13 Manifolds - removal and installation

Intake manifold

Warning:
Refer to the **Warnings** in Section 1 before proceeding.

Warning:
Wait until the engine is completely cool before beginning this procedure.

Note:
New sealing rings may be required on installation.

Removal

1 Depressurize the fuel system as described in Section 7 , then disconnect the battery negative cable. **Caution:** *If the stereo in your vehicle is equipped with an anti-theft system, make sure you have the correct activation code before disconnecting the battery.*

2 Remove the air cleaner/air mass meter assembly as described in Section 2 .

3 To allow sufficient clearance for the manifold to be removed, raise the hood to its fully open position as described in Chapter 11 , then remove the heater/ventilation inlet air ducting from the rear of the engine compartment as follows **(see illustrations)** .

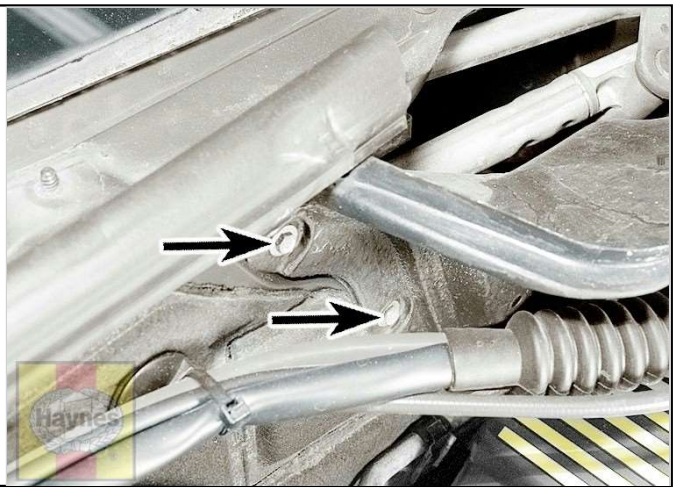
13.3a Remove the plastic securing screws . . .

13.3b . . . then peel back the weatherstrip . . .

13.3c . . . and lift off the complete cowl grille assembly

13.3d Remove the screws securing the cable ducting

13.3e Right-hand air ducting securing screws (arrows)



13.3f Removing the air ducting

A. Lift the grille from the top of the ducting (on certain Coupe models, it will be necessary to remove the windshield wiper arms, then remove the plastic securing screws, peel back the weatherstrip, and lift off the complete cowl grille assembly).

B. Working through the top of the ducting, remove the screws securing the cable ducting to the air ducting and move the cable ducting clear.

C. Unscrew the nuts and/or screw(s) securing the air ducting to the firewall (where applicable, bend back the heat shielding for access).

D. Remove the air ducting by pulling upwards.

E. Move the previously removed cable ducting clear of the manifold.

4 Disconnect the throttle position sensor electrical connector.

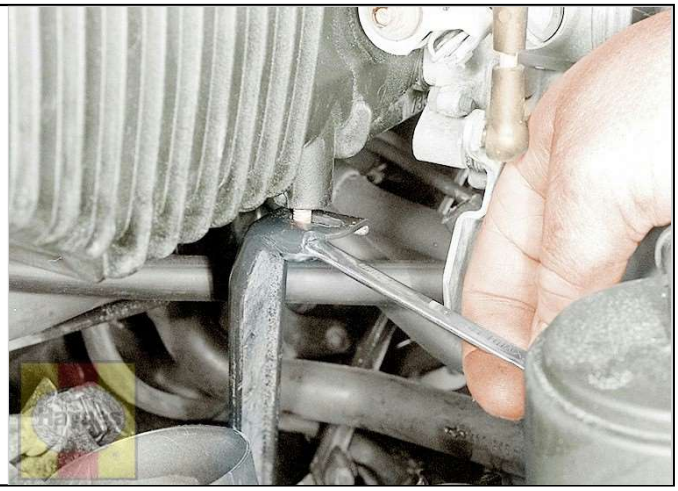
5 Disconnect the brake booster vacuum hose from the manifold **(see illustration)** .

13.5 Disconnecting the brake booster vacuum hose

6 Disconnect the throttle cable from the manifold, with reference to Section 4 .

7 Working under the manifold, unscrew the bolts securing the manifold to the two support brackets **(see illustration)** .

13.7 Unscrew the bolts securing the manifold to the support brackets



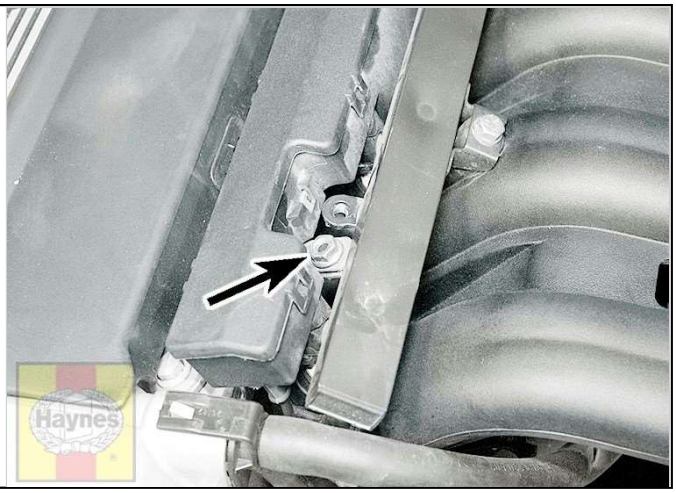
8 Pry out the cover plates, then unscrew the bolts and remove the plastic cover from the top of the fuel injectors **(see illustrations)** .

13.8a Pry out the cover plates to reveal the securing bolts . . .

13.8b . . . and remove the cover from the fuel injectors

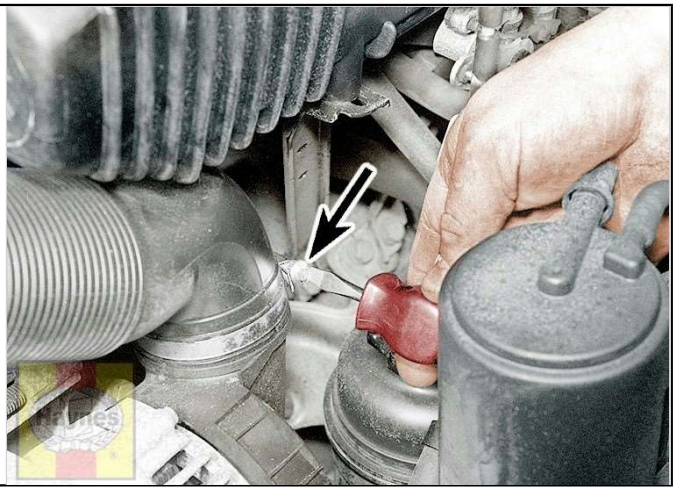
9 Remove the two nuts securing the engine wiring ducting to the fuel rail, then pull the ducting up to release the electrical connectors from the fuel injectors **(see illustration)** .

13.9 Engine wiring duct securing nut (arrow)



10 To improve access, loosen the securing clip and remove the alternator cooling duct **(see illustration)** .

13.10 Loosening the alternator cooling duct securing clip



11 Disconnect the breather hose from the bottom of the manifold.

12 If the cooling system is not going to be drained at a later stage, clamp the two throttle body coolant hoses to prevent spillage, then loosen the clamps and disconnect the hoses.

13 Disconnect the two fuel hoses from the pipes at the rear of the manifold **(see illustration)** . Be prepared for fuel spillage, and clamp or plug the hoses to prevent further fuel loss and dirt ingress.

13.13 Disconnect the fuel hoses (arrows)

14 Disconnect the smaller breather hose from the connector on the valve cover.

15 Reach under the manifold, and carefully pull the air hose from the top of the idle speed control valve.

1 6 Disconnect the electrical connector from the air temperature sensor. The sensor may be located in the side of the manifold, or underneath the manifold (in which case it may prove easier to disconnect the plug as the manifold is removed), depending on model.

17 Lift the manifold off the cylinder head studs and withdraw it from the engine compartment **(see illustration)** . Recover the sealing rings if they are loose.

13.17 Where applicable, disconnect the air temperature electrical connector as the manifold is removed

Installation

18 Installation is a reversal of removal, bearing in mind the following points.

A. Before installation, examine the condition of the sealing rings, and replace if necessary (see illustration).

B. Reconnect and if necessary adjust the throttle cable as described in Section 4 .

C. On completion, prime the fuel system as described in Section 7 .

13.18 Installing a new manifold sealing ring

Exhaust manifold

Note:
New manifold-to-cylinder head and manifold-to-exhaust front section gaskets and new manifold nuts will be required on installation.

Removal

19 The engine has twin exhaust manifolds, each manifold serving three cylinders.

20 Remove the washer fluid reservoir, as described in Chapter 12 .

21 To improve access, jack up the front of the vehicle and support securely on axle stands.

22 Working underneath the vehicle, unscrew the nuts securing the exhaust downpipes to the manifolds.

23 Working at the transmission exhaust bracket, unscrew the two bolts securing the two exhaust mounting clamp halves together.

24 Loosen the bolt securing the clamp halves to the bracket on the transmission, then lower the exhaust downpipes down from the manifold studs. Recover the gaskets.

25 Working in the engine compartment, unscrew the manifold securing nuts.

26 Withdraw the manifolds from the studs and recover the gaskets **(see illustration)** .

13.26 Withdrawing an exhaust manifold

27 It is possible that some of the manifold studs may be unscrewed from the cylinder head when the manifold securing nuts are unscrewed. In this event, the studs should be screwed back into the cylinder head once the manifolds have been removed, using two manifold nuts locked together.

Installation

28 Installation is a reversal of removal, but use new gaskets and new manifold securing nuts.