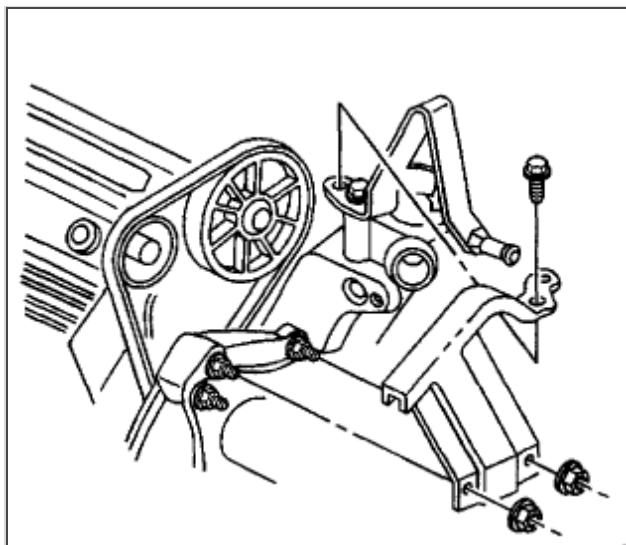


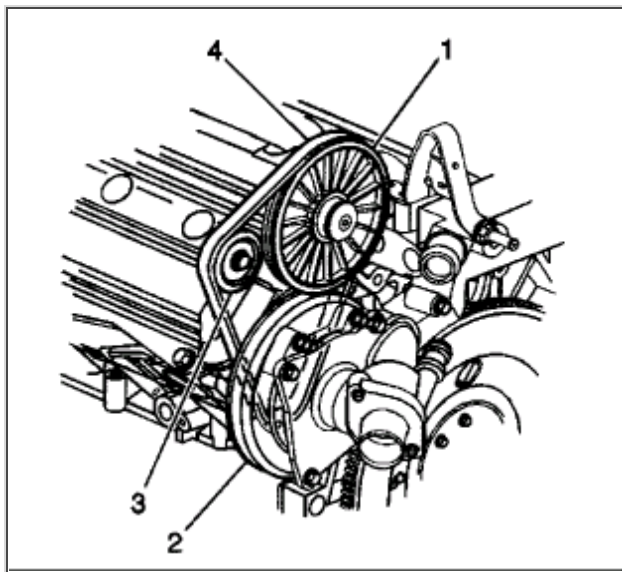
Water Pump Replacement

- **Tools Required**
- J 38816-A Water Pump Remover & Installer
- J 38185 [Hose Clamp](#) Pliers

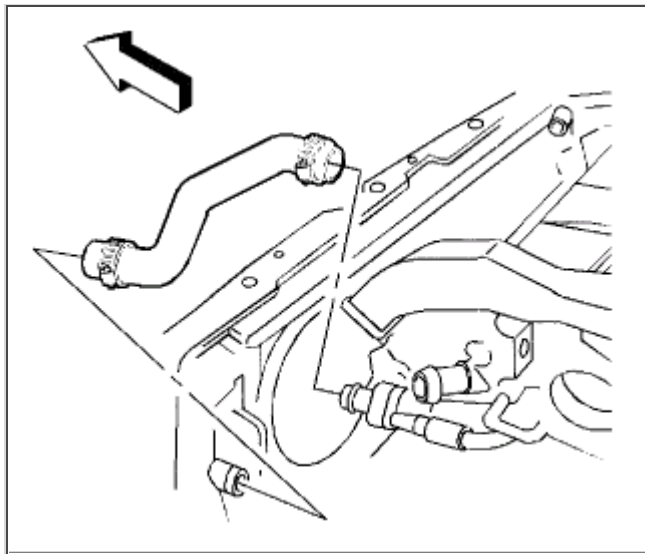
Removal Procedure



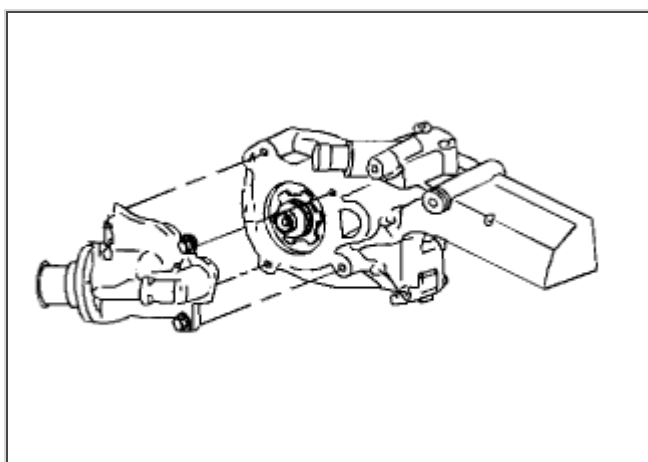
1. Drain the [cooling system](#).
2. Remove the upper filler panel.
3. Remove the air cleaner assembly.
4. Remove the secondary AIR injection control valve.
5. Remove the oil level indicator tube nut.
6. Remove the water pump belt shield fasteners. Remove the water pump belt shield.

[Zoom](#)[Sized for Print](#)

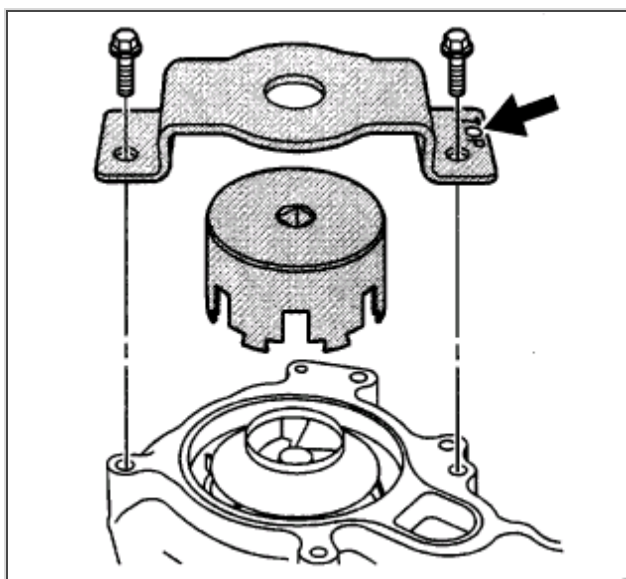
7. Remove the water pump [drive belt](#) (4).

[Zoom](#)[Sized for Print](#)

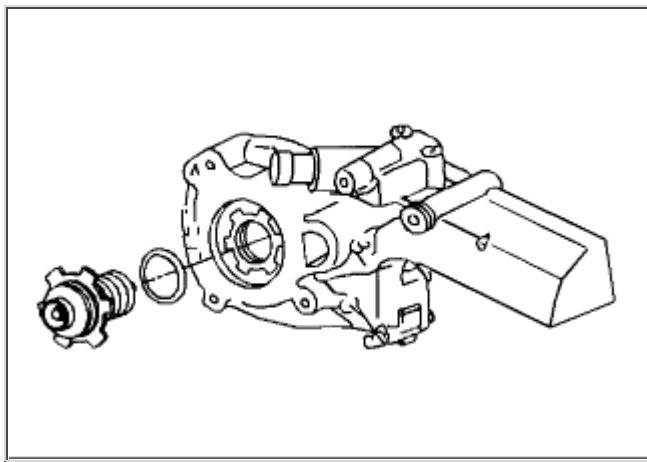
8. Position the J 38185 to the clamp in order to remove the [radiator](#) outlet hose from the [thermostat housing](#).

[Zoom](#)[Sized for Print](#)

9. Remove the water pump cover bolts.
10. Remove the water pump cover.
11. Disconnect the heater return hose.

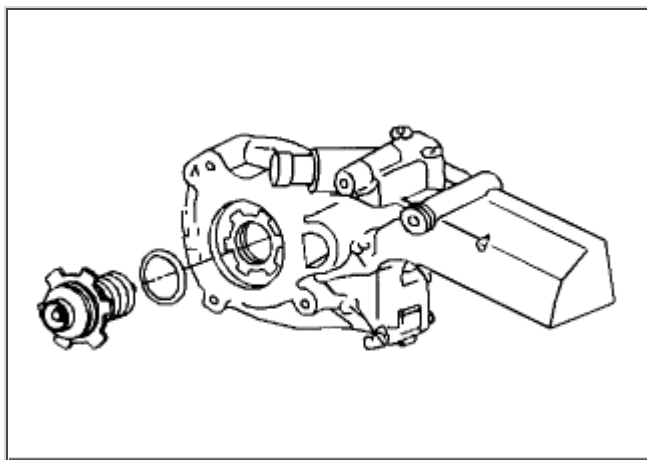
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12. Position the J 38816-A to the water pump locking ears.
13. Fasten the support plate to the water housing crossover, to ensure proper engagement of the tool to the water pump locking ears.
14. Using the J 38816-A, turn the pump clockwise in order to remove the pump from the housing.
15. Remove the support plate from the water housing crossover.

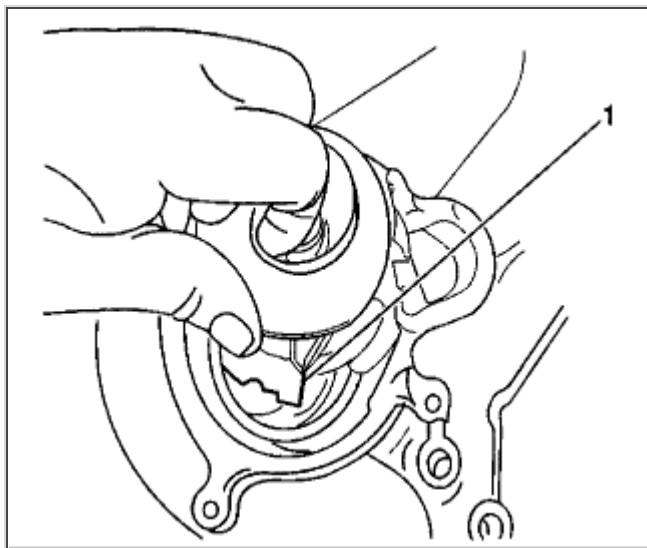
[Zoom](#)[Sized for Print](#)

16. Remove the water pump from the vehicle.
17. Remove the seal from the water crossover.
18. Clean the sealing surfaces of the water housing crossover and the pump cover.
19. Clean and inspect the water pump.

Installation Procedure

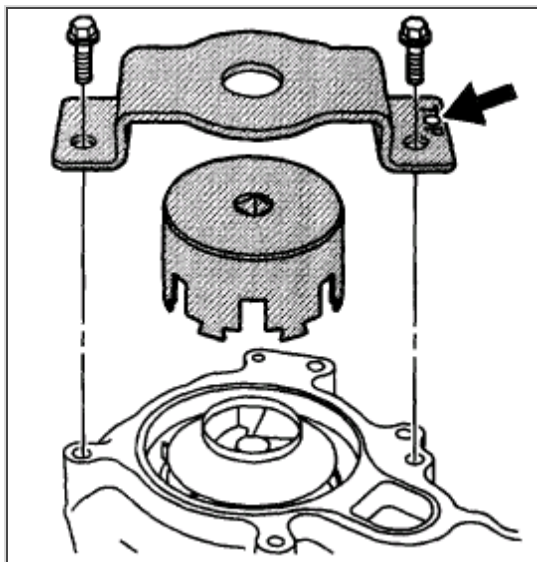
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1. Insert the seal into the recessed portion of the water crossover.

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Important: The notched locking ear (1) must be in the 7 O'clock position.

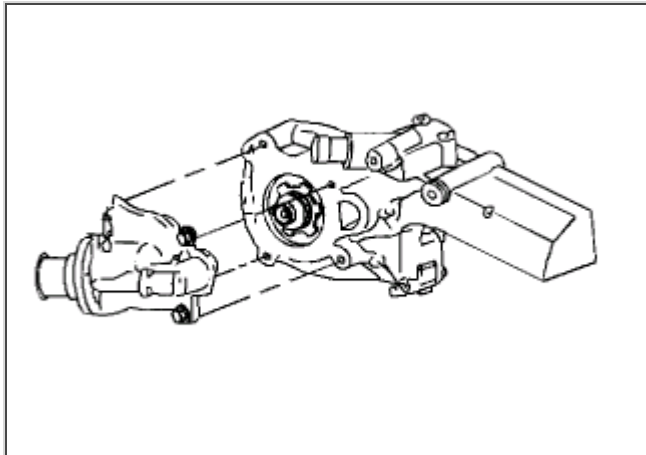
2. Index the water pumps locking ears with the tangs in the water crossover.

[Zoom](#)[Sized for Print](#)

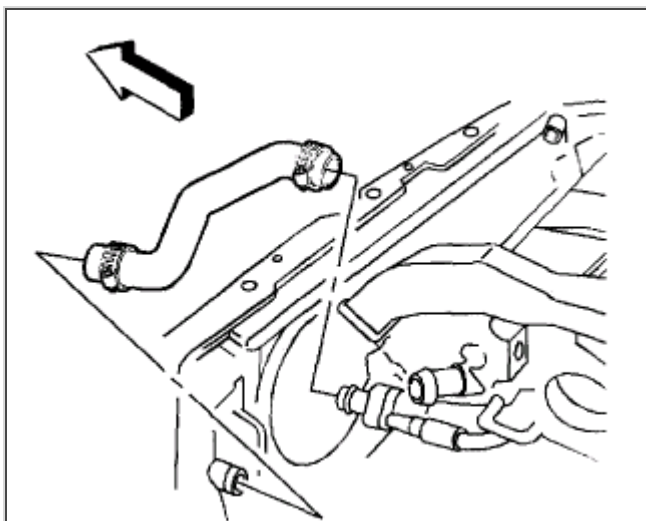
3. Position the J 38816-A to the water pump locking ears.
4. Fasten the support plate to the water housing crossover, to ensure proper engagement of the tool to the water pump locking ears.

Notice: Refer to Fastener Notice in Service Precautions.

5. Turn the J38816-A counterclockwise.
 - Tighten the water pump to **100 Nm (74 ft. lbs.)**.
6. Remove the support plate from the water housing crossover.

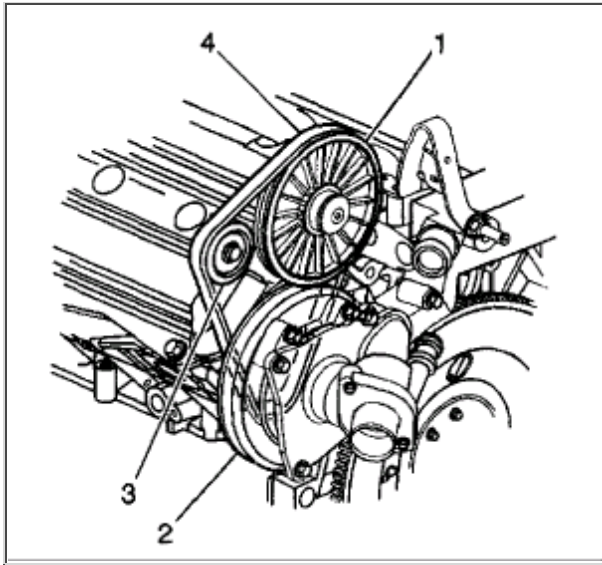
[Zoom](#)[Sized for Print](#)

7. Connect the water pump cover to the heater return hose.
8. Install the water pump cover to the water housing crossover.
9. Install the water pump cover bolts. Tighten Tighten the water pump cover bolts to **10 Nm (89 inch lbs.)** .

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10. Position the J 38185 to the clamp in order to connect the [radiator](#) outlet hose to the

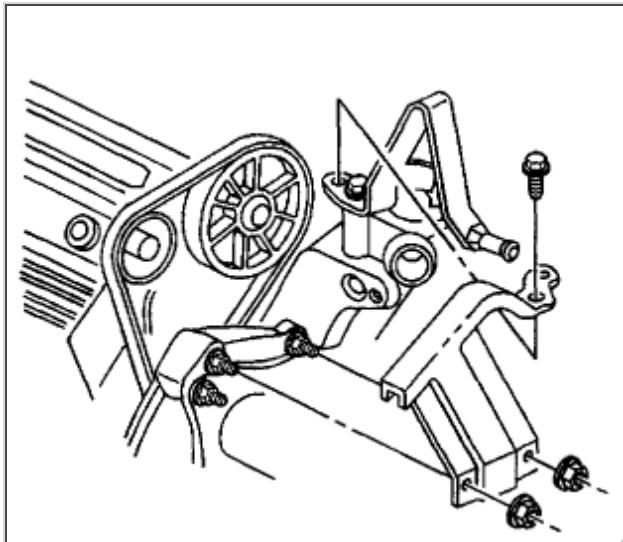
[thermostat housing.](#)



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11. Install the water pump [drive belt](#) (4).



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12. Place the water pump belt shield in position.

13. Install the water pump belt shield fasteners.

- Tighten the water pump belt shield fasteners to **10 Nm (89 inch lbs.)** .

14. Install the oil level indicator tube nut.

- Tighten the oil level indicator tube nut to **10 Nm (89 inch lbs.)** .
15. Install the secondary AIR injection control valve.
 16. Install the air cleaner assembly.
 17. Install the upper filler panel.
 18. Fill the [cooling system](#).