

# ELECTRICAL

## CONTENTS

### Adjustments

	Page
Auxiliary drive belt .....	1

---

### Repairs

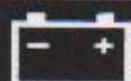
	Page
Starter motor .....	1
Alternator .....	2
Auxiliary drive belt .....	3
Auxiliary drive belt tensioner .....	4

---

### Data, Torque & Tools

	Page
Torque Settings .....	1
Tool Numbers .....	1

---

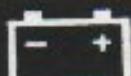
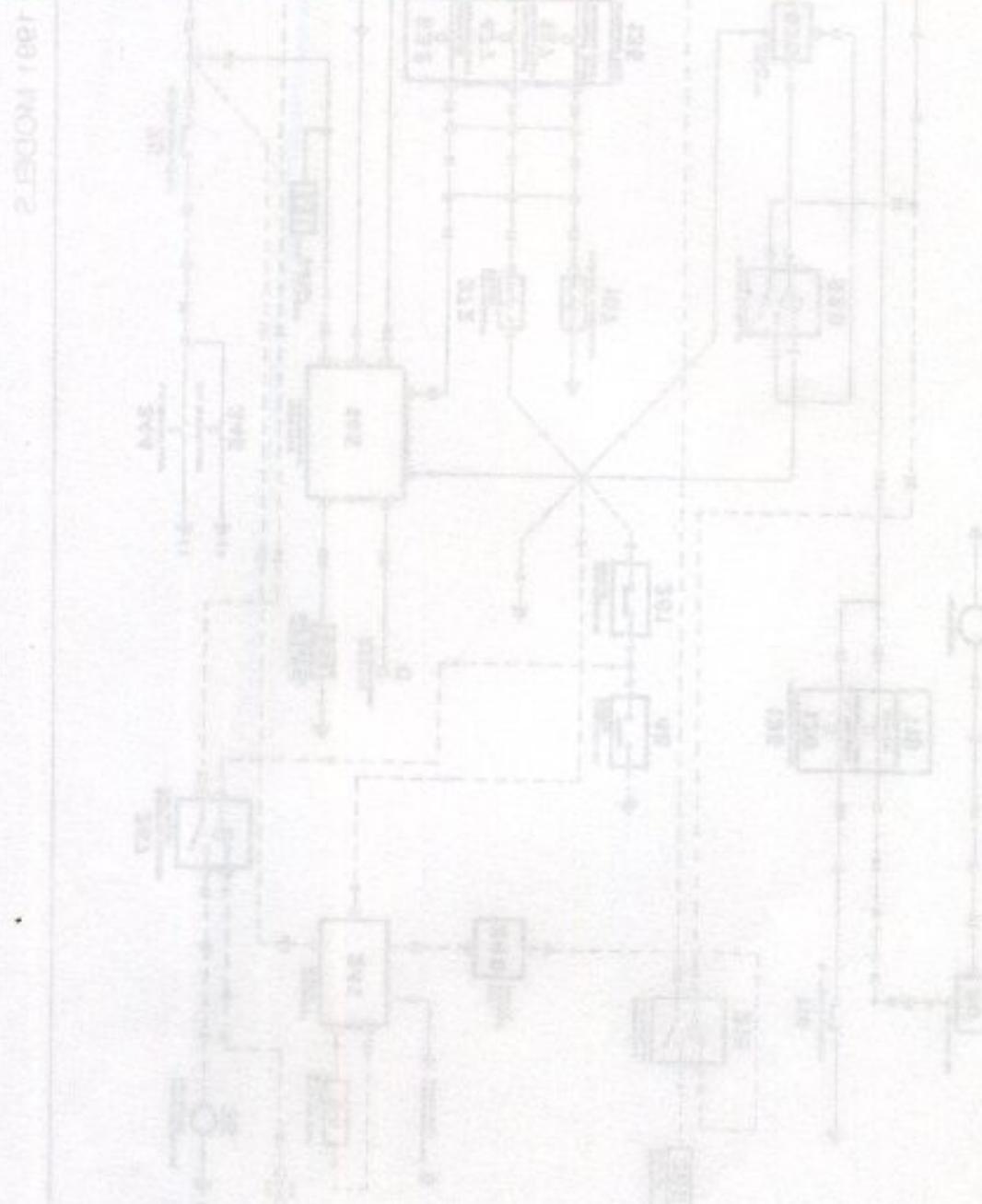


# WIRING DIAGRAMS - UP TO 1991 MODELS

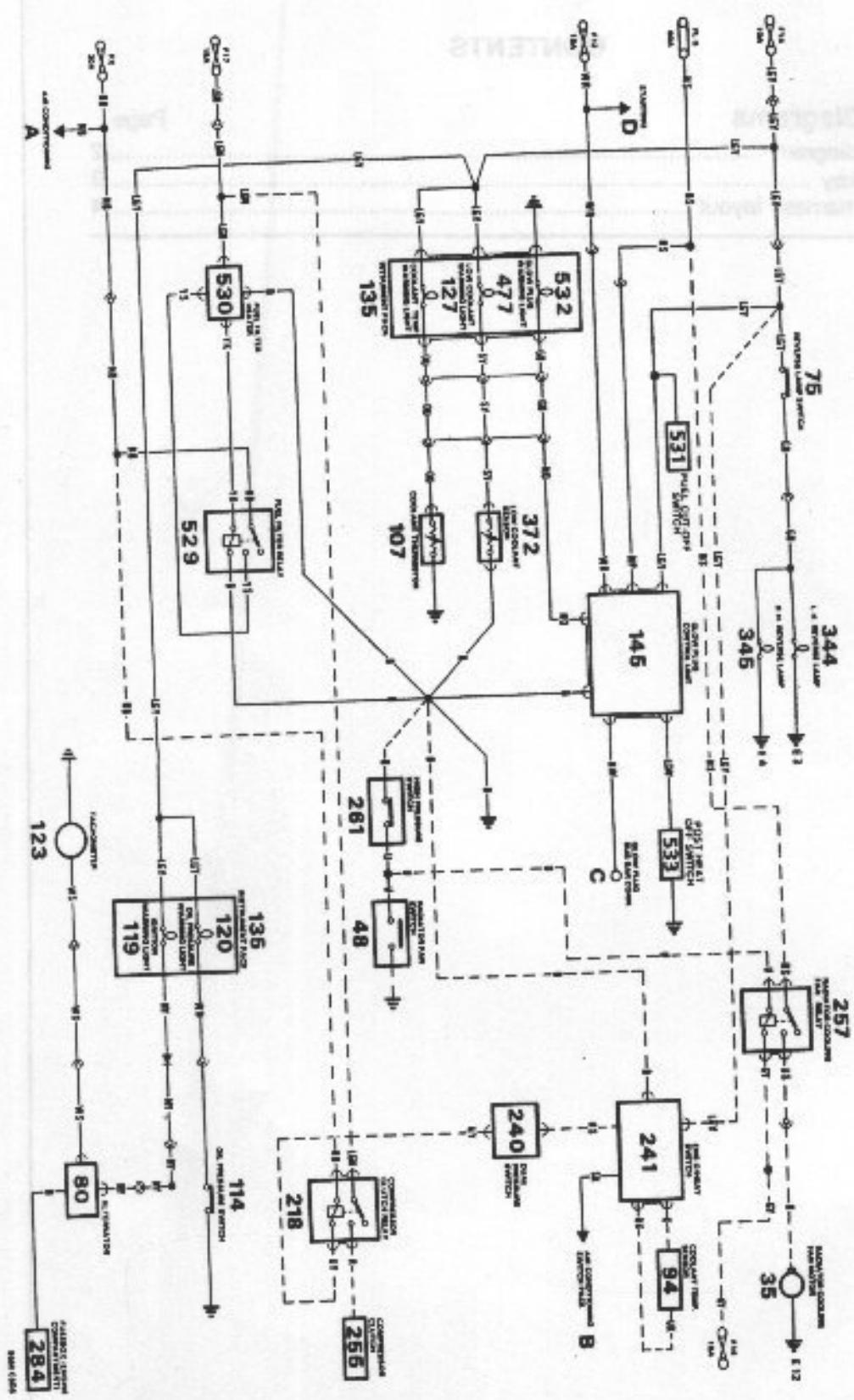
## CONTENTS

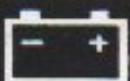
### Wiring Diagrams

	Page
Circuit diagram .....	2
Circuit key .....	3
Engine harness layout .....	4



## WIRING DIAGRAMS - UP TO 1991 MODELS





## CIRCUIT KEY

No. Description

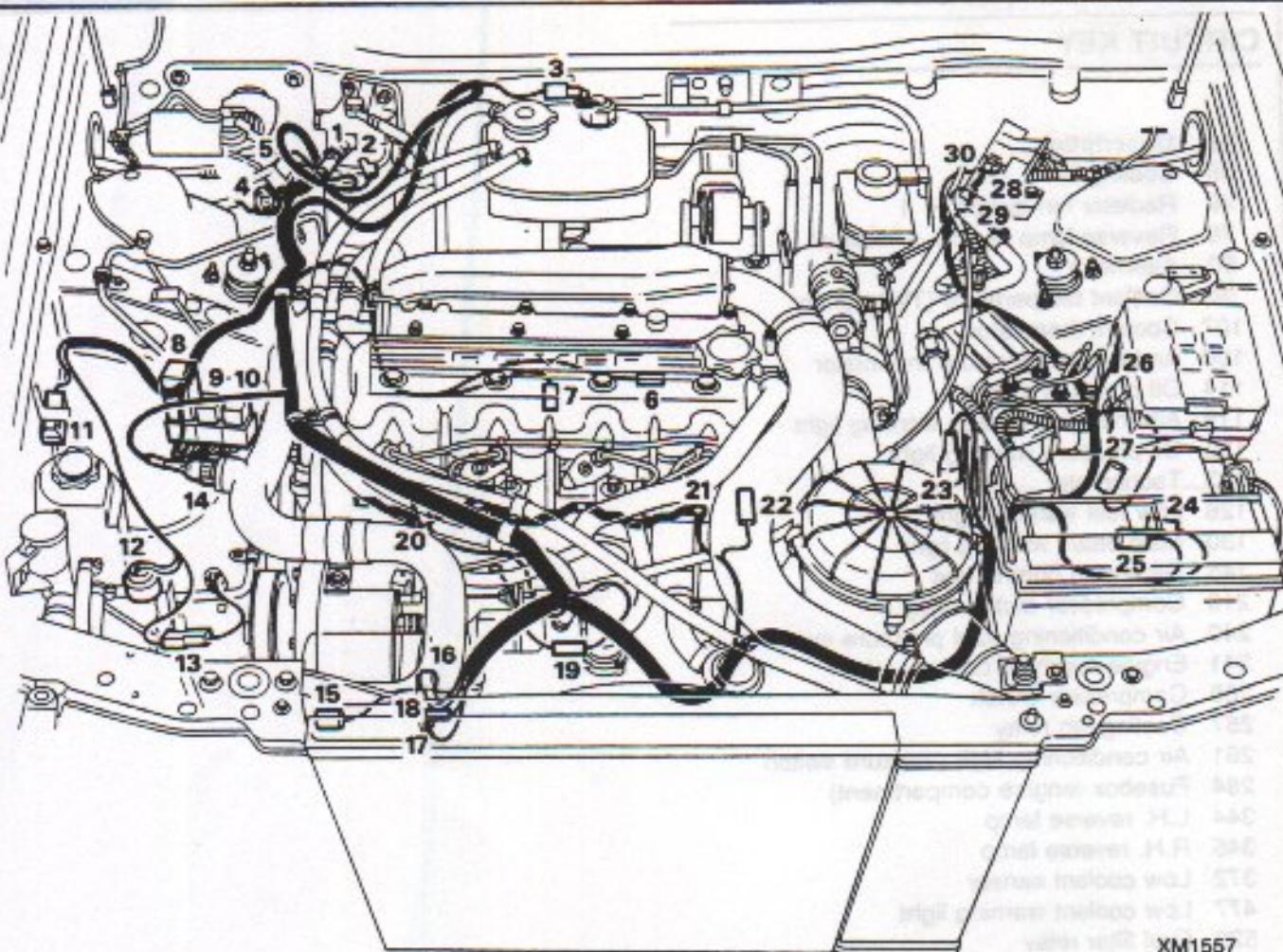
- 35 Cooling fan
- 48 Radiator fan switch - 1
- 75 Reverse lamp switch - manual
- 80 Alternator
- 94 Coolant temperature (TW) sensor
- 107 Coolant thermistor
- 108 Ambient temperature thermistor
- 114 Oil pressure switch
- 119 Alternator/no charge warning light
- 120 Oil pressure warning light
- 123 Tachometer
- 126 Low fuel warning light
- 130 Main beam warning light
- 145 Glow plug control unit
- 218 Compressor clutch relay
- 240 Air conditioning dual pressure switch
- 241 Engine overheat control unit
- 255 Compressor clutch
- 257 Cooling fan relay
- 261 Air conditioning high pressure switch
- 284 Fusebox (engine compartment)
- 344 L.H. reverse lamp
- 345 R.H. reverse lamp
- 372 Low coolant sensor
- 477 Low coolant warning light
- 529 Fuel filter relay
- 530 Fuel filter heater
- 531 Fuel cut - off switch
- 532 Glow plug warning light
- 533 Post heat off switch

## ENGINE HARNESS LAYOUT

## Letter Circuit

- A Air conditioning
- B Air conditioning switch pack
- C Glow plug bus bar connection
- D Starting

# WIRING DIAGRAMS - UP TO 1991 MODELS



## ENGINE HARNESS LAYOUT

1. Fuel filter 1
2. Fuel filter 2
3. Low coolant switch
4. Main harness connector 1
5. Main harness connector 2
6. Starter motor solenoid
7. Oil pressure switch
8. Engine over heat control unit
9. Compressor clutch relay
10. Fuel filter relay
11. Radiator fan switch
12. Air conditioning dual pressure switch
13. Air conditioning high pressure switch
14. Coolant temperature sensor
15. Compressor clutch
16. Alternator
17. Alternator/no charge warning light
18. Tachometer
19. Fuel cut - off solenoid
20. Postheat off switch
21. Glow plugs
22. Coolant temperature switch
23. Reverse lamp switch
24. Engine harness
25. Main harness connector 3
26. Relay box
27. Bus bar connection
28. Battery connections
29. Glow plug control unit



## STARTER MOTOR

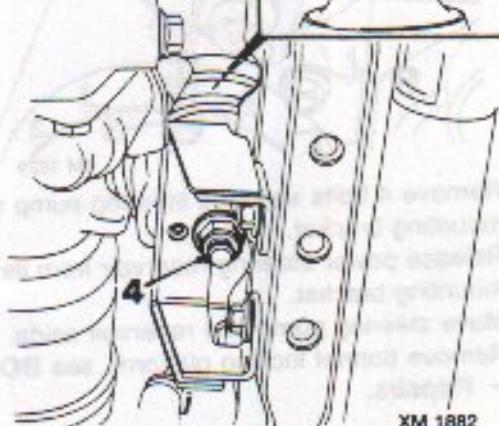
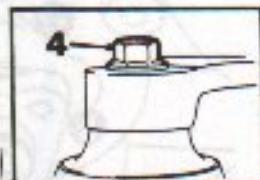
Service Repair No. 86.60.01

### Remove

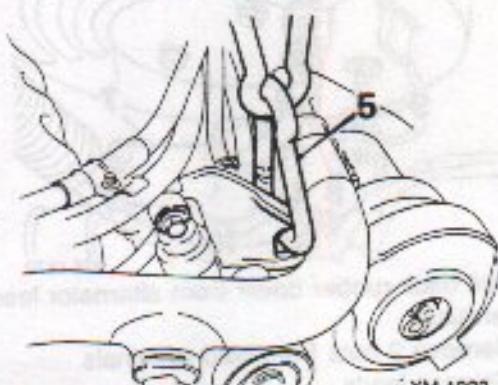
1. Raise front of vehicle.

**WARNING: Support on safety stands.**

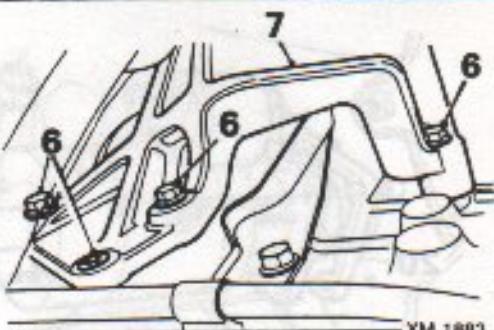
2. Remove R.H. drive shaft, see **DRIVE SHAFTS - Repairs.**
3. Remove exhaust down pipe, see **MANIFOLD AND EXHAUST - Repairs.**



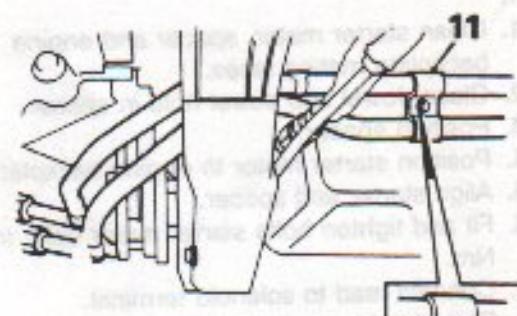
4. Remove 2 nuts securing rear engine mounting to mounting brackets on crossmember and engine.



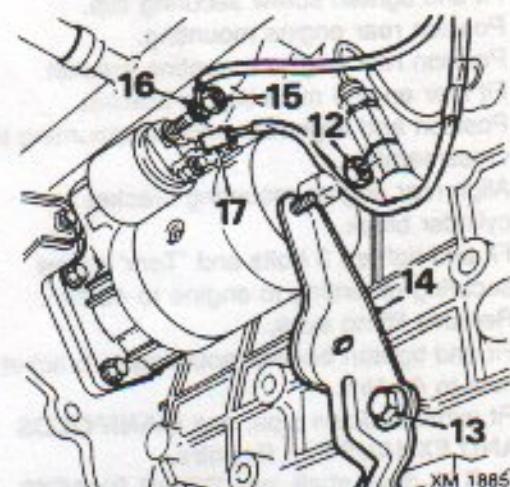
5. Fit two lifting eyes to P.A.S. pump bracket and support weight of engine.



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

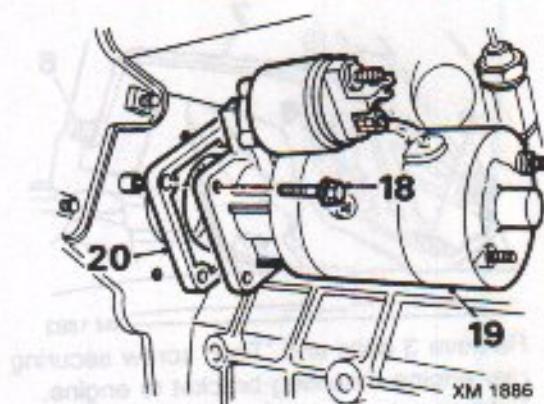


10. Remove screw securing oil cooler pipe clip to starter motor support bracket.
11. Remove clip.



12. Remove nut securing starter motor support bracket to starter motor.
13. Remove bolt securing support bracket to cylinder block.
14. Remove bracket.
15. Remove starter solenoid terminal nut.
16. Release lead.
17. Disconnect starter solenoid Lucas.

# ELECTRICAL



18. Remove 3 bolts securing starter motor to engine backplate.
19. Remove starter motor.
20. Remove spacer.

## Refit

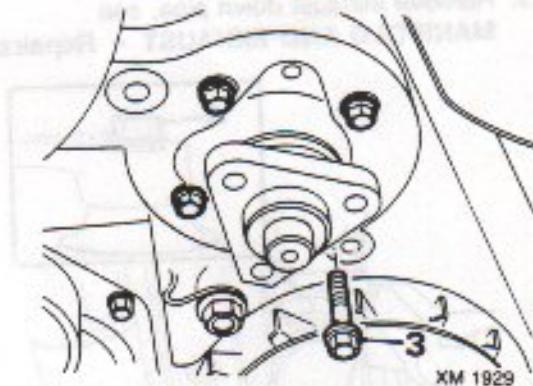
1. Clean starter motor, spacer and engine backplate mating faces.
2. Clean dowel and dowel hole in spacer.
3. Position spacer.
4. Position starter motor to engine backplate.
5. Align starter and spacer.
6. Fit and tighten bolts starter motor bolts to 68 Nm.
7. Connect lead to solenoid terminal.
8. Fit and tighten terminal nut.
9. Connect solenoid Lucas.
10. Position starter support bracket.
11. Fit and tighten bolt, starter support bracket.
12. Fit and tighten nut securing support bracket to starter.
13. Position oil cooler pipe clip.
14. Fit and tighten screw securing clip.
15. Position rear engine mounting.
16. Position rear engine mounting bracket.
17. Fit rear engine mounting to bracket.
18. Position and align rear engine, mounting to crossmember.
19. Align rear engine mounting bracket to cylinder block.
20. Fit and tighten 3 bolts and 'Torx' screw securing mounting to engine to 45 Nm.
21. Remove lifting eyes.
22. Fit and tighten engine mounting to bracket nuts to 85 Nm.
23. Fit exhaust down pipe, see MANIFOLDS AND EXHAUST - Repairs.
24. Fit R.H. drive shaft, see DRIVE SHAFTS - Repairs.
25. Remove stand(s) and lower vehicle.
26. Check and top up gearbox oil, see GEARBOX - Adjustments.

## ALTERNATOR

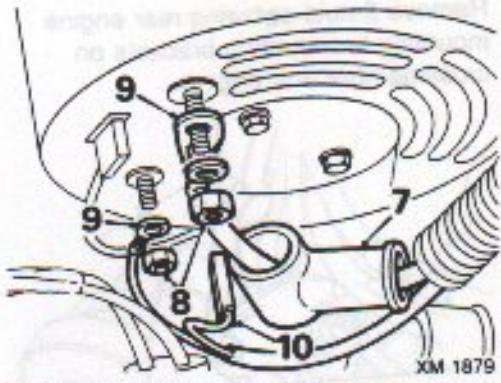
### Service Repair No. 86.10.02

#### Remove

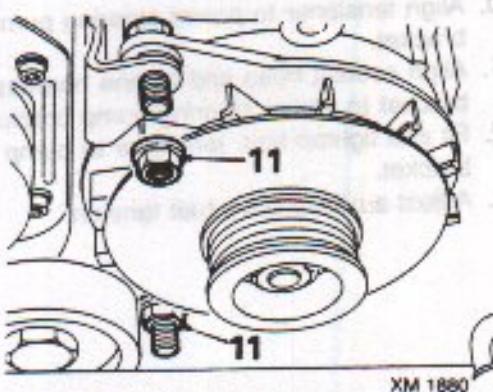
1. Remove radiator grille, see REPAIR MANUAL - BODY - Repairs.
2. Remove power steering pump, see STEERING - Repairs



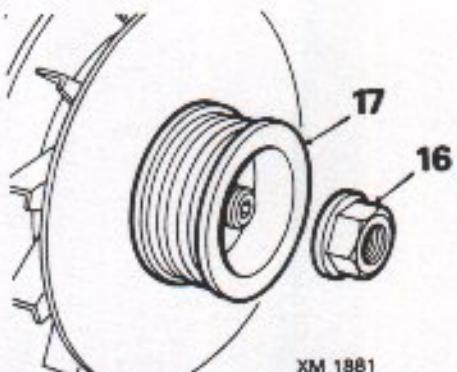
3. Remove 4 bolts securing steering pump to mounting bracket.
4. Release power steering reservoir from its mounting bracket.
5. Move steering pump and reservoir aside.
6. Remove bonnet locking platform, see BODY - Repairs.



7. Pull back rubber cover from alternator lead terminal.
8. Remove 2 nuts from lead terminals.
9. Release leads.
10. Release Lucas from alternator.



11. Remove 2 alternator upper and lower mounting nuts and bolts.
12. Release alternator from its lower mounting.
13. Pull radiator forward for access.
14. Manoeuvre alternator from engine compartment.
15. Remove alternator.



16. Remove nut from alternator pulley.
17. Remove pulley from alternator.
18. Fit pulley to new alternator.
19. Fit and tighten pulley nut to 47 Nm.

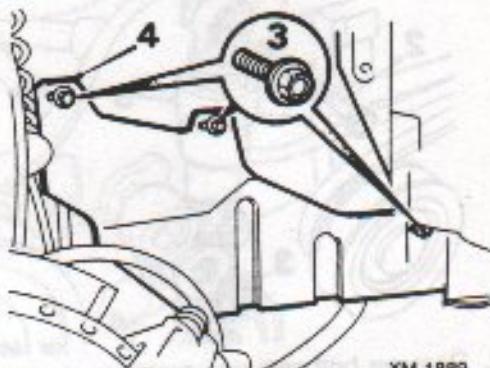
#### Refit

1. Position alternator to engine. Pull radiator forward to allow better access.
2. Position alternator to lower mounting.
3. Fit and tighten 2 upper and lower mounting bolts to 25 Nm.
4. Position leads to terminals.
5. Fit and tighten 2 terminal nuts.
6. Secure rubber cover to terminal.
7. Connect Lucas to alternator.
8. Refit bonnet locking platform, see **BODY - Repairs**.
9. Reposition steering pump and reservoir.
10. Secure reservoir to its mounting bracket.
11. Align steering pump to mounting bracket.
12. Fit and tighten 4 bolts, steering pump to mounting bracket to 8 Nm.
13. Refit radiator grille, see **REPAIR MANUAL - BODY - Repairs**.

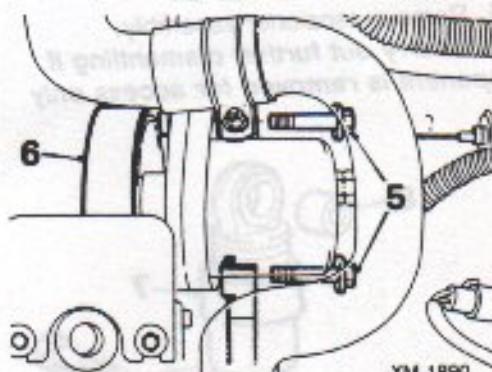
## AUXILIARY DRIVE BELT

#### Remove

1. Release auxiliary drive belt tension.
2. Turn steering onto R.H. lock.



3. Remove 3 screws securing R.H. splash shield.
4. Remove splash shield.



5. Remove 2 bolts securing power steering pump to pulley cover.
6. Remove pulley cover.
7. Release auxiliary drive belt from pulleys.
8. Release auxiliary drive belt from between crankshaft pulley and longitudinal member.
9. Remove auxiliary drive belt.

#### Refit

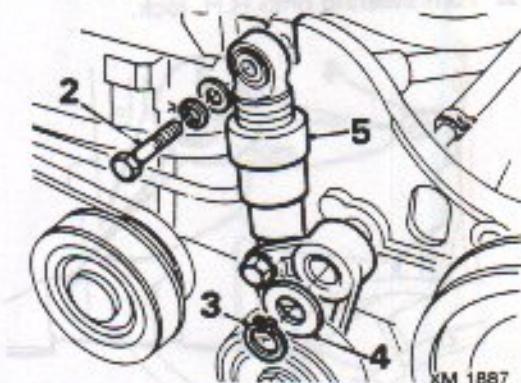
1. Wipe clean drive belt and pulleys.
2. Fit belt between crankshaft pulley and longitudinal member.
3. Position belt to pulleys.
4. Adjust auxiliary drive belt tension.
5. Position power steering pump belt cover.
6. Align hose retaining clips.
7. Fit and tighten steering pump belt cover bolts to 15 Nm.
8. Position splash shield.
9. Fit and tighten 3 splash shield screws.

# ELECTRICAL

## AUXILIARY DRIVE BELT TENSIONER

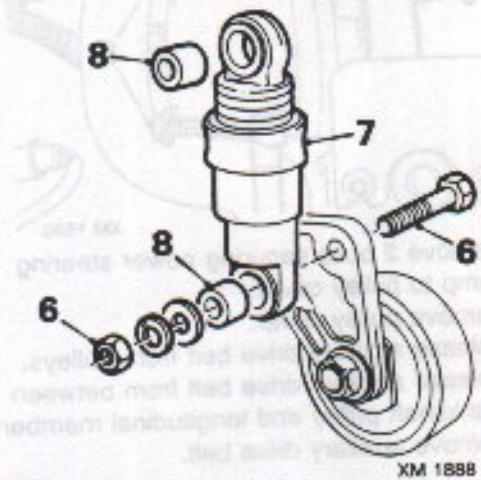
### Remove

1. Release auxiliary drive belt tension.



2. Remove bolt securing tensioner to power steering pump bracket.
3. Remove circlip, tensioner bracket to power steering pump bracket.
4. Remove the flat washer.
5. Remove tensioner assembly.

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



6. Remove nut and bolt, tensioner to bracket.
7. Remove tensioner from bracket.
8. Collect steel bushes from tensioner.

### Refit

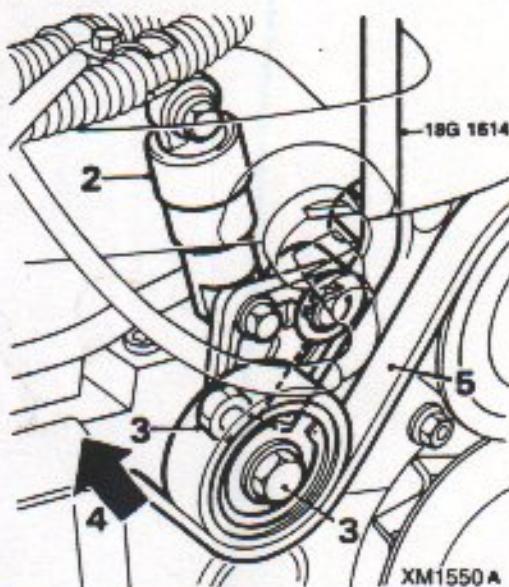
1. Clean steel bushes.
2. Fit bushes to tensioner.
3. Fit tensioner to bracket.
4. Fit and tighten tensioner nut and bolt to power steering pump bracket.
5. Clean tensioner shaft on power steering pump bracket.
6. Lubricate tensioner shaft.
7. Fit tensioner assembly to power steering pump bracket.
8. Fit flat washer.
9. Fit circlip, tensioner bracket to power steering pump bracket.

10. Align tensioner to power steering pump bracket.
11. Align coolant hose and engine harness bracket to power steering pump bracket.
12. Fit and tighten bolt, tensioner to pump bracket.
13. Adjust auxiliary drive belt tension.

## AUXILIARY DRIVE BELT

Service Repair No. 86.10.03.

## Release tension

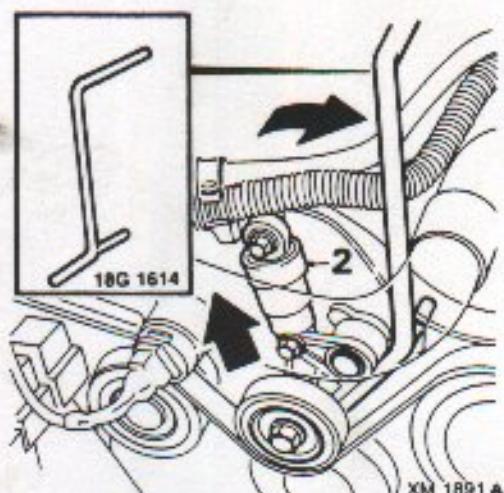


1. Fit auxiliary belt tensioning tool 18G 1614 to power steering pump bracket.
2. Raise tensioner.
3. Slacken nut on tensioner pulley.

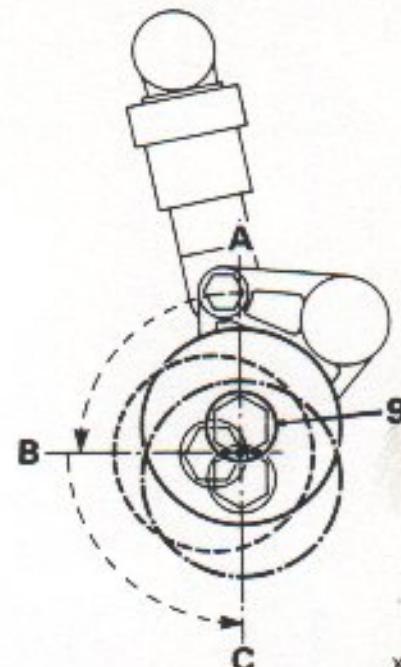
*Note: Note position of tensioner pulley if original drive belt is to be refitted.*

4. Rotate tensioner pulley to its uppermost position.
5. Release belt from tensioner pulley.
6. Release tensioner.
7. Remove belt tensioning tool.

## Adjust tension



1. Fit auxiliary belt tensioning tool 18G 1614 to power steering pump bracket.
2. Raise tensioner.



3. Ensure pulley is in its uppermost position (A).
4. Fit drive belt under tensioner pulley.
5. Release tensioner and remove belt tensioning tool.
6. **Original belt:** Using a spanner on the tensioner pulley securing bolt rotate pulley to its original position.
7. **New belt:** Using a spanner on the tensioner pulley securing bolt rotate pulley anti-clockwise to position (B).
8. **Service tensioning:** Using a spanner on the tensioner pulley securing bolt rotate pulley anti-clockwise to position (C).
9. Tighten tensioning pulley securing nut and bolt.

**TORQUE SETTINGS**

Starter motor bolts	68 Nm
Engine mounting bolts and 'Torx' screw	45 Nm
Engine mounting bracket nuts	85 Nm
Alternator pulley nut	47 Nm
Alternator mounting bolts	25 Nm
Steering pump mounting bracket bolts	8 Nm
Steering pump belt cover bolts	15 Nm

**TOOL NUMBERS**

18G 1614      Auxiliary belt tensioning tool