

**Engine Front Cover**

If the engine front cover (6019) is being removed to check timing chain deflection, refer to Timing Chain Deflection Procedure as outlined in [Section 03-00](#).

**SPECIAL SERVICE TOOL(S) REQUIRED**

Description	Tool Number
Crankshaft Damper Remover	T58P-6316-D
Vibration Damper and Seal Replacer	T82L-6316-A
Vibration Damper Remover Adapter	T82L-6316-B

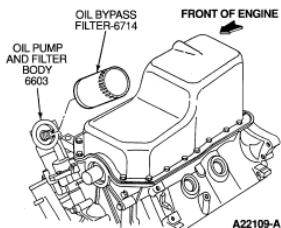
**Removal**

1. Remove engine (6007) from vehicle. Refer to procedure in this section.
2. Loosen drive belt tensioner (6B209) and drive belt (8620) .
3. Remove water pump pulley retaining bolts and water pump pulley (8509) .
4. Remove retaining bolts and disconnect heater water outlet tube (18663) from water pump (8501) .
5. Disconnect electrical connector at camshaft position sensor.
6. Disconnect electrical connector at crankshaft position sensor (CKP sensor) (6C315) .
7. Remove retaining bolt and disconnect radiator lower hose tube (8291) from water pump .

**NOTE:** If the vibration damper and crankshaft pulley have to be separated, mark the vibration damper and crankshaft pulley so that they may be reassembled in the same relative position. This is important as the vibration damper and crankshaft pulley are initially balanced as a unit.

**NOTE:** If the vibration damper is being replaced, check if the original vibration damper has balance pins installed. If so, new balance pins (6A328 or equivalent) must be installed on the new vibration damper in the same position as the original vibration damper. The crankshaft pulley (new or original) must also be installed in the same relative position as originally installed.

8. Remove crankshaft pulley (6312) and vibration damper assembly using Crankshaft Damper Remover T58P-6316-D and Vibration Damper Remover Adapter T82L-6316-B.
9. Remove four retaining bolts and remove brace from A/C bracket and P/S bracket.
10. Remove oil bypass filter (6714) .



**CAUTION:** The engine front cover cannot be removed without lowering the oil pan (6675) .

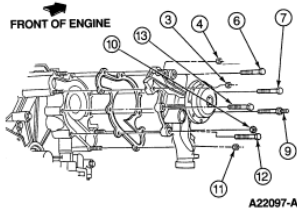
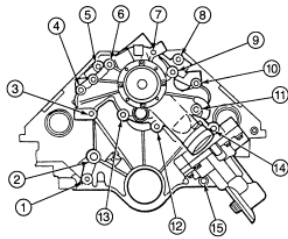
11. Remove oil pan . Refer to procedure in this section.



**CAUTION:** Do not overlook the engine front cover retaining bolt located behind the oil pump and filter body (6603) . The engine front cover will break if pried upon and all retaining bolts are not removed.

12. Remove engine front cover retaining bolts. It is not necessary to remove water pump .
13. Remove engine front cover and water pump as an assembly.
14. Remove engine front cover gasket and discard.

**Water Pump Tightening Sequence**



Fastener and Hole No.	Hole No.		Fasteners	
	Water Pump	Front Cover	Part No.	Part Name
1	—	4	N805112	Stud
2	—	2	N805112	Stud
3	2	9	N804757	Stud
4	1	8	N804757	Stud
5	—	10	N605787	Bolt
6	9	15	N605908	Bolt
7	8	16	N605908	Bolt
8	—	11	N807611	Stud/Bolt
9	7	17	N804756	Bolt
10	6	1	N805275	Stud
11	5	7	N804757	Stud
12	4	13	N605908	Bolt
13	3	14	N605908	Bolt
14	—	6	N804839	Bolt
15	—	5	N804841	Capscrew
3,4,10,11	2,1, 6,5	9,8, 1,7	N804758	Nut

### Installation

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

1. Clean gasket surfaces on the engine front cover and cylinder block (6010) .

If reusing the engine front cover , replace crankshaft front seal (6700) . Refer to [Crankshaft Pulley and/or Damper and/or Crankshaft Front Seal](#) in this section.

2. If a new engine front cover is to be installed:
  - Install oil pump and filter body .
  - Clean water pump gasket surface. Position a new water pump housing gasket (8507) on the engine front cover and install water pump . Install water pump retaining bolts. Tighten to 20-30 Nm (15-22 lb-ft).

3. Lubricate crankshaft front seal with clean engine oil XO-10W30-QSP or -DSP or equivalent meeting Ford specification ESE-M2C153-E.

**NOTE:** Gasket and Trim Adhesive D7AZ-19B508-B or equivalent meeting Ford specification ESE-M2G52-A is recommended to hold the engine front cover gasket (6020) in position while the engine front cover is installed.

4. Position a new engine front cover gasket on the cylinder block and install the engine front cover / water pump assembly using dowels for proper alignment.
5. Install the engine front cover retaining bolts. Tighten to 20-30 Nm (15-22 lb-ft). Install the capscrew (Part No. N804841) nearest the oil bypass filter flange last, and tighten last. Apply Loctite® or equivalent to bolt prior to installation. Refer to illustration under Step 13 of removal procedure.
6. Install oil pan as outlined.
7. Install oil bypass filter .
8. Coat pulley sealing surface with clean engine oil XO-10W30-QSP or -DSP or equivalent meeting Ford specification ESE-M2C153-E.

**NOTE:** When using silicone rubber sealer, assembly must occur within 15 minutes after sealer application. After this time, the sealer may start to setup, and its sealing effectiveness may be reduced.

9. Apply a small amount of Silicone Gasket and Sealant F1AZ-19562-A or equivalent meeting Ford specification WSE-M4G320-A2 to crankshaft keyway.
10. Position crankshaft key (6B316) in the crankshaft keyway.

11. Install the crankshaft pulley using Vibration Damper and Seal Replacer T82L-6316-A.
  12. Install crankshaft pulley retaining washer and bolt. Tighten bolt to 140-180 Nm (103-132 lb-ft).
  13. Install pulley to vibration damper, if removed. Tighten retaining bolts to 26-38 Nm (19-28 lb-ft).
  14. Install brace to A/C bracket and P/S bracket. Tighten three M8 retaining bolts to 20-30Nm (16-22 lb-ft). Tighten one M10 retaining bolt to 10-54 Nm (31-41 lb-ft).
  15. Connect radiator lower hose tube . Tighten bolt securely.
  16. Connect crankshaft position sensor electrical connector.
  17. Connect camshaft position sensor electrical connector.
  18. Connect heater water outlet tube to water pump . Install retaining bolts and tighten to 8-11.5 Nm (71-102 lb-in).
  19. Install water pump pulley and retaining bolts. Tighten bolts to 40.3-54.7 Nm (30-40 lb-ft).
  20. Position drive belt over pulleys and drive belt tensioner . Refer to [Section 03-05](#).
  21. Install engine into vehicle. Refer to procedure in this section.
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