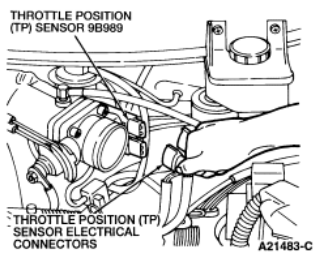
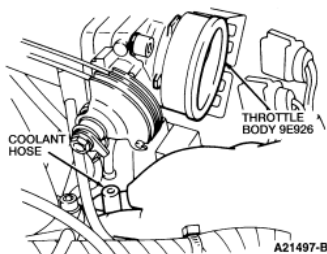


Intake Manifold**Upper****Removal**

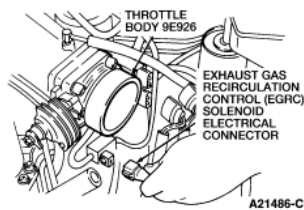
1. Relieve the fuel pressure. Refer to [Section 10-01](#) for the procedure.
2. Disconnect the battery ground cable (14301).
3. Drain the cooling system. Refer to [Section 03-03](#) for the procedure.
4. Remove the engine air cleaner intake tube (9A624) and engine intake air resonator (9F763). Refer to [Section 03-12](#) for the removal procedure.
5. Disconnect the two throttle position (TP) sensor electrical connectors.



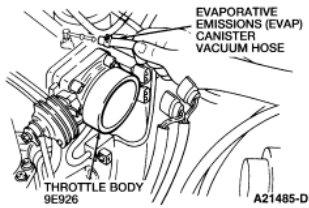
6. Slide the TP sensor electrical wiring out of the bracket.
7. Remove the coolant hose from the throttle body (9E926).



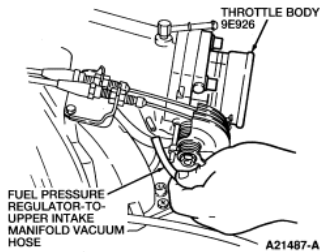
8. Disconnect the exhaust gas recirculation (EGR) vacuum regulator solenoid electrical connector.



9. Remove the evaporative emission (EVAP) canister vacuum hose.



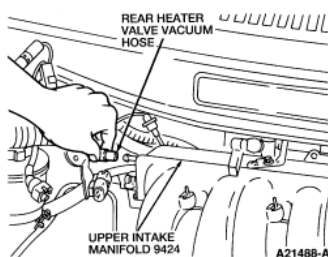
10. Disconnect the EVAP canister-to-throttle body hose from the throttle body.
11. Remove the fuel pressure regulator-to-upper intake manifold vacuum hose from the upper intake manifold (9424).



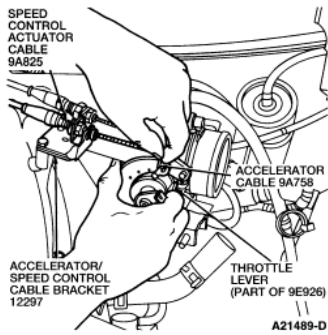
12. Disconnect the No. 1, 3, and 5 cylinder distributor to spark plug wires (12286) from the spark plugs (12405), then remove the spark plug wire boots from in between the upper intake manifold runners.
13. Remove the two spark plug wire bracket bolts and spark plug wire brackets from the upper intake manifold.
14. Remove the distributor dust cover.
15. **NOTE: The distributor cap screws are not removable from the distributor cap (12106).**

Loosen the three distributor cap screws.

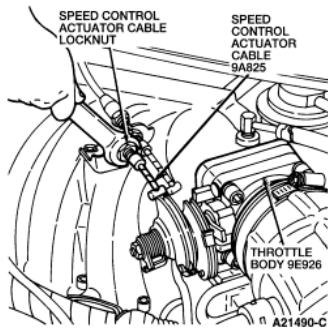
16. Remove the distributor cap from the distributor (12127). Position the distributor cap and distributor to spark plug wires aside to gain access to the main engine wiring harness.
17. Disconnect the rear heater valve vacuum hose from the right side of the upper intake manifold, if equipped.



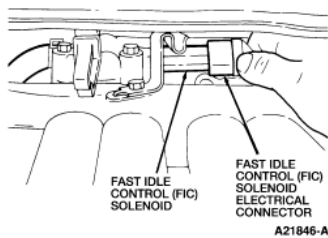
18. Remove the two wiring harness bracket bolts and remove the wiring harness bracket from the upper intake manifold and set aside.
19. Disconnect the speed control actuator cable from the throttle lever, if equipped.
20. Disconnect the accelerator cable (9A758) from the throttle lever.



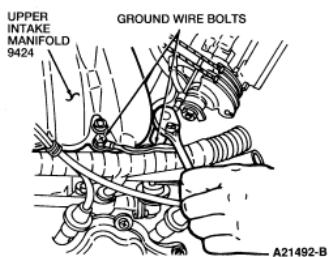
21. Remove the speed control actuator cable (9A825) from the hanging bracket, if equipped.
22. Remove the accelerator cable from the bracket attached to the top of the upper intake manifold.
23. Loosen the accelerator cable locknut and remove the accelerator cable from the bracket on top of the upper intake manifold.
24. Loosen the speed control actuator cable locknut, if equipped, and remove the speed control actuator cable from the bracket on the top of the upper intake manifold and position aside.



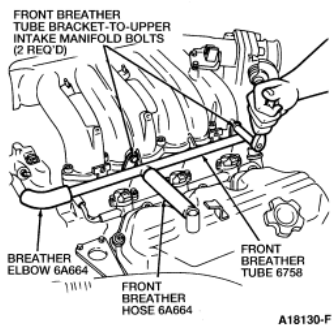
25. Disconnect the brake booster hose (2A046) from the power brake booster check valve (2365).
26. Remove the exhaust gas recirculation (EGR) valve-to-back pressure transducer (BPT) valve tube from the EGR valve (EGR valve) (9D475).
27. Remove the EGR valve to exhaust manifold tube (9D477) from the EGR valve.
28. Disconnect the fast idle control (FIC) solenoid electrical connector.



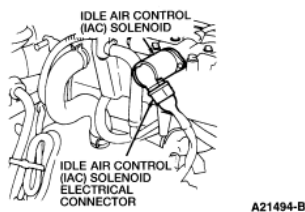
29. Disconnect the main engine wiring harness clips from the breather tube brackets.
30. Remove the two ground wire bolts from the upper intake manifold and position the ground wires and main wiring harness aside.



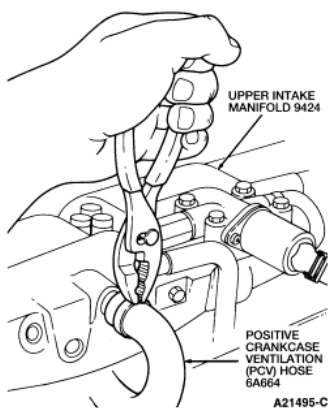
31. Remove the two front breather tube bracket-to-upper intake manifold bolts.



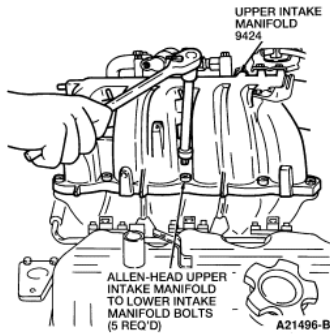
32. Disconnect the front breather hose from the front valve cover (6582).
33. Remove the fuel tube mounting bracket bolt.
34. Disconnect the coolant hose from the top heater core pipe.
35. Disconnect the EGR temperature sensor electrical connector.
36. Disconnect the idle air control (IAC) solenoid electrical connector.



37. Disconnect the positive crankcase ventilation (PCV) hose from the upper intake manifold.



38. Remove the five Allen head upper intake manifold-to-lower intake manifold bolts.



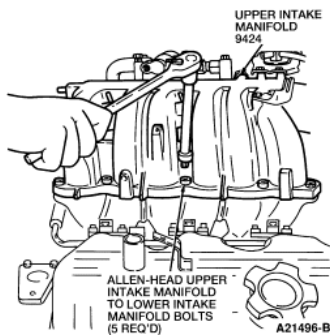
39. Remove the upper intake manifold. Discard the intake manifold upper gasket (9H486).

Installation

1. **NOTE: Ensure that the gasket surfaces are clean of any old gasket material.**

Install a new intake manifold upper gasket, then place the upper intake manifold into position.

2. Install the five Allen head upper intake manifold-to-lower intake manifold bolts. Tighten the upper intake manifold-to-lower intake manifold bolts to 18-22 Nm (13-16 lb-ft).



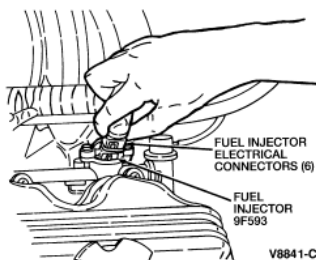
3. Connect the PCV hose to the upper intake manifold.
4. Connect the IAC solenoid electrical connector.
5. Connect the EGR temperature sensor electrical connector.
6. Connect the coolant hose to the top heater core pipe.
7. Install the fuel tube mounting bracket bolt.
8. Connect the front breather hose to the front valve cover.
9. Position the front breather tube onto the upper intake manifold, and install the two front breather tube bracket-to-upper intake manifold bolts. Tighten the front breather tube bracket-to-upper intake manifold bolts.
10. Position the ground wires and main wiring harness into place and install the two ground wire bolts. Tighten the ground wire bolts.
11. Connect the main engine wiring clips on the breather tube brackets.
12. Connect the FIC solenoid electrical connector.
13. Install the EGR valve to exhaust manifold tube.
14. Install the EGR valve-to-BPT valve tube to the EGR valve.
15. Connect the brake booster hose to the power brake booster check valve.
16. Install the speed control actuator cable, if equipped, and the accelerator cable to the bracket on the top of the upper intake manifold.
17. Connect the speed control actuator cable cable on the throttle lever, if equipped.
18. Install the accelerator cable to the bracket on the top of the upper intake manifold.
19. Install the speed control actuator cable, if equipped, into the hanging bracket.

20. Connect the accelerator cable on the throttle lever.
21. Tighten the speed control actuator cable locknut, if equipped, and the accelerator cable nut.
22. Install the wire harness bracket on the rear of the upper intake manifold.
23. Install the two wire harness bracket bolts. Tighten the wire harness bracket bolts.
24. Connect the rear heater valve vacuum hose to the upper intake manifold, if equipped.
25. Install the distributor cap and tighten the three distributor cap screws.
26. Install the distributor dust cover.
27. Install the spark plug wire brackets on the upper intake manifold and install the two spark plug wire bracket bolts.
28. Install the spark plug wire boots in between the upper intake manifold runners and connect the No. 1, 3, and 5 cylinder spark plug wires on the spark plugs.
29. Connect the fuel pressure regulator-to-upper intake manifold hose to the upper intake manifold.
30. Connect the EVAP canister-to-throttle body hose to the throttle body.
31. Connect the EGR vacuum regulator solenoid electrical connector.
32. Install the EVAP canister vacuum hose.
33. Install the coolant hose on the throttle body.
34. Slide the TP sensor electrical wiring into the bracket.
35. Connect the TP sensor electrical connectors.
36. Install the engine air cleaner intake tube and engine intake air resonator. Refer to [Section 03-12](#) for the installation procedure.
37. Fill the cooling system. Refer to [Section 03-03](#) for the procedure.
38. Connect the battery ground cable.
39. Start the engine (6007) and check for leaks and proper operation.

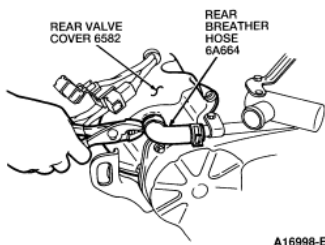
Lower

Removal

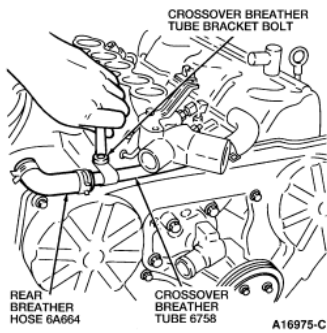
1. Remove the upper intake manifold. Refer to the procedure in this section.
2. Disconnect the six fuel injector electrical connectors.



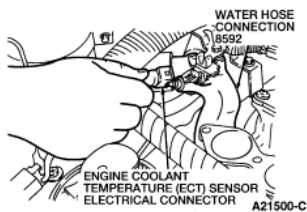
3. Disconnect the rear breather hose from the rear valve cover.



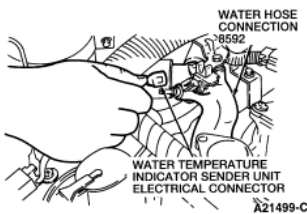
- Remove the crossover breather tube bracket bolt and the crossover breather tube from the upper engine front cover (6019).



- Remove the four fuel injection supply manifold bolts.
- Position the fuel injection supply manifold (9D280) and the insulators out of the way.
- Disconnect the engine coolant temperature (ECT) sensor electrical connector.

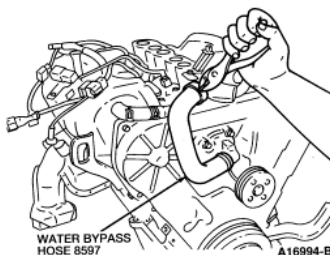


- Disconnect the water temperature indicator sender unit electrical connector.



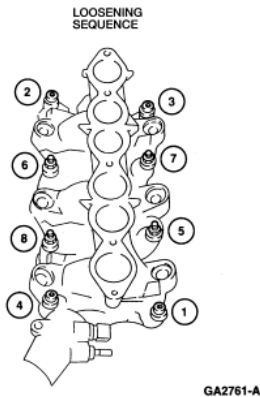
- Remove the upper radiator hose (8260) from the water hose connection (8592).
- Remove the upper radiator hose bracket bolt.
- Remove the water bypass hose (8597) from the water hose connection.

Engine Removed From Vehicle for Clarity



- Remove the bolt securing the water hose connection to the upper engine front cover.
- Remove the heater hose from the top heater core pipe.

14. Remove the four Allen head lower intake manifold bolts and the four lower intake manifold nuts from the lower intake manifold in two steps in the sequence shown.



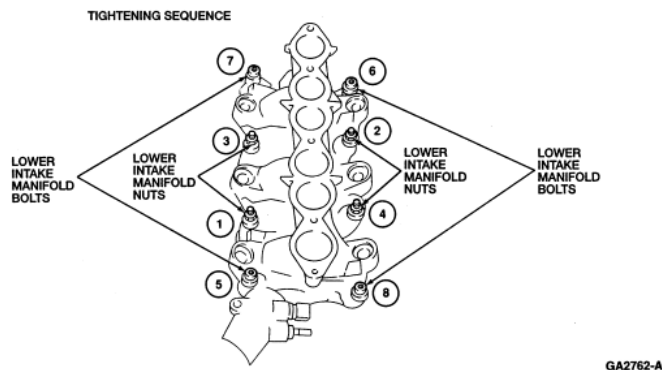
15. Remove the lower intake manifold washers.
16. Remove the lower intake manifold and lower intake manifold gaskets (9439). Discard the lower intake manifold gaskets.

Installation

1. **NOTE: Ensure that the lower intake manifold gasket surfaces are clean of any old lower intake manifold gasket material.**

Install new lower intake manifold gaskets on the cylinder heads (6049) and position the lower intake manifold on the cylinder blocks (6010).

2. Install the lower intake manifold washers.
3. Install the Allen head lower intake manifold bolts and the lower intake manifold nuts.
4. Tighten the lower intake manifold-to-cylinder block nuts and Allen head bolts in the sequence shown in the following steps:
 - a. Tighten the lower intake manifold nuts and bolts to 3-5 Nm (26-43 lb-in).
 - b. Tighten the lower intake manifold bolts to 13-17 Nm (9-12 lb-ft) and the lower intake manifold-to-cylinder block nuts to 24-27 Nm (17-20 lb-ft).
 - c. Tighten the lower intake manifold bolts to 13-17 Nm (9-12 lb-ft) and the lower intake manifold nuts to 24-27 Nm (17-20 lb-ft).



5. Install the heater hose to the top heater core pipe.
6. Install the bolt securing the water hose connection to the upper engine front cover.
7. Install the water bypass hose onto the water hose connection.
8. Install the upper radiator hose bracket bolt.
9. Install the upper radiator hose onto the water hose connection.
10. Connect the water temperature indicator sender unit electrical connector.
11. Connect the ECT sensor electrical connector.
12. Position the fuel injection supply manifold with the insulators into place and install the four fuel injection supply manifold bolts.
13. Tighten the fuel injection supply manifold bolts to 24-27 Nm (17-20 lb-ft).

14. Install the breather tube assembly.
 15. Connect the rear breather hose to the rear valve cover.
 16. Install the crossover breather tube and the crossover breather tube bracket bolt to the upper engine front cover.
 17. Connect the six fuel injector electrical connectors.
 18. Install the upper intake manifold. Refer to the procedure in this section.
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