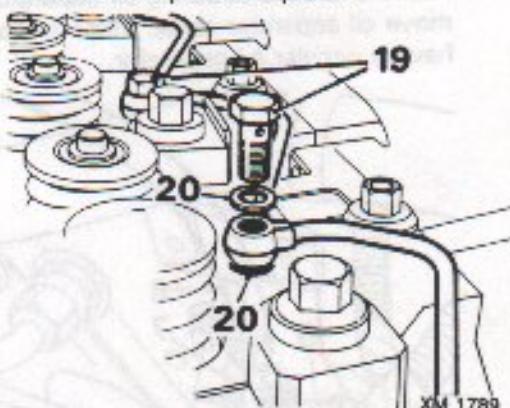


Pre 1992 model illustrated

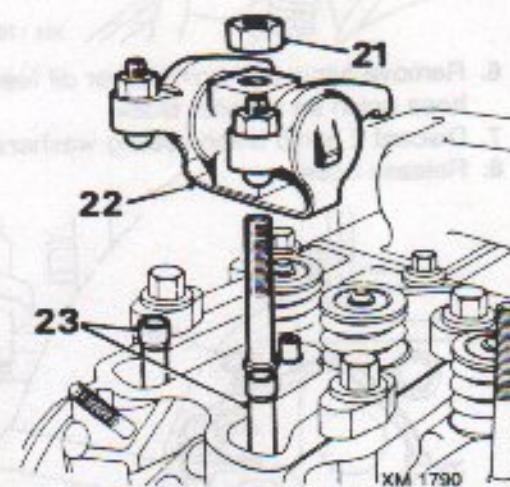
16. Disconnect lead from coolant temperature transmitter.
17. Pre 1992 models: Slacken clip securing injection pump cold start device hose to No. 3 cylinder head and disconnect hose.
1992 models on: Disconnect lead from cold start advance temperature sensor.



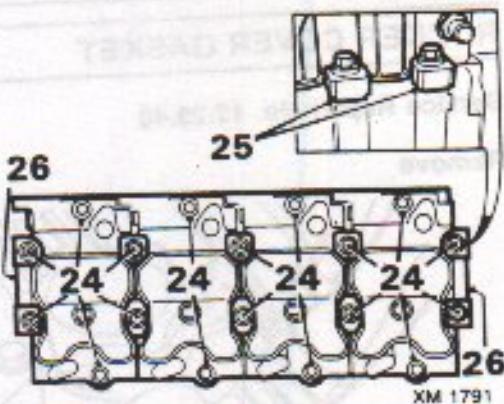
18. Remove screw securing cylinder head oil feed hose clip to end plate.



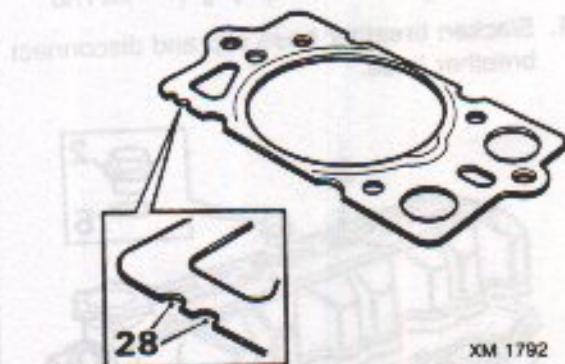
19. Remove 4 oil feed pipe banjo bolts.
20. Discard 8 sealing washers and move pipe aside.



21. Remove 4 nuts securing rocker assemblies.
22. Remove rocker assemblies.
23. Remove push rods.



24. Remove 18 bolts securing cylinder heads.
25. Remove 10 spacer blocks.
26. Remove 2 end plates.
27. Remove cylinder heads.



28. Remove cylinder head gaskets and note thickness indication which could be 2 notches, 1 notch or no notches in position shown.

Note: All 4 cylinder head gaskets should be same thickness.

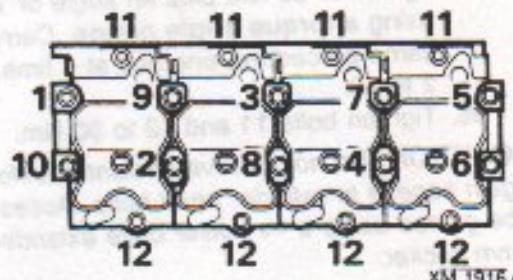
Refit

1. Clean cylinder head and block mating faces.
2. Clean cylinder head bolts, spacer blocks and end plates.
3. Clean remaining components and blow out oil feed drillings
4. Ensure new cylinder head gaskets have same thickness indication as those removed.
If all were not the same on removal, ensure all are now of thickest type removed.
5. Position head gaskets.
6. Lubricate threads and beneath heads of cylinder head bolts 1 to 10 with Molybdenum Di Sulphide based grease. Lubricate threads of bolts 11 and 12 with engine oil.
7. Position cylinder heads one at a time, ensuring that the gasket is fully covered by

the cylinder head. Use a lead lamp to confirm full coverage. Fit and hand tighten bolts 11 and 12 prior to fitting the next head. When all heads are fitted, align cylinder head with exhaust manifold and recheck coverage of gasket.

Note: Using a straight-edge, check that the height of all heads is within 0.1 mm of each other. Using the shank of a 3 mm drill as a gauge, check that the gap between heads is 3 mm. The gap must not be below 1.5 mm or above 4.5 mm.

8. Position spacer blocks.
9. Position end plates.



10. Fit cylinder head bolts shown as 1 to 10 and tighten in that order to a torque of 30 Nm. Overcheck by repeating the procedure with the same torque.
11. Tighten bolts 1 to 10 in sequence a further 70° using a torque angle gauge. Again in sequence, tighten bolts 1 to 10 a further 70°.
12. Tighten bolts 11 first, then 12 to 80 Nm.
13. Refit manifolds leaving nuts loose, see **MANIFOLD & EXHAUST - Repairs**.
14. Lubricate and fit push rods.
15. Fit rocker assemblies, lubricate and tighten nuts to 108 Nm.
16. Clean cylinder head oil feed pipe union and sealing washers.
17. Position oil feed pipe, fit new sealing washers, fit and tighten banjo bolts.
18. Position hose clip to cylinder head end plate, fit and tighten screw.
19. Connect cold start device feed hose to cylinder head and tighten hose clip.
20. Connect temperature gauge transmitter lead.
21. Fit heater plug terminal links and connect feed wire.
22. Fit and tighten terminal nuts.
23. Connect pressure sensing hose to injection pump and tighten hose clip.
24. Position hose and harness, fit and tighten clamp bolt.
25. Tighten manifold nuts, see **MANIFOLD & EXHAUST - Repairs**.
26. Check and adjust valve rocker clearances, see **Adjustments**.
27. Fit splash shield.

ENGINE

28. Fit road wheel and tighten nuts to 110 Nm.
29. Remove stand(s) and lower vehicle.
30. Fit injectors, see **FUEL SYSTEM - Repairs**.
31. Fit coolant manifold, see **COOLING SYSTEM - Repairs**.
32. Fit rocker cover and tighten nuts to 9 Nm.
33. Refill cooling system, see **COOLING SYSTEM - Adjustments**.
34. Run engine for 20 minutes, until it reaches stabilised operating temperature, then allow the engine to cool for a minimum of 4 hours. Where possible, allow an overnight cool.
35. Starting at bolt 1, slacken completely then, tighten to 30 Nm plus an angle of 120°, using a torque angle gauge. Carry out same procedure, one bolt at a time, for bolts 2 to 10.
36. Tighten bolts 11 and 12 to 90 Nm.

CAUTION: Do not remove coolant manifold to gain access to cylinder head bolts. Access can be gained using a $\frac{3}{8}$ " power drive extended 11 mm socket.

Note: The cylinder head bolts must be retorqued in the correct sequence at 24,000 miles(40,000 Km) after engine rebuild as follows:

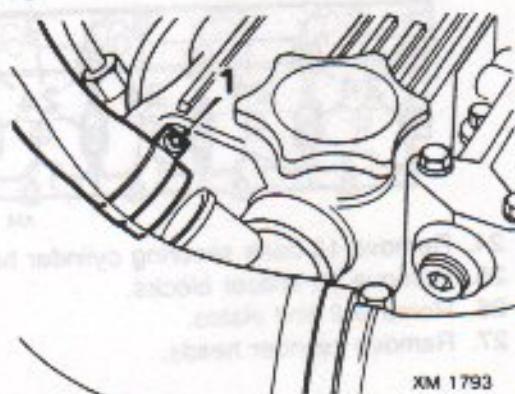
Tighten bolts 1 to 10 a further 10° - 15°.

Check that torque of bolts 11 and 12 is still 90 Nm.

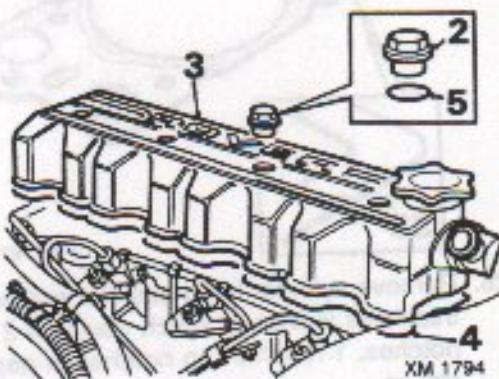
ROCKER COVER GASKET

Service Repair No. 12.29.40

Remove



1. Slacken breather hose clip and disconnect breather hose.



2. Remove 4 nuts securing rocker cover.
3. Remove rocker cover.
4. Remove rocker cover gasket.
5. Remove 'O' rings from nuts.

Refit

1. Clean rocker cover nuts, lubricate 'O' rings and fit seals to nuts.
2. Clean rocker cover and cylinder heads mating faces.
3. Fit rocker cover gasket.
4. Fit and align rocker cover.
5. Fit and tighten rocker cover nuts to 9 Nm.
6. Connect breather hose, tighten hose clip.



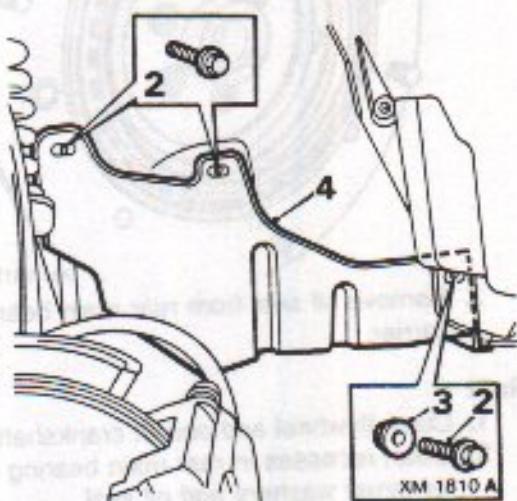
OIL FILTER HEAD SEAL

Service Repair No. 12.60.03

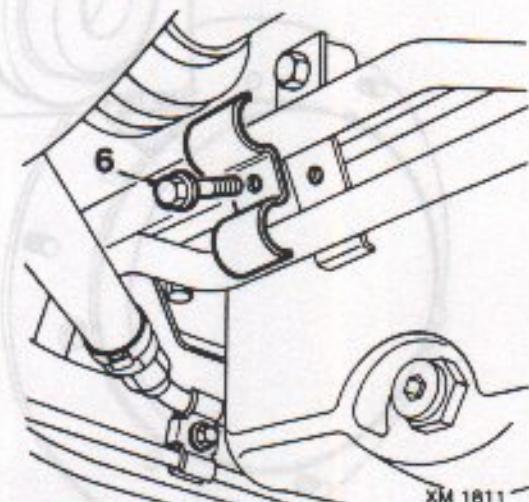
Remove

1. Raise front of vehicle.

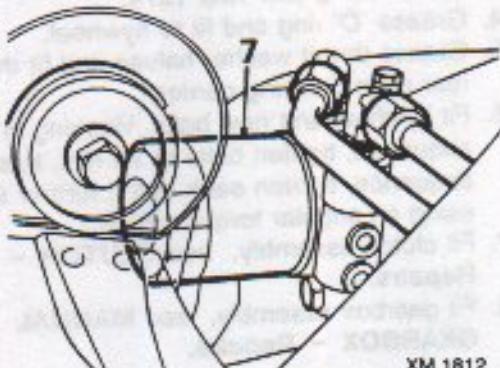
WARNING: Support on safety stands.



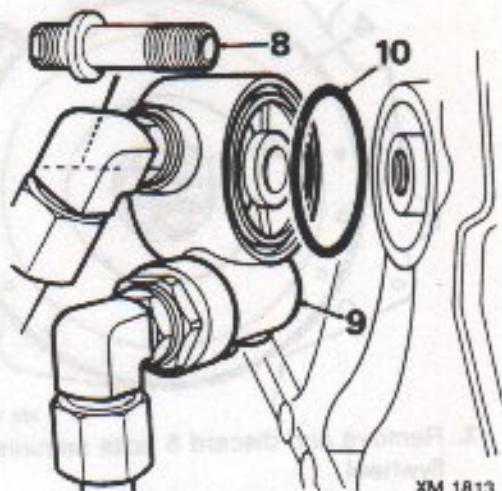
2. Remove 3 screws securing splash shield under R.H. front wing.
3. Remove spacer from front screw.
4. Release splash shield from body.
5. Remove splash shield.



6. Remove screw securing oil cooler pipe clamp to bracket on cylinder block.



7. Unscrew oil filter cartridge from filter head.



8. Remove filter head union.
9. Release filter head from cylinder block.
10. Remove filter head sealing ring.

Refit

1. Clean filter head and cylinder block mating faces.
2. Clean seal recess.
3. Apply grease to seal recess and fit seal to filter head.
4. Align filter head to cylinder block.
5. Fit and tighten filter head union to 37 Nm.
6. Fit filter cartridge hand tight.
7. Align oil cooler pipes to bracket, position clamp, fit and tighten clamp screw.
8. Position splash shield.
9. Position spacer on front screw, fit and tighten screws securing shield.
10. Remove stand(s) and lower vehicle.

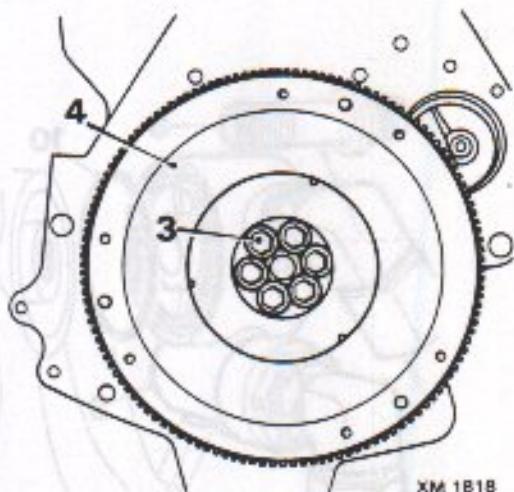
FLYWHEEL AND CRANKSHAFT REAR OIL SEAL

Service Repair No. Flywheel - 12.53.07

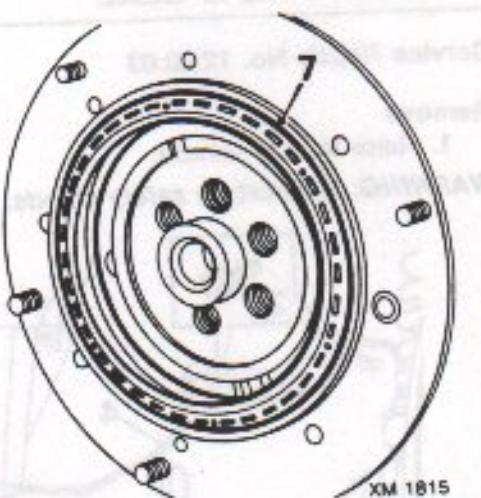
Service Repair No. Crankshaft rear oil seal - 12.21.20

Remove

1. Remove gearbox assembly, see **MANUAL GEARBOX - Repairs**.
2. Remove clutch assembly, see **CLUTCH - Repairs**.



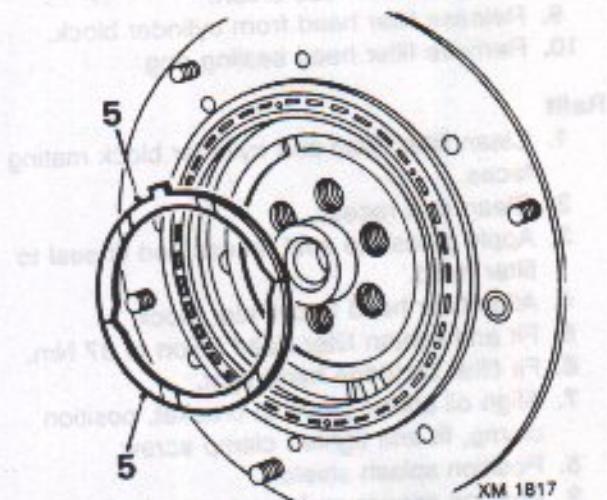
3. Remove and discard 6 bolts securing flywheel.
4. Remove flywheel from crankshaft.



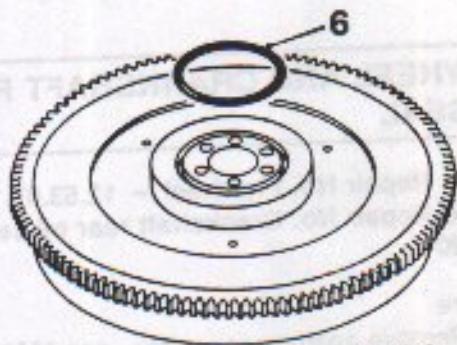
7. Remove oil seal from rear main bearing carrier.

Refit

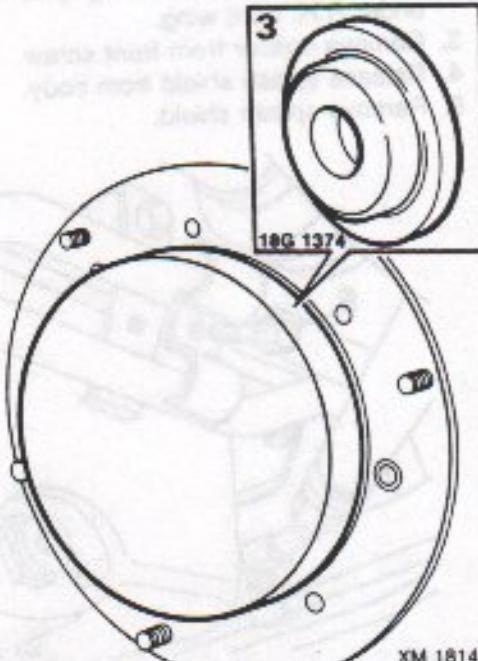
1. Clean flywheel and end of crankshaft.
2. Clean recesses in rear main bearing carrier for thrust washers and oil seal.



5. Remove 2 half thrust washers from rear main bearing carrier.



6. Remove 'O' ring from flywheel.



3. Lubricate oil seal and fit to rear main bearing carrier using tool 18G 1374.
4. Grease 'O' ring and fit to flywheel.
5. Grease thrust washer halves and fit them to rear main bearing carrier.
6. Fit flywheel and new bolts. Working in sequence, tighten bolts to 20 Nm. In same sequence, tighten each bolt a further 60° using an angular torque gauge.
7. Fit clutch assembly, see CLUTCH - Repairs.
8. Fit gearbox assembly, see MANUAL GEARBOX - Repairs.



CRANKSHAFT FRONT OIL SEAL

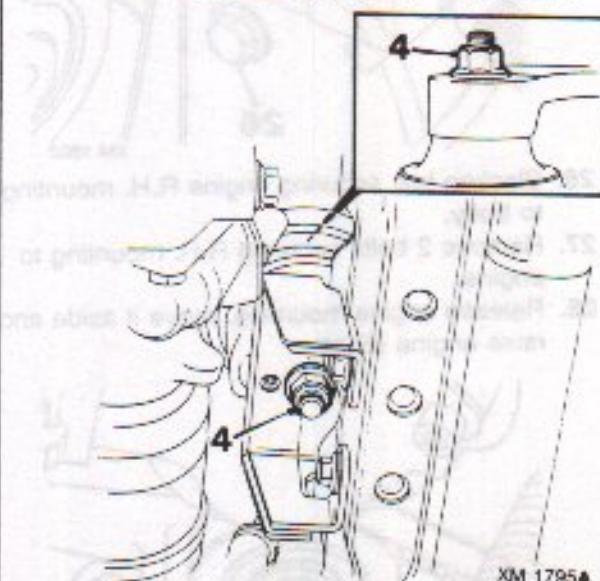
Service Repair No. 12.21.14

Remove

1. Raise front of vehicle.

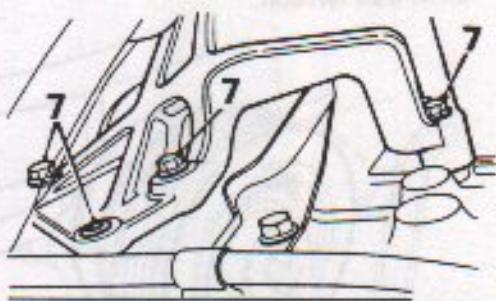
WARNING: Support on safety stands.

2. Remove R.H. drive shaft, see **DRIVE SHAFTS - Repairs**.
3. Remove exhaust front pipe, see **MANIFOLD & EXHAUST - Repairs**.

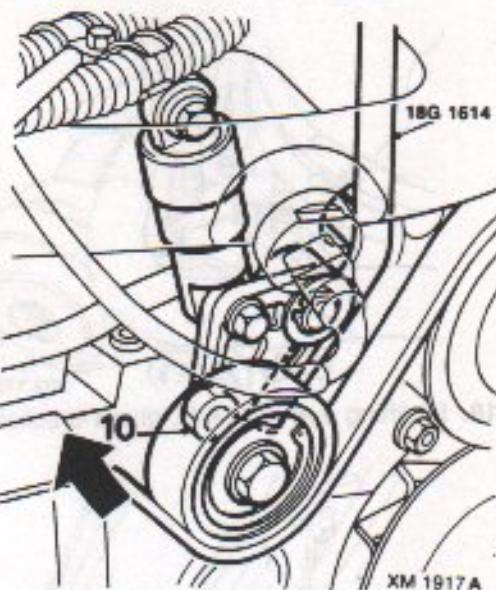


4. Remove 2 nuts securing rear centre engine mounting to mounting brackets on crossmember and engine.
5. Position trolley jack under power unit.
6. Support power unit under differential housing using trolley jack.

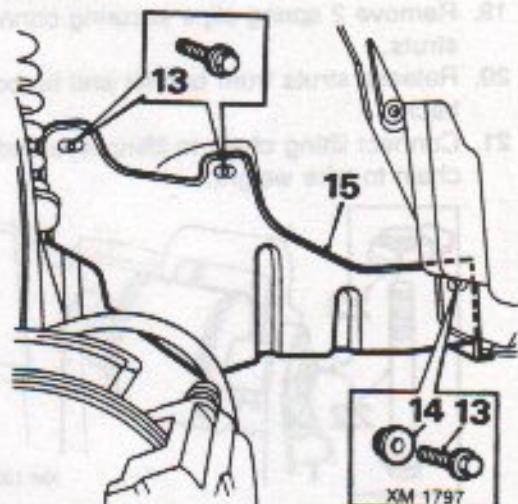
CAUTION: Use a block of wood or hard rubber to protect the differential housing. Never support the engine using the sump.



7. Remove 3 bolts and 'Torx' screw securing rear mounting bracket to engine.
8. Release mounting and bracket assembly, remove mounting from bracket and remove mounting bracket.

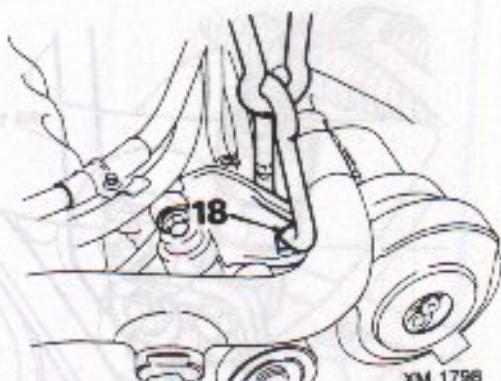


9. Fit tool 18G 1614 to power steering pump bracket and raise tensioner.
10. Slacken nut on tensioner pulley eccentric and rotate pulley to high position.
11. Release belt from under tensioner and release tensioner.
12. Remove tool 18G 1614.

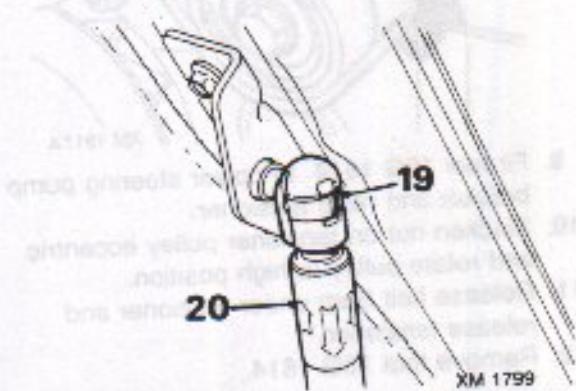


13. Remove 3 screws securing splash shield under R.H. front wing.
14. Remove spacer from front screw.
15. Remove splash shield.
16. Release belt from pulleys.
17. Release belt from between crankshaft pulley and longitudinal member.

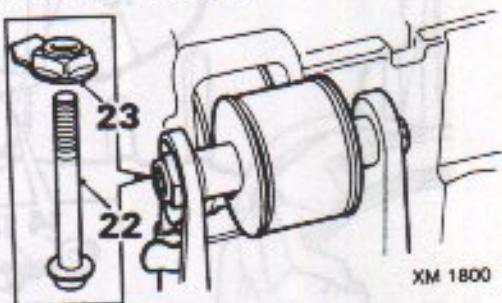
ENGINE



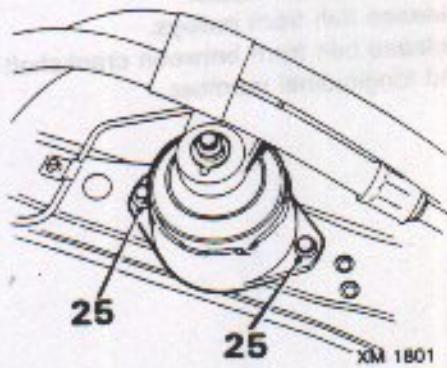
18. Fit lifting eye to P.A.S. pump bracket.



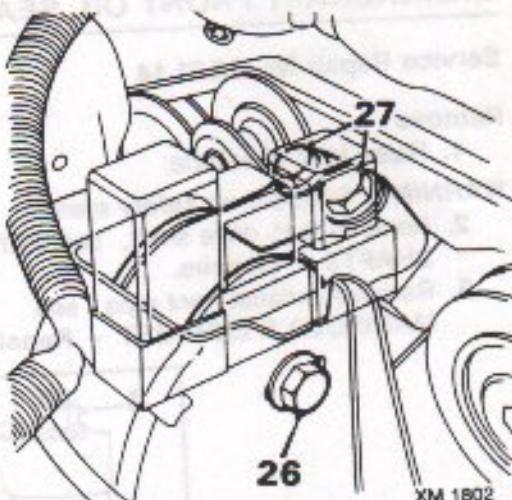
19. Remove 2 spring clips securing bonnet struts.
 20. Release struts from bonnet and tie bonnet back.
 21. Connect lifting chain to lifting eye and raise chain to take weight.



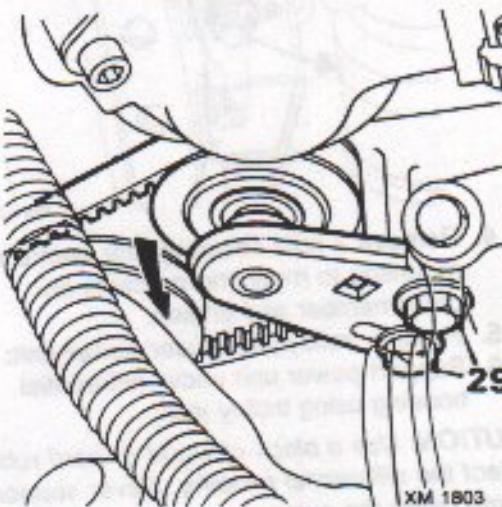
22. Remove engine rear tie bar through - bolt.
 23. Remove special nut.
 24. Remove engine lower tie bar through - bolt.



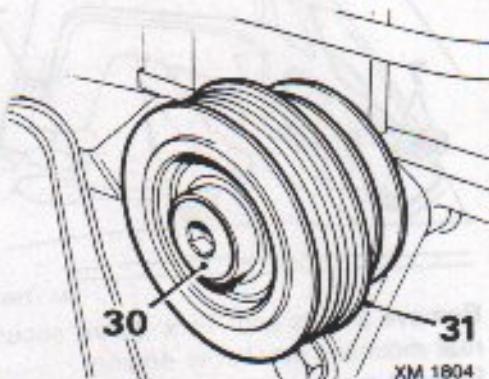
25. Remove 2 bolts securing engine front mounting to crossmember.



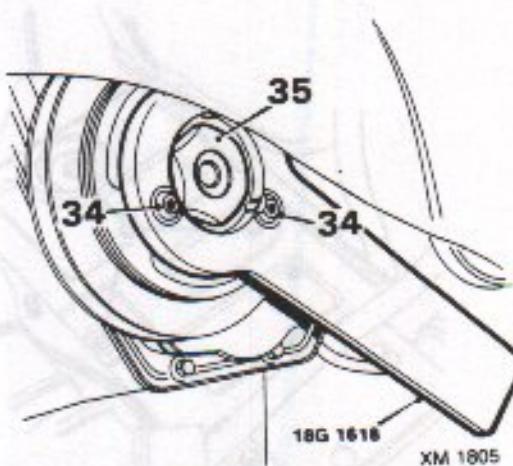
26. Slacken bolt securing engine R.H. mounting to body.
 27. Remove 2 bolts securing R.H. mounting to engine.
 28. Release engine mounting, move it aside and raise engine slightly.



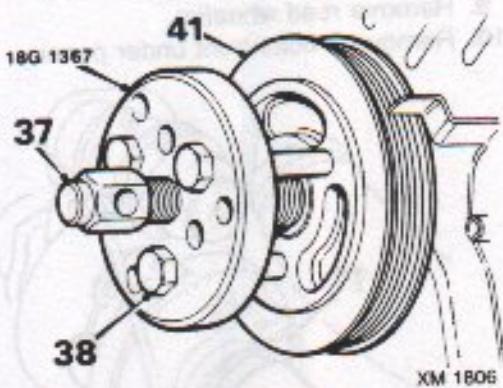
29. Slacken 2 bolts, coolant pump drive belt tensioning pulley, to release coolant pump drive belt tension.



30. Remove Allen screw securing coolant pump drive pulley.
 31. Remove pulley.
 32. Lower jack.
 33. Move power unit back towards bulkhead and lower power unit.



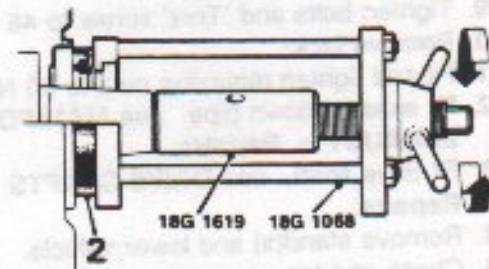
34. Position tool 18G 1618 to crankshaft pulley and secure with 3 bolts.
35. Remove crankshaft pulley nut.
36. Remove tool 18G 1618.



37. Slacken centre screw on tool 18G 1367.
38. Position tool 18G 1367 to crankshaft pulley and fit and tighten 3 bolts.
39. Tighten centre screw on tool 18G 1367 to release crankshaft pulley.
40. Remove tool 18G 1367.
41. Remove pulley.
42. Warm area around seal using an hot air gun and carefully lever out seal.

Refit

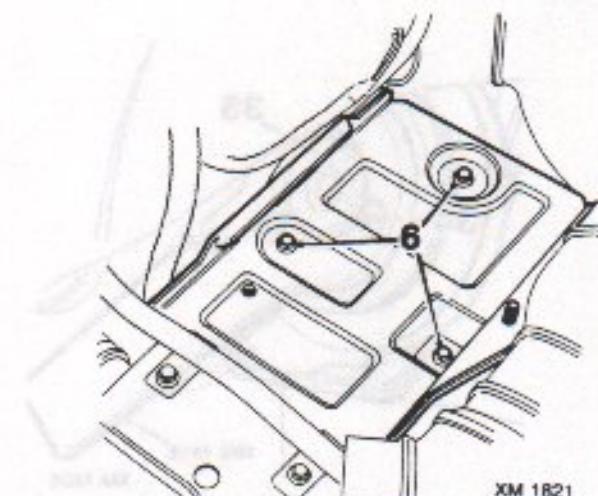
1. Clean seal recess and lubricate new seal.



2. Fit seal, using tools 18G 1068 and 18G 1619.
3. Clean pulley and crankshaft and fit pulley.
4. Apply Loctite 601 to pulley nut thread and fit pulley nut.
5. Position tool 18G 1618 to pulley and secure with 3 bolts.
6. Tighten pulley nut to 177 Nm.
7. Remove tool 18G 1618.
8. Raise power unit.
9. Fit coolant pump drive pulley, fit and tighten Allen screw.
10. Retension coolant pump drive belt, see COOLING SYSTEM - Adjustments.
11. Position engine R.H. mounting.
12. Fit and tighten 2 bolts to 75 Nm.
13. Tighten through - bolt securing mounting to body to 45 Nm.
14. Align engine front mounting.
15. Fit and tighten 2 bolts to 45 Nm.
16. Align engine lower tie bar, fit and tighten through - bolt to 45 Nm..
17. Raise jack.
18. Align engine top tie bar, position special nut, fit and tighten through - bolt to 45 Nm.
19. Lower engine and disconnect chain from lifting eye.
20. Untie bonnet, connect bonnet struts and fit spring clips.
21. Remove lifting eye from P.A.S. pump bracket.
22. Clean belt pulleys and fit belt to pulleys.
23. Fit tool 18G 1614 to P.A.S. pump bracket, fit drive belt and adjust belt tension, see ELECTRICAL - Adjustments.
24. Remove tool 18G 1614.
25. Position splash shield, position spacer to front screw, fit and tighten screws.
26. Position engine rear centre mounting and mounting bracket, fit mounting to bracket.
27. Align mounting to crossmember and bracket to cylinder block.

ENGINE

28. Fit bolts and 'Torx' screw.
29. Tighten bolts and 'Torx' screw to 45 Nm.
30. Remove jack.
31. Fit and tighten mounting nuts to 90 Nm.
32. Fit exhaust down pipe, see **MANIFOLD & EXHAUST - Repairs**.
33. Fit drive shaft, see **DRIVE SHAFTS - Repairs**.
34. Remove stand(s) and lower vehicle.
35. Check and top up gearbox oil, see **MANUAL GEARBOX - Adjustments**.

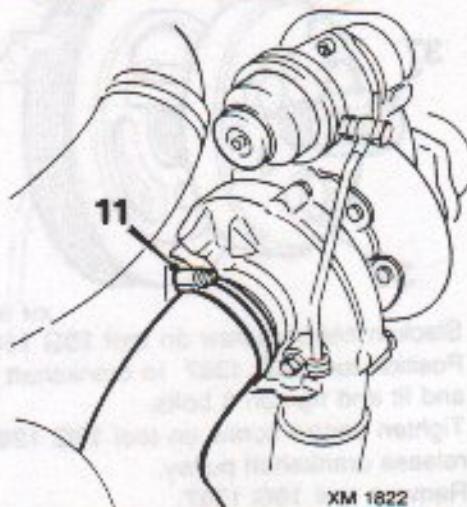


XM 1821

6. Remove 3 bolts securing battery tray.
7. Remove battery tray.
8. Raise front of vehicle.

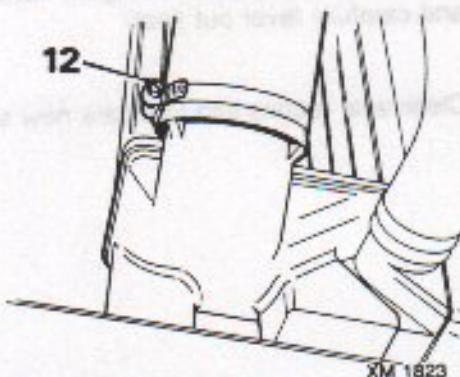
WARNING: Support on safety stands.

9. Remove road wheel(s).
10. Remove 5 bolts front under panel.



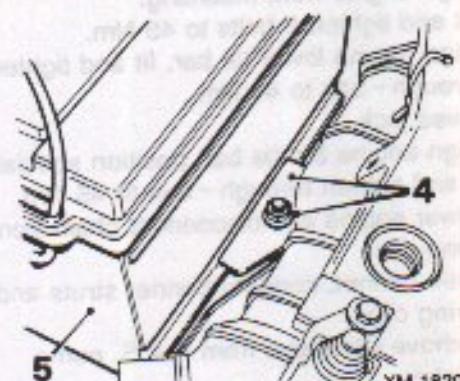
XM 1822

11. Remove clip securing hose to turbocharger.

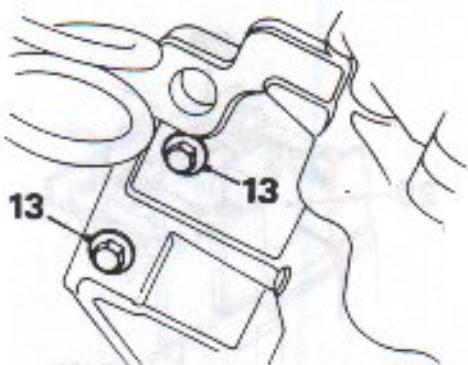


XM 1823

12. Remove clip securing hose to intercooler.

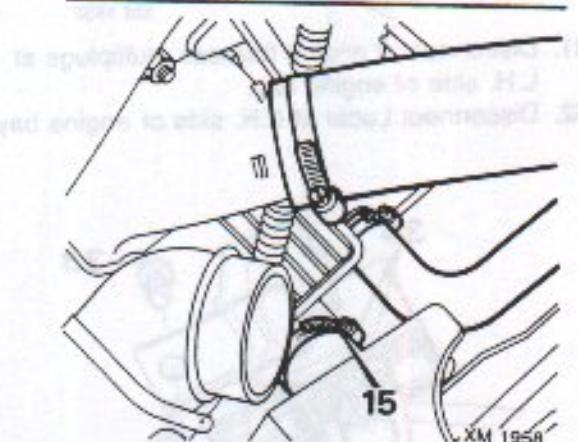
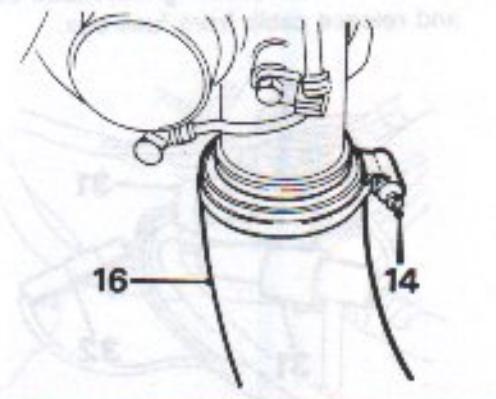


4. Remove nut securing battery clamp, remove clamp.
5. Remove battery.



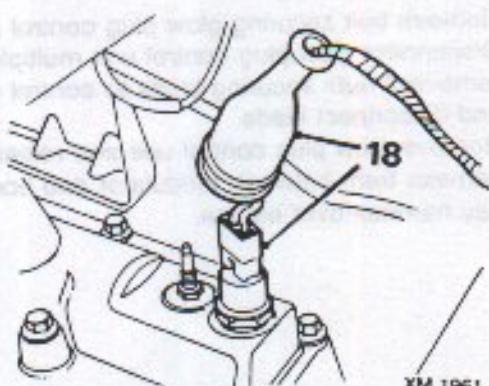
XM TB24

13. Remove 2 bolts securing hose connector to gearbox case.



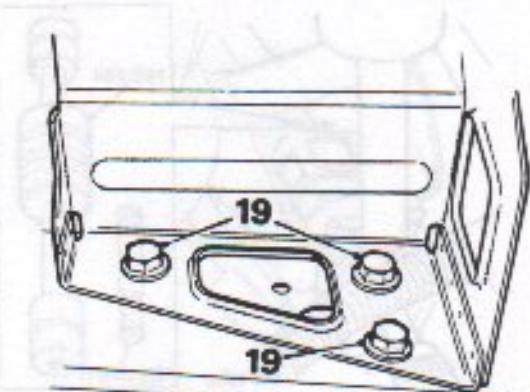
XM 1958

14. Disconnect hose from turbocharger.
 15. Disconnect hose from intercooler.
 16. Remove hose and connector pipe assembly.
 17. Plug turbocharger and intercooler.



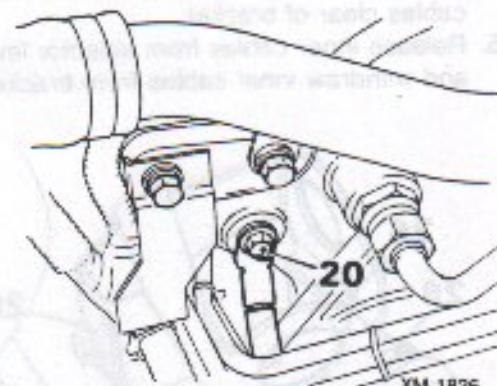
XM 1961

18. Release reverse lamp switch cover and disconnect multiplug.



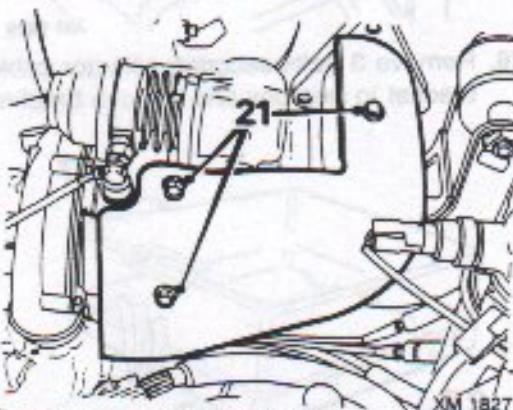
XM 1825

19. Remove 3 bolts securing air cleaner bracket, remove bracket.



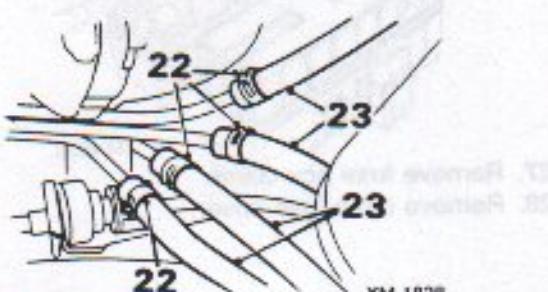
XM 1826

20. Remove bolt securing earth lead to engine backplate and move lead aside.



XM 1827

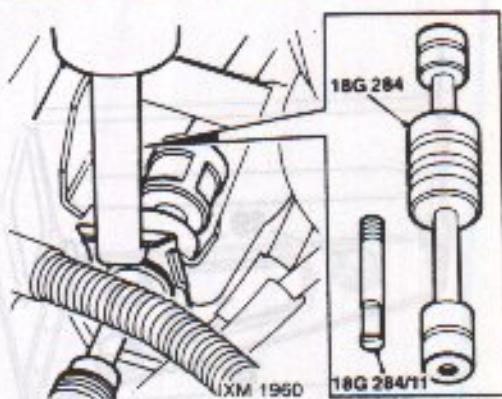
21. Remove 3 bolts securing turbocharger heatshield and remove heatshield.



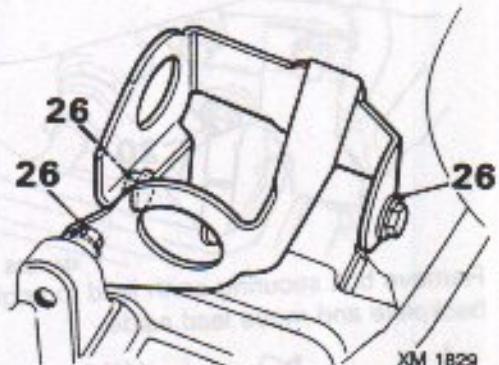
XM 1828

22. Release 4 clips securing fuel hoses to pipes.
 23. Disconnect and plug hoses.

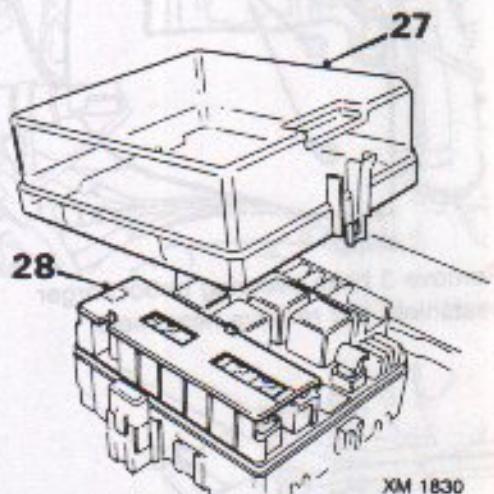
ENGINE



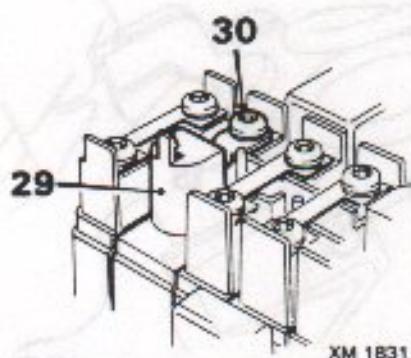
24. Using tools 18G 284 and 18G 284-11, remove clips securing gear selector outer cables in bracket. Pull outer cables clear of bracket.
 25. Release inner cables from selector levers and withdraw inner cables from bracket.



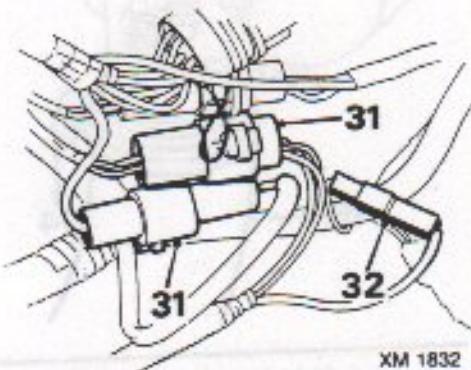
26. Remove 3 bolts securing selector cable bracket to gearbox and remove bracket.



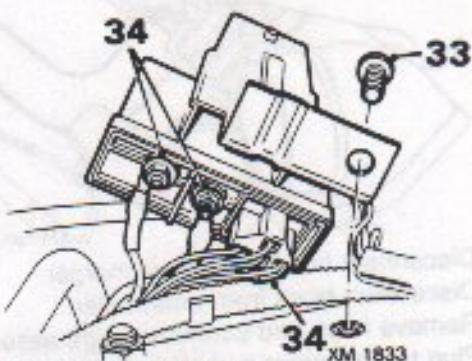
27. Remove fuse box cover.
 28. Remove main fuse cover.



29. Remove main feed cable cover.
 30. Remove screw securing main feed cable and release cable from fuse box.

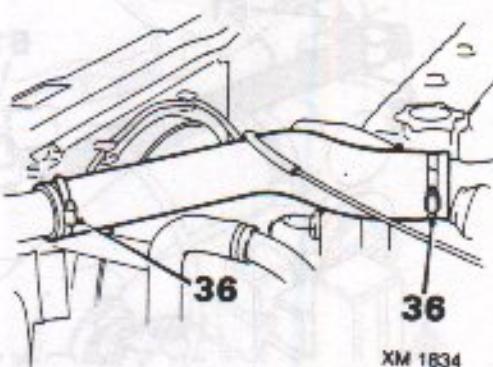


31. Disconnect 2 engine harness multiplugs at L.H. side of engine bay.
 32. Disconnect Lucas at L.H. side of engine bay.



Models fitted with ABS

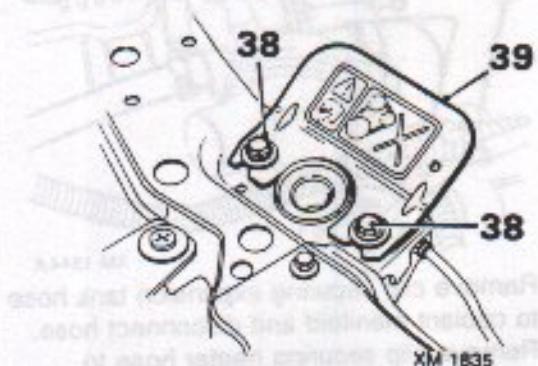
33. Remove bolt securing glow plug control unit.
 34. Disconnect glow plug control unit multiplug, remove 2 nuts securing leads to control unit and disconnect leads.
 Remove glow plug control unit and release harness from between modulator and body.
 35. Lay harness over engine.



XM 1834

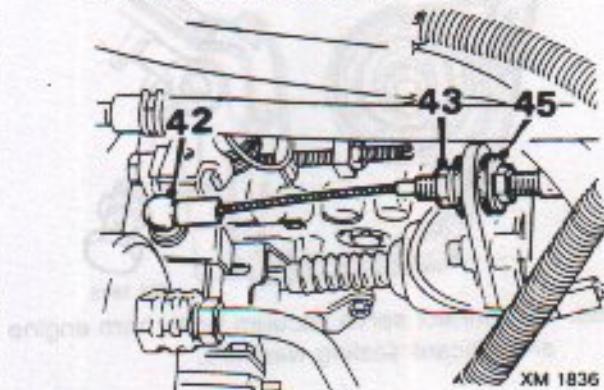
All Models

36. Slacken 2 intake hose clips, disconnect hose from intake elbow and remove hose from intercooler.
37. Plug intercooler and intake elbow.



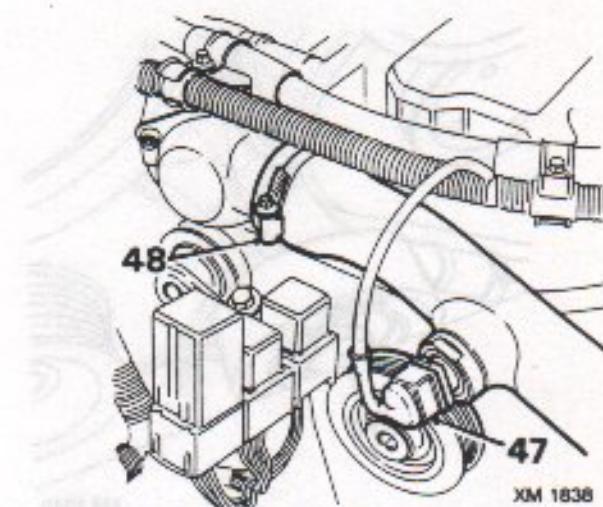
XM 1835

38. Slacken 2 bolts securing bonnet R.H. catch.
39. Remove warning label plate.
40. Position drain tin and drain coolant, see **COOLING SYSTEM - Adjustments**.
41. Remove radiator, fan and cowl assembly, see **COOLING SYSTEM - Repairs**.



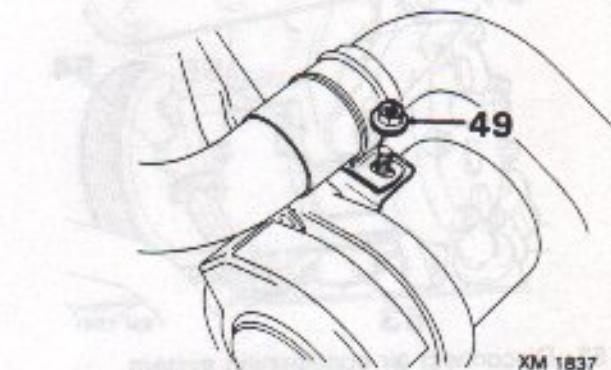
XM 1836

42. Release throttle inner cable pivot from lever on pump.
43. Unscrew cable locknut.
44. Release inner cable from abutment bracket.
45. Release cable sleeve from abutment bracket grommet and release grommet from abutment bracket.
46. Release cable from abutment and move cable assembly aside.



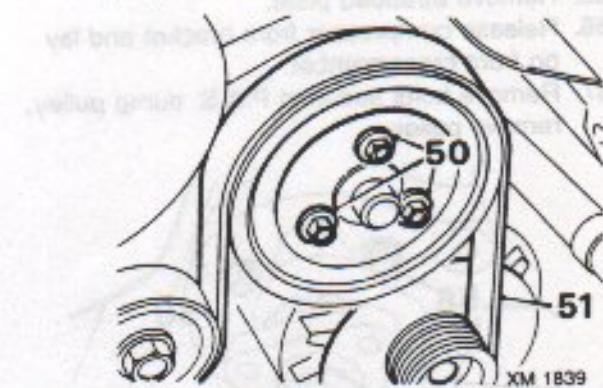
XM 1838

47. Disconnect overheat switch multiplug.
48. Slacken clip securing top hose to thermostat housing.



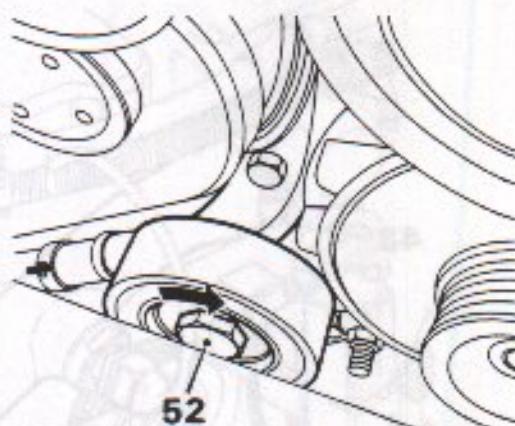
XM 1837

49. Remove nut securing top hose clip to P.A.S. pump bracket, remove top hose.



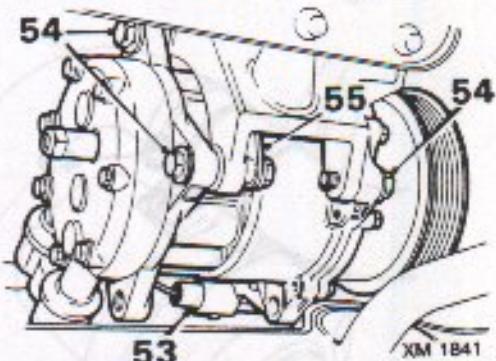
XM 1839

50. Slacken 3 P.A.S. pump drive pulley bolts.
51. Remove auxiliary drive belt.



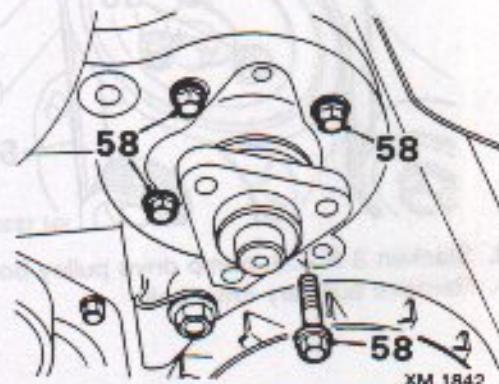
XM 1840

52. Remove lower jockey wheel centre bolt (L.H. thread) and remove jockey wheel.



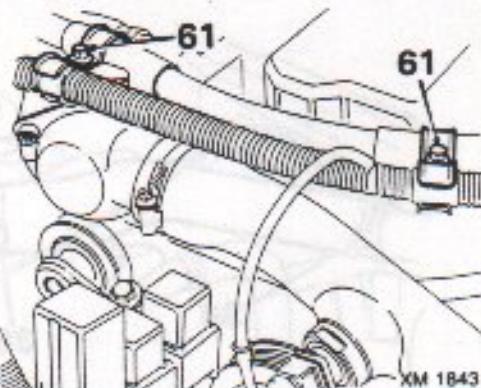
XM 1841

53. Disconnect air conditioning system compressor lead.
 54. Remove 4 bolts securing compressor.
 55. Remove threaded plate.
 56. Release compressor from bracket and lay on front crossmember.
 57. Remove bolts securing P.A.S. pump pulley, remove pulley.



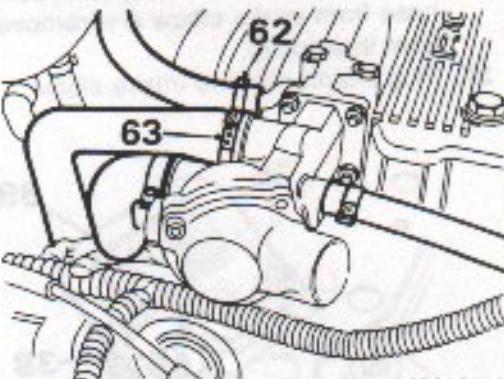
XM 1842

58. Remove 4 bolts securing P.A.S. pump.
 59. Release pump reservoir from clip.
 60. Release pump from bracket and tie pump aside.



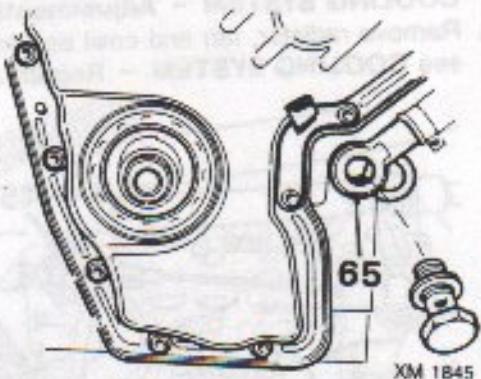
XM 1843

61. Remove 2 screws securing hose and harness clamps, remove clamps.



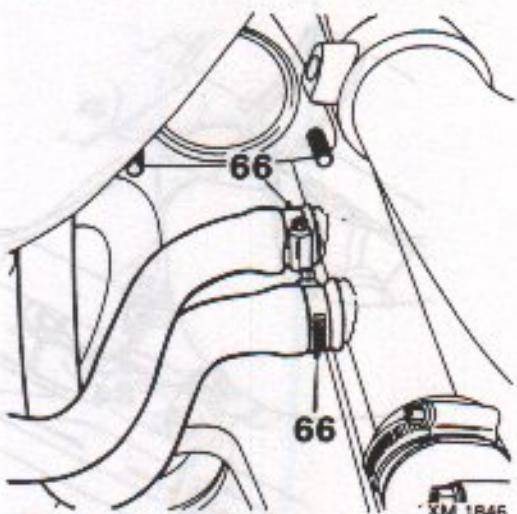
XM 1844A

62. Remove clip securing expansion tank hose to coolant manifold and disconnect hose.
 63. Remove clip securing heater hose to thermostat housing and disconnect hose.
 64. Remove exhaust front pipe, see **MANIFOLD & EXHAUST - Repairs.**

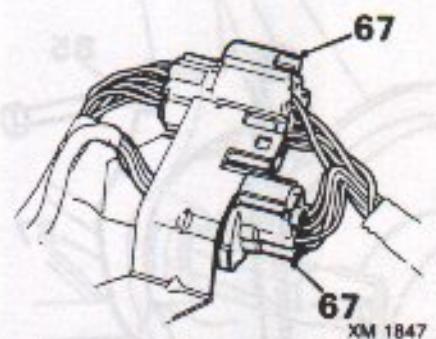


XM 1845

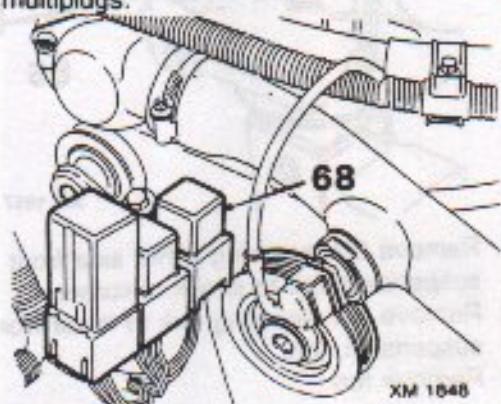
65. Disconnect servo vacuum hose from engine and discard sealing washers.



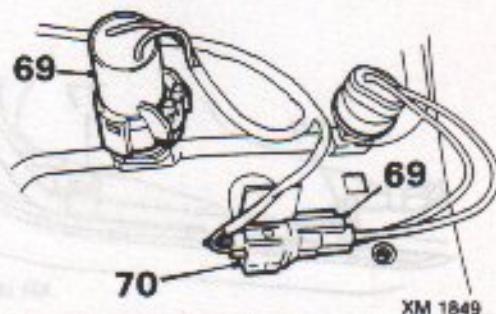
66. Remove 2 clips securing hoses to coolant pipe on rear of engine and disconnect 2 hoses.



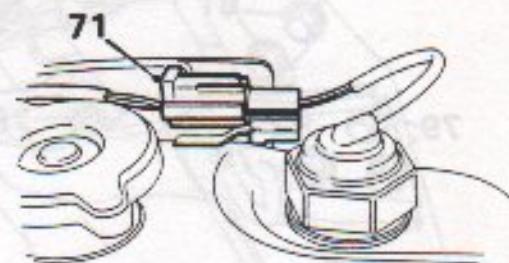
67. Release 2 engine harness multiplugs from bracket on R.H. inner wing and disconnect multiplugs.



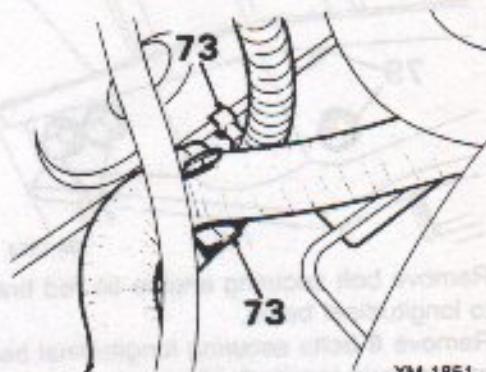
68. Release 3 relays from bracket.



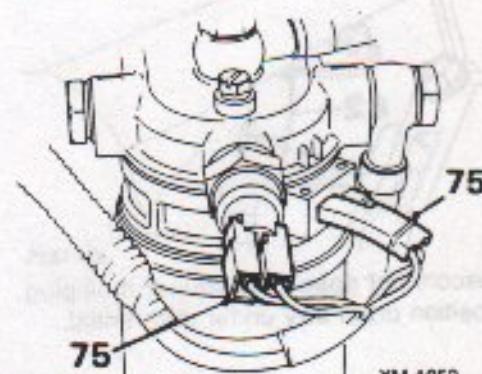
69. Disconnect air conditioning system dual and low pressure switch leads.
70. Release air conditioning system multiplug from bracket on R.H. inner wing panel and disconnect multiplug.



71. Disconnect low coolant level sensor multiplug.
72. Remove 2 screws securing expansion tank.

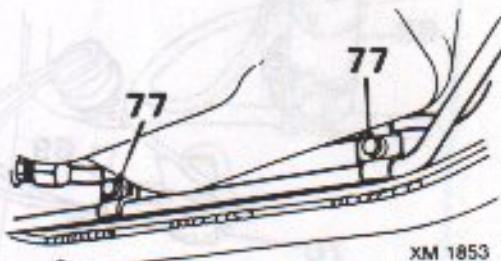


73. Release 2 overflow hose clips from brake pipe.
74. Remove expansion tank and hose assembly.

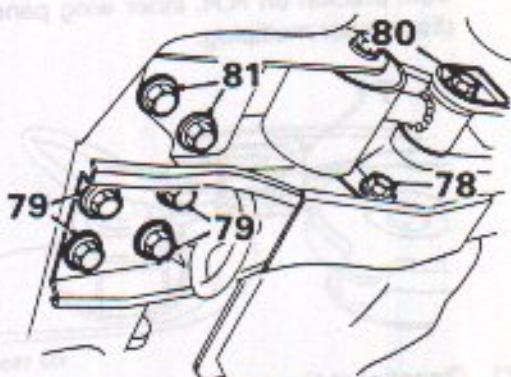


75. Disconnect fuel heater and switch leads.
76. Release harness from behind filter and lay harness over engine.

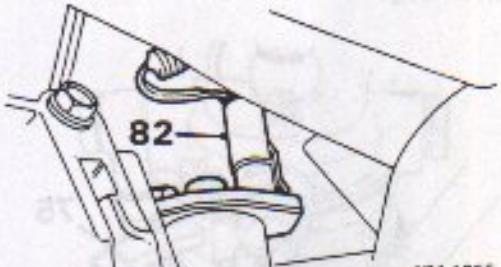
ENGINE



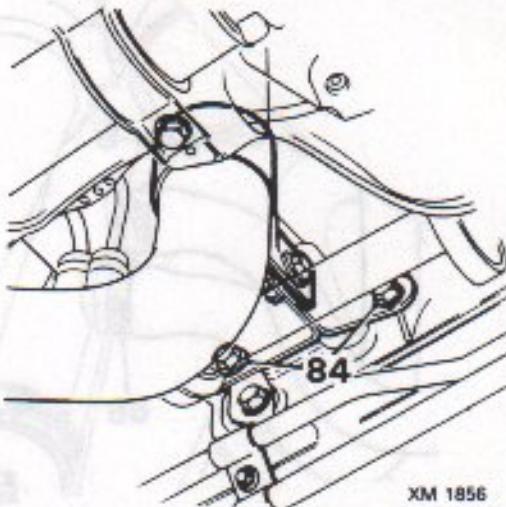
77. Remove 2 bolts securing P.A.S. pipes to longitudinal beam.



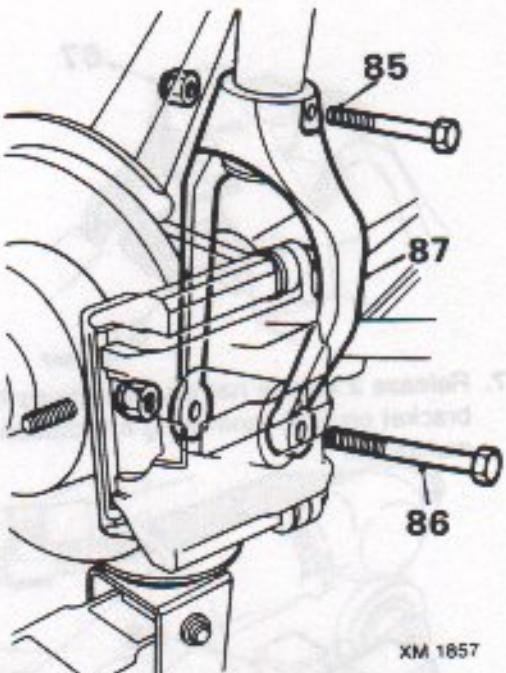
78. Remove bolt securing engine tie rod bracket to longitudinal beam.
79. Remove 8 bolts securing longitudinal beam and remove longitudinal beam.
80. Remove tie rod through - bolt.
81. Remove 2 bolts securing tie rod bracket, remove bracket and tie rod assembly.



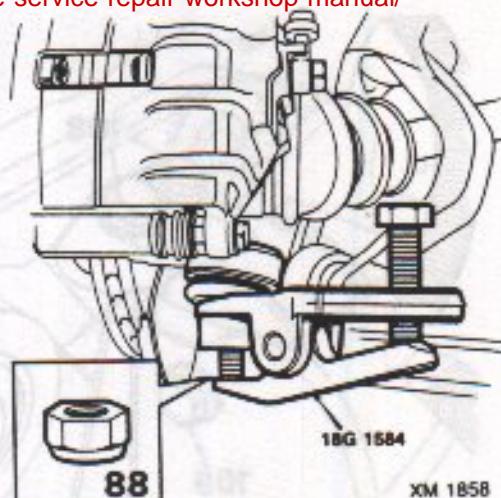
82. Disconnect speed transducer multiplug.
83. Position drain tray under differential.



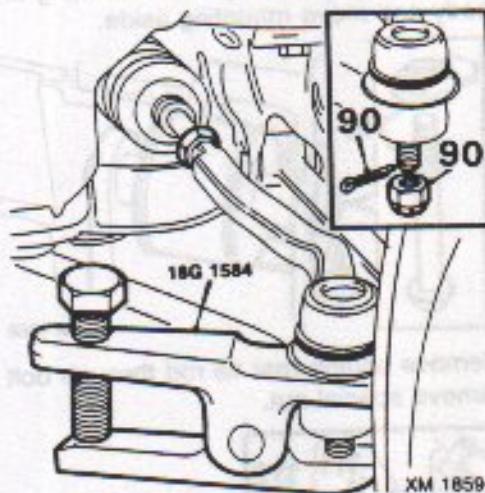
84. Remove 2 bolts securing exhaust front pipe bracket to cylinder block and remove bracket.



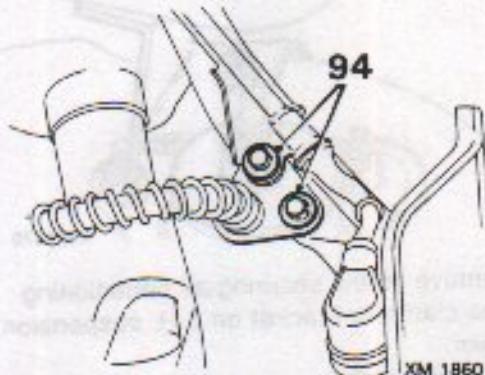
85. Remove bolt securing either side front suspension fork to shock absorber.
86. Remove bolt securing fork to lower front suspension arm.
87. Remove fork.



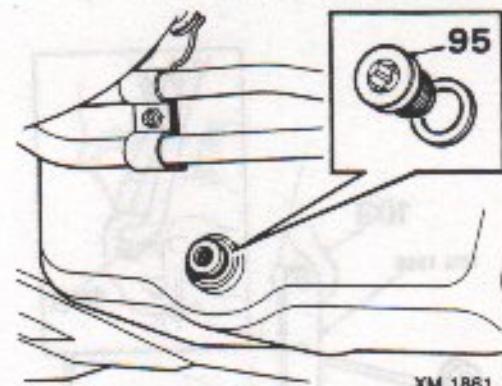
88. Remove bottom ball joint nut.
89. Release ball joint from lower arm, using tool 18G 1584.



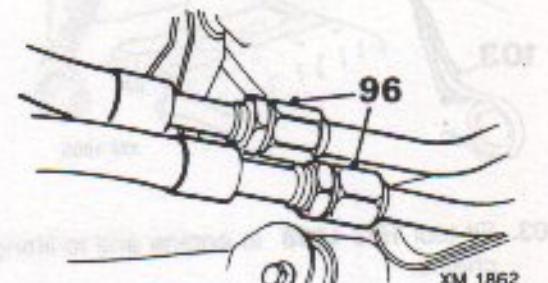
90. Remove split pin and nut from steering track rod ball joint.
91. Release ball joint from steering arm, using tool 18G 1584.
92. Release drive shaft from differential.
93. Repeat operations 85 to 92 to release second drive shaft from differential.



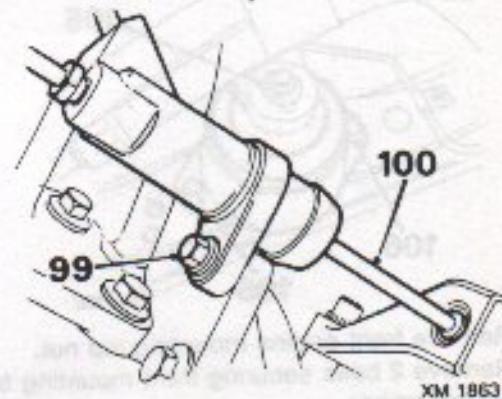
94. Remove 2 bolts securing brake hose bracket to suspension.



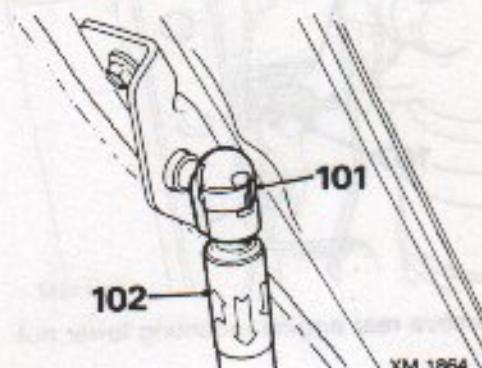
95. Position drain tray under sump, remove sump drain plug and drain sump.



96. Disconnect 2 oil cooler hoses.
97. Plug pipes and hoses.
98. Remove drain tray.



99. Remove 2 bolts securing clutch slave cylinder and move cylinder aside.
100. Remove clutch push rod.



101. Remove 2 spring clips securing bonnet struts.
102. Release struts from bonnet and tie bonnet back.