

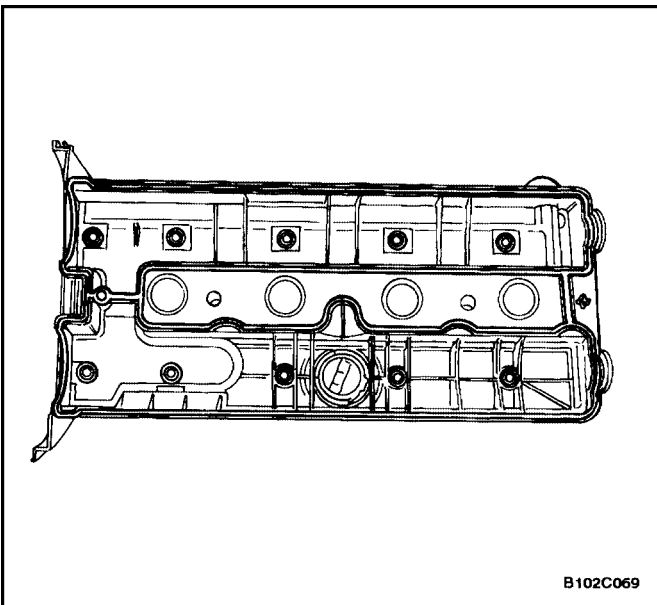
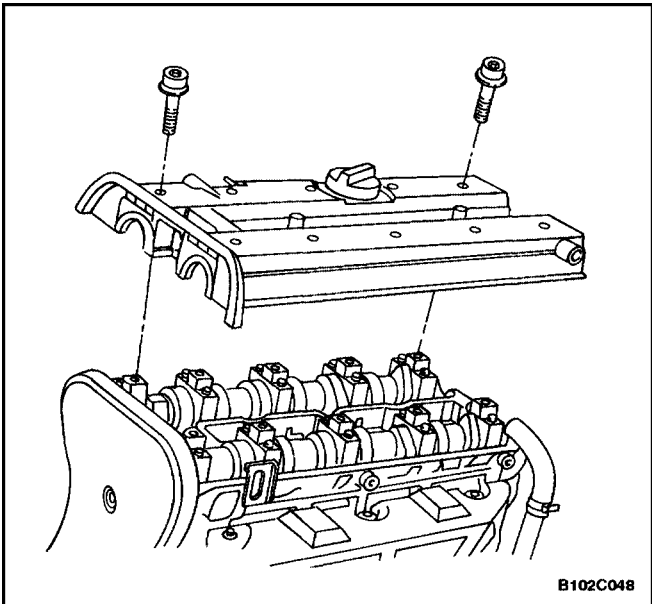
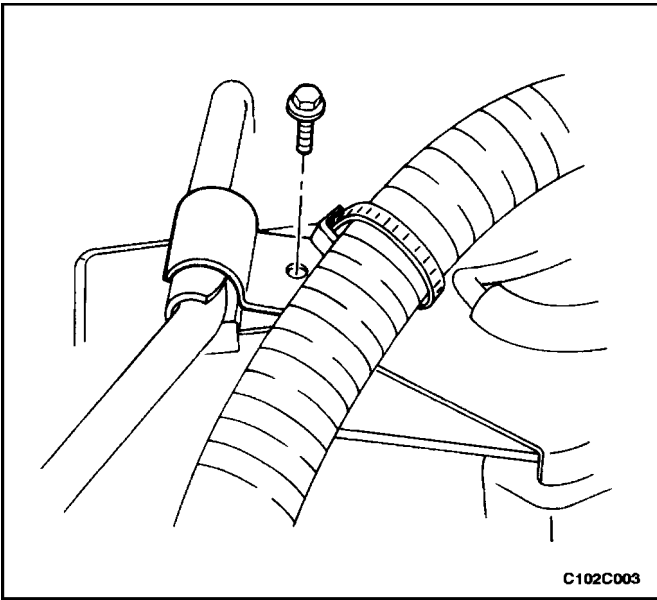
# MAINTENANCE AND REPAIR

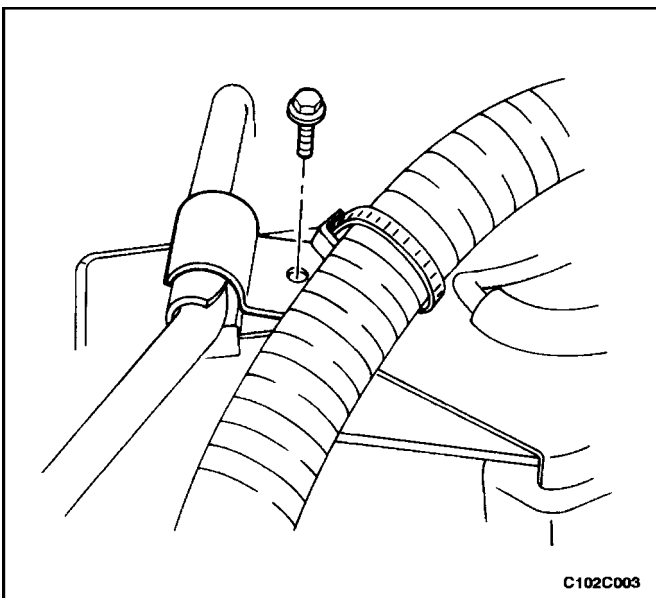
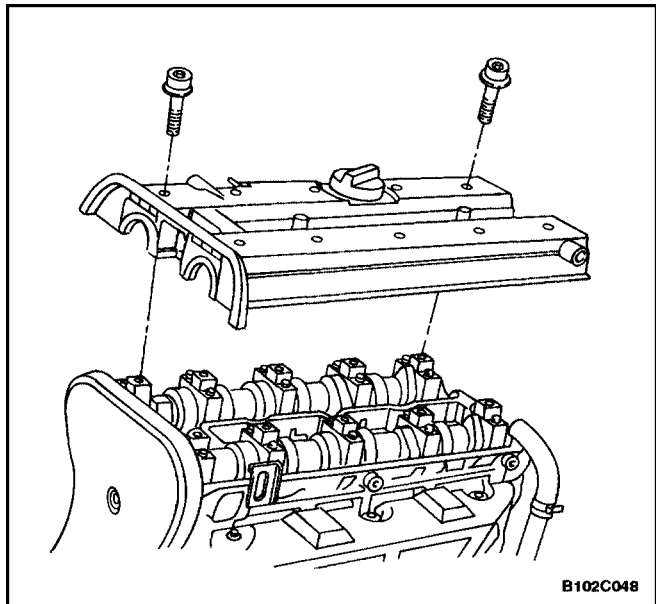
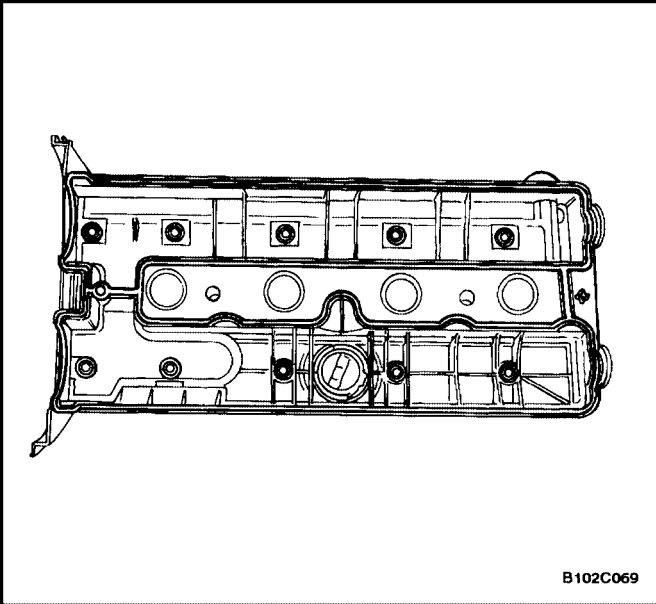
## ON-VEHICLE SERVICE

### VALVE COVER

#### Removal Procedure

1. Disconnect the negative battery cable.
2. Disconnect the breather tube from the valve cover.
3. Disconnect all of the necessary vacuum lines.
4. Remove the spark plug cover bolts.
5. Remove the spark plug cover.
6. Disconnect the ignition wires from the spark plugs.
7. Remove the power steering hose clamp bolt and the position power steering hose clamp clear of the repair area.
8. Disconnect the camshaft position (CMP) sensor connector.
9. Remove the valve cover bolts.
10. Remove the valve cover washers.
11. Remove the valve cover.
12. Remove the valve cover gasket from the valve cover.





## Installation Procedure

1. Apply a small amount of gasket sealant to the corners of the front camshaft caps and the top of the rear valve cover-to-cylinder head seal.
2. Install the new valve cover gasket to the valve cover.

3. Install the valve cover.
4. Install the valve cover washers.
5. Install the valve cover bolts.

### Tighten

Tighten the valve cover bolts to 8 N•m (71 lb-in).

6. Connect the ignition wires to the spark plugs.
7. Install the spark plug cover.
8. Install the spark plug cover bolts.

### Tighten

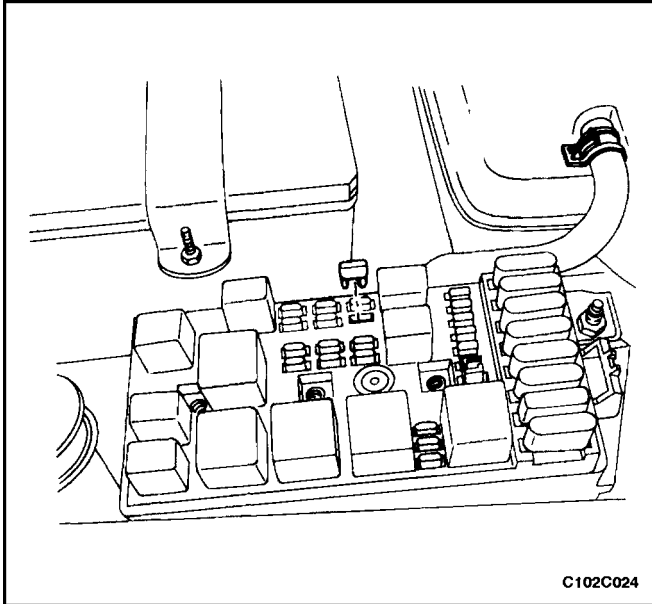
Tighten the spark plug cover bolts to 3 N•m (27 lb-in).

9. Connect all of the necessary vacuum lines.
10. Connect the breather tube to the valve cover.
11. Connect the CMP sensor connector.
12. Position the power steering pressure hose in place and install the bolt.

### Tighten

Tighten the power steering hose clamp bolt to 8 N•m (71 lb-in).

13. Connect the negative battery cable.



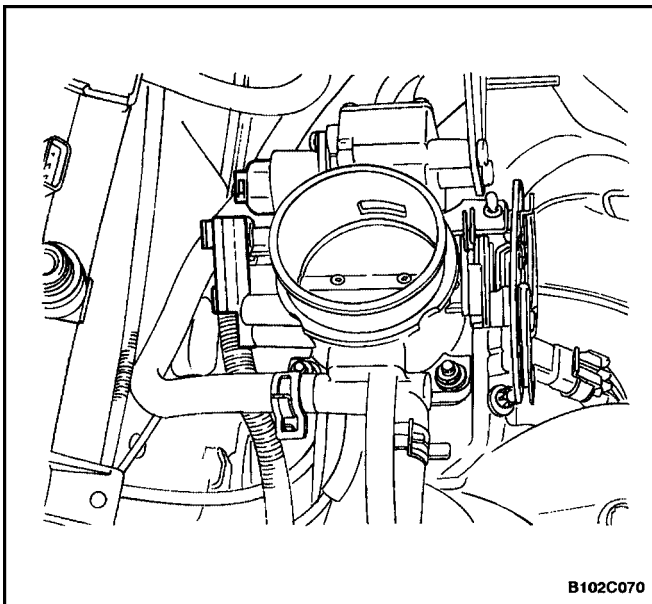
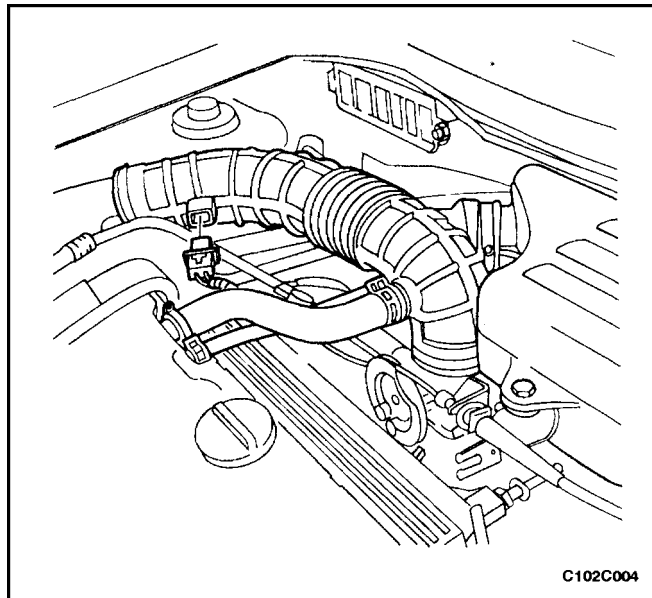
## CYLINDER HEAD AND GASKET

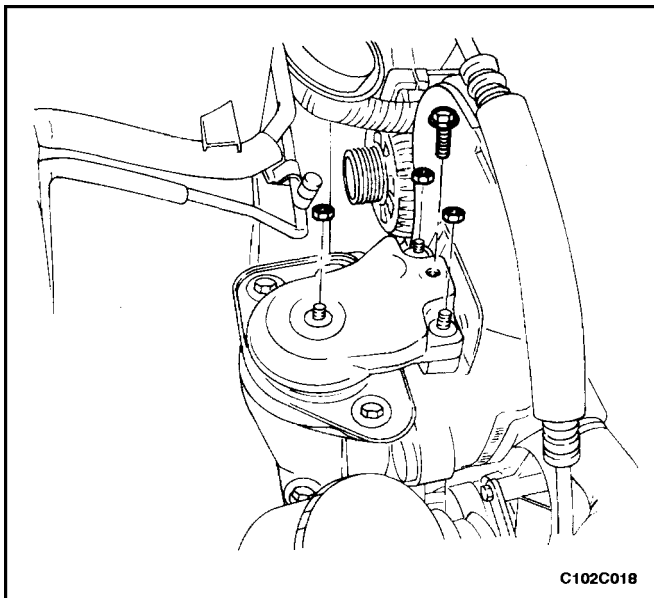
### Tools Required

KM-470-B Angular Torque Gauge  
J-28467-B Engine Support Fixture

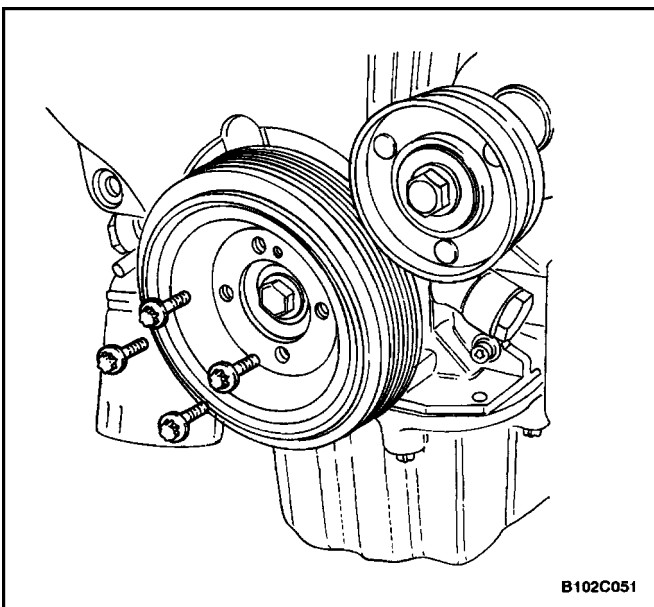
### Removal Procedure

1. Remove the fuel pump fuse.
2. Start the engine. After it stalls, crank the engine for 10 seconds to rid the fuel system of fuel pressure.
3. Disconnect the negative battery cable.
4. Disconnect the engine control module (ECM) ground terminal.
5. Drain the engine coolant. Refer to *Section 1D, Engine Cooling*.
6. Disconnect the intake air temperature (IAT) sensor connector.
7. Disconnect the breather tube from the valve cover.
8. Remove the resonator retaining bolts and the resonator.
9. Remove the air intake tube.
10. Remove the evaporative (EVAP) emission canister purge solenoid bracket bolt and reposition the canister purge solenoid clear of the repair area.
11. Disconnect the electronic ignition (EI) system ignition coil connector.
12. Disconnect the oxygen sensor connector.
13. Disconnect the idle air control (IAC) valve connector.
14. Disconnect the throttle position sensor (TPS) connector.
15. Disconnect the engine coolant temperature (ECT) sensor connector.
16. Disconnect the coolant temperature sensor (CTS) connector.
17. Disconnect the camshaft position (CMP) sensor connector.

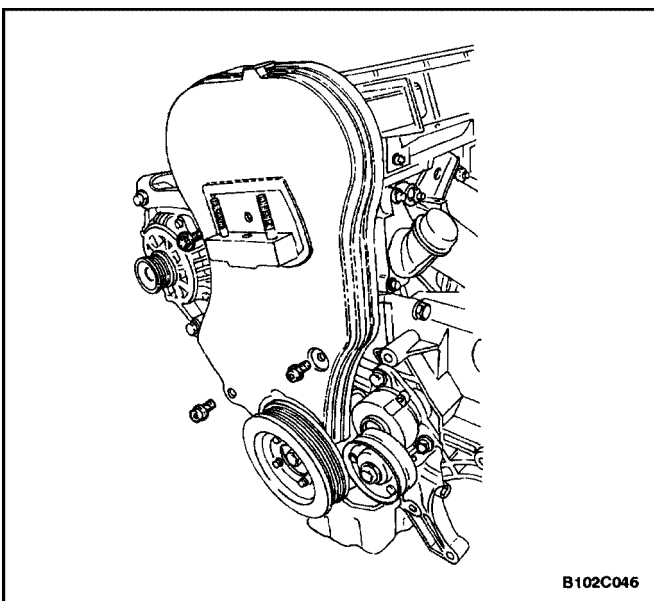




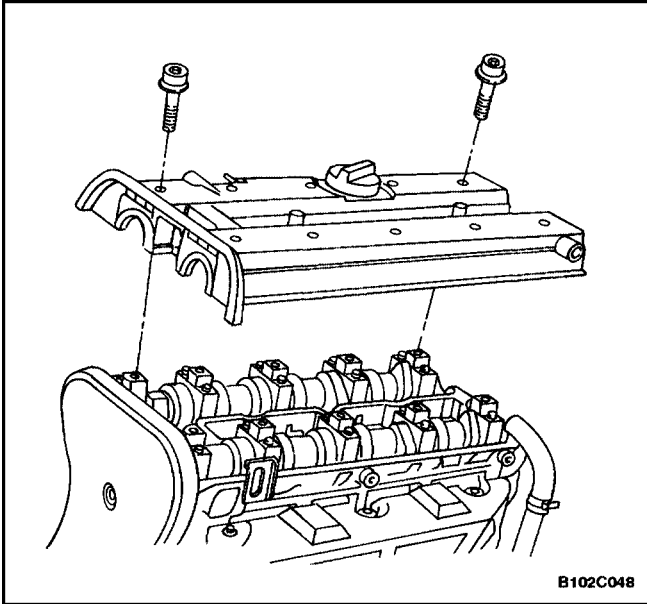
18. Remove the air filter housing bolts.
19. Remove the air filter housing.
20. Remove the right front wheel. Refer to *Section 2E, Tires and Wheels*.
21. Remove the right front wheel well splash shield. Refer to *Section 9R, Body Front End*.
22. Install the engine support fixture J-28467-B.
23. Remove the right engine mount bracket and the bolts.



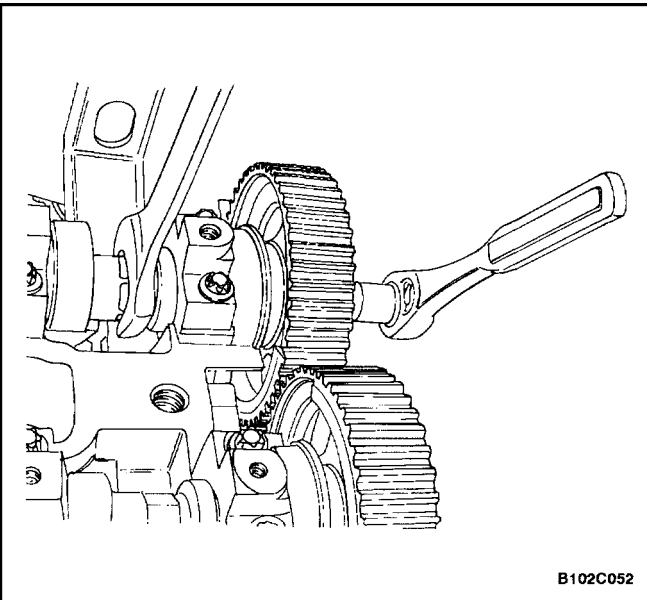
24. Disconnect the upper radiator hose at the thermostat housing.
25. Remove the serpentine accessory drive belt. Refer to *Section 6B, Power Steering Pump*.
26. Remove the crankshaft pulley bolts.
27. Remove the crankshaft pulley.



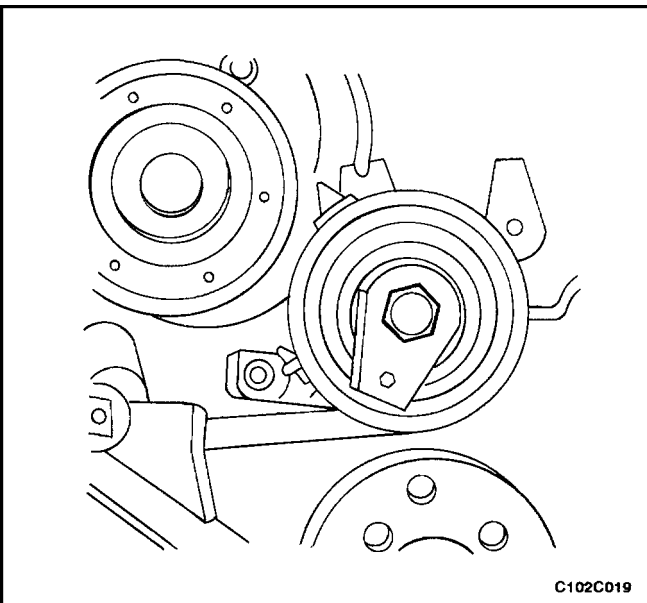
28. Remove the front timing belt cover bolts.
29. Remove the front timing belt cover.



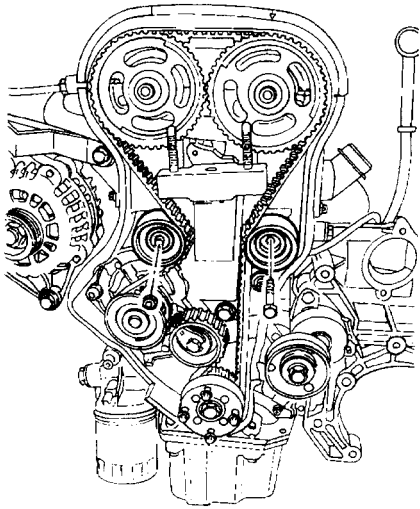
30. Remove the timing belt. Refer to "Timing Belt" in this section.
31. Disconnect the breather tube at the valve cover.
32. Remove the spark plug cover bolts.
33. Remove the spark plug cover.
34. Disconnect the ignition wires from the spark plugs.
35. Remove the valve cover bolts.
36. Remove the valve cover washers.
37. Remove the valve cover and the valve cover gasket.



- Notice :** Take extreme care to prevent any scratches, nicks, or damage to the camshafts.
38. While holding the intake camshaft firmly in place, remove the intake camshaft gear bolt.
  39. Remove the intake camshaft gear.
  40. While holding the exhaust camshaft firmly in place, remove the exhaust camshaft gear bolt.
  41. Remove the exhaust camshaft gear.

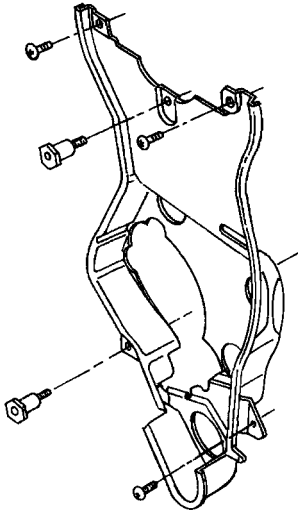


42. Remove the timing belt automatic tensioner bolts.
43. Remove the timing belt automatic tensioner.



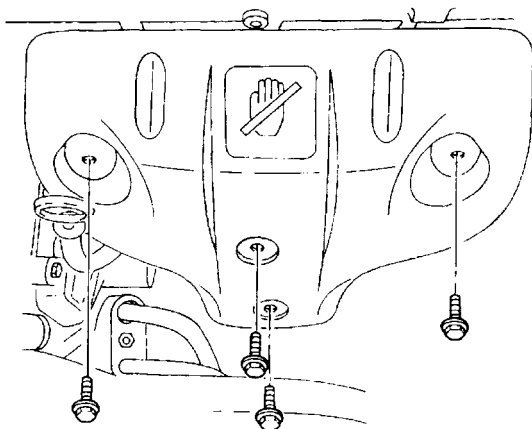
B102C054

- 44. Remove the timing belt idler pulley nuts.
- 45. Remove the timing belt idler pulleys.
- 46. Remove the engine mount bolts.
- 47. Remove the engine mount.



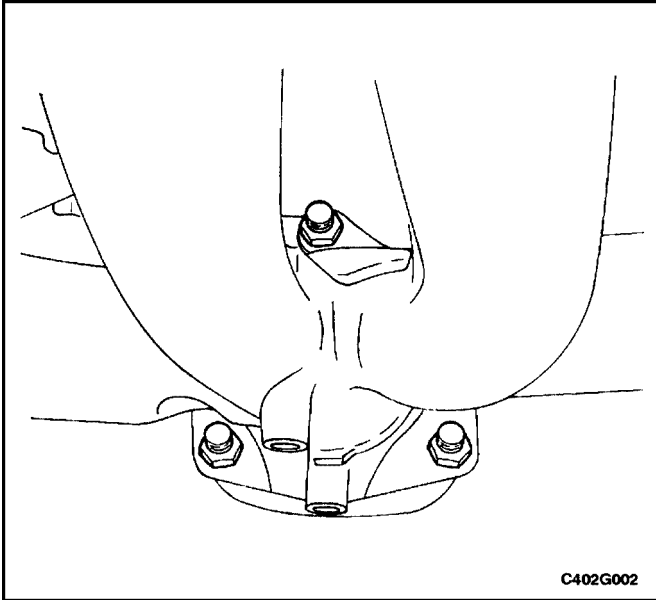
B102C084

- 48. Remove the rear timing belt cover bolts.
- 49. Remove the rear timing belt cover.

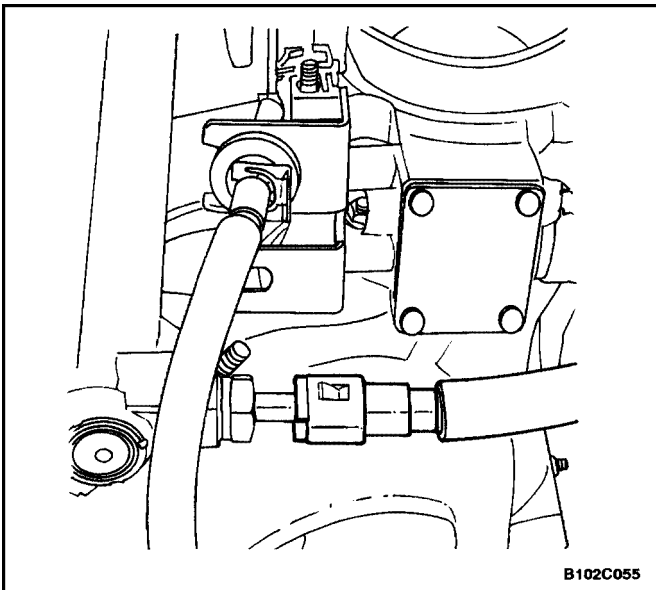


C402G001

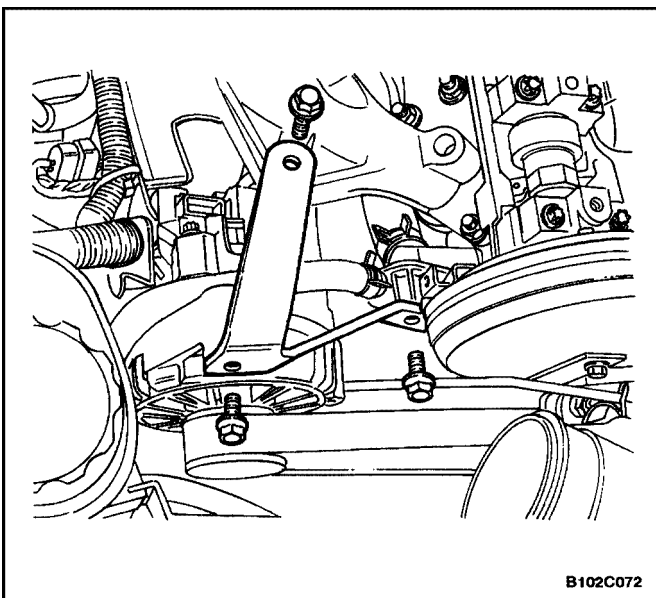
- 50. Remove the exhaust manifold heat shield nuts and the heat shield.



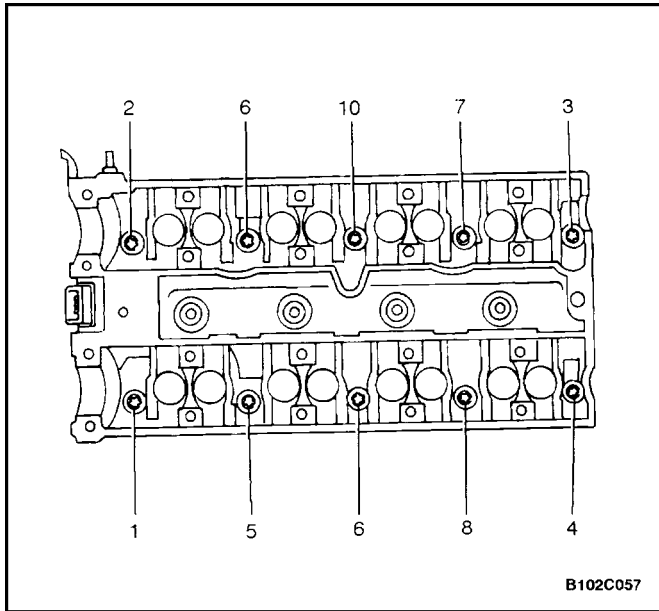
51. Remove the auxiliary catalytic converter upper flange nuts.
52. Disconnect the vacuum hoses, as needed.



53. Disconnect the fuel return line at the fuel pressure regulator.
54. Disconnect the fuel feed line at the fuel rail.
55. Disconnect the coolant hose at the rear cylinder head and ignition coil exhaust gas recirculation (EGR) bracket.
56. Disconnect the surge tank coolant hose at the throttle body.
57. Remove the fuel rail assembly. Refer to *Section 1F, Engine Controls*.



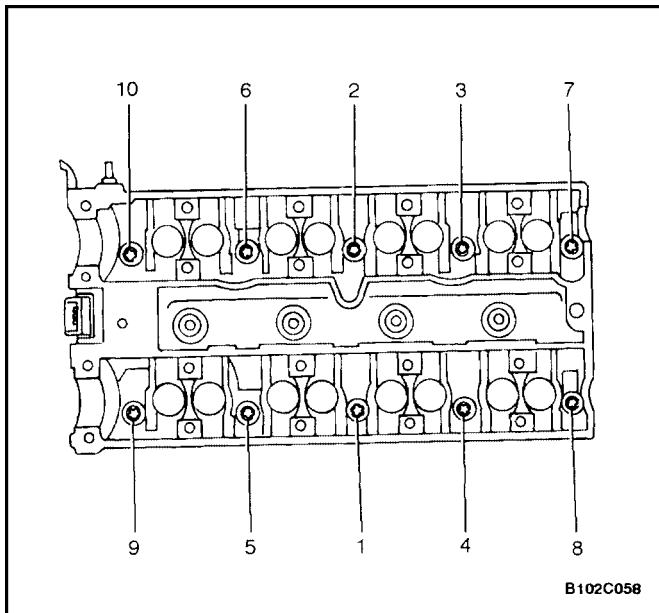
58. Remove the generator-to-intake manifold support bracket bolts at the cylinder head coolant bypass and the intake manifold.
59. Remove the generator support bracket.
60. Remove the intake manifold-to-generator strap bracket bolt and loosen the bolt on the generator.
61. Move the strap clear of the intake manifold.



62. Disconnect the throttle cable at the throttle body and the intake manifold.
63. Loosen all of the cylinder head bolts gradually and in the sequence shown.
64. Remove the cylinder head bolts.
65. Remove the cylinder head with the intake manifold and the exhaust manifold attached.

**Notice :** To avoid damaging the vehicle, prevent any engine oil or coolant from entering the cylinders when removing the cylinder head.

66. Remove the cylinder head gasket.



### Cleaning Procedure

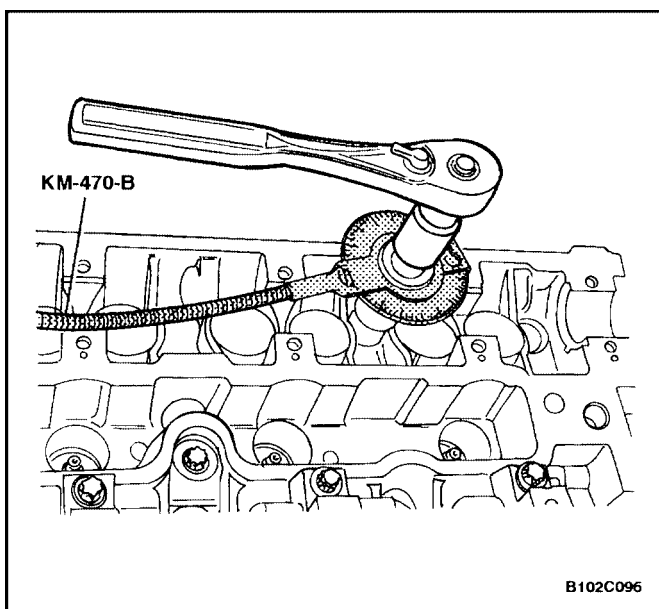
1. Clean the gasket surfaces of the cylinder head and the engine block.
2. Make sure the gasket surfaces of the cylinder head and the engine block are free of nicks and heavy scratches.
3. Clean the cylinder head bolts.
4. Inspect the cylinder head for warpage. Refer to "Cylinder Head and Valve Train Components" in this section.

### Installation Procedure

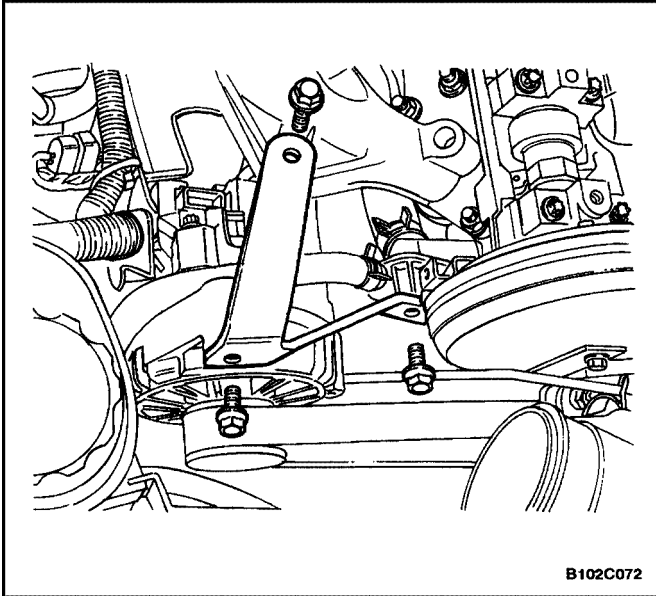
1. Install the cylinder head gasket.
2. Install the cylinder head with the intake manifold and the exhaust manifold attached.
3. Install the cylinder head bolts.
4. Tighten the cylinder head bolts gradually and in the sequence shown.

#### Tighten

Tighten the cylinder head bolts to 25 N•m (18 lb-ft) and turn the bolts another three turns of 90 degrees using the angular torque gauge KM-470-B.







5. Connect the throttle cable at the throttle body and the intake manifold.
6. Install the generator-to-intake manifold support bracket.
7. Install the generator-to-intake manifold support bracket bolts.

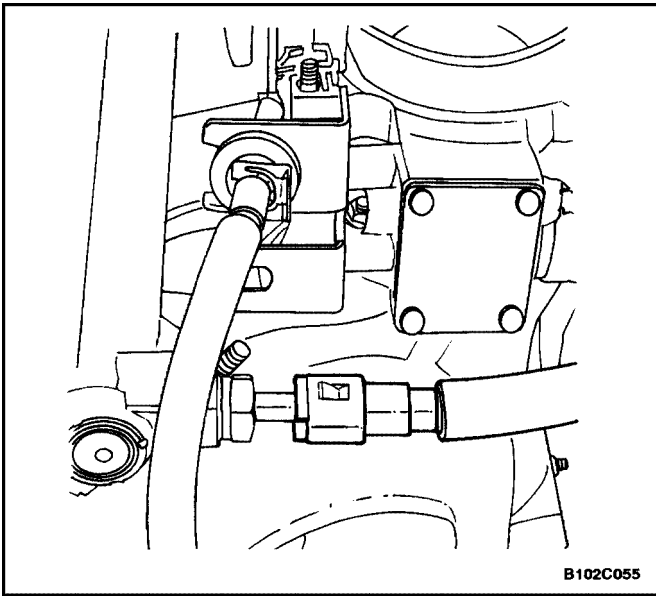
### **Tighten**

Tighten the generator-to-intake manifold support bracket bolts to 35 N•m (26 lb-ft).

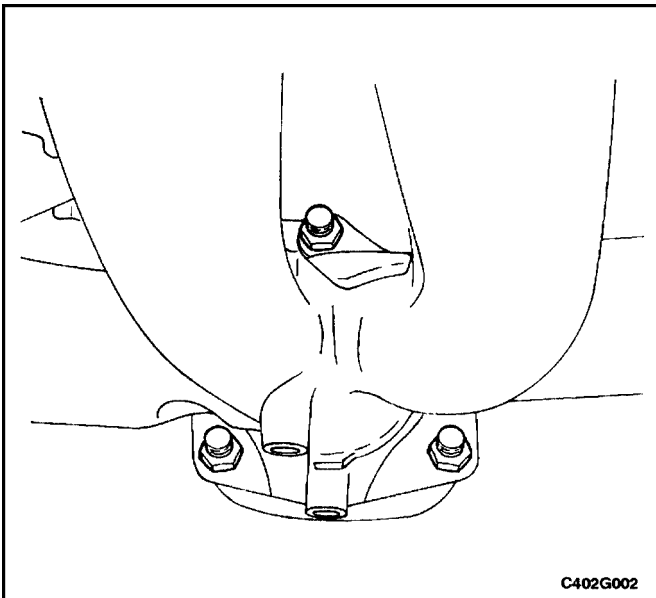
8. Install the intake manifold strap bracket bolts to the alternator.

### **Tighten**

Tighten the generator-to-intake manifold strap bracket bolts to 20 N•m (15 lb-ft).



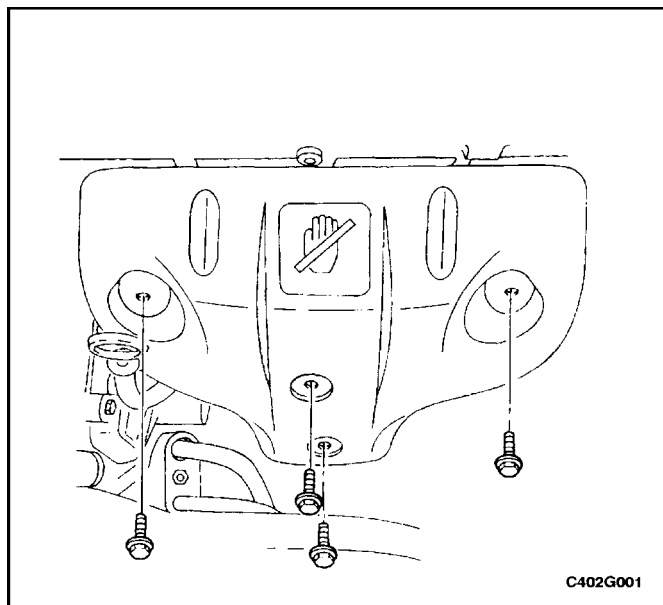
9. Connect the surge tank coolant hose at the throttle body.
10. Connect the coolant hose to the rear cylinder head and ignition coil EGR bracket.
11. Connect the fuel feed line at the fuel rail.
12. Connect the fuel return line at the fuel rail.
13. Connect all the previous disconnected vacuum hoses.
14. Install the fuel rail assembly. Refer to *Section 1F, Engine Controls*.



15. Install the auxiliary catalytic converter nuts.

### **Tighten**

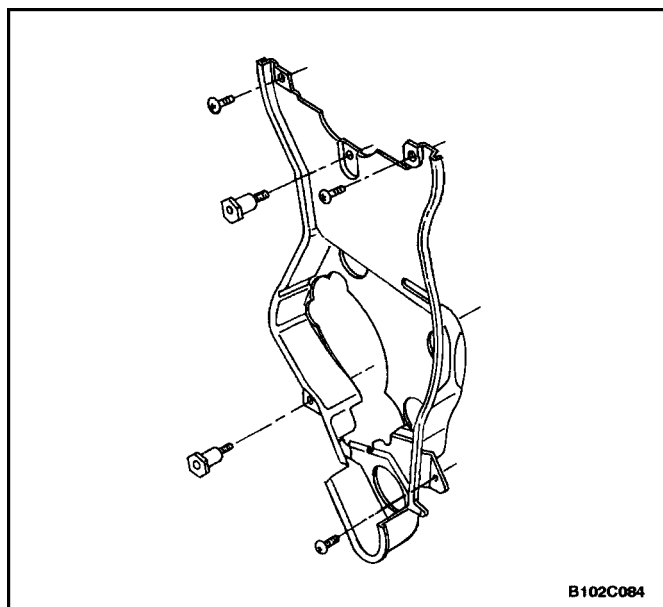
Tighten the auxiliary catalytic converter-to-exhaust manifold nuts to 40 N•m (30 lb-ft).



16. Install the exhaust manifold heat shield bolts.

**Tighten**

Tighten the exhaust manifold heat shield bolts to 8 N•m (71 lb-in).



17. Install the rear timing belt cover.

18. Install the rear timing belt cover bolts.

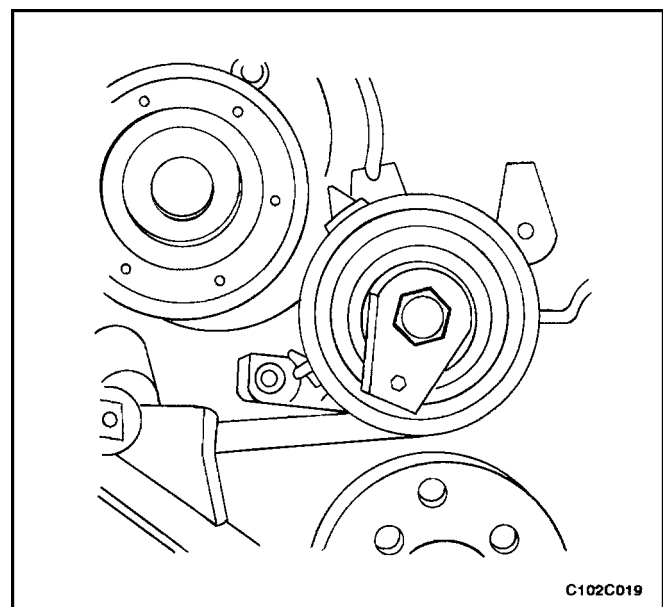
**Tighten**

Tighten the rear timing belt cover bolts to 6 N•m (53 lb-in).

19. Install the engine mount bolts.

**Tighten**

Tighten the engine mount bolts to 60 N•m (44 lb-ft).



20. Install the timing belt automatic tensioner.

21. Install the timing belt automatic tensioner bolt.

**Tighten**

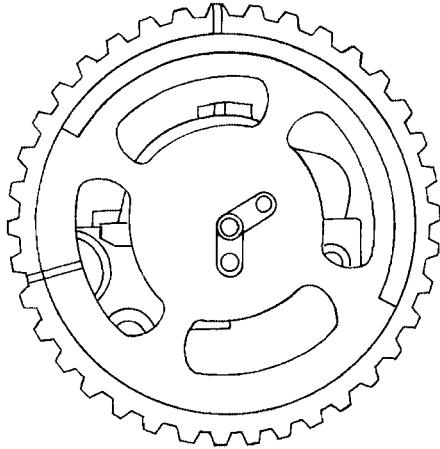
Tighten the timing belt automatic tensioner bolt to 25 N•m (18 lb-ft).

22. Install the timing belt idler pulleys.

23. Install the timing belt idler pulley nuts.

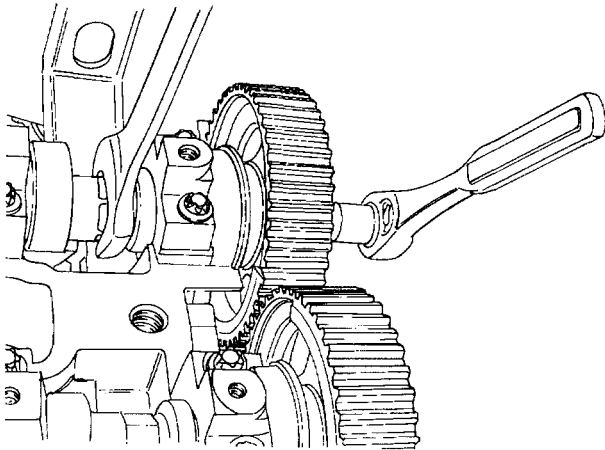
**Tighten**

Tighten the timing belt idler pulley nuts to 25 N•m (18 lb-ft).



B102C059

24. Install the camshaft gears with the timing marks at the front.
25. Insert the guide pin of the intake camshaft into the "IN" bore.
26. Insert the guide pin of the exhaust camshaft into the "EX" bore.



B102C052

27. Install the camshaft gears by counterholding on the hex of the camshaft with an open end wrench.
28. Install the camshaft gear to the camshaft with a new bolt.

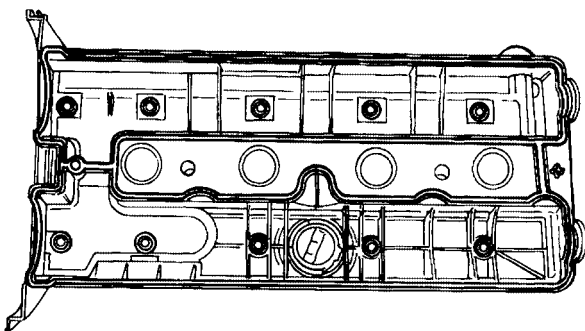
### **Tighten**

Tighten the intake camshaft gear bolt to 50 N•m (37 lb–ft). Using the angular torque gauge KM–470–B, tighten the bolt an additional turn of 60 degrees, plus another turn of 15 degrees.

29. While holding the exhaust camshaft firmly in place, install the exhaust camshaft gear bolt.

### **Tighten**

Tighten the exhaust camshaft gear bolt to 50 N•m (37 lb–ft). Using the angular torque gauge KM–470–B, tighten the bolt an additional turn of 60 degrees, plus another turn of 15 degrees.

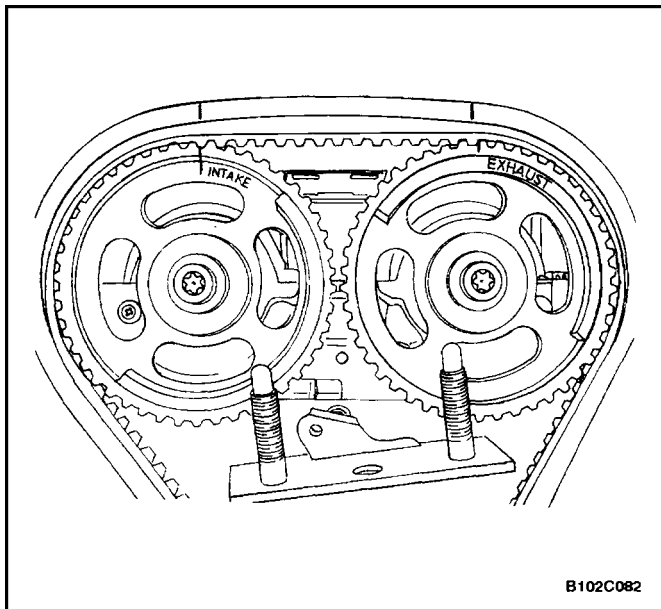


B102C069

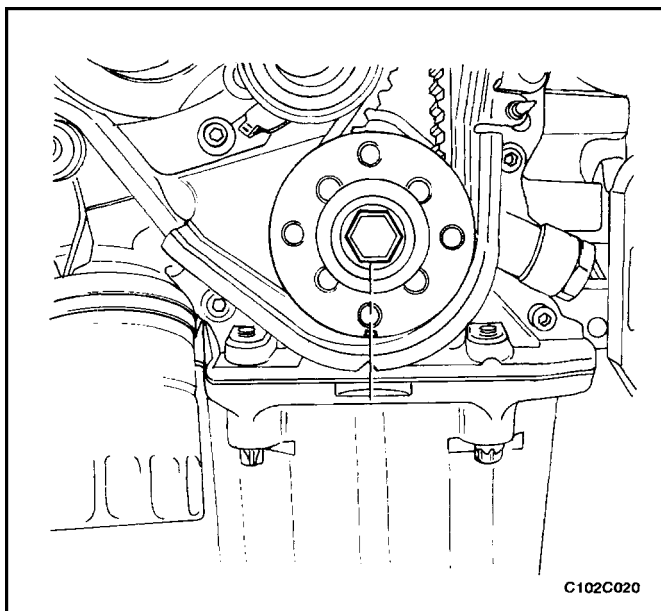
30. Apply a small amount of gasket sealant to the corners of the front camshaft caps and to the top of the rear valve cover-to-cylinder head seal.
31. Install the valve cover and the valve cover gasket.
32. Install the valve cover washers.
33. Install the valve cover bolts.

### **Tighten**

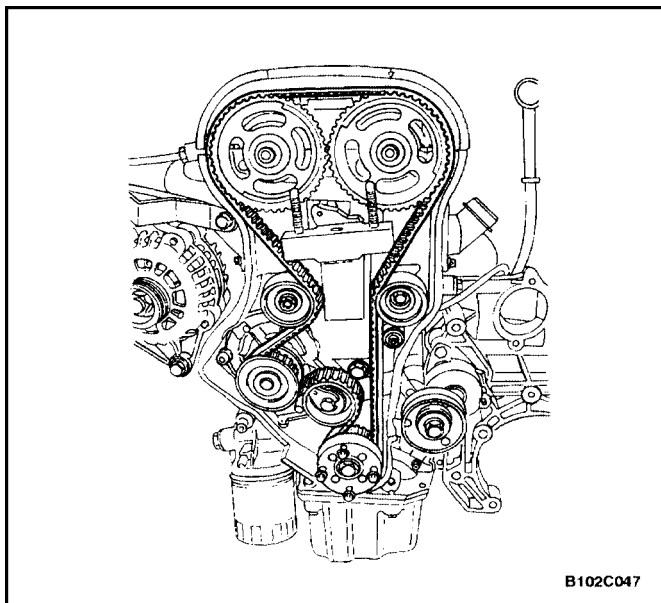
Tighten the valve cover bolts to 8 N•m (71 lb–in).



B102C082



C102C020



B102C047

34. Connect the ignition wires to the spark plugs.
35. Install the spark plug cover.
36. Install the spark plug cover bolts.

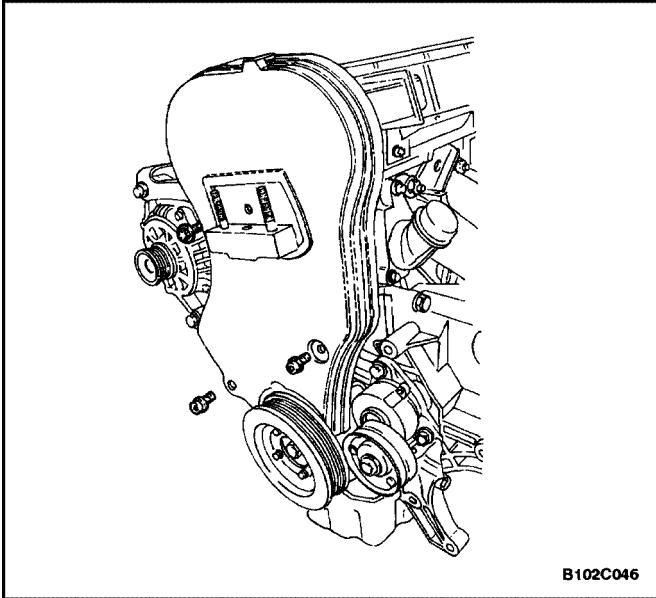
### Tighten

Tighten the spark plug cover bolts to 3 N•m (27 lb-in).

37. Connect the breather tube to the valve cover.
38. Align the timing marks on the camshaft gears to the notches on the valve cover, using the intake gear mark for the intake gear and the exhaust gear mark for the exhaust gear.

39. Align the mark on the crankshaft gear with the notch at the bottom of the rear timing belt cover.

40. Install the timing belt. Refer to "Timing Belt" in this section.
41. Check and adjust the timing belt tension. Refer to "Timing Belt Check and Adjust" in this section.



42. Install the front timing belt cover.
43. Install the front timing belt cover bolts.

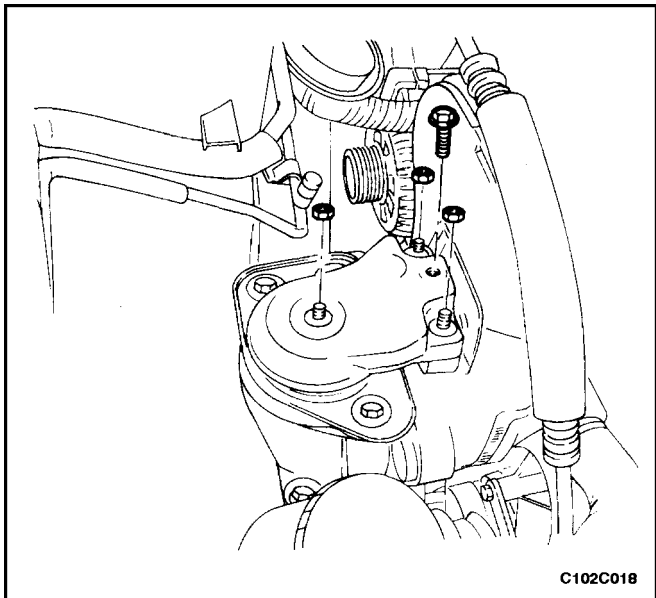
### **Tighten**

Tighten the front timing belt cover bolts to 8 N•m (71 lb-in).

44. Install the crankshaft pulley.
45. Install the crankshaft pulley bolts.

### **Tighten**

Tighten the crankshaft pulley bolts to 20 N•m (15 lb-ft).

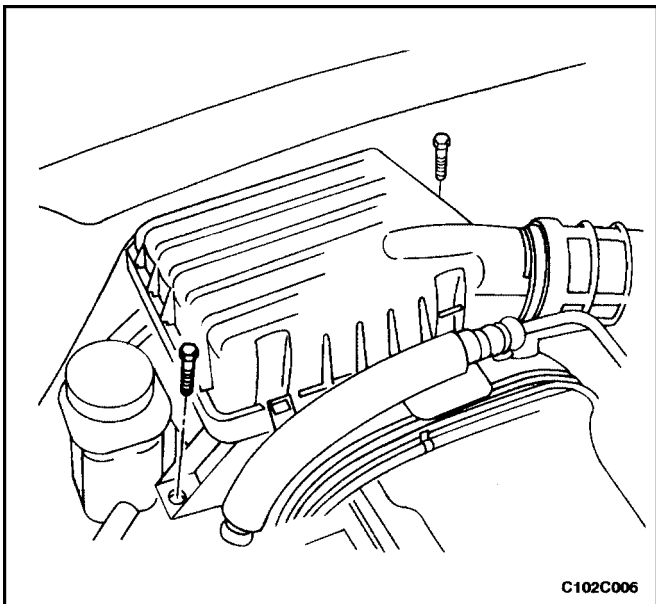


46. Install the right engine mount bracket, the retaining bolts, and the nut.

### **Tighten**

Tighten the engine mount bolts to 60 N•m (44 lb-ft).

47. Remove the engine support fixture J-28467-B.
48. Install the serpentine accessory drive belt. Refer to *Section 6B, Power Steering Pump*.
49. Connect the upper radiator hose to the thermostat housing.
50. Install the right front wheel well splash shield. Refer to *Section 9R, Body Front End*.
51. Install the right front wheel. Refer to *Section 2E, Tires and Wheels*.



52. Install the air filter housing.
53. Install the air filter housing bolts.

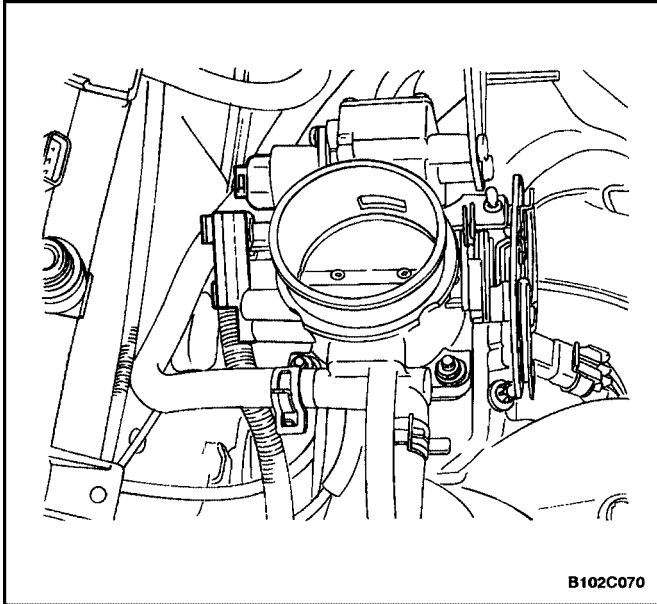
### **Tighten**

Tighten the air filterhousing bolts to 8 N•m (71 lb-in).

54. Connect the air intake tube to the throttle body.
55. Connect the breather tube to the valve cover.
56. Connect the IAT sensor connector.
57. Install the resonator and the retaining bolts.

### **Tighten**

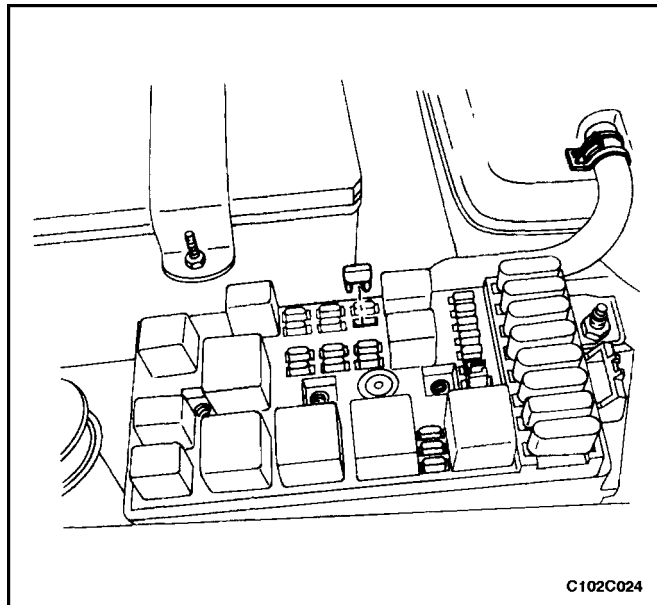
Tighten the resonator retaining bolts to 8 N•m (71 lb-in).



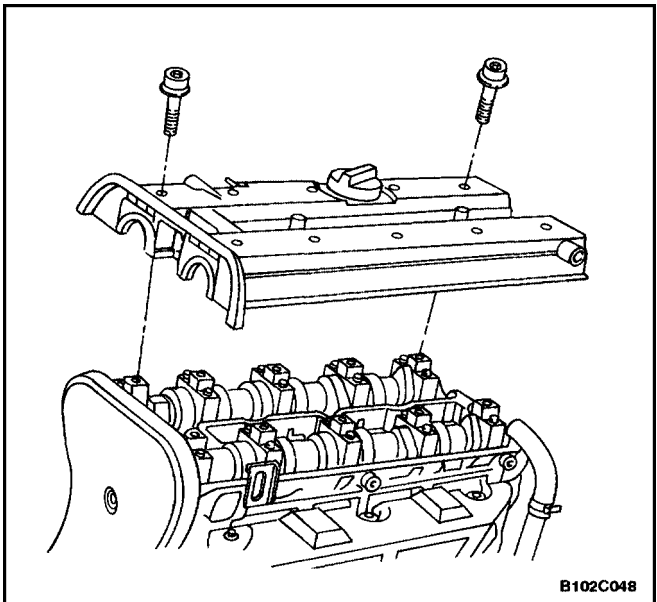
58. Connect the CMP sensor connector.
59. Connect the CTS connector.
60. Connect the ECT sensor connector.
61. Connect the IAC connector.
62. Connect the TPS connector.
63. Install the EVAP canister purge solenoid bracket bolt.

### Tighten

Tighten the canister purge solenoid bracket bolt to 5 N•m(44 lb-in).



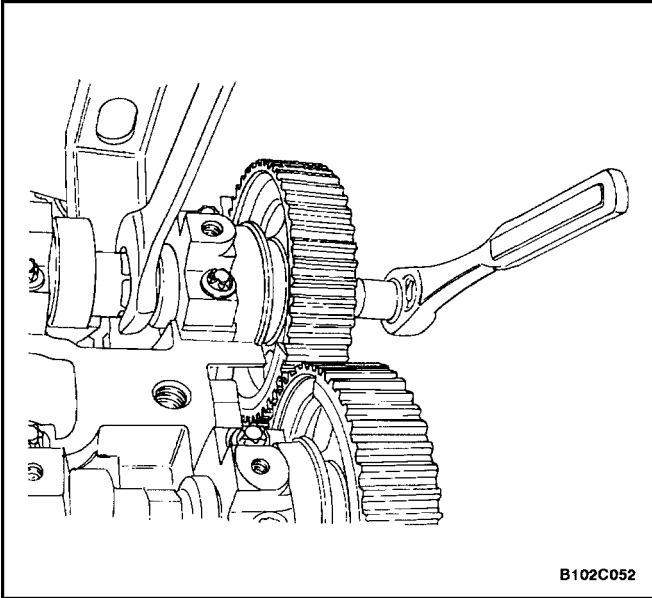
64. Connect the EI system ignition coil connector.
65. Connect the oxygen sensor connector.
66. Connect the ECM ground terminal.
67. Install the fuel pump fuse.
68. Connect the negative battery ground cable.
69. Refill the engine cooling system. Refer to *Section 1D, Engine Cooling*.



## CAMSHAFTS

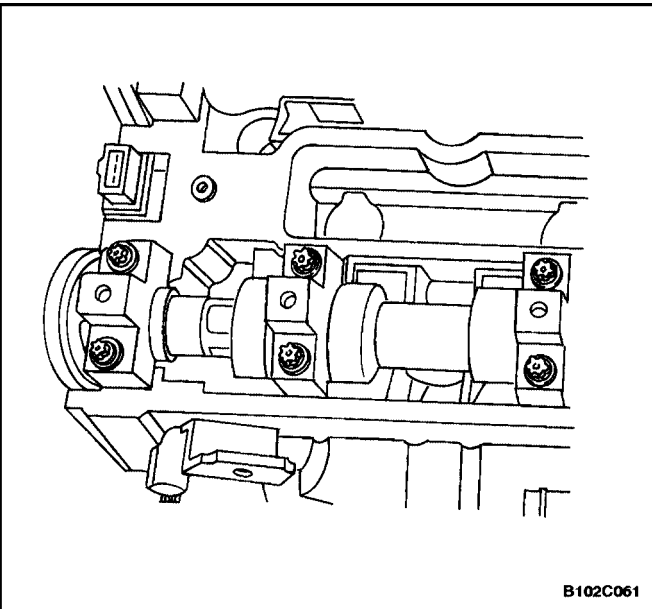
### Removal Procedure

1. Remove the timing belt. Refer to "Timing Belt" in this section.
2. Disconnect the breather tube at the valve cover.
3. Disconnect the crankcase ventilation tube at the valve cover.
4. Remove the spark plug cover bolts.
5. Remove the spark plug cover.
6. Disconnect the ignition wires from the spark plugs.
7. Disconnect the camshaft position (CMP) sensor connector.
8. Remove the valve cover bolts.
9. Remove the valve cover washers.
10. Remove the valve cover and the valve cover gasket.



**Notice :** Take extreme care to prevent any scratches, nicks, or damage to the camshafts.

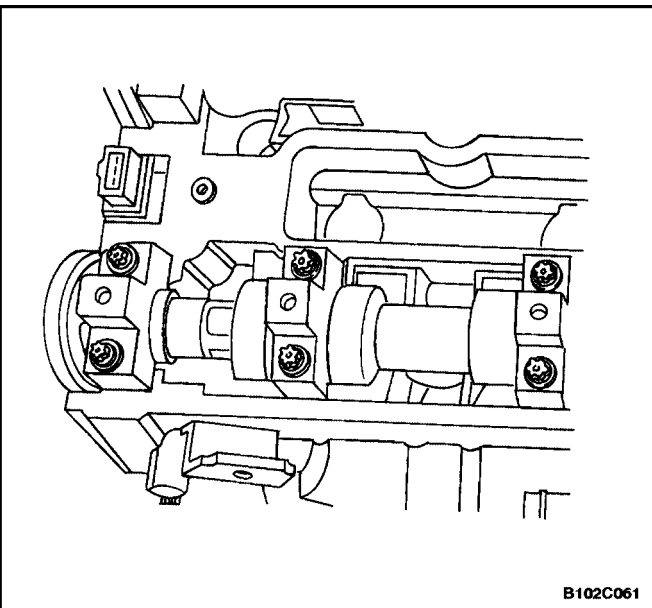
11. While holding the intake camshaft firmly in place, remove the intake camshaft gear bolt.
12. Remove the intake camshaft gear.
13. While holding the exhaust camshaft firmly in place, remove the exhaust camshaft gear bolt.
14. Remove the exhaust camshaft gear.



15. Loosen the camshaft bearing cap bolts in stages of one-half to one turn.
16. Remove the camshaft bearing cap bolts from the cylinder head.
17. Remove the camshafts.
18. Remove the seal ring from the camshafts.

**Important :** The camshaft must detach evenly from the bearing seats in the front guide bearing.

19. Check the camshaft and bearing seats for wear and replace them if necessary.



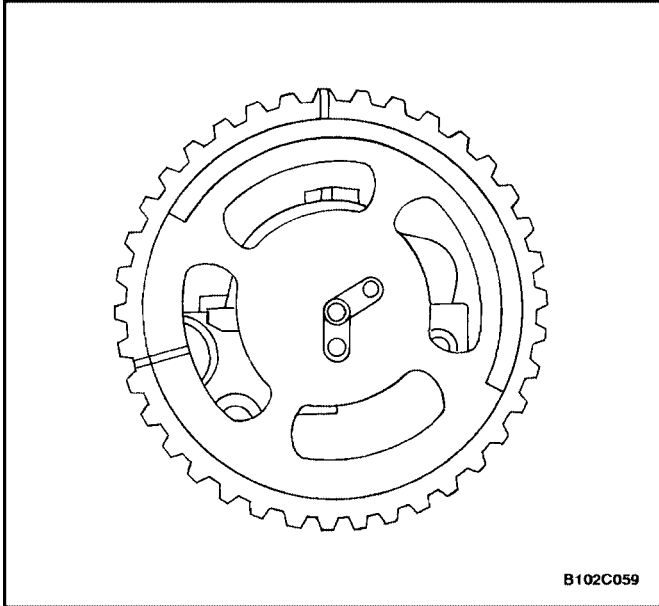
## Installation Procedure

**Notice :** Take extreme care to prevent any scratches, nicks, or damage to the camshafts.

1. Lubricate the camshaft journals and the camshaft bearing caps with engine oil.
2. Install the intake camshaft.
3. Install the intake camshaft bearing caps in their original positions.
4. Install the intake camshaft bearing cap bolts.
5. Install the exhaust camshaft.
6. Install the exhaust camshaft bearing caps in their original positions.
7. Install the exhaust camshaft bearing cap bolts.
8. Tighten the camshaft bearing cap bolts gradually.

### Tighten

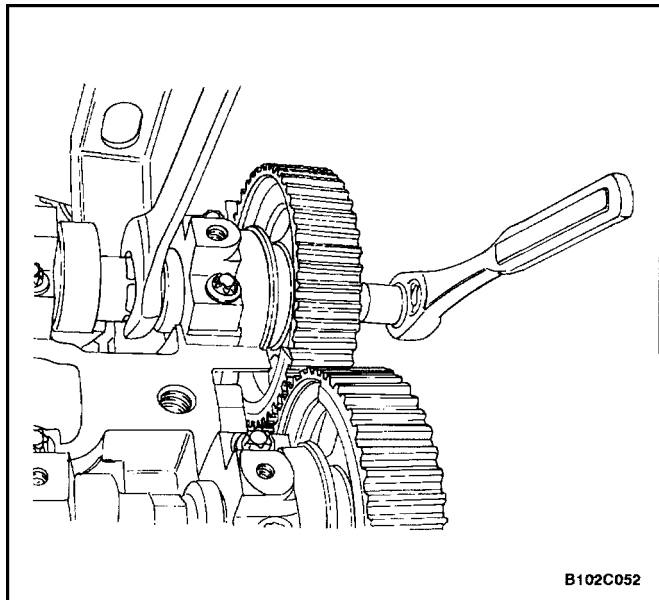
Tighten the camshaft bearing cap bolts to 8 N•m (71 lb-in).



9. Measure the intake camshaft end play and the exhaust camshaft end play. Refer to "Engine Specifications" in this section.
10. Install the intake camshaft gear.
11. While holding the intake camshaft firmly in place, install the intake camshaft gear bolt.

### **Tighten**

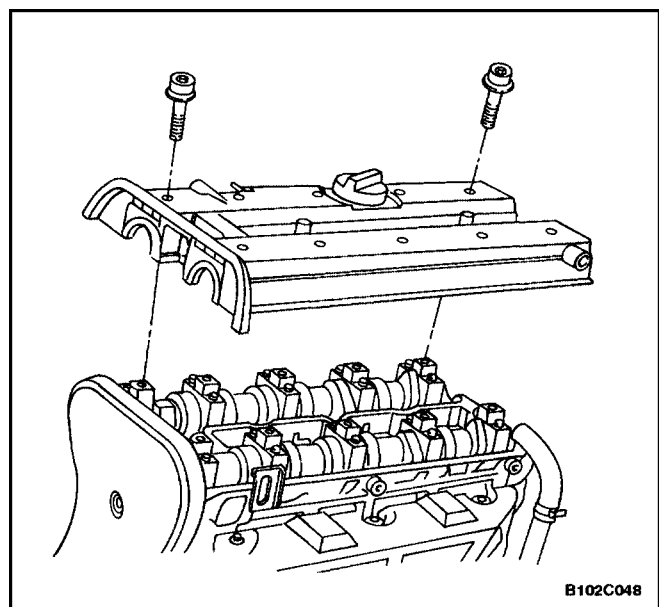
Tighten the intake camshaft gear bolt to 50 N•m (37 lb–ft). Using the angular torque gauge KM–470–B, tighten the bolt an additional turn of 60 degrees, plus another turn of 15 degrees.



12. Install the exhaust camshaft gear.
13. While holding the exhaust camshaft firmly in place, install the exhaust camshaft gear bolt.

### **Tighten**

Tighten the exhaust camshaft gear bolt to 50 N•m (37 lb–ft). Using the angular torque gauge KM–470–B, tighten the bolt an additional turn of 60 degrees, plus another turn of 15 degrees.

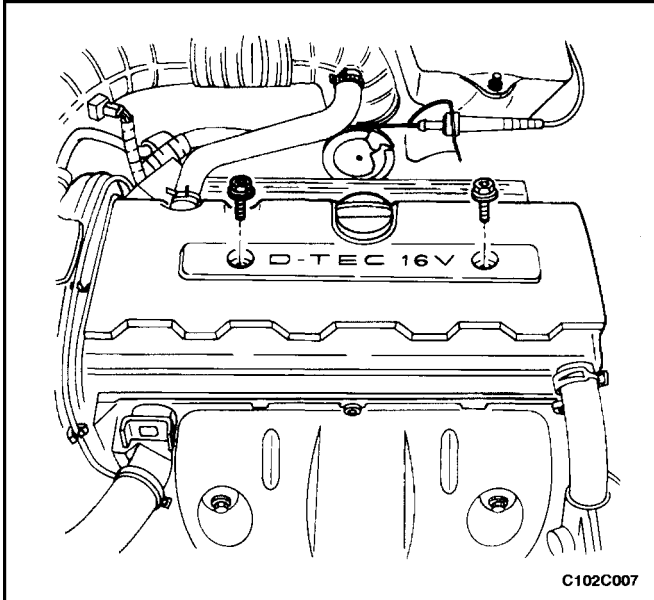


14. Install the valve cover and the valve cover gasket.
15. Install the valve cover washers.
16. Install the valve cover bolts.

### **Tighten**

Tighten the valve cover bolts to 8 N•m (71 lb–in).



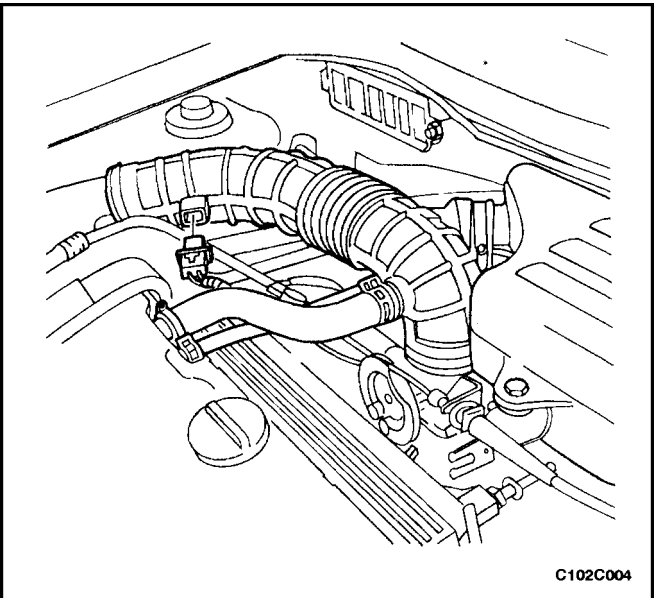


17. Connect the ignition wires to the spark plugs.
18. Connect the CMP sensor connector.
19. Install the spark plug cover.
20. Install the spark plug cover bolts.

### Tighten

Tighten the spark plug cover bolts to 3 N•m (27 lb-in).

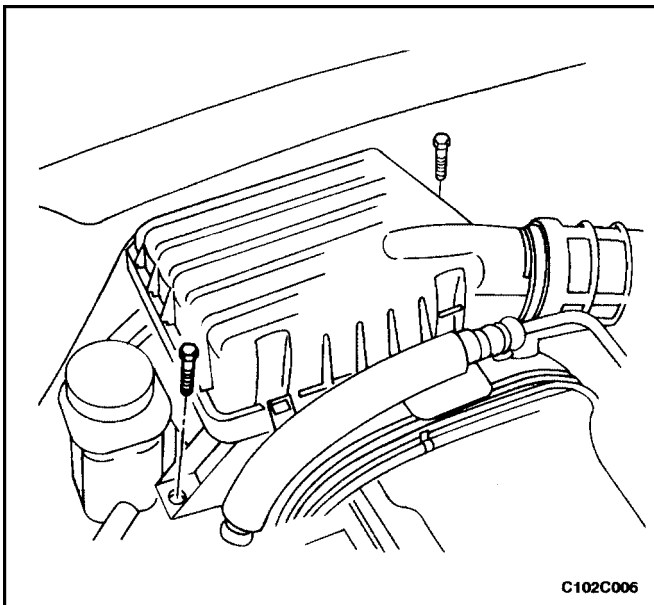
21. Connect the breather tube to the valve cover.
22. Connect the crankcase ventilation tube to the valve cover.
23. Install the timing belt. Refer to "Timing Belt" in this section.

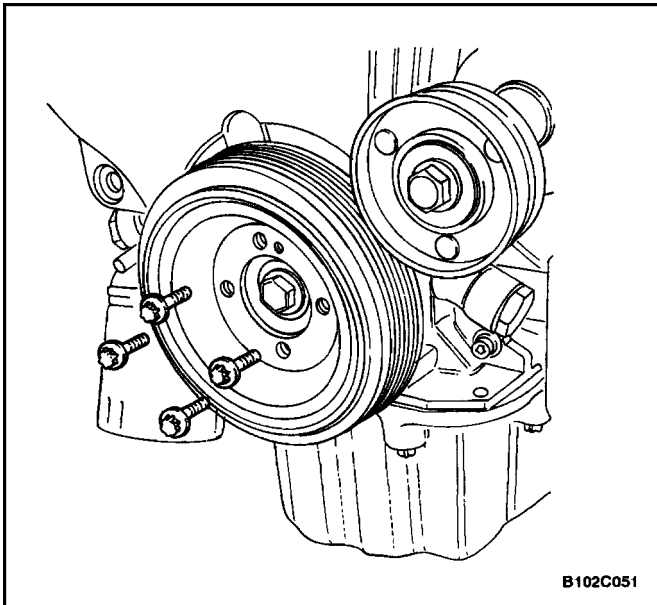


## TIMING BELT CHECK AND ADJUST

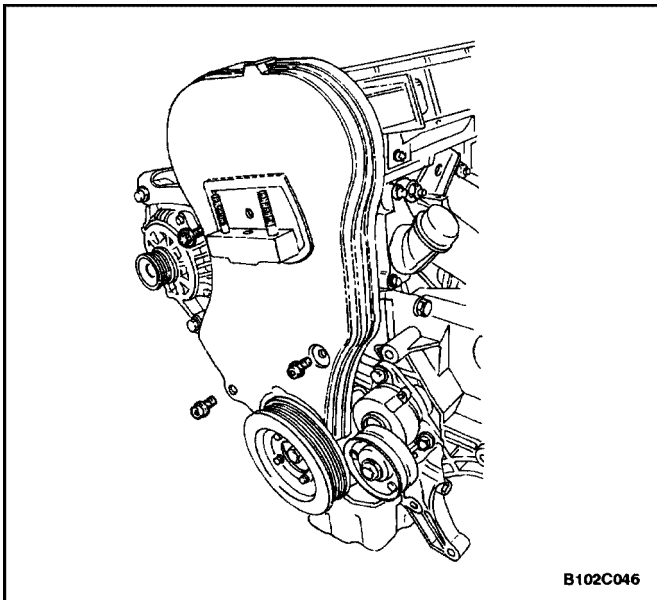
### Adjustment Procedure

1. Disconnect the negative battery cable.
2. Disconnect the intake air temperature (IAT) sensor connector.
3. Remove the air intake tube from the throttle body.
4. Remove the breather tube from the valve cover.
5. Remove the air filter housing bolts.
6. Remove the air filter housing.
7. Remove the right front wheel. Refer to *Section 2E, Tires and Wheels*.
8. Remove the right front wheel well splash shield. Refer to *Section 9R, Body Front End*.

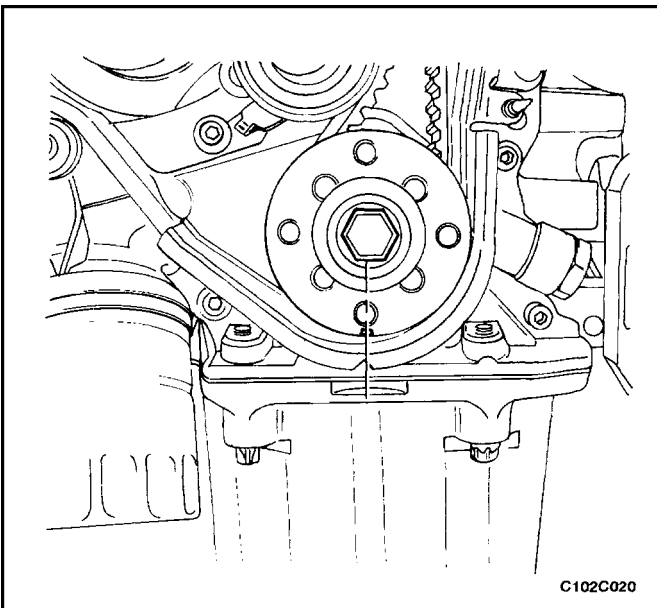




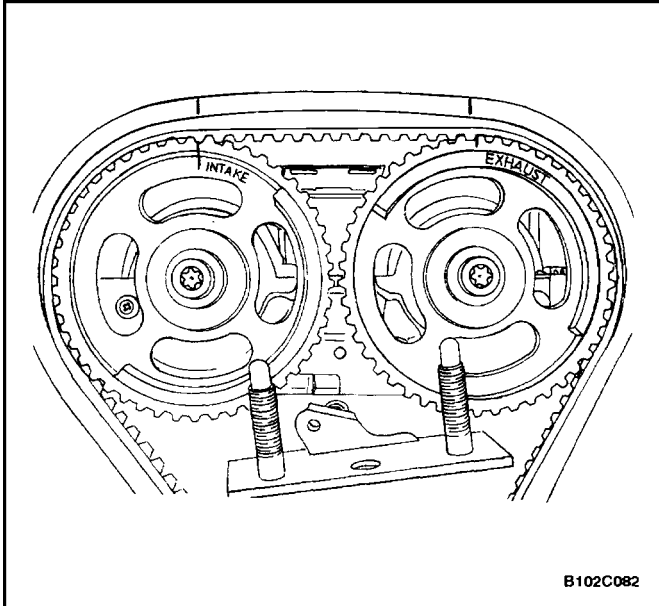
9. Remove the serpentine accessory drive belt. Refer to *Section 6B, Power Steering Pump*.
10. Remove the crankshaft pulley bolts.
11. Remove the crankshaft pulley.
12. Remove the right engine mount bracket. Refer to "Engine Mount" in this section.



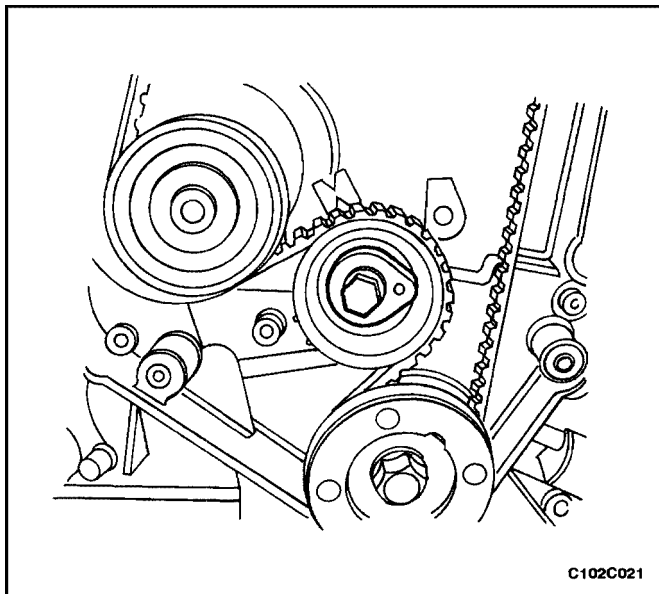
13. Remove the front timing belt cover bolts.
14. Remove the front timing belt cover.



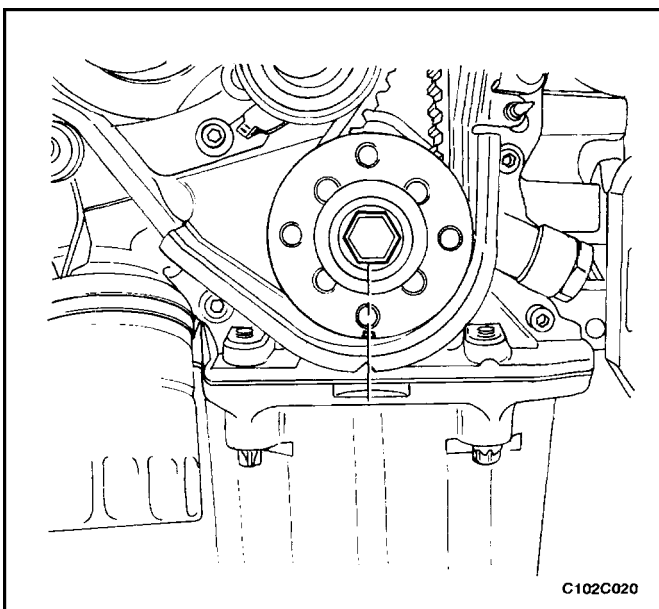
15. Rotate the crankshaft at least one full turn clockwise using the crankshaft gear bolt.
16. Align the mark on the crankshaft gear with the notch at the bottom of the rear timing belt cover.



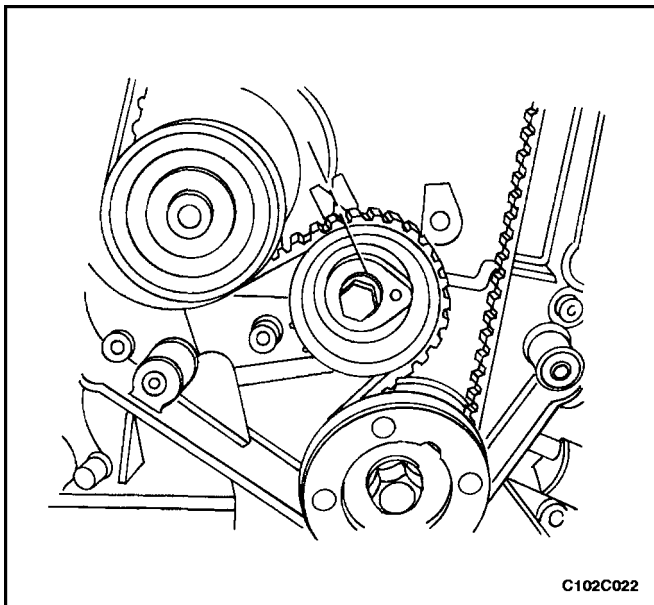
17. Align the camshaft gear timing marks. Use the exhaust gear mark for the exhaust gear and the intake gear mark for the intake gear, since the gears are interchangeable.



18. Loosen the automatic tensioner bolt. To tighten the belt tension, turn the hex-key tab counterclockwise.
19. Rotate the automatic tensioner hex-key tab clockwise until the adjust arm pointer of the timing belt automatic tensioner is aligned with the notch in the timing belt automatic tensioner bracket.



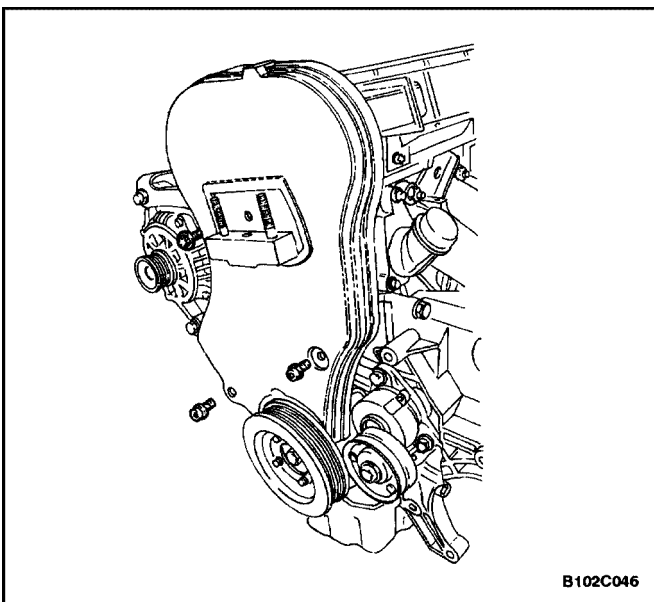
20. Tighten the automatic tensioner bolt.
21. Rotate the crankshaft two full turns clockwise using the crankshaft gear bolt.
22. Check the automatic tensioner pointer.



23. When the adjust arm pointer of the timing belt automatic tensioner is aligned with the notch on the timing belt automatic tensioner bracket, the belt is tensioned correctly.

**Tighten**

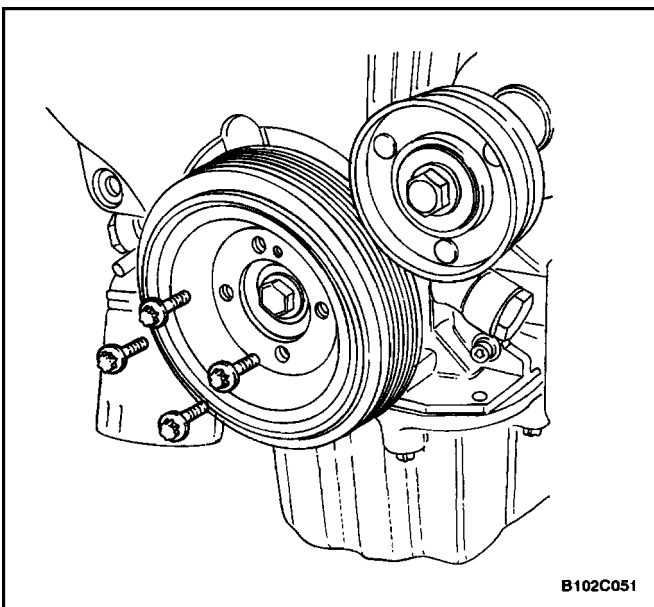
Tighten the timing belt automatic tensioner bolt to 25 N•m (18 lb–ft).



24. Install the front timing belt cover.  
25. Install the front timing belt cover bolts.

**Tighten**

Tighten the front timing belt cover bolts to 6 N•m (53 lbin).

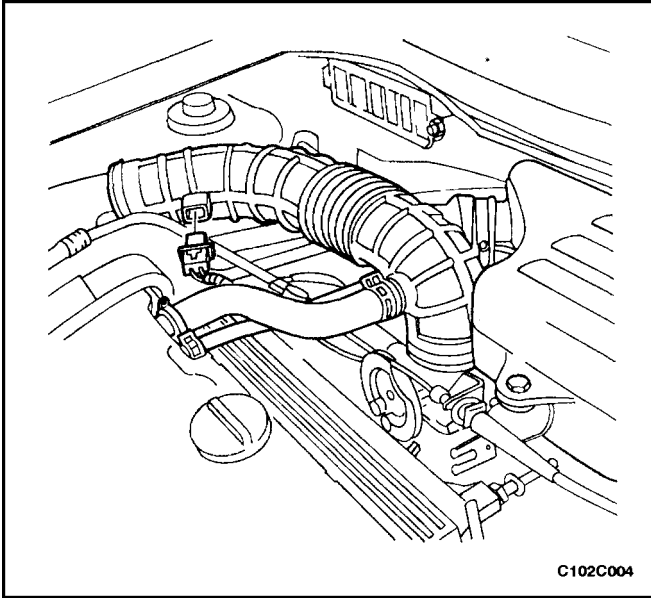


26. Install the crankshaft pulley.  
27. Install the crankshaft pulley bolts.

**Tighten**

Tighten the crankshaft pulley bolts to 20 N•m (15 lbf).

28. Install the right engine mount bracket. Refer to "Engine Mount" in this section.  
29. Install the serpentine accessory drive belt. Refer to Section 6B, Power Steering Pump.

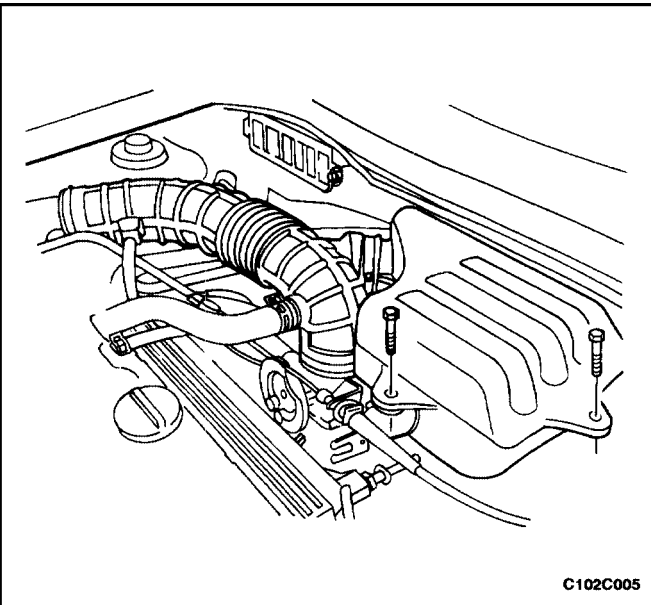


30. Install the right front wheel well splash shield. Refer to *Section 9R, Body Front End*.
31. Install the right front wheel. Refer to *Section 2E, Tires and Wheels*.
32. Install the air filter housing.
33. Install the air filter housing bolts.

### Tighten

Tighten the air filter housing bolts to 8 N•m (71 lb-in).

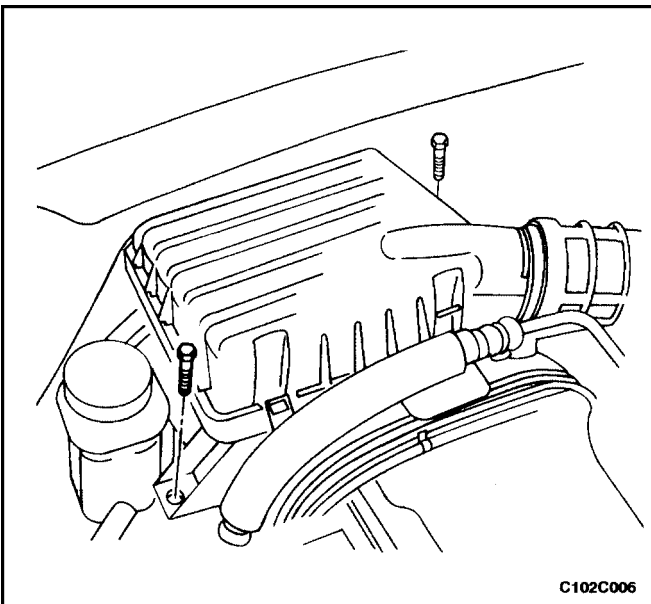
34. Connect the air intake tube to the throttle body.
35. Connect the breather tube to the valve cover.
36. Connect the IAT sensor connector.
37. Connect the negative battery cable.

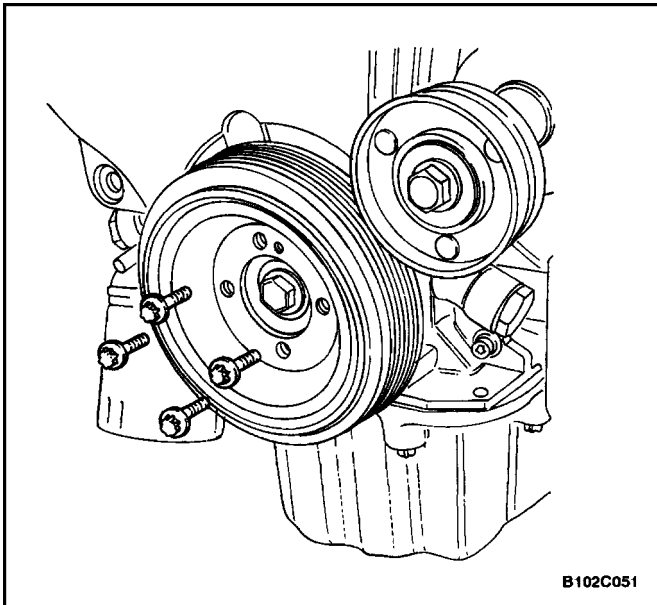


## TIMING BELT

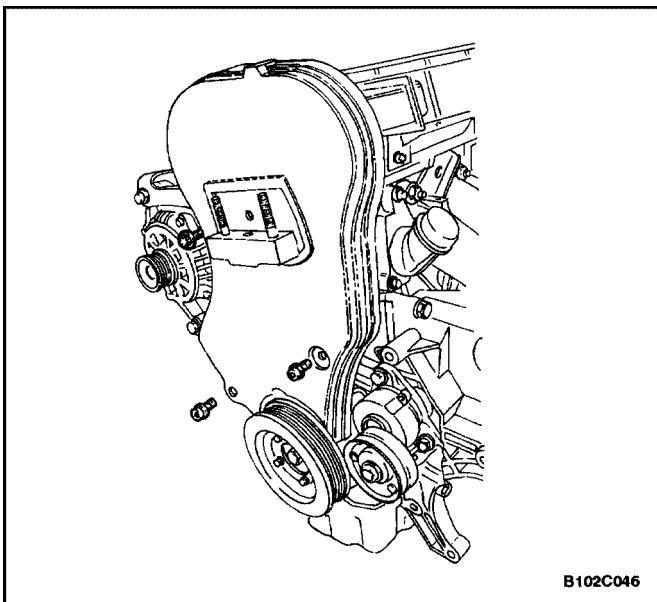
### Removal Procedure

1. Disconnect the negative battery cable.
2. Disconnect the intake air temperature (IAT) sensor connector.
3. Disconnect the air intake tube from the throttle body.
4. Remove the resonator retaining bolts and the resonator from the throttle body.
5. Disconnect the breather tube from the valve cover.
6. Remove the air filter housing bolts.
7. Remove the air filter housing.
8. Remove the right front wheel. Refer to *Section 2E, Tires and Wheels*.
9. Remove the right front wheel well splash shield. Refer to *Section 9R, Body Front End*.

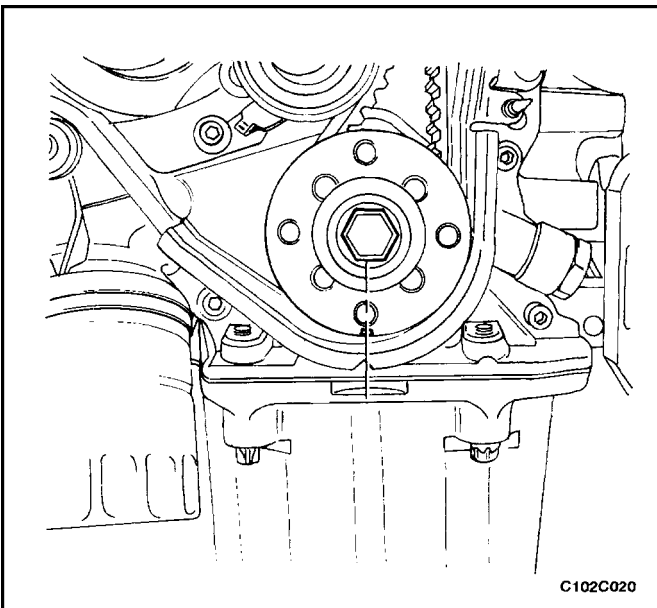




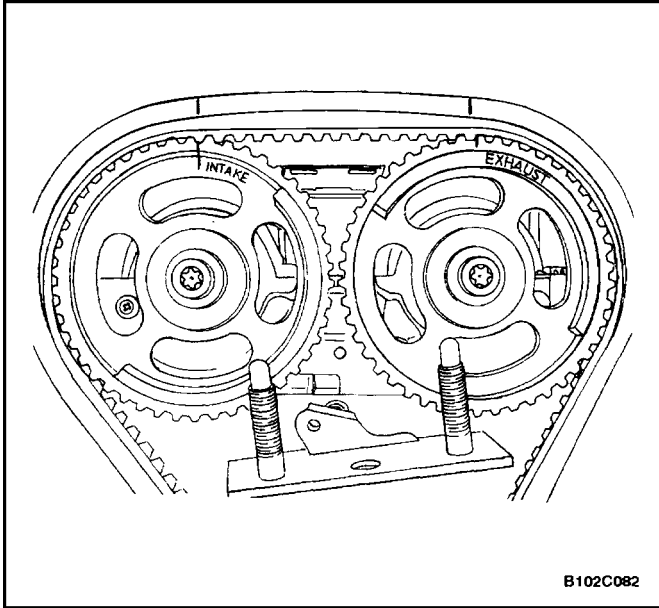
10. Remove the serpentine accessory drive belt. Refer to *Section 6B, Power Steering Pump*.
11. Remove the crankshaft pulley bolts.
12. Remove the crankshaft pulley.
13. Remove the right engine mount bracket. Refer to "Engine Mount" in this section.



14. Remove the power steering hose clamp bolt, and position the hose clear of the repair area.
15. Remove the front timing belt cover bolts.
16. Remove the front timing belt cover.



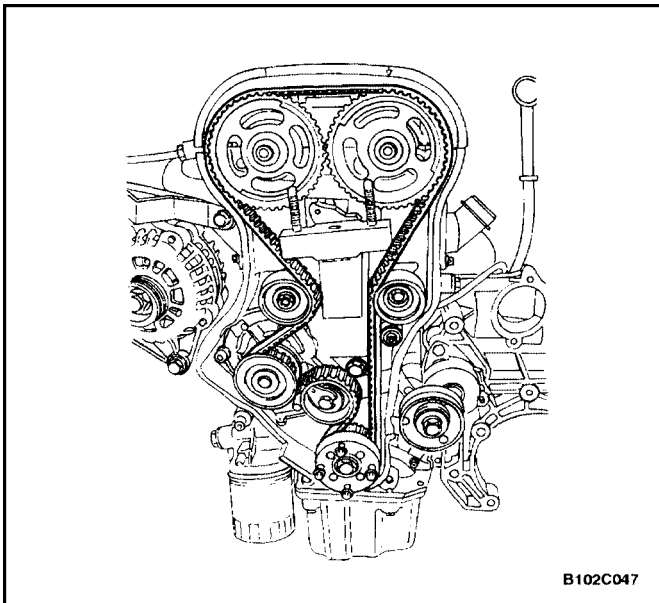
17. Using the crankshaft gear bolt, rotate the crankshaft clockwise until the timing mark on the crankshaft gear is aligned with the notch at the bottom of the rear timing belt cover.



**Notice :** The camshaft gears must align with the notch on the valve cover or damage to the engine could result.

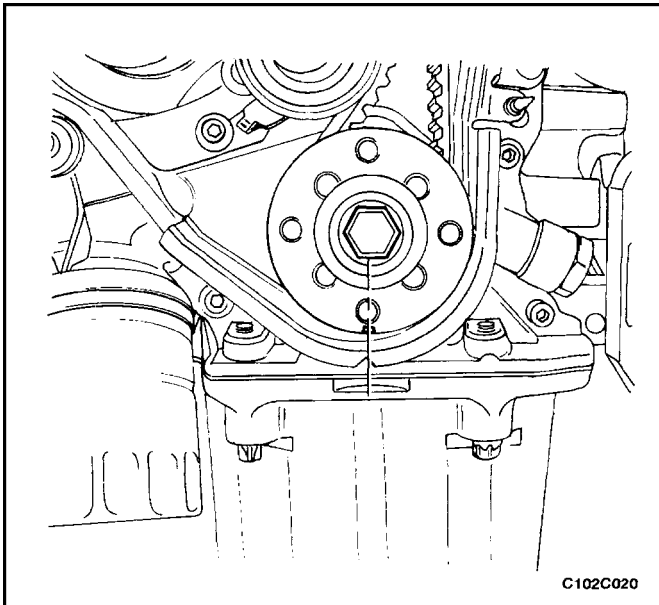
18. Align the camshaft gears with the notch on the valve cover.

**Important :** Use the intake gear mark for the intake camshaft gear and the exhaust gear mark for the exhaust camshaft gear since both gears are interchangeable.



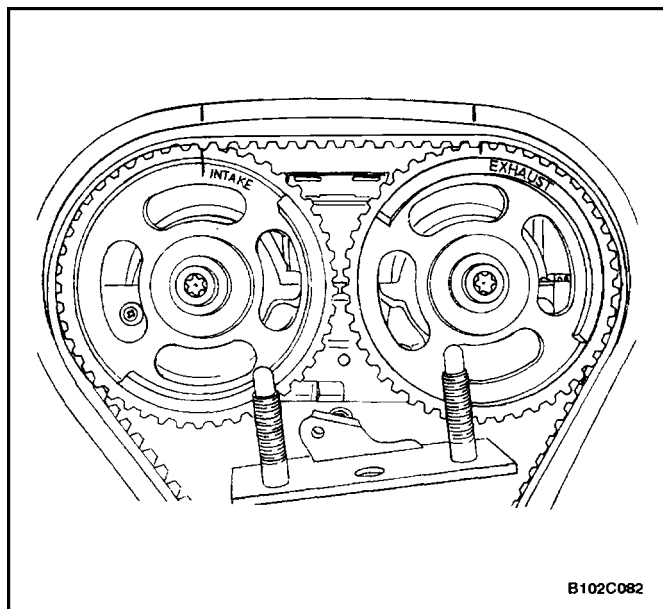
19. Loosen the automatic tensioner bolt. Turn the hexkey tab to relieve belt tension.

20. Remove the timing belt.

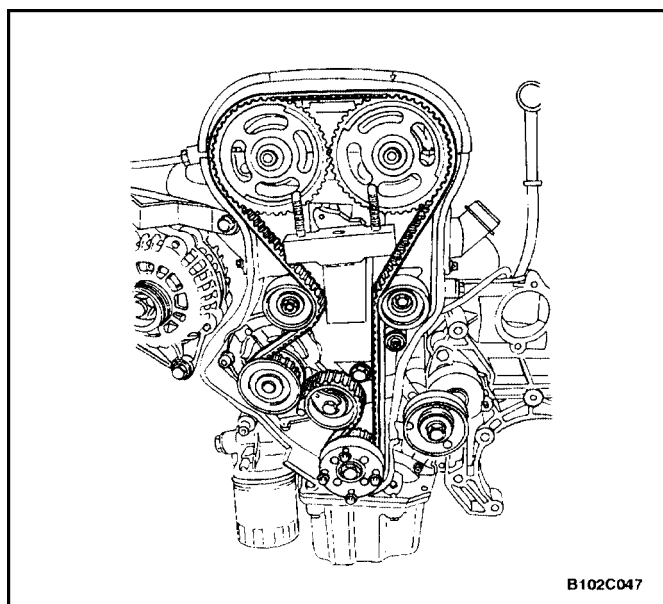


## Installation Procedure

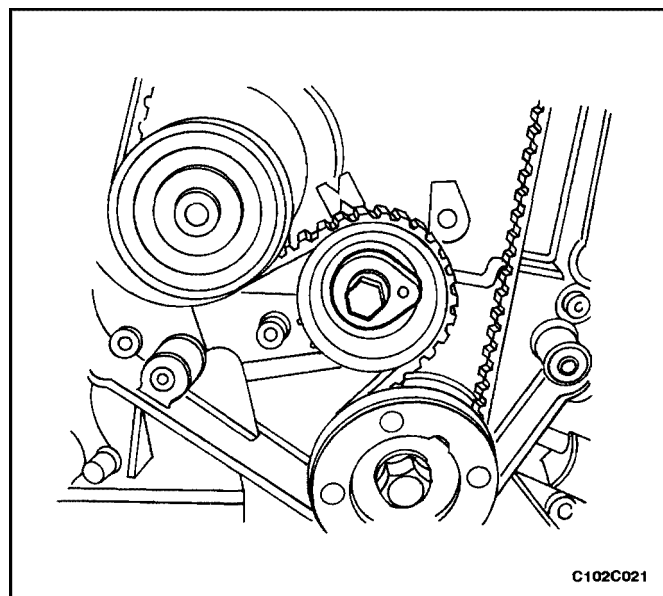
1. Align the timing mark on the crankshaft gear with the notch on the bottom of the rear timing belt cover.



2. Align the timing marks on the camshaft gears, using the intake gear mark for the intake gear and the exhaust gear mark for the exhaust gear.



3. Install the timing belt.



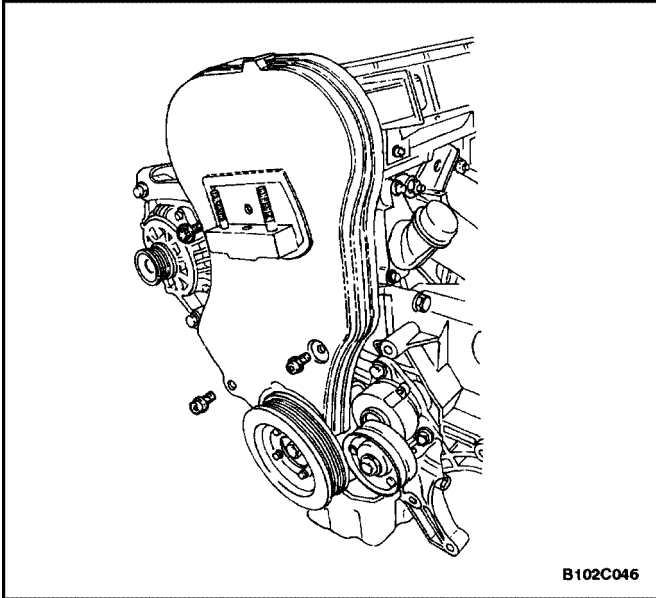
4. Turn the hex-key tab in a counterclockwise direction to tension the belt. Turn until the pointer aligns with the notch.
5. Install the automatic tensioner bolt.

## **Tighten**

Tighten the timing belt automatic tensioner bolt to 25 N•m (18 lb–ft).

6. Rotate the crankshaft two full turns clockwise using the crankshaft gear bolt.
7. Recheck the automatic tensioner pointer.





8. Install the front timing belt cover.
9. Install the front timing belt cover bolts.

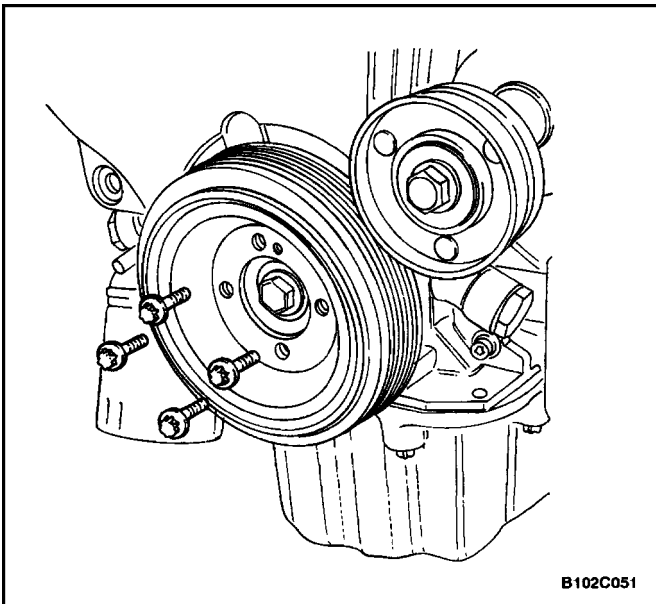
### **Tighten**

Tighten the front timing belt cover bolts to 6 N•m (53 lb-in).

10. Install the right engine mount bracket. Refer to "Engine Mounts" in this section.
11. Position the power steering hose in place and install the clamp bolt.

### **Tighten**

Tighten the power steering hose clamp bolt to 8 N•m (71 lb-in).



12. Install the crankshaft pulley.
13. Install the crankshaft pulley bolts.

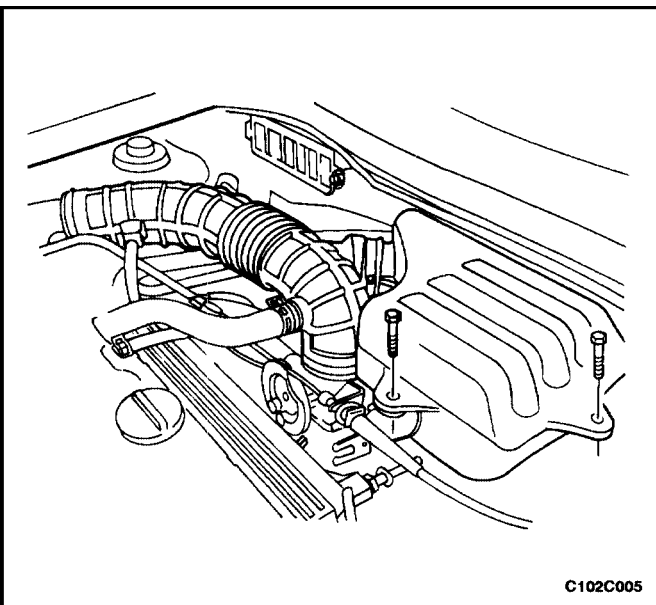
### **Tighten**

Tighten the crankshaft pulley bolts to 20 N•m (15 lb-ft).

14. Install the serpentine accessory drive belt. Refer to *Section 6B, Power Steering Pump*.
15. Install the right front wheel well splash shield. Refer to *Section 9R, Body Front End*.
16. Install the right front wheel. Refer to *Section 2E, Tires and Wheels*.
17. Install the air filter housing.
18. Install the air filter housing bolts.

### **Tighten**

Tighten the air filter housing bolts to 8 N•m (71 lb-in).

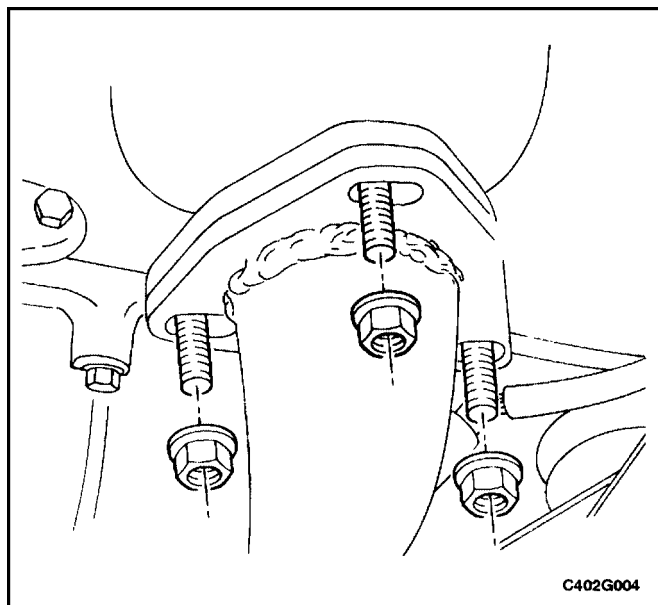


19. Install the resonator and the retaining bolts.

### **Tighten**

Tighten the resonator retaining bolts to 8 N•m (71 lb-in).

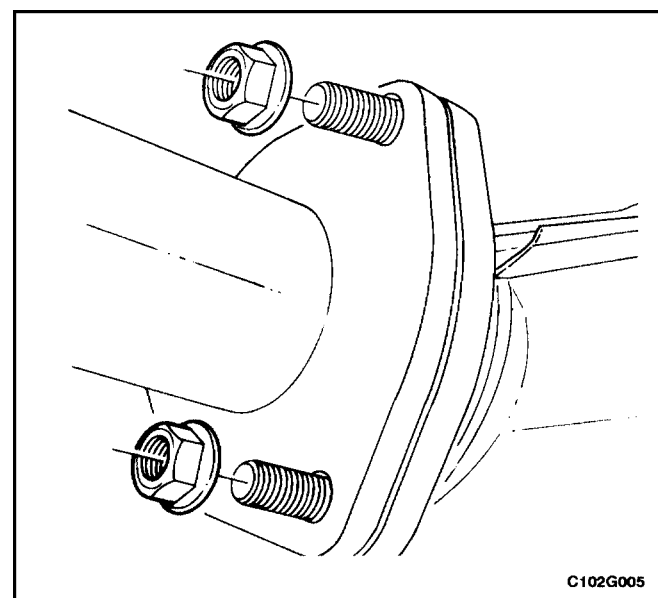
20. Connect the air intake tube to the throttle body.
21. Connect the breather tube to the valve cover.
22. Connect the IAT sensor connector.
23. Connect the negative battery cable.



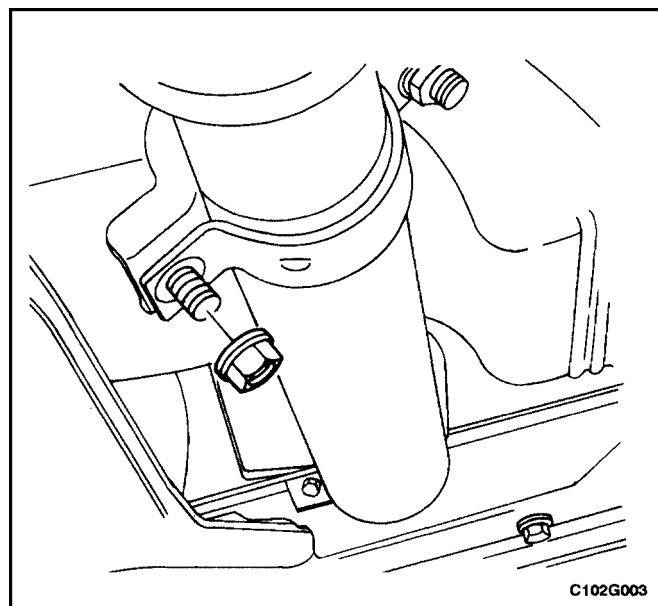
## OIL PAN

### Removal Procedure

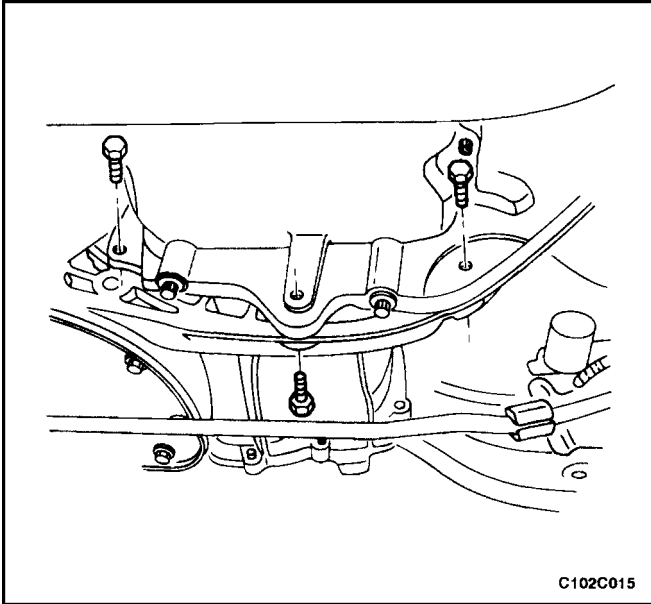
1. Disconnect the negative battery cable.
2. Disconnect the post-converter heated oxygen sensor connector.
3. Drain the engine oil from the engine crankcase.
4. Remove the auxiliary catalytic converter lower flange nuts.



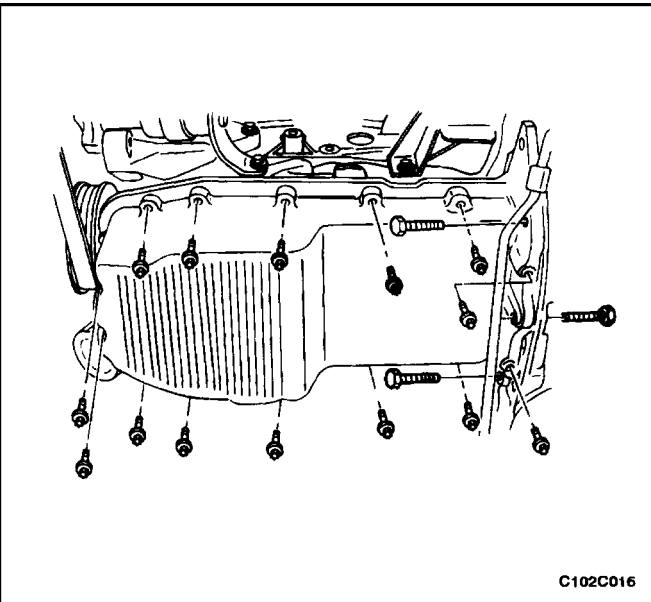
5. Remove the nuts that secure the front muffler pipe to the main catalytic converter.
6. Remove the rubber hangers that attach the connecting pipe to the vehicle.



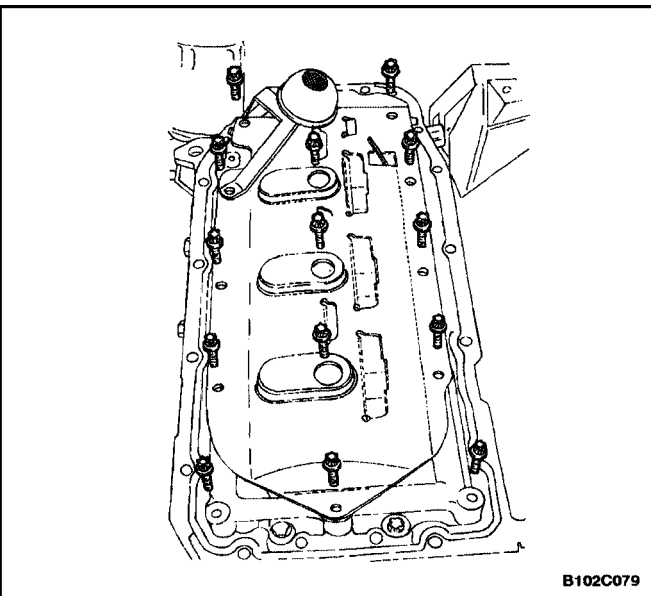
7. Remove the connecting pipe mounting bracket nuts and the bracket.
8. Remove the main catalytic converter and the connecting pipe.



9. Remove the oil pan flange-to-transaxle retaining bolts.

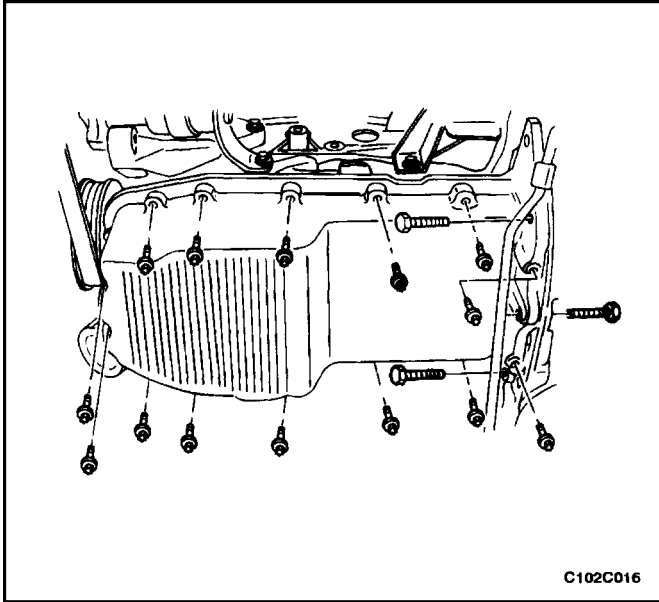


10. Remove the oil pan retaining bolts.
11. Remove the oil pan from the engine block.
12. Remove the oil pan gasket from the oil pan.



### Cleaning Procedure

1. Clean the oil pan sealing surface.
2. Clean the engine block sealing surface.
3. Clean the oil pan retaining bolts.
4. Clean the oil pan attaching bolt holes in the engine block.
5. Clean the oil pan splash shield.

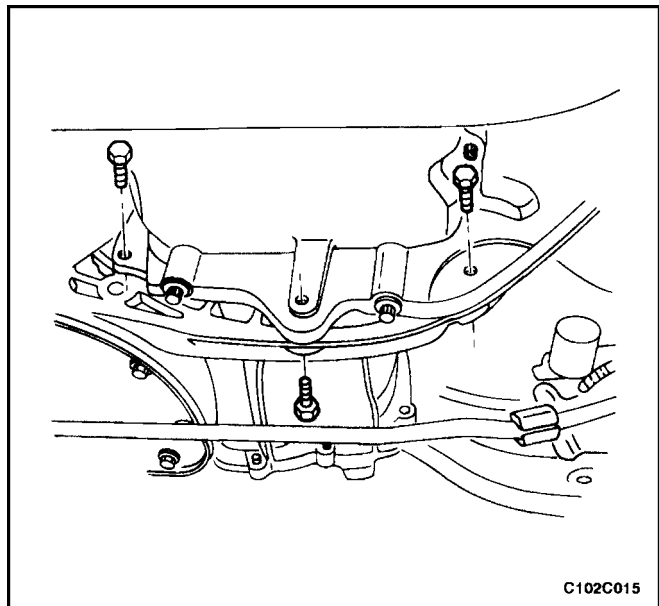


## Installation Procedure

1. Coat the new oil pan gasket with sealant.
2. Install the oil pan gasket to the oil pan.
3. Install the oil pan to the engine block.
4. Install the oil pan retaining bolts.

### Tighten

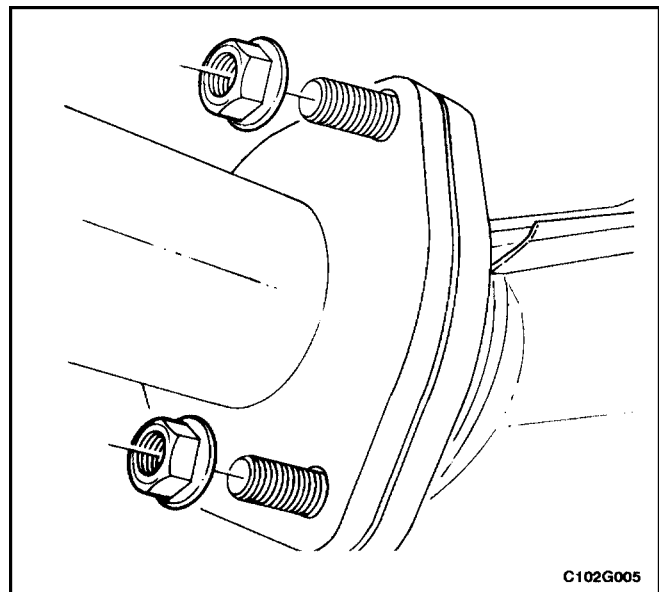
Tighten the oil pan retaining bolts to 10 N•m (89 lb–ft).



5. Install the oil pan flange-to-transaxle retaining bolts.

### Tighten

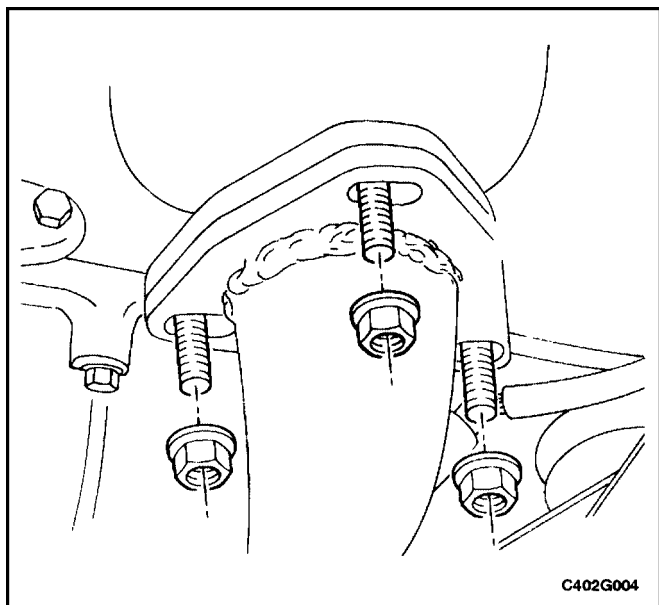
Tighten the oil pan flange-to-transaxle retaining bolts to 40 N•m (30 lb–ft).



6. Insert the main catalytic converter bolts into the front muffler flange.
7. Install the rubber hangers that attach the connecting pipe to the vehicle.
8. Install the nuts to secure the front muffler pipe to the main catalytic converter.

### Tighten

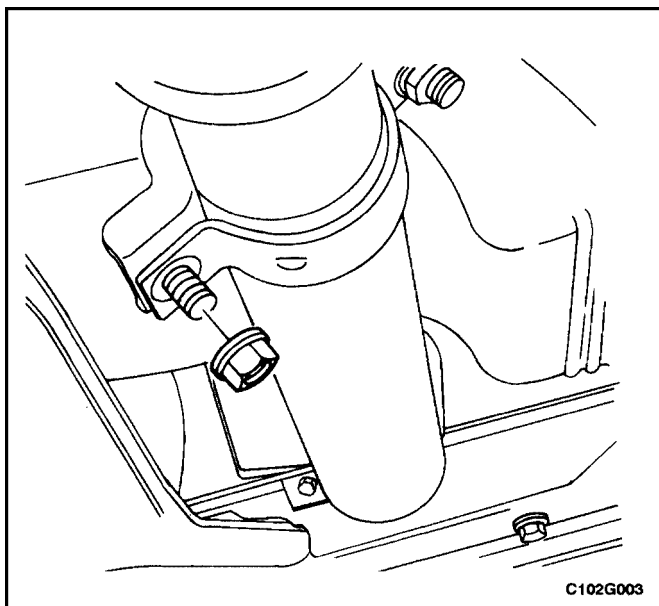
Tighten the front muffler pipe-to-main catalytic converter nuts to 30 N•m (22 lb–ft).



9. Install the auxiliary catalytic converter lower flange bolts.

**Tighten**

Tighten the auxiliary catalytic converter-to-connecting pipe nuts to 40 N•m (30 lb–ft).



10. Install the connecting pipe mounting bracket and nuts.

**Tighten**

Tighten the connecting pipe mounting bracket nuts to 30 N•m (22 lb–ft).

11. Connect the post-converter heated oxygen sensor connector.  
12. Connect the negative battery cable.  
13. Refill the engine crankcase with engine oil.