

REMOVAL & INSTALLATION

FUEL PRESSURE RELEASE

Disconnect negative battery cable. Remove fuel tank filler cap to release tank pressure. Attach a fuel pressure gauge to pressure relief valve on fuel rail. Release fuel pressure.

COOLING SYSTEM BLEEDING

1. To bleed trapped air from cooling system, disconnect heater hose from water pump. Using 50/50 mixture of coolant and water, fill radiator until coolant flows from heater hose fitting at water pump. Reconnect heater hose.
2. Fill radiator until coolant is 1.5" (38 mm) below radiator cap seal. Install radiator cap. Run engine until warm. Turn off engine. CAREFULLY remove radiator cap and check level. Fill as required.

ENGINE

NOTE: Engine removal and installation procedures are for engine without transmission attached.

Removal (Pickup)

1. Disconnect battery cables. Drain cooling system and crankcase. Scribe hood hinge position and remove hood. Remove throttle body inlet tubes. Remove heater hoses and air cleaner assembly. Release fuel pressure. See FUEL PRESSURE RELEASE.

NOTE: Fan clutch/water pump hub has right-hand thread (counterclockwise to loosen).

2. Using Spring Lock Coupling Remover (T81P-19623-G1 for 3/8" line or T81P-19623-G2 for 1/2" line), disconnect fuel supply and return lines. See Fig. 2. Remove radiator shroud and radiator. Using Fan Clutch Pulley Holder (T84T-6312-C) and Fan Clutch Nut Wrench (T93T-6312-B), remove fan and clutch assembly.
3. Remove water pump pulley. Disconnect accelerator cable at throttle body and remove return spring. Remove power brake vacuum hose at intake manifold. Disconnect kickdown cable at throttle body (A/T). Separate exhaust pipe from manifold.
4. Remove wiring harness from coil and all sending units. Disconnect all sensor harness connectors. Remove generator mounting bolts, and set generator aside with wires attached. Remove power steering pump from mounting brackets, and set aside with lines attached.
5. On A/C-equipped models, discharge system and disconnect pressure lines. On all models, raise and support vehicle. Remove starter and A/T filler tube bracket (if equipped). Remove upper right bolt from engine rear plate.
6. On M/T models, remove all bellhousing lower retaining bolts and disconnect clutch retracting spring. On A/T models, remove converter housing access cover and remove flexplate-to-torque converter nuts. Secure torque converter assembly in housing.
7. Remove transmission cooler lines from clip at engine. Remove converter housing lower retaining bolts. On all models, remove insulator support bracket nut from each front engine support. Lower vehicle and support transmission with floor jack.
8. Remove remaining bellhousing-to-engine bolts. Attach engine hoist to engine. Raise engine slightly to

separate from transmission. Remove engine from vehicle.

Installation (Pickup)

To install, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill or top off all fluid levels. Fill and bleed air from cooling system. See **COOLING SYSTEM BLEEDING**.

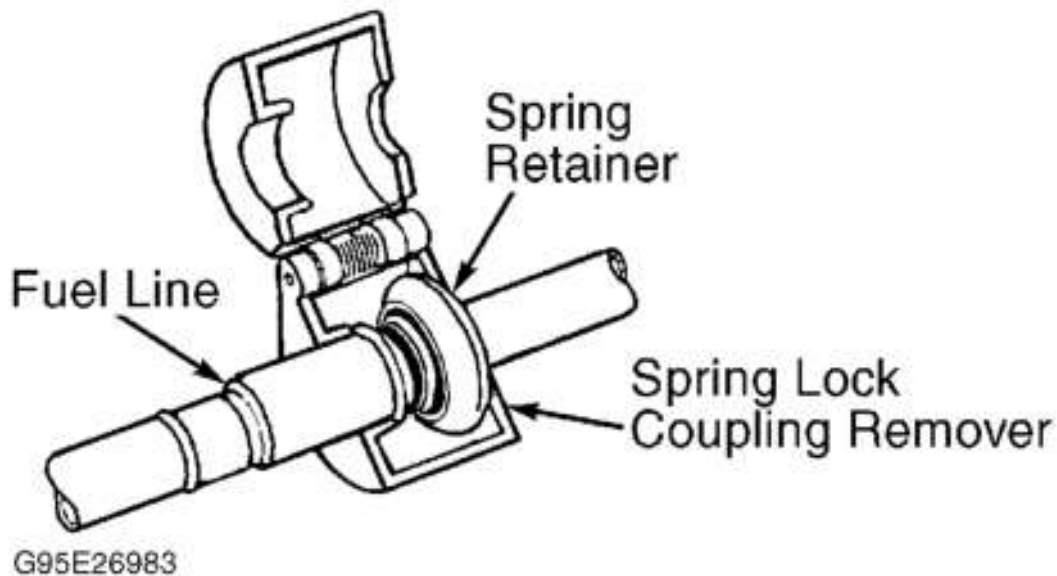


Fig. 2: Disconnecting Fuel Lines
Courtesy of FORD MOTOR CO.

Removal (Van)

1. Remove engine cover and air cleaner assembly. Drain cooling system. Disconnect battery. Remove front bumper, grille and lower gravel deflector. Disconnect coolant hoses and transmission oil lines from radiator (if equipped).
2. Remove radiator and shroud. Disconnect brake booster and heater hoses at intake manifold. Disconnect generator and set aside. Remove power steering pump drive belt, pump and bracket from engine.
3. Release fuel pressure. See **FUEL PRESSURE RELEASE**. Using Spring Lock Coupling Remover (T81P-19623-G1 for 3/8" line or T81P-19623-G2 for 1/2" line), disconnect fuel supply and return lines. See **Fig. 2**.
4. Disconnect sensors and sending unit wires from engine. Disconnect accelerator cable and remove bracket from engine. Disconnect A/T kickdown cable at throttle body. Remove exhaust manifold heat deflector and exhaust pipe-to-manifold nuts.
5. Disconnect A/T vacuum line at intake manifold junction. Remove upper transmission-to-engine bolts. Remove A/T dipstick tube support at intake manifold. Raise vehicle. Drain crankcase and remove oil filter.
6. Disconnect starter wiring and remove starter. On A/T models, remove transmission housing cover and

flexplate-to-torque converter nuts. On all applications, remove front engine mount nuts. Remove remaining transmission-to-engine bolts. Lower vehicle from hoist. Attach lifting device to engine. Remove engine from vehicle.

Installation (Van)

To install, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill or top off all fluid levels. Fill and bleed air from cooling system. See, in this article, **COOLING SYSTEM BLEEDING**.

INTAKE & EXHAUST MANIFOLDS

Removal

1. Disconnect negative battery cable. Disconnect electrical connectors as necessary. Disconnect PCV hose from underside of upper intake manifold. Remove throttle linkage shield.

CAUTION: When disconnecting throttle cable from ball stud, use screwdriver or similar tool to pry off. Removing by hand may damage cable.

2. Disconnect accelerator cable and speed control cable. Remove throttle body inlet hoses. Disconnect accelerator cable from bracket and set aside. Remove cable retracting spring. Disconnect and remove EGR tube.
3. Release fuel system pressure. See **FUEL PRESSURE RELEASE**. Using Spring Lock Coupling Remover (T81P-19623-G1 for 3/8" line or T81P-19623-G2 for 1/2" line), disconnect fuel supply and return lines. See **Fig. 2**.
4. Remove air injection tube assembly from lower intake manifold. Remove air injection by-pass valve bracket retaining nut from lower intake manifold. On Van, remove transmission fill tube retaining nut.
5. On all models, remove upper intake manifold retaining nuts. Remove screw and washer attaching upper intake manifold support bracket to upper intake manifold. Remove upper intake manifold and throttle body as an assembly. Remove injector heat shield.
6. Disconnect exhaust pipes from exhaust manifolds. Mark and disconnect vacuum lines for installation reference. Disconnect power brake vacuum line (if equipped). Remove lower intake manifold and exhaust manifold-to-cylinder head bolts. Remove lower intake manifold and exhaust manifolds.

Installation

1. Clean mating surfaces of manifolds and cylinder head. Lightly coat mating surfaces with graphite grease. Install new intake/exhaust manifold gasket on cylinder head.

NOTE: If installing original exhaust manifolds, install NEW exhaust manifold gaskets. If installing new exhaust manifolds, install exhaust manifolds without gaskets.

2. Position lower intake/exhaust manifold assembly on cylinder head. Ensure gasket remains in position. Tighten bolts and nuts in sequence to specification. See **Fig. 3**. See **TORQUE SPECIFICATIONS**. To complete installation, reverse removal procedure.

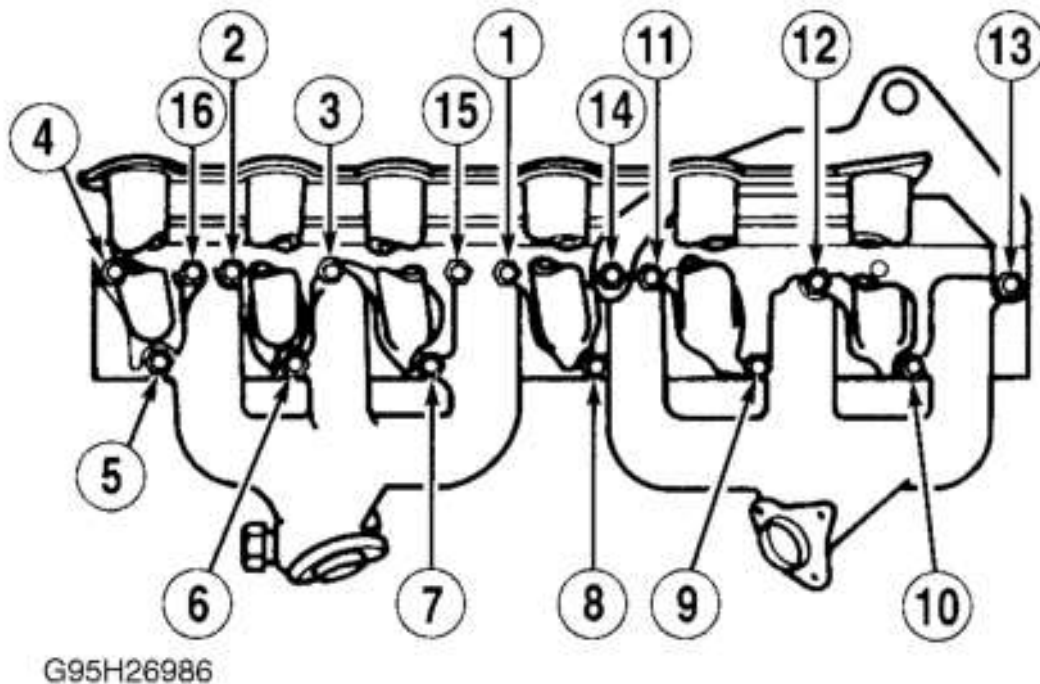


Fig. 3: Lower Intake & Exhaust Manifold Tightening Sequence
 Courtesy of FORD MOTOR CO.

CYLINDER HEAD

NOTE: Cylinder head can be removed with intake and exhaust manifolds connected.

Removal

1. Scribe hood hinge position and remove hood. Disconnect negative battery cable. Drain cooling system and crankcase. Remove throttle body inlet tubes. Discharge A/C system using approved refrigerant recovery/recycling equipment (if equipped). Remove the A/C compressor and condenser (if equipped).
2. Disconnect heater hoses from water pump and thermostat housing. Release pressure from fuel system. See **FUEL PRESSURE RELEASE**.

NOTE: Fan clutch/water pump hub has right-hand thread (counterclockwise to loosen).

3. Using Spring Lock Coupling Remover (T81P-19623-G1 for 3/8" line or T81P-19623-G2 for 1/2" line), disconnect fuel supply and return lines. See **Fig. 2**. DO NOT bend fuel rail. Remove radiator and shroud. Using Fan Clutch Pulley Holder (T84T-6312-C) and Fan Clutch Nut Wrench (T93T-6312-B), remove fan and clutch assembly.
4. Remove water pump pulley and accessory drive belt. Disconnect accelerator cable and return spring from throttle body. Disconnect power brake vacuum line from intake manifold (if equipped). Disconnect transmission kickdown cable from throttle body (if equipped).

5. Disconnect exhaust pipes from exhaust manifolds. Disconnect body ground strap and negative battery cable from engine. Disconnect Powertrain Control Module (PCM) harness and engine wiring harness from all electrical components on engine.
6. Leaving wiring attached, remove generator and set aside. Remove air pump and generator/air pump bracket. Remove power steering pump with hoses attached and set aside. Remove power steering pump and A/C compressor bracket.
7. Remove coil bracket and set aside. Remove rocker arm cover. Loosen rocker arm bolts, and rotate rocker arms aside. Mark push rods for installation reference and remove. Disconnect spark plug wires from spark plugs.
8. Remove cylinder head bolts. Lift cylinder head and manifold assemblies from engine using appropriate lifting device. DO NOT pry between cylinder head and block, as machined surfaces may be damaged.

Inspection

1. Clean gasket mating surfaces. Check cylinder head warpage. Resurface cylinder head if warpage exceeds specification. Refer to **CYLINDER HEAD** table under ENGINE SPECIFICATIONS. Check cylinder block deck surface for warpage.
2. Resurface cylinder block if warpage exceeds specification. See **CYLINDER BLOCK** table under ENGINE SPECIFICATIONS. If cylinder head or cylinder block warpage exceeds specification, DO NOT remove more than .010" (.25 mm) material from original surface of cylinder head or block.

Installation

1. Position NEW gasket over dowel pins on cylinder block. Using lifting device, carefully position cylinder head onto block. Ensure dowel pins engage in head. Coat head bolt threads with engine oil and install.
2. Tighten head bolts in sequence to specification. Refer to **Fig. 4** . See **TORQUE SPECIFICATIONS**. Lubricate push rod ends, rocker arm fulcrum seats and sockets with multipurpose grease. To complete installation, reverse removal procedure.
3. Tighten nuts/bolts to specification. See **TORQUE SPECIFICATIONS**. Fill and bleed air from cooling system. See **COOLING SYSTEM BLEEDING**.

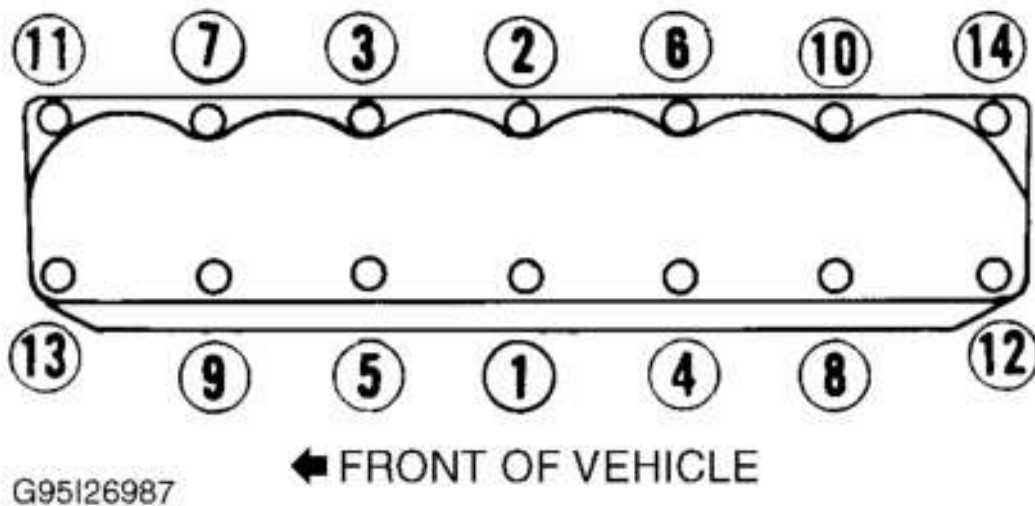


Fig. 4: Cylinder Head Bolt Tightening Sequence
 Courtesy of FORD MOTOR CO.

CRANKSHAFT FRONT SEAL

Removal

1. Remove fan and shroud. Remove drive belt. Remove crankshaft damper retaining bolt and washer. Using puller, remove vibration damper. Position Oil Seal Remover (T70P-6B070-B) onto seal, and tighten 2 through-bolts to force seal puller under the seal flange.
2. Alternately tighten 4 puller bolts 1/2 turn at a time. Remove oil seal from the timing gear cover. Clean seal recess in timing gear cover.

Installation

1. Lubricate crankshaft stub, vibration damper hub inside diameter and sealing surface of timing gear cover seal with clean engine oil. DO NOT apply grease to seal. Position seal onto Crankshaft Seal Installer/Cover Aligner (T88T-6701-A).
2. Position timing gear cover seal installer and seal onto the crankshaft end. Force seal into recess by tightening bolt. See **Fig. 5**. Remove timing gear cover seal installer. Apply a 1/4" (6 mm) bead of silicone sealer to keyway inside vibration damper hub.
3. Using Vibration Damper Installer (T52L-6306-AEE), install vibration damper. To complete installation, reverse removal procedure. See **TORQUE SPECIFICATIONS**.

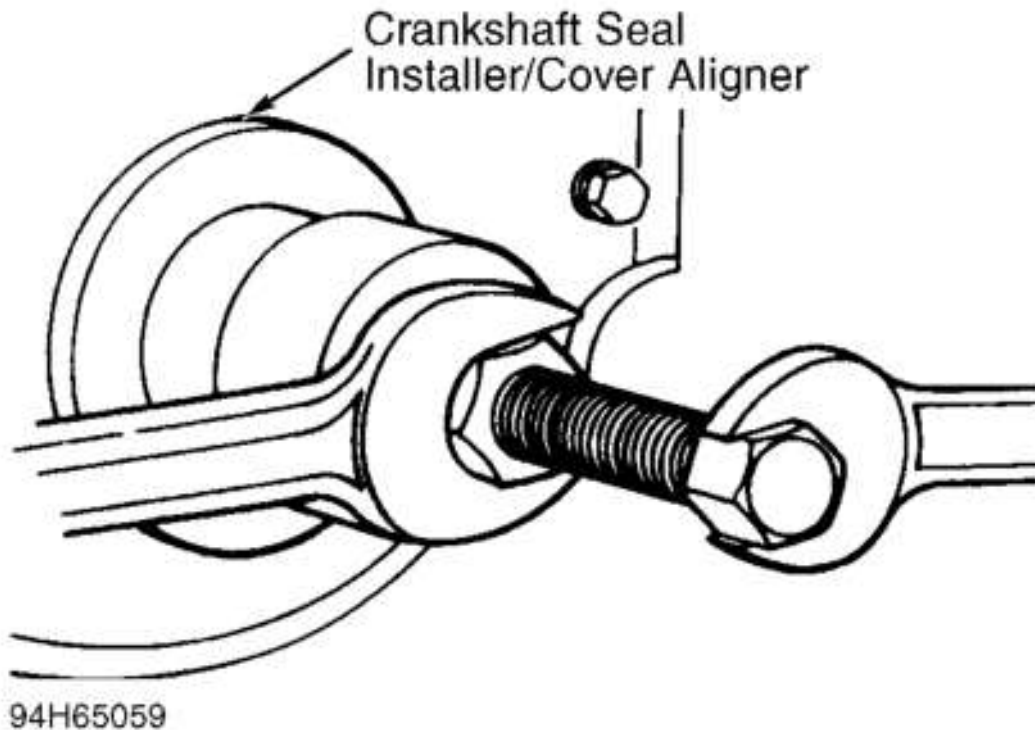


Fig. 5: Installing Timing Cover Oil Seal
 Courtesy of FORD MOTOR CO.

TIMING GEAR COVER

Removal

1. Drain cooling system and crankcase. Remove shroud and radiator. Remove drive belt. Using Fan Clutch Pulley Holder (T84T-6312-C) and Fan Clutch Nut Wrench (T93T-6312-B), remove fan and clutch assembly.
2. Remove A/C compressor and position aside. Remove power steering pump and bracket and position aside. Remove crankshaft damper retaining bolt and washer. Using Vibration Damper Remover (T58P-6316-D), remove vibration damper.
3. Remove timing gear cover and front oil pan bolts. Loosen first 6 bolts on each side of oil pan. Lightly push down oil pan to relieve pressure on timing gear cover. Remove timing gear cover and gasket.

NOTE: Always replace timing gear cover oil seal whenever timing gear cover is removed.

Installation

1. Clean timing gear cover and cylinder block mating surfaces. Coat cylinder block and timing gear cover gasket surfaces with oil resistant sealer. Install timing gear cover gasket. Apply silicone sealer to block/pan junction and to oil pan gasket sealing surface.
2. Position timing gear cover on cylinder block. Hand-start timing gear cover and pan bolts. To aid

timing gear cover alignment, slide Timing Gear Cover Aligner (T61P-6019-B) over crankshaft and into seal bore.

3. Tighten timing gear cover bolts first to obtain proper alignment, then tighten oil pan bolts. Remove timing gear cover aligner. Install and lubricate timing gear cover oil seal. See **CRANKSHAFT FRONT SEAL**.
4. Lubricate crankshaft stub, vibration damper hub I.D. and sealing surface of timing gear cover seal with clean engine oil. DO NOT apply grease to seal. Apply a 1/4" (6 mm) bead of silicone sealer to keyway inside vibration damper hub.
5. Using Vibration Damper Replacer (T52L-6306-AEE), install vibration damper. To install remaining components, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill and bleed air from cooling system. See **COOLING SYSTEM BLEEDING**.

TIMING GEARS

CAUTION: To avoid valve train damage, NEVER rotate camshaft or crankshaft unless timing gears are installed.

Checking Timing Gear Backlash

1. Remove timing gear cover. See **TIMING GEAR COVER**. Attach a dial indicator to engine block, with sensing stylus on camshaft gear tooth.
2. Using a dial indicator, measure gear backlash between camshaft gear and crankshaft gear at 6 equally spaced teeth. To obtain an accurate reading, hold gear firmly against block. Backlash should be .004-.010" (.10-.25 mm). If any of the 6 readings are not within specification, replace timing gears.

Removal

1. Drain cooling system and crankcase. Remove timing gear cover. See **TIMING GEAR COVER**. Check camshaft end play. If end play is not within specification, replace camshaft thrust plate. See **CAMSHAFT** table under ENGINE SPECIFICATIONS.
2. Rotate engine (in direction of normal rotation) until camshaft and crankshaft gear timing marks are aligned. See **Fig. 6**. Using Camshaft Gear Puller (T82T-6256-A), remove camshaft gear. Using Crankshaft Damper Remover (T58P-6316-D), remove crankshaft gear. Remove Woodruff keys from camshaft and crankshaft.

Installation

1. Ensure camshaft key spacer and thrust plate are correctly aligned. Install Woodruff key into camshaft. Align camshaft gear keyway with camshaft key, and install gear using Camshaft Gear Replacing Adapter (T65L-6306-A).
2. Install Woodruff key into crankshaft. Using Crankshaft Damper Replacer (T52L-6306-AEE), install crankshaft gear. Ensure timing marks on camshaft and crankshaft gears are still aligned.
3. To complete installation, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill or top off all fluids. Fill and bleed air from cooling system. Refer to **COOLING SYSTEM BLEEDING**.

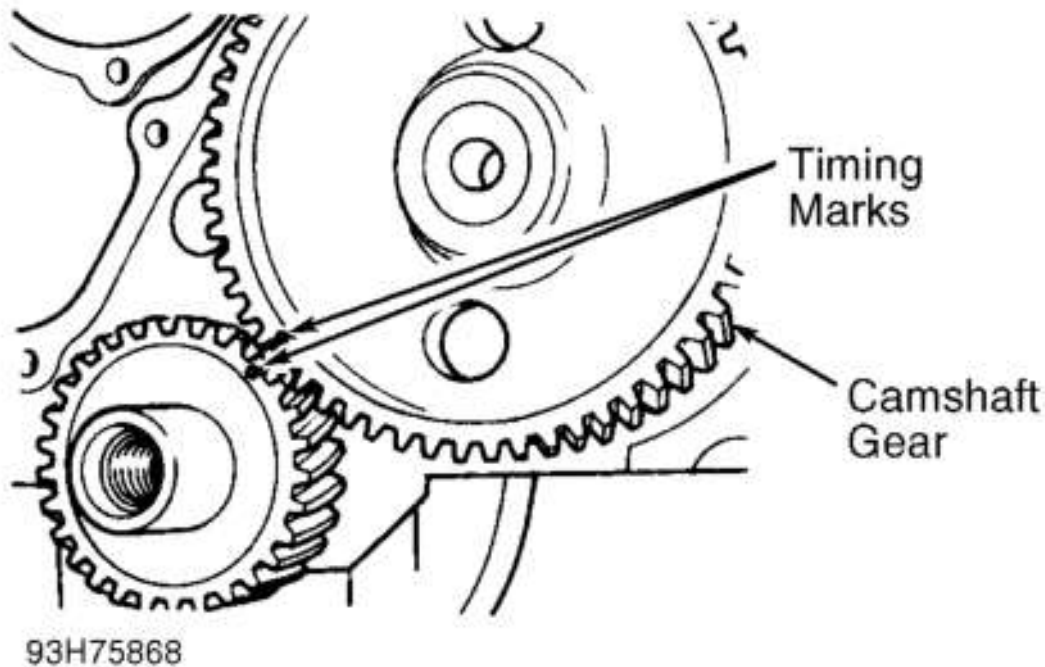


Fig. 6: Aligning Timing Marks
 Courtesy of FORD MOTOR CO.

CAMSHAFT

Removal

1. Drain cooling system and crankcase. Remove radiator and shroud. Remove rocker arm cover. Rotate engine (in direction of rotation) until No. 1 piston is at TDC. Remove distributor cap.
2. Mark distributor rotor and housing for installation reference. Remove distributor. Loosen rocker arm bolts and turn rocker arms aside. Remove push rods and mark for installation reference.
3. Remove engine side cover to expose valve lifters. Remove lifters and mark for installation reference. Remove engine timing gear cover. See **TIMING GEAR COVER**. Check and note camshaft end play.
4. Replace camshaft thrust plate if end play is not within specification. See **CAMSHAFT** table under ENGINE SPECIFICATIONS. Turn crankshaft to align gear timing marks. See **Fig. 6**.
5. Remove camshaft thrust plate bolts. Remove camshaft gear using Camshaft Gear Puller (T82T-6256-A). Remove Woodruff key, thrust plate and spacer. Carefully remove camshaft to avoid damaging lobes or bearings.

Inspection

Inspect components for damage. Check camshaft journal diameter, lobe lift, and oil clearance. Replace components if damaged or not within specification. See **CAMSHAFT** table under ENGINE SPECIFICATIONS.

Installation

1. Coat camshaft lobes with multipurpose grease. Coat bearing journals with clean engine oil. Install Woodruff key, spacer and thrust plate on camshaft. Align gear keyway with key and install gear using Camshaft Gear Replacing Adapter (T65L-6306-A).
2. Install camshaft, spacer, thrust plate and gear as an assembly, ensuring timing marks are aligned. See **Fig. 6**. Tighten thrust plate bolts. Ensure camshaft end play is within specification. See **CAMSHAFT** table under ENGINE SPECIFICATIONS.
3. To complete installation, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill and bleed air from cooling system. See **COOLING SYSTEM BLEEDING**.

CAMSHAFT BEARINGS

NOTE: It may be necessary to remove crankshaft for access to camshaft bearings.

Removal

1. Remove engine. See **ENGINE**. Install engine on engine stand. Remove flywheel/flexplate. Remove camshaft rear bearing bore plug.
2. Remove camshaft and crankshaft. See **CAMSHAFT** and **CRANKSHAFT**. Push pistons to top of cylinders. Using Camshaft Bearing Remover/Installer (T65L-6250-A), remove cam bearings. To remove front bearing, place bearing puller in cam bore from rear of cylinder block.

Installation

To install cam bearings, reverse removal procedure. Ensure oil holes in bearings align with oil holes in cylinder block when installing camshaft bearings. Install front bearing so .020-.035" (.51-.89 mm) exists between front edge of bearing and face of cylinder block.

CRANKSHAFT

NOTE: Unless parts are being discarded, keep all crankshaft parts in the order that they were removed.

Removal & Installation

1. Remove engine and attach to engine stand. See **ENGINE**. Remove spark plugs. Remove oil pan. See **OIL PAN**. Remove timing gear cover. See **TIMING GEAR COVER**.
2. Using Camshaft Gear Puller (T82T-6256-A), remove camshaft gear. Using Vibration Damper Remover (T58P-6316-D), remove crankshaft gear. Remove flywheel. Remove oil pump. Rotate crankshaft to position connecting rod caps at bottom of stroke. Remove connecting rod cap nuts. Tap cap with plastic mallet to separate from rod.
3. Remove connecting rod caps. Cover connecting rod bolts with protective rubber caps. Use wooden hammer handle to tap piston into cylinder bore. Ensure main bearing caps are marked. Remove crankshaft main bearing caps.
4. Carefully remove crankshaft. To install, reverse removal procedure. Once bearings are installed, apply a coat of heavy engine oil to crankshaft and bearings. Tighten nuts/bolts to specifications. See **TORQUE SPECIFICATIONS**.

CRANKSHAFT REAR OIL SEAL

Removal

1. Remove starter and transmission. For A/T models, see TRANSMISSION REMOVAL & INSTALLATION article in TRANSMISSION SERVICING. For M/T models, see HYDRAULIC article in CLUTCHES.
2. On all models, remove clutch assembly (if equipped). Remove flexplate/flywheel. Remove engine rear cover plate. Using an awl, punch hole in oil seal metal surface between lip and block.
3. Carefully pry oil seal from recess without damaging seal surface. Clean oil seal recess in block and main bearing cap.

Installation

1. Inspect and clean crankshaft surface. Lightly coat crankshaft and sealing surface of NEW oil seal with engine oil. Place seal in position with lip facing inward, and install seal using Rear Oil Seal Installer (T89T-6701-AH).
2. Keep installer straight in respect to center line of crankshaft. Seal is properly installed when seal installer contacts cylinder block. Coat threads of flywheel bolts with oil resistant sealer. To complete installation, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.

THERMOSTAT

Do not attempt to service the water thermostat (8575). It should be replaced if it is not operating properly.

Check the water thermostat before installing it.

Removal

1. Drain the radiator (8005) so that the coolant level is below the water thermostat.
2. Remove the coolant outlet elbow attaching bolts.
3. Pull the elbow away from the cylinder head (6049) sufficiently to provide access to the water thermostat.
4. Remove the water thermostat and gasket.

Installation

1. Clean the coolant outlet elbow and cylinder head gasket surfaces.
2. Coat a new gasket with Perfect Seal Sealing Compound B5A-19554-A or D7AZ-19554-BA (ESR-M18P2-A and ESE-M4G115-A) or equivalent.
3. Position the gasket on the cylinder head opening. The gasket must be positioned on the cylinder head before the thermostat is installed.
4. The coolant outlet elbow contains a locking recess into which the water thermostat is turned and locked. Install the water thermostat with pellet side out.
5. Turn the water thermostat clockwise to lock it in position on the flats cast into the outlet elbow.
6. Position the coolant outlet elbow against the cylinder head. Install and tighten the attaching bolts to 16-24N-m (12-18 lb-ft).
7. Fill and bleed the cooling system as described in this section.

WARNING: DO NOT STAND IN LINE WITH OR NEAR RADIATOR FAN BLADE (8600) WHEN ENGINE IS RUNNING.

8. Check for leaks and proper coolant level after the engine has reached normal operating temperatures.

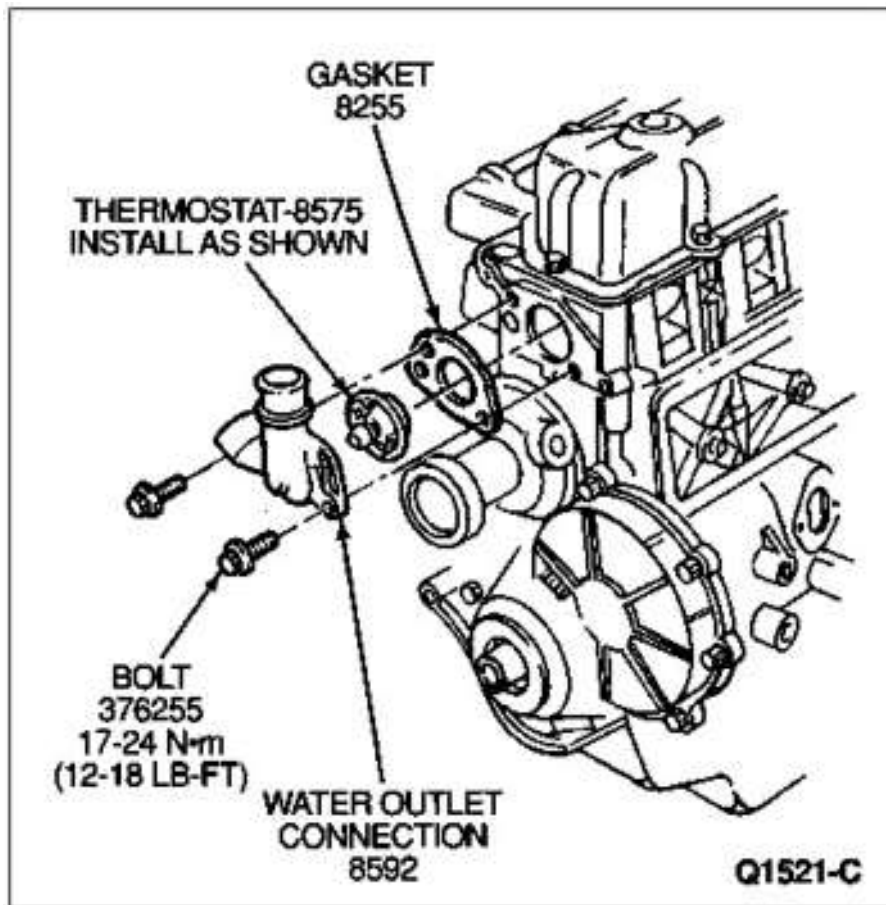


Fig. 7: Removing/Installing Thermostat
Courtesy of FORD MOTOR CO.

WATER PUMP

NOTE: Fan clutch/water pump hub has right-hand thread (counterclockwise to loosen).

Removal

Drain cooling system. Remove accessory drive belt by using a 3/8" (10 mm) open-end wrench. Lift belt tensioner away from belt. Using Fan Clutch Pulley Holder (T84T-6312-C) and Fan Clutch Nut Wrench (T93T-6312-B), remove fan and clutch assembly. Remove water pump pulley. Disconnect coolant hoses from water pump. Remove water pump.

Installation

1. Clean all gasket mating surfaces. Coat NEW gasket on both sides with gasket sealer, and position gasket on water pump. Install water pump and tighten attaching bolts.
2. To install remaining components, reverse removal procedure. Fill and bleed air from cooling system.

See **COOLING SYSTEM BLEEDING.**

OIL PAN

Removal (Pickup)

1. Drain engine oil and cooling system. Disconnect negative battery cable. Raise and support vehicle. Remove starter. Remove both front engine mount-to-engine mount bracket nuts.
2. Raise engine and place 1" (25.4 mm) wood blocks between front engine mount insulators and frame brackets. Remove oil pan bolts. Lower pan and remove oil pump bolts and pick-up tube nut. Lower oil pump assembly into pan. Remove pan.

Installation (Pickup)

1. To install, reverse removal procedure. Apply silicone sealant at front and rear corners of oil pan surface and cylinder block, and where timing gear cover meets the cylinder block.
2. Install oil pan bolts "A" through "D" first. See **Fig. 8**. Install all other bolts except bolts "X", "Y" and "Z", and tighten all installed bolts to 15-17 ft. lbs. (20-23 N.m). Install bolts "X" and "Y", and tighten to 15-17 ft. lbs. (20-23 N.m). Install bolt "Z", and tighten to 16-20 ft lbs. (21-27 N.m)
3. To install remaining components, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS.** Fill or top off fluids. Fill and bleed air from cooling system. See **COOLING SYSTEM BLEEDING.**

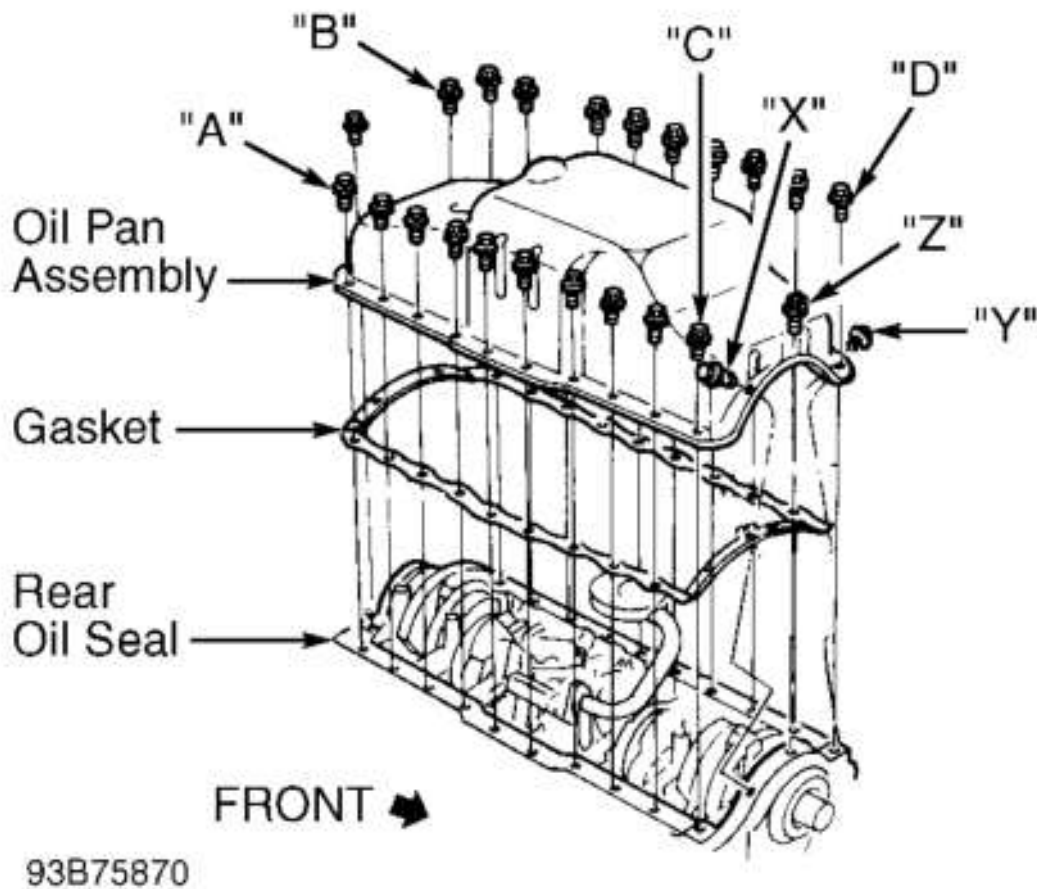


Fig. 8: Oil Pan Bolt Tightening Sequence
 Courtesy of FORD MOTOR CO.

Removal (Van)

1. Remove engine cover, air cleaner and air inlet tubes from throttle body. Position idle air by-pass valve aside. Unbolt fan shroud and let it rest on fan. Drain engine oil and cooling system. Remove upper and lower radiator hoses. Disconnect heater hoses from engine. Remove starter and heated oxygen sensor wiring retainers.
2. Raise and support vehicle. Remove front engine mount nuts. Raise engine approximately 3" and place wooden block under engine mounts. Remove oil pan bolts. Remove oil pick-up tube from oil pump. Remove oil pan and gaskets.

Installation (Van)

1. To install, reverse removal procedure. Apply silicone sealant at front and rear corners of oil pan surface and cylinder block, and where timing gear cover meets the cylinder block.
2. Install oil pan bolts "A" through "D" first. See **Fig. 8**. Install all other bolts except bolts "X", "Y" and "Z", and tighten all installed bolts to 15-17 ft. lbs. (20-23 N.m). Install bolts "X" and "Y", and tighten to 15-17 ft. lbs. (20-23 N.m). Install bolt "Z", and tighten to 16-20 ft lbs. (21-27 N.m)

3. To install remaining components, reverse removal procedure. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill or top off fluids. Fill and bleed air from cooling system. See **COOLING SYSTEM BLEEDING**.