



ENGINE MANAGEMENT AND EMISSION SYSTEM
(Escort RS Cosworth 4x4
83 US Emission Levels)

29W

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ANY SERVICE AND/OR REPAIR OPERATION FOR THE ESCORT
RS COSWORTH WHICH IS NOT FEATURED IN THIS SECTION,
REFER TO SIERRA RS COSWORTH SECTION (29Y) ABOVE.



TECHNICAL DATA

ENGINE MANAGEMENT AND EMISSION SYSTEM
ESCORT RS COSWORTH 4x4

Fuel System

Injectors

Manufacturer	..	..	..	..	..	..	Weber
Type	..	..	..	..	..	..	Electronically operated
Lubrication for injector seals	..	..	..	..	..	..	Clean engine oil

Fuel Pump

Manufacturer	..	..	..	..	..	..	A/C Delco
Type	..	..	..	..	..	..	Intank - Electric roller cell
Output pressure	..	..	..	..	..	..	Greater than 3 bar at 12 volts

Pressure Regulator

Manufacturer	..	..	..	..	..	..	Weber
System pressure	..	..	..	..	..	..	3,2 to 3,8 bar (with ignition on - engine <u>not</u> running)
System pressure	..	..	..	..	..	..	2,7 to 3,3 bar (engine running at idle)
Lubricant for Regulator seals	..	..	..	..	..	..	clean engine oil

Idle Speed

83 US vehicles	..	..	..	..	..	..	900 $\pm$ 50 rpm
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Turbocharger

Manufacturer	..	..	..	..	..	..	Garret
Type	..	..	..	..	..	..	T034
Boost pressure (ECU controlled)	..	..	..	..	..	..	0,8 bar (maximum 0,9 bar)

Tightening Torques

	Nm	lbf ft
Wastegate actuator rod locknut	5,6 to 7,9	4,0 to 6,0
Actuator to retainer	5,6 to 7,9	4,0 to 6,0
Intermediate housing to turbine housing	18,5 to 21,9	14,0 to 16,0
Intermediate housing to compressor housing	16,4 to 19,8	12,0 to 14,0
Exhaust downpipe to turbocharger	19,0 to 23,0 (M8) 35 - 47 (M10)	14,0 to 17,0
Exhaust manifold to Turbocharger assembly	32,0 to 36,0	24,0 to 27,0
Oil feed adaptor to turbocharger	25,0 to 35,0	18,0 to 26,0
Oil feed to adaptor	25,0 to 27,0	18,0 to 20,0
Turbo drain pipe to turbocharger	18,5 to 21,5	14,0 to 16,0
Water pipe banjo bolts to turbocharger	19,0 to 23,0	14,0 to 17,0
Throttle cable bracket to plenum chamber	18,5 to 21,5 + Loctite 518	14,0 to 16,0
Fuel regulator to fuel rail	8,0 to 10,0	6,0 to 8,0
Fuel rail to plenum chamber	8,0 to 10,0	6,0 to 8,0
Breather valve intake to plenum chamber	15,0 to 20,0 + Loctite 242	11,0 to 15,0
Air charge temperature sensor to plenum chamber	23,0 to 25,0 + Loctite 518	17,0 to 18,0
HEGO sensor to turbocharger	28,0 to 30,0	20,0 to 22,0
TDC sensor bracket to sump	8,0 to 10,0	6,0 to 8,0
TDC sensor to bracket	4,0 to 6,0 + Loctite 270	3,0 to 5,0
Distributor clamp to cylinder block	8,5 to 21,5	13,0 to 16,0

**TECHNICAL DATA (cont'd)****ENGINE MANAGEMENT AND EMISSION SYSTEM
ESCORT RS COSWORTH 4x4****Ignition System****Coil**

Manufacturer	..	..	..	..	..	Motorcraft
Primary resistance	..	..	..	..	..	0,72 to 0,88 ohms
Secondary resistance	..	..	..	..	..	4500 to 8600 ohms

Spark Plugs

Manufacturer	..	..	..	..	..	Nippondenso
Type	..	..	..	..	..	PK 20 PR P11
Electrode material	..	..	..	..	..	Platinum
Electrode gap - all territories	..	..	..	..	..	1,10 mm (0,060 in)
Firing order	..	..	..	..	..	1 - 3 - 4 - 2

Distributor

Dwell angle	..	..	..	..	..	Totally controlled by ECU module and cannot be adjusted
Initial advance	..	..	..	..	..	16° BTDC

HT Leads

Resistance	..	..	..	..	..	10,000 ohms maximum per 300 mm
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ECU Module

Manufacturer	..	..	..	..	..	Weber Marelli
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Ignition Amplifier Module

Manufacturer	..	..	..	..	..	Motorcraft
Ignition Amplifier Module heat sink compound (specification number)	..	..	..	..	..	81SF-12103-AA
(Finis code)	..	..	..	..	..	6092983

Clearance Settings

TDC sensor to pulley teeth	..	..	..	..	..	0,6 to 1,0 mm
Distributor cam to phase sensor	..	..	..	..	..	0,2 to 0,3 mm



ENGINE MANAGEMENT AND EMISSION SYSTEM
ESCORT RS COSWORTH 4x4

SPECIAL SERVICE TOOLS

Tool	Tool Name
 23-026	Fuel tank sender unit wrench

GENERAL EQUIPMENT

22 292 0 IGNITION AMPLIFIER MODULE -
REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Disconnect multiplug from ignition amplifier module, refer to Fig.1.
3. Remove both screws along with their washers and lift out module from vehicle.

To Install

4. Coat rear face of ignition amplifier module with heat sink compound, refer to Fig.2 (see Technical Data on page 3 for compound finish code number).
5. Reposition ignition amplifier module and secure with both screws and washers.
6. Reconnect ignition amplifier module multiplug, refer to Fig.1.
7. Reconnect battery earth cable.
8. Start engine to ensure correct operation.

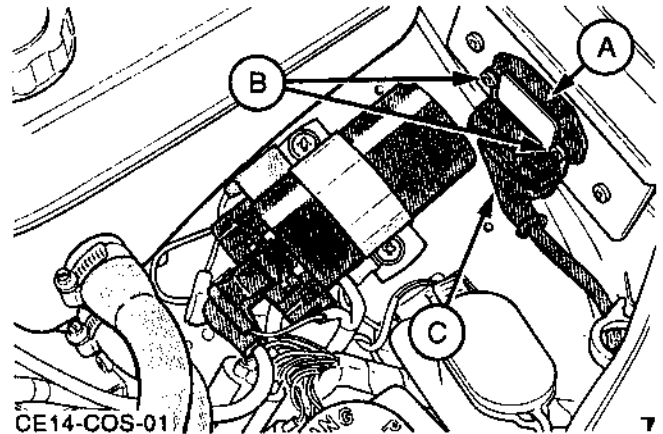


Fig.1. A - Ignition amplifier module.
B - Securing screws
C - Multiplug

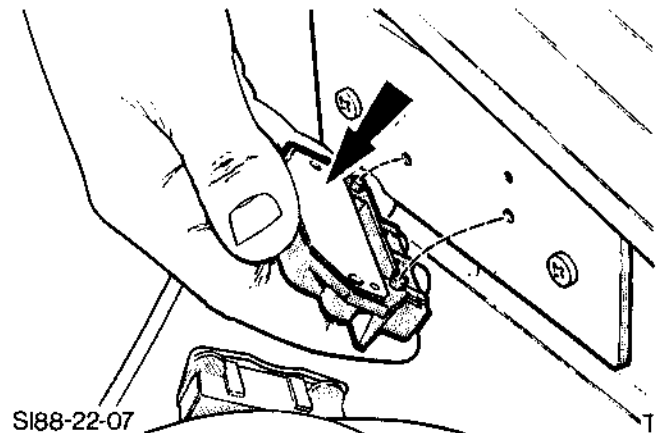


Fig.2. Apply heat sink compound to module.

22 414 0 IGNITION COIL - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Disconnect HT and LT connections at coil.
3. Remove both ignition coil securing screws, and lift out coil with suppression capacitor.

To Install

4. Reposition coil with suppression capacitor and secure with both retaining screws.

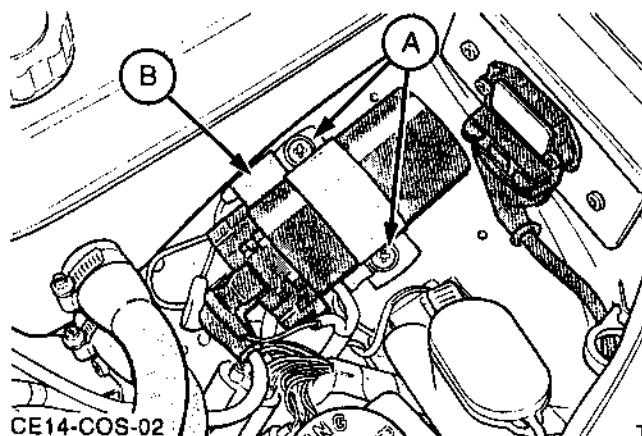


Fig.1. Ignition coil location.
A - Mounting screws
B - Suppression capacitor

5. Reconnect HT and LT connections.
6. Reconnect battery earth cable.
7. Start engine to ensure correct operation.

23 534 0 FUEL PUMP (INTANK) - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED:

Fuel tank sender unit wrench .. 23-026

WARNING: ENSURE FUEL HANDLING SAFETY
PRECAUTIONS ARE STRICTLY ADHERED TO.

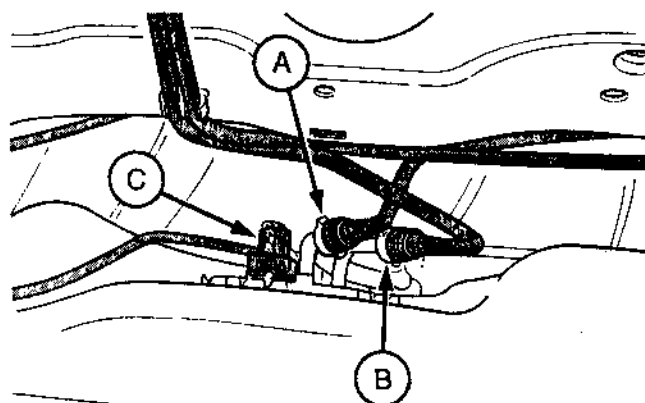
CAUTION: Ensure that any fuel drained from the vehicle is stored in an appropriately marked storage container with either an identification of 'LEADED FUEL ONLY' or 'UNLEADED FUEL ONLY'. Should this not occur and a common storage container be used, a deterioration to the catalytic converters and HEGO sensors (where fitted) will occur.

To Remove

1. Disconnect battery earth cable.

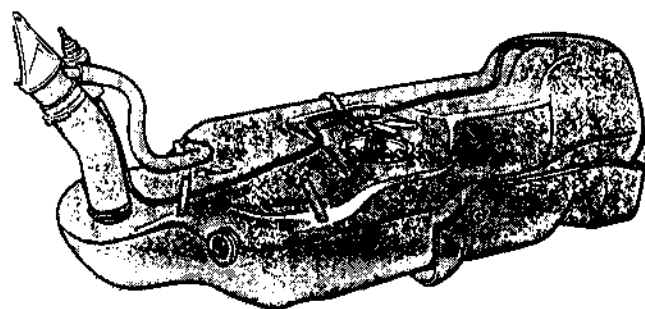
WARNING: ENSURE FUEL HANDLING SAFETY
PRECAUTIONS ARE STRICTLY ADHERED TO.
REFER TO SECTION 05 OF THE MICROFICHE.

2. Pump fuel from vehicle fuel tank into a closed container (see 'Caution Note' above).
3. Raise vehicle on hoist.
4. Disconnect fuel tank filler hose neck, breather hose and valve hose at body filler neck.
5. Support fuel tank whilst it is in position and remove both tank securing straps.
6. Carefully lower fuel tank and disconnect fuel pump/sender unit multiplug, do not pull on wiring, refer to Fig.1.
7. Disconnect fuel supply hose connector (white) and return hose connector (red) both at fuel tank, refer to Fig.1.
8. Remove fuel tank assembly from vehicle and drain any residue into a suitable container.
9. Using Special Service Tool 23-026, remove fuel pump/sender unit, refer to Fig.3. Disconnect and remove fuel tank filler hose, breather hose and valve hose from tank.



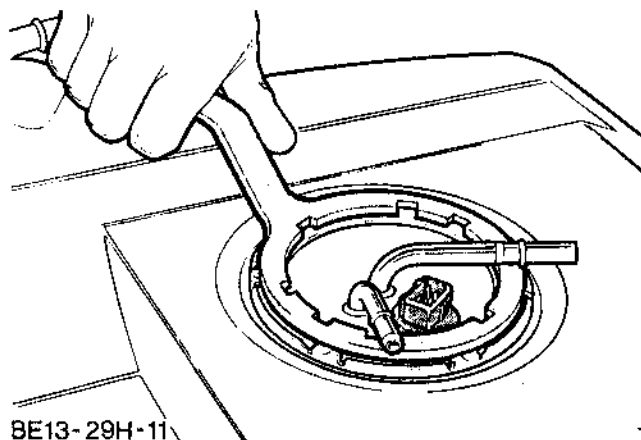
CE14-COS-04

Fig.1. A - Fuel line connector (red)
B - Fuel line connector (white)
C - Fuel pump/sender unit multiplug



CE14-COS-05

Fig.2. Fuel tank with all components fitted.



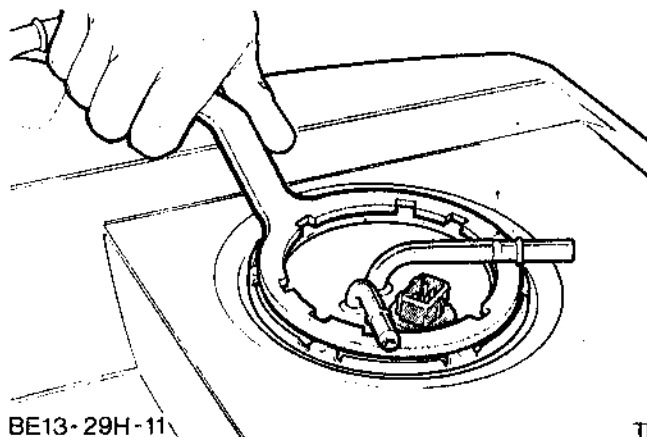
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Fig.3. Intank fuel pump/sender unit removal.

To install

NOTE: A used sender unit seal usually distorts and is difficult to install correctly. It is therefore, appropriate to fit a new seal each time the fuel pump/sender is removed from the tank and installed.

10. With a new seal refit fuel pump/sender unit into fuel tank. Tighten with Special Service Tool 23-026, refer to Fig.4.



BE13-29H-11

TI

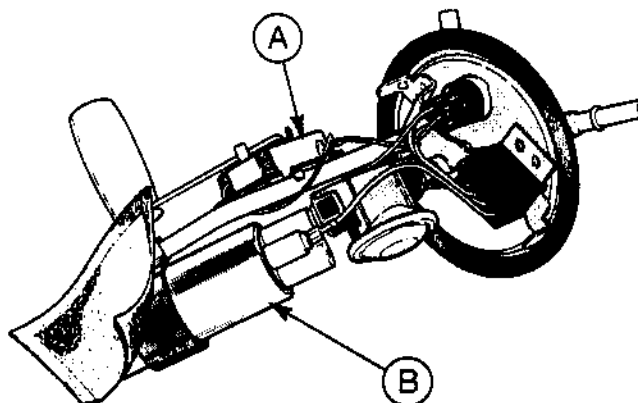
Fig.4. Intank fuel pump/sender unit.

11. Fit fuel tank filler neck hose, breather hose and valve hose to tank. Apply a very thin coat of grease to the tank flanges to assist with fitment of hoses, prior to lifting fuel tank into position.

12. Support and reposition tank beneath vehicle, ensuring that tank vent hose is routed through hole located in chassis, refer to Fig.6.

13. Reconnect fuel supply hose connector (white) and return hose connector (red). Reconnect fuel tank sender unit multiplug.

14. Fully locate tank into position and secure with both tank straps. Reconnect fuel fill neck hose, breather hose and valve hose.



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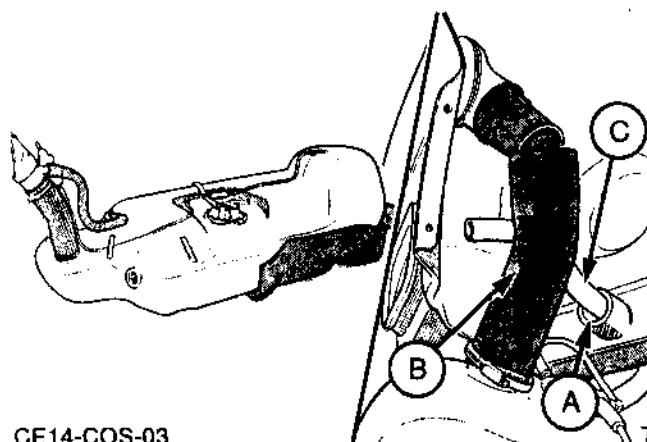
TI

Fig.5. A - Sender unit
B - Fuel pump

15. Lower vehicle to ground and refill tank with fuel (see 'Caution Note' on previous page).

16. Reconnect battery earth cable.

17. Start engine to ensure correct fuel pump operation and that no fuel leaks exist.



CE14-COS-03

Fig.6. A - Fuel tank vent hose hole in chassis.
B - Fuel tank filler neck
C - Fuel tank vent hose

23 545 0 FUEL FILTER - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

WARNING: THE FUEL SYSTEM REMAINS PRESSURISED.
TAKE ADEQUATE SAFETY PRECAUTIONS TO PREVENT
FUEL SPILLAGE.

To Remove

1. Disconnect battery earth cable.
2. Raise vehicle on a hoist.
3. Position a suitable container beneath fuel filter. Carefully disconnect fuel outlet pipe from filter, allow pressure in fuel line to reduce. Remove fuel inlet pipe, refer to Fig.1.
4. Slacken fuel filter retaining bolt and withdraw filter assembly, refer to Fig.1.

NOTE: Take care when removing filter, as filter will still contain a certain amount of fuel after removal of supply and outlet pipes.

To Install

5. Fit new filter assembly and secure, ensuring filter assembly is correctly positioned (note direction of fuel flow arrows on side of filter canister), refer to Fig.2.
6. Reconnect fuel filter inlet and outlet pipes.
7. Reconnect battery earth cable.
8. Switch ignition on and off five times to generate fuel system pressure. Check filter and connecting fuel pipes, to ensure that no fuel leakage is evident.

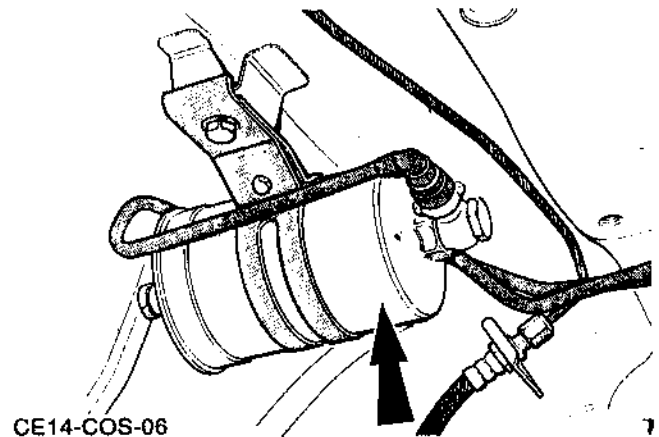


Fig.1. Fuel filter position beneath vehicle.

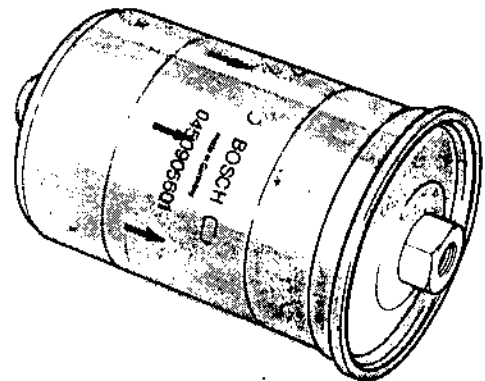


Fig.2. Fuel filter assembly.

23 616 0 SOLENOID CONTROL VALVE - REMOVE AND
INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Establish position of solenoid control valve beneath bonnet slam panel and above intercooler. Then disconnect solenoid control valve multiplug, refer to Fig.1.

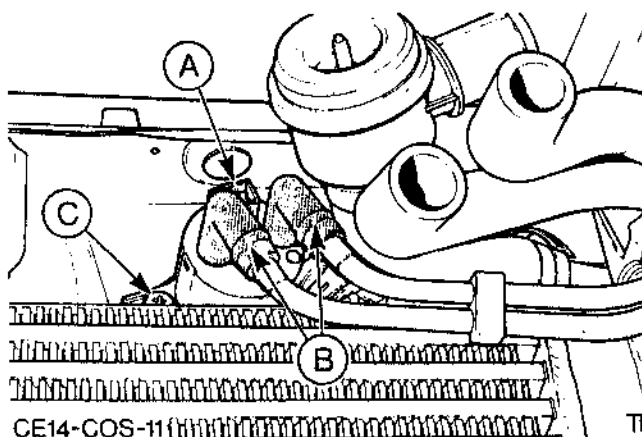


Fig.1. Solenoid control valve assembly.

- A - Multiplug connection
B - 2 hose connections
C - Solenoid securing screws (one shown)

3. Disconnect both hoses at solenoid control valve assembly, refer to Fig.1.
4. Remove securing screws and lift off solenoid control valve from vehicle.

To Install

5. Reposition solenoid control valve and secure with both screws, refer to Fig.1.
6. Reconnect both air hoses to solenoid control valve assembly.
7. Reconnect solenoid control valve multiplug.
8. Reconnect battery earth cable.

23 620 0 INTERCOOLER - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Disconnect solenoid control valve multiplug, 2 air hose connections and both assembly securing screws, refer to Fig.1.
3. Remove air hose between air cleaner assembly and turbocharger.
4. Disconnect and remove bypass hose (with valve) from top of intercooler, refer to Fig.2.
5. Disconnect coolant hoses to intercooler, once having placed a drain tray beneath engine, refer to Fig.2.
6. Disconnect air hoses from left and right hand sides of intercooler.
7. Remove 4 intercooler securing bolts and 2 nuts, refer to Fig.3. This will allow the intercooler assembly to be carefully removed from vehicle, once both bolts securing bottom of intercooler to top of radiator have been removed.

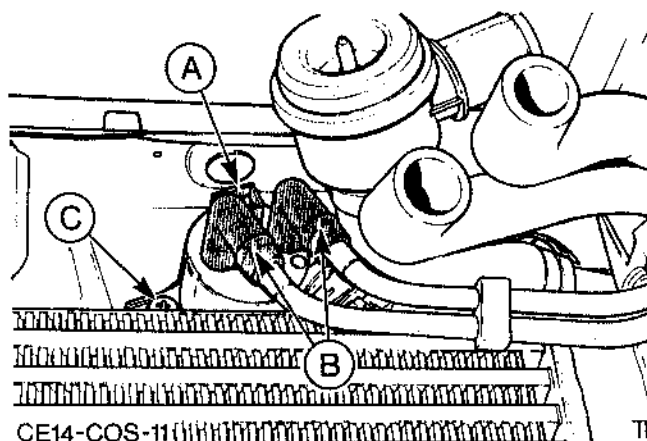


Fig.1. Solenoid control valve assembly.

- A - Multiplug connection
B - 2 hose connections
C - Solenoid securing screws (one shown)

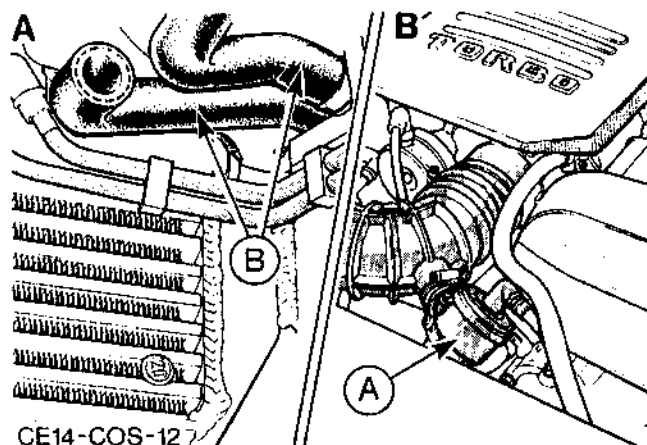


Fig.2. A - Bypass hose with valve
B - Coolant hoses

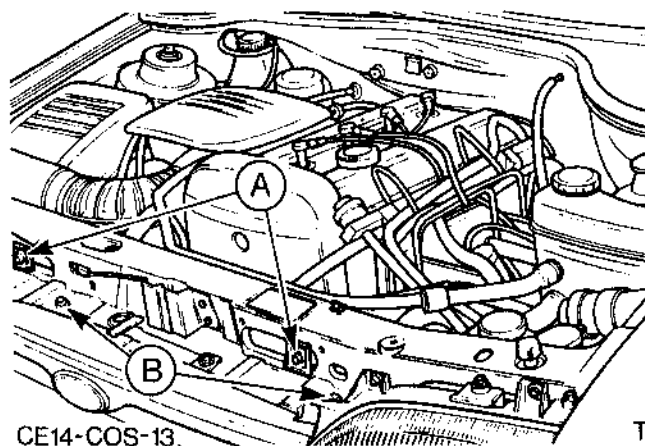


Fig.3. Intercooler retaining nuts and bolts.

- A - Upper retaining bolts shown
B - Lower retaining bolts shown

To Install

8. Position intercooler into vehicle and secure, refer to Fig.4.

9. Reconnect air hoses to left and right hand side of intercooler.

10. Reconnect coolant hoses to intercooler.

11. Refit solenoid control valve with both securing screws, refer to Fig.6.

12. Reconnect both air hoses and multiplug connections to solenoid control valve.

NOTE: Check the condition of air hoses for signs of deterioration. Replace if necessary.

13. Reconnect air bypass hose with valve into top of intercooler, refer to Fig.5.

14. Reconnect battery earth cable.

15. Start engine to ensure correct operation.

16. Top up engine coolant reservoir to "max" mark and remove drain tray from beneath vehicle.

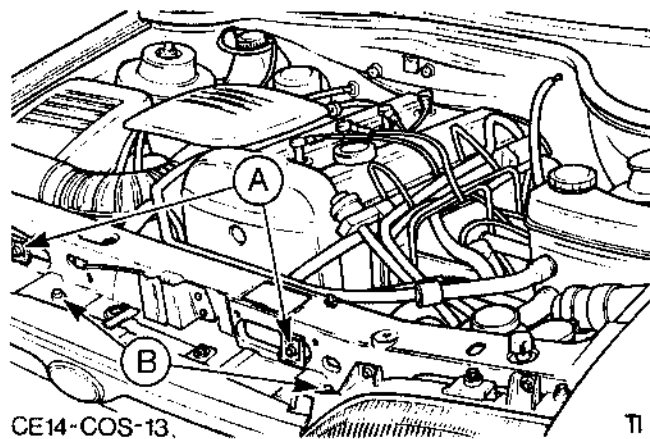


Fig.4. Intercooler retaining nuts and bolts.

A - Upper retaining bolts

B - Lower retaining bolts

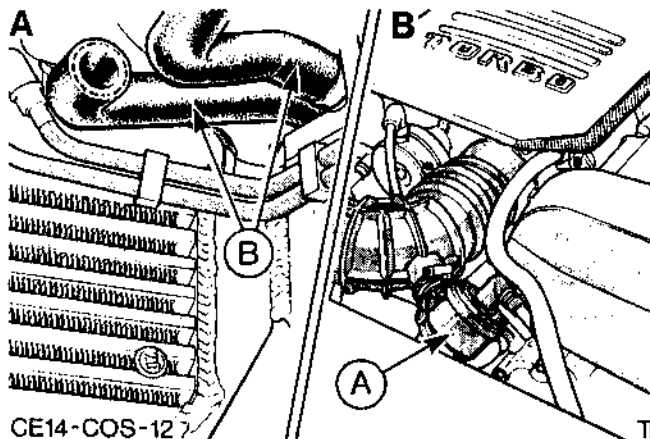


Fig.5. A - Bypass hose

B - Coolant hoses

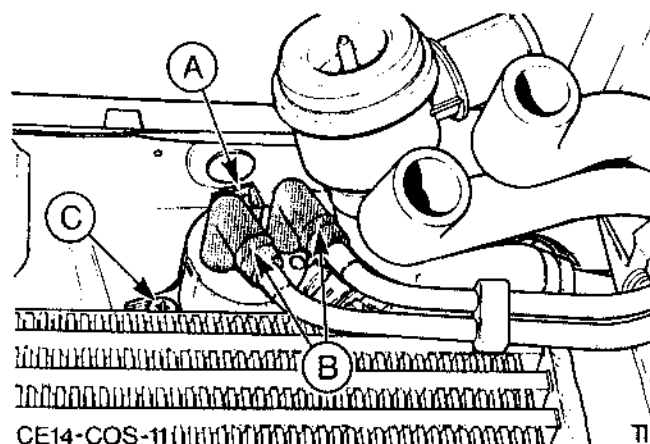


Fig.6. Solenoid control valve assembly.

A - Multiplug connection

B - 2 hose connections

C - Solenoid securing screws (one shown)

29 200 0 CONTROL MODULE - ENGINE MANAGEMENT -
REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. From inside vehicle, remove passenger side kick panel trim to enable access to ECU module, refer to Fig.1.
3. Unclip ECU module from its retaining bracket, refer to Fig.1. Disconnect wiring loom ECU multiplug connector.

To Install

4. Refit ECU module to wiring loom multiplug connector.
5. Position ECU module into retaining bracket, refer to Fig.1.
6. Refit passenger side foot well kick panel trim over ECU module and secure, refer to Fig.1.
7. Reconnect battery earth cable.
8. Start engine to ensure correct operation.

IMPORTANT

There is no requirement for CO% adjustment.

On disconnection of the ECU module ALL KAM values will be erased. This includes idle and drive values and any fault codes detected.

After reconnection of the ECU module the engine should be allowed to idle for 3 minutes. At normal operation temperature engine speed should then be increased to 1200 rpm and maintained for approximately 2 minutes. This will allow the ECU module to re-learn idle and drive values. Surge, hesitation, erratic idle or a deterioration of driveability may result if this procedure is not carried out.

The ECU module should complete its learning strategy after approximately 5 miles (8 kilometres) of varied driving.

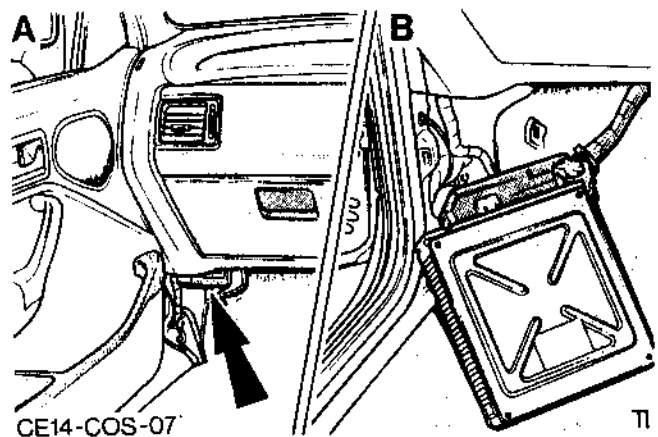


Fig.1. ECU Module positioned in vehicle.

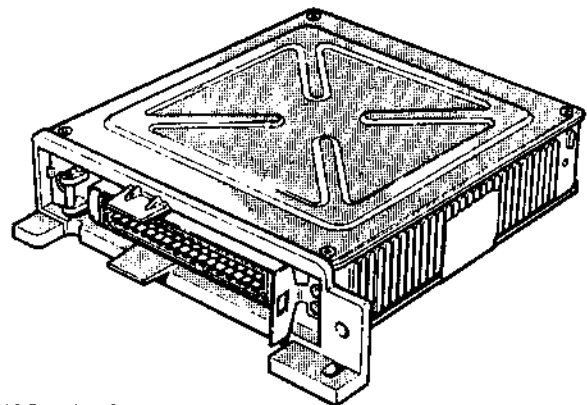


Fig.2. ECU module.

29 250 0 CARBON CANISTER - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Remove wheel arch plastic liner, refer to Fig.1.
3. Establish position of carbon canister beneath front wing, refer to Fig.1.
4. Disconnect carbon canister pipe connection to top of carbon canister.
5. Remove carbon canister retaining screw and lift assembly clear of vehicle, refer to Fig.2.

To Install

6. Reposition carbon canister into position and secure with retaining screw.
7. Reconnect carbon canister pipe connector into top of carbon canister.
8. Refit wheel arch plastic liner.
9. Reconnect battery earth cable.

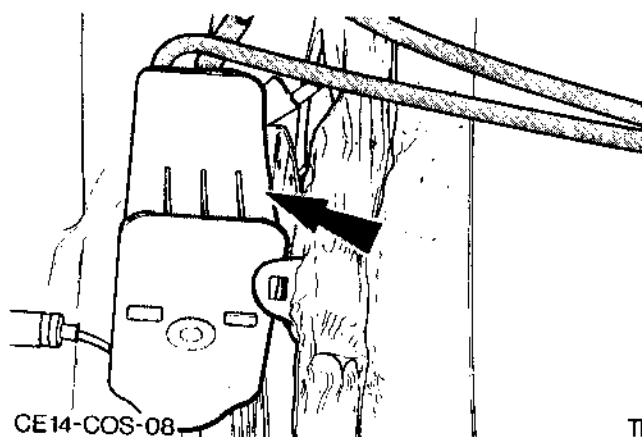
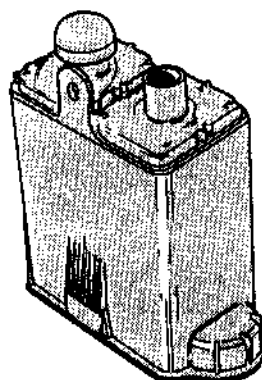


Fig.1. Carbon canister assembly in vehicle (wheel arch liner removed for clarity).



BE13-29H-33

Fig.2. Carbon canister assembly.

33 577 0 INERTIA SWITCH - FUEL SHUT OFF - REMOVE
AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Remove driver's side footwell kick panel, allowing access to the fuel shut off switch, refer to Fig.1.
3. Remove screws securing fuel shut off switch to vehicle body, refer to Fig.2.
4. Disconnect fuel shut off switch multiplug, pull on multiplug not on wiring and lift switch out of vehicle.

To Install

5. Reconnect fuel shut off switch multiplug, ensuring locking tab 'snaps' into position on switch.
6. Reposition fuel shut off switch and secure with both screws to vehicle body.
7. Ensure fuel shut off switch is reset by pushing down button on top of switch assembly, refer to Fig.2.
8. Refit kick panel and secure into position.
9. Start engine to ensure switch is operating.

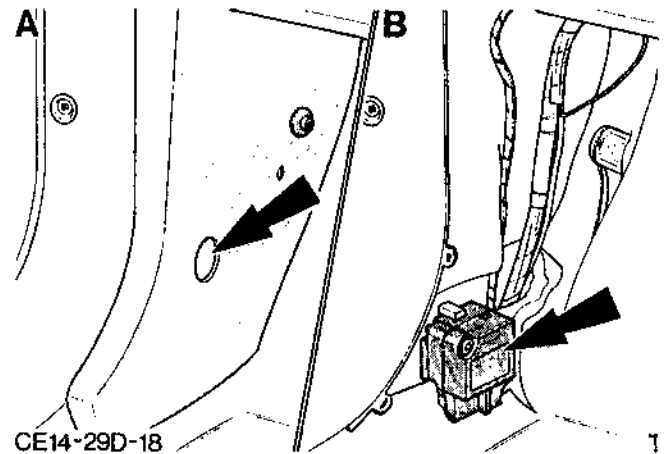
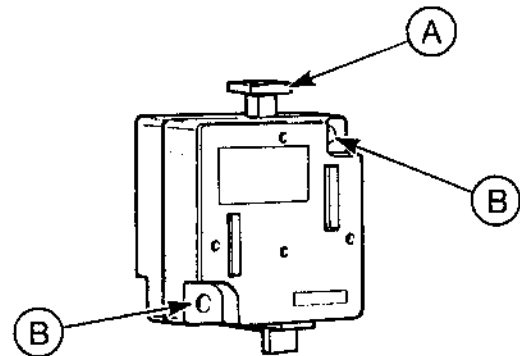


Fig.1. A - Access for switch reset
B - With kick panel removed



VE6-29B-01

Fig.2. A - Switch reset button
B - Switch securing points



33 711 0 RELAY - POWER - REMOVE AND INSTALL
33 750 0 RELAY - FUEL PUMP - REMOVE AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Remove plastic panel positioned in front of fuse/relay pack located in facia assembly, refer to Fig.1.
3. Remove 3 screws securing plastic panel in front of fuse/relay pack. Release spring retaining clip, allowing fuse/relay pack to loaded lower from underside of facia, refer to Fig.2.
4. Remove power relay (coloured green) or fuel pump relay (coloured brown), refer to Fig.2.

To Install

5. Refit relay into fuse/relay pack, refer to Fig.2.
6. Reposition and lock fuse/relay pack into underside of facia, refer to Fig.1.
7. Refit plastic panel over fuse/relay pack and secure.
8. Reconnect battery earth cable.
9. Start engine to ensure correct operation.

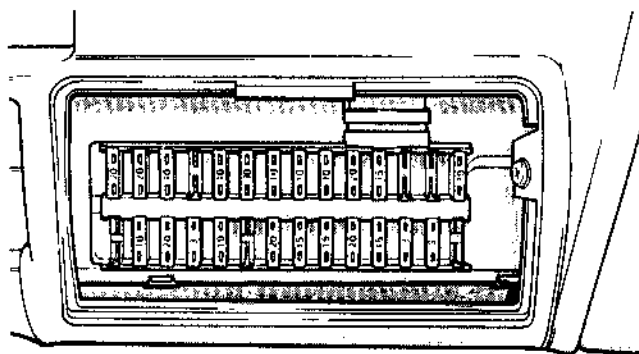


Fig.1. Fuse/relay pack positioned in dash.

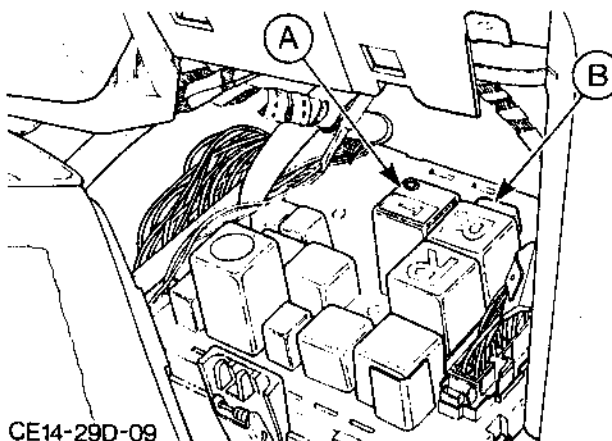


Fig.2. A - Power relay location
B - Fuel pump relay location

33 772 0 SOLENOID - CANISTER PURGE - REMOVE
AND INSTALL

SPECIAL SERVICE TOOLS AND EQUIPMENT REQUIRED: NONE

To Remove

1. Disconnect battery earth cable.
2. Disconnect canister purge solenoid multiplug, do not pull on wiring, refer to Fig.2.
3. Remove both hoses from canister purge solenoid and lift solenoid out from vehicle.

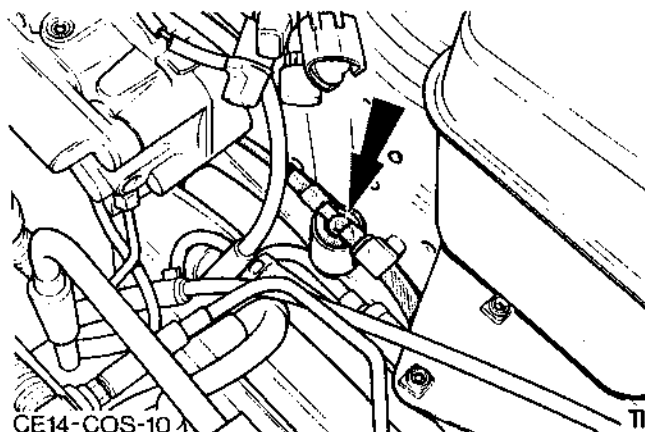


Fig.1. Canister purge solenoid position.

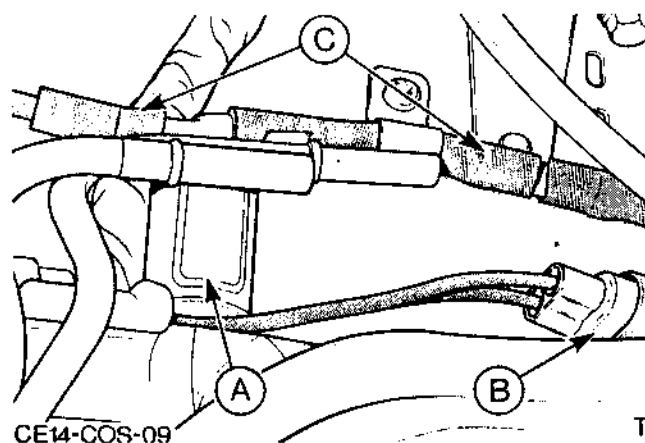


Fig.2. A - Canister purge solenoid
B - Canister purge solenoid multiplug
C - Canister purge hoses

To Install

4. Reconnect both hoses to solenoid.
5. Reconnect multiplug, ensuring locking tab 'snaps' into position, refer to Fig.2.
6. Reconnect battery earth cable.

