Water Pump

SPECIAL SERVICE TOOL(S) REQUIRED

<table>
<thead>
<tr>
<th>Description</th>
<th>Tool Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Clutch Holding Tool</td>
<td>T84T-6312-C</td>
</tr>
<tr>
<td>Fan Clutch Nut Wrench</td>
<td>T84T-6312-D</td>
</tr>
</tbody>
</table>

Removal

1. Disconnect ground cable at battery.

2. Remove engine air cleaner outlet tube.

3. **CAUTION:** Fan clutch has left-hand threads so nut must be turned clockwise to remove.
   - Loosen nut on fan clutch using Fan Clutch Holding Tool T84T-6312-C and Fan Clutch Nut Wrench T84T-6312-D and remove fan blade and clutch assembly from water pump (8501).

4. Remove 2 screws holding fan shroud to radiator (8005). Remove fan blade and clutch assembly and fan shroud together.

5. Drain cooling system.

6. Loosen, do not remove, 4 water pump pulley (8509) retaining screws.

7. Rotate engine drive belt tensioner clockwise and remove engine drive belt (8620).

8. Remove 4 water pump pulley retaining screws and water pump pulley.

9. Remove 3 electrical connectors at generator (GEN) (10300).

10. On Aerostar only, remove oil fill tube retaining nut at generator stud and lift tube from stud.

11. Remove 3 bolts retaining generator bracket to cylinder head (6049) and remove generator and bracket as an assembly.

Engine Accessory Installation, 3.0L, Ranger

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N606068-S2</td>
<td>Bolt</td>
</tr>
<tr>
<td>2</td>
<td>10300</td>
<td>Generator</td>
</tr>
<tr>
<td>3</td>
<td>10153</td>
<td>Generator Mounting Bracket</td>
</tr>
</tbody>
</table>
12. On Ranger only, disconnect crank position sensor (CKP) wiring.

13. Remove heater water return hose at water pump.

14. On Ranger only, remove bypass hose from fitting at intake manifold (9424).

15. CAUTION: Use care not to damage the throttle linkage or fuel lines.

On Ranger only, remove 3 screws securing A/C compressor to power steering pump support bracket. Using a piece of wood bridged from the top of the battery to the throttle body (9E926), suspend the A/C compressor with a wire tie or other suitable material.

16. Using a Torx® 50 driver, remove engine drive belt tensioner (6B209) assembly.

17. On Aerostar only, if equipped with auxiliary heater, remove screw retaining auxiliary heater tube bracket at power steering pump support bracket.

18. Remove lower radiator hose at water pump.

19. Remove 12 water pump retaining bolts and note bolt location.

20. Remove water pump and discard old water pump gasket.

**Installation**

**NOTE:** Lightly oil all bolts and stud threads before installation except those requiring special sealant.

1. Clean gasket surfaces on engine front cover (6019) and water pump carefully. (Use care as aluminum gouges easily.)

2. Position a new gasket on water pump sealing surface using Gasket and Trim Adhesive D7AZ-19B508-B or equivalent meeting Ford specification ESE-M2G52-A to hold gasket in position.

3. Install water pump on engine front cover and hand-tighten 12 attaching bolts. Refer to Engine Front Cover in this section for tightening specifications.

4. Reinstall lower radiator hose at water pump and radiator and tighten clamps.

5. Reinstall power steering pump support bracket to engine and torque to (5 fasteners) (Ranger) 48-61 Nm (35-45 lb-ft) or (3 fasteners) (Aerostar) 40-54 Nm (30-40 lb-ft).

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**Power Steering Support Bracket — Aerostar**

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<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>4</td>
<td>N806020-S2</td>
<td>Bolt</td>
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<tr>
<td>5</td>
<td>19703</td>
<td>A/C Compressor</td>
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<tr>
<td>6</td>
<td>6312</td>
<td>Crankshaft Pulley</td>
</tr>
<tr>
<td>7</td>
<td>3A674</td>
<td>Power Steering Pump</td>
</tr>
<tr>
<td>8</td>
<td>N807551-S100</td>
<td>Bolt</td>
</tr>
<tr>
<td>9</td>
<td>N807123-S2</td>
<td>Stud</td>
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<tr>
<td>10</td>
<td>N605805-S2</td>
<td>Bolt</td>
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<tr>
<td>11</td>
<td>2882</td>
<td>A/C Compressor Mounting Bracket</td>
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<tr>
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<td>N800199-S8M</td>
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<tr>
<td>13</td>
<td>3A733</td>
<td>Power Steering Pump Pulley</td>
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<tr>
<td>14</td>
<td>6B209</td>
<td>Drive Belt Tensioner</td>
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<tr>
<td>15</td>
<td>N60609-S2</td>
<td>Bolt</td>
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<tr>
<td>16</td>
<td>N807124-S2</td>
<td>Bolt</td>
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<tr>
<td>17</td>
<td>3F67I</td>
<td>Belt Adjuster</td>
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<tr>
<td>18</td>
<td>N802096-S2</td>
<td>Bolt</td>
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<tr>
<td>19</td>
<td>8509</td>
<td>Water Pump Pulley</td>
</tr>
<tr>
<td>A</td>
<td>—</td>
<td>Tighten to 40-55 Nm (30-41 Lb-Ft)</td>
</tr>
<tr>
<td>B</td>
<td>—</td>
<td>Tighten to 21-29 Nm (15-21 Lb-Ft)</td>
</tr>
<tr>
<td>C</td>
<td>—</td>
<td>Tighten to 53-72 Nm (39-53 Lb-Ft)</td>
</tr>
</tbody>
</table>

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5/23/2011
### Power Steering Support Bracket — Ranger

#### Power Steering Support Bracket — Ranger

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>3A674</td>
<td>Power Steering Pump</td>
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<tr>
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<td>3C511</td>
<td>Power Steering Pump Support</td>
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<tr>
<td>3</td>
<td>N800199-S309</td>
<td>Bolt</td>
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<tr>
<td>4</td>
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<td>Power Steering Pump Pulley</td>
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<tr>
<td>5</td>
<td>6B209</td>
<td>Drive Belt Tensioner</td>
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<tr>
<td>6</td>
<td>N606088-S309</td>
<td>Bolt</td>
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<tr>
<td>7</td>
<td>3F671</td>
<td>Power Steering Belt Idler Support</td>
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<tr>
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<td>—</td>
<td>Tighten to 40-55 Nm (30-41 Lb-Ft)</td>
</tr>
<tr>
<td>B</td>
<td>—</td>
<td>Pulley with Pull-Off Groove Facing Front, Flush with End of Shaft +/- .25mm (0.018 Inch)</td>
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<tr>
<td>C</td>
<td>—</td>
<td>Tighten to 30-50 Nm (22-37 Lb-Ft)</td>
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</table>

### Power Steering Support Bracket — Ranger

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>6049</td>
<td>Cylinder Head</td>
</tr>
<tr>
<td>2</td>
<td>3A674</td>
<td>Power Steering Pump</td>
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<tr>
<td>3</td>
<td>N807123-S2</td>
<td>Stud</td>
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<tr>
<td>4</td>
<td>N605805-S2</td>
<td>Bolt</td>
</tr>
<tr>
<td>5</td>
<td>—</td>
<td>Power Steering Bracket (Part of 3A674)</td>
</tr>
<tr>
<td>6</td>
<td>N800199</td>
<td>Bolt</td>
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<td>7</td>
<td>3A733</td>
<td>Power Steering Pump Pulley</td>
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<td>N606098-S2</td>
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<td>10</td>
<td>N807124-S2</td>
<td>Bolt</td>
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<td>11</td>
<td>3F671</td>
<td>Power Steering Belt Idler Support</td>
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<tr>
<td>12</td>
<td>N807551-S100</td>
<td>Bolt (4 Places)</td>
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<td>13</td>
<td>N602098-S2</td>
<td>Screw and Washer</td>
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<tr>
<td>14</td>
<td>8509</td>
<td>Water Pump Pulley</td>
</tr>
<tr>
<td>15</td>
<td>6312</td>
<td>Crankshaft Pulley</td>
</tr>
</tbody>
</table>
6. Reinstall engine accessory drive belt tensioner and torque to 35-45 Nm (27-33 lb-ft).

7. On Ranger only, install A/C compressor to steering pump support bracket with 3 bolts and torque to 22-28 Nm (17-21 lb-ft).

8. On Ranger only, reconnect bypass hose to fitting on intake manifold and tighten clamp.

9. Install heater water return hose at water pump fitting and tighten clamp.

10. On Aerostar only, if equipped with auxiliary heater, reinstall auxiliary heater tube bracket at power steering pump support bracket and torque to 8-12 Nm (6-8 lb-ft).

11. On Ranger only, connect crank position sensor (CKP) wiring at sensor.

12. Reinstall generator and bracket assembly to right cylinder head with 3 bolts and torque to 40-54 Nm (30-40 lb-ft).

Front End Accessory Drive — Aerostar

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6049</td>
<td>Cylinder Head (RH)</td>
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<tr>
<td>2</td>
<td>N606068-S309</td>
<td>Bolt</td>
</tr>
<tr>
<td>3</td>
<td>N806209-S309</td>
<td>Stud</td>
</tr>
<tr>
<td>4</td>
<td>10A313</td>
<td>Generator Bracket</td>
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<tr>
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<td>10300</td>
<td>Generator</td>
</tr>
<tr>
<td>6</td>
<td>N802827-S309</td>
<td>Nut</td>
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<td>7</td>
<td>N606706-S309</td>
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<tr>
<td>8</td>
<td>N606707-S309</td>
<td>Bolt</td>
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<tr>
<td>9</td>
<td>3F671</td>
<td>Power Steering Belt Idler Support</td>
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<tr>
<td>10</td>
<td>8680</td>
<td>Belt Idler Bracket</td>
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<td>A/C Compressor Bracket (Part of 19703)</td>
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<td>N605801-S309</td>
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<tr>
<td>13</td>
<td>19703</td>
<td>A/C Compressor</td>
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<td>14</td>
<td>N806020-S309</td>
<td>Bolt</td>
</tr>
<tr>
<td>A</td>
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<td>Tighten to 40-55 Nm (30-41 Lb-ft)</td>
</tr>
<tr>
<td>B</td>
<td>—</td>
<td>Tighten to 21-29 Nm (16-21 Lb-ft)</td>
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</table>

Front End Accessory Drive — Ranger

A3429-A

<table>
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<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
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<td>Tighten to 40-55 Nm (30-41 Lb-ft)</td>
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<tr>
<td>2</td>
<td>—</td>
<td>Tighten to 21-29 Nm (16-21 Lb-ft)</td>
</tr>
</tbody>
</table>
13. Reconnect 3 wiring connectors in generator.

14. Install oil fill tube bracket over stud at generator and torque retaining nut to 42-50 Nm (32-37 lb-ft).

15. Install water pump pulley on water pump hub and tighten bolts finger-tight.

16. Wrap engine accessory drive belt around all pulleys except generator. Rotate belt tensioner clockwise and when belt clears, slip over alternator pulley.

**Front End Accessory Drive — Aerostar**

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<thead>
<tr>
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<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>N606068-S2</td>
<td>Bolt</td>
</tr>
<tr>
<td>2</td>
<td>10300</td>
<td>Generator</td>
</tr>
<tr>
<td>3</td>
<td>10A313</td>
<td>Generator Bracket</td>
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<tr>
<td>4</td>
<td>N606065-S2</td>
<td>Bolt</td>
</tr>
<tr>
<td>5</td>
<td>6049</td>
<td>Cylinder Head (RH)</td>
</tr>
<tr>
<td>A</td>
<td>—</td>
<td>Tighten to 40-55 Nm (30-41 Lb-FT)</td>
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**Front End Accessory Drive — Ranger**

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>3F671</td>
<td>Power Steering Belt Idler Support</td>
</tr>
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<td>2</td>
<td>3A733</td>
<td>Power Steering Pump Pulley</td>
</tr>
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<td>8B209</td>
<td>Drive Belt Tensioner</td>
</tr>
<tr>
<td>4</td>
<td>8620</td>
<td>Drive Belt</td>
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<td>5</td>
<td>6312</td>
<td>Crankshaft Pulley</td>
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<tr>
<td>6</td>
<td>8509</td>
<td>Water Pump Pulley</td>
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<tr>
<td>7</td>
<td>—</td>
<td>Idler (Part of 8A620)</td>
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<td>A/C Compressor</td>
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<tr>
<td>9</td>
<td>10300</td>
<td>Generator</td>
</tr>
</tbody>
</table>

Front End Accessory Drive — Explorer
17. Torque water pump pulley bolts to 23-32 Nm (18-24 lb-ft).

18. Place radiator fan and clutch assembly in fan shroud and slide fan shroud into position. Lower edge of fan shroud should locate in clips at bottom of radiator. Secure top of fan shroud with 2 screws and torque to 6-8 Nm (53-71 lb-in).

19. **CAUTION:** Fan clutch has left-hand threads so nut must be turned clockwise to remove.

   Install fan clutch on water pump hub and torque to 41-135 Nm (30-100 lb-ft) using Tool T84T-6312-C and Fan Clutch Nut Wrench T84T-6312-D.

20. Reinstall engine air cleaner outlet tube and tighten clamps.

21. Fill engine cooling system to specified level. Refer to **Section 03-03**.

22. Reconnect ground cable at battery.

23. Start vehicle and check for leaks. Allow engine to reach operating temperature and verify no fluid leaks. Shut off engine, check and correct all fluid levels.

<table>
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<tr>
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<tbody>
<tr>
<td>1</td>
<td>19703</td>
<td>A/C Compressor</td>
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<td>3A733</td>
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<td>68209</td>
<td>Drive Belt Tensioner</td>
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<td>Drive Belt</td>
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<td>6312</td>
<td>Crankshaft Pulley</td>
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<tr>
<td>6</td>
<td>8529</td>
<td>Water Pump Pulley</td>
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<td>8</td>
<td>3F671</td>
<td>Power Steering Belt Idler Support</td>
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