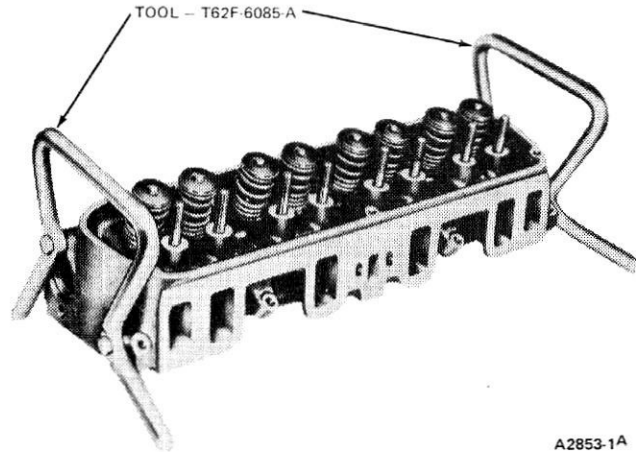


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FIG. 21 Removing Valve Push Rod



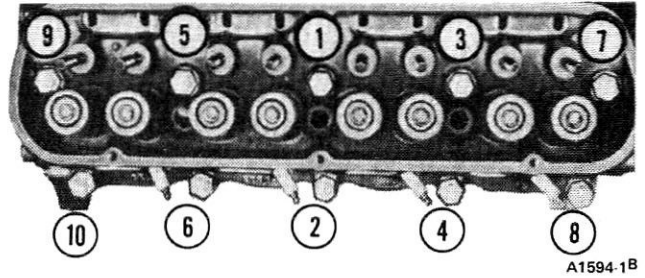
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FIG. 22 Cylinder Head Holding Fixture

6. Install the cylinder head holding fixtures (Fig. 22).
Remove the cylinder head attaching bolts and lift the cylinder head off the block. If required, remove the exhaust manifolds to gain access to the lower attaching bolts. Remove and discard the cylinder head gasket.

Installation

1. Clean the cylinder head, intake manifold, valve rocker arm cover and cylinder head gasket surfaces. If the cylinder head was removed for a cylinder head gasket replacement, check the flatness of the cylinder head and block gasket surfaces. (See Part 21-01.)
2. Position the new cylinder head gasket over the cylinder dowels on the block. Position the cylinder head on the block and install the attaching bolts. Remove the holding fixtures.
3. The cylinder head bolts are tightened in three progressive steps. Torque all the bolts in sequence (Fig. 23) to specifications. When cylinder head bolts have been tightened following this procedure, it is not necessary to retorque the bolts after extended operation. However, the bolts may be checked and retorqued if desired. If removed, install the exhaust manifolds and retorque the attaching bolts to specification.
4. Clean the push rods in a suitable solvent. Blow out the oil passage in the push rod with compressed air. Check the ends of the push rods for nicks, grooves, roughness or excessive wear. Visually check the push rods for straightness or check push rod runout with a dial indicator. If runout exceeds the maximum limit at any point, discard the rod. **Do not attempt to straighten push rods.**



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FIG. 23 Cylinder Head Bolt Torque Sequence

5. Apply Lubriplate or equivalent to both ends of the push rods. Install the push rods in their original positions. Apply Lubriplate or equivalent to the valve stem tips. Install the exhaust valve stem caps.
6. Install the rocker arms. If all original assembly components are installed, a valve clearance adjustment is not necessary. If any valve train components are replaced, perform a valve clearance adjustment as outlined under Valve Clearance Adjustment—Hydraulic Tappets (Part 21-01).
7. Connect the exhaust manifold(s) at the muffler inlet pipe(s). Tighten the nuts to specifications.
8. If the right cylinder head was removed, install the alternator attaching bracket on the right cylinder head assembly. Install the alternator. Adjust the drive belt tension to specifications.
9. Clean the valve rocker arm cover(s). Position the valve rocker cover gasket in each cover, making sure that the tabs engage the notches in the cover. Install the valve rocker arm cover(s).
The valve rocker cover is tightened in two steps. Tighten the bolts to specifications. Two minutes later retighten bolts to the same specifications. Install EGR cooler, if equipped.
10. If the left cylinder head was removed on a vehicle with an air conditioner, install the compressor as outlined in Group 36.

If the left cylinder head was removed on a vehicle with power steering, install the drive belt and power steering pump bracket. Install the bracket attaching bolts. Adjust the drive belt to specifications.

11. Install the intake manifold and related parts following the procedure under Intake Manifold Installation.

EXHAUST MANIFOLDS

Removal

1. On a right exhaust manifold, remove the air cleaner and intake duct assembly. Disconnect the automatic choke heat tubes.
2. Disconnect the exhaust manifold from the muffler inlet pipe. Remove the attaching nuts and then remove the spark plug wires, spark plugs and heat shields.
3. Remove the attaching bolts and washers and remove the exhaust manifold.

Installation

1. Clean the mating surfaces of the exhaust manifold and cylinder head. Clean the mounting flange of the exhaust manifold and muffler inlet pipe.

2. Position the exhaust manifold on the cylinder head and install the heat shields and the attaching bolts and washers. Working from the center to the ends, torque the bolts to specifications. Install the spark plugs and spark plug wires. See Part 23-01 for special installation procedure.
3. Position the muffler inlet pipe to the manifold. Install and torque the attaching nuts to specifications.
4. Install the automatic choke heat tubes. Install the air cleaner and intake duct assembly.
5. Start the engine and check for exhaust leaks.

WATER PUMP

Removal

1. Drain the cooling system. Remove the carburetor air inlet tube.

On vehicles equipped with a fan shroud, remove the shroud attaching bolts and position the shroud over the fan.

Remove the fan and spacer from the water pump shaft. Remove the shroud if so equipped.

2. Remove the air conditioner drive belt and idler pulley bracket if so equipped.

Remove the alternator drive belt.

Remove the power steering drive belt and power steering pump, if so equipped.

Remove all accessory brackets which attach to the water pump. Remove the water pump pulley.

3. Disconnect the radiator lower hose, heater hose and water pump bypass hose at the water pump.
4. Remove the bolts that attach the pump to the cylinder front cover. Remove the pump and gasket. Discard the gasket.

Installation

1. Remove all gasket material from the mounting surfaces of the cylinder front cover and water pump.
2. Position a new gasket, coated on both sides with sealer, on the cylinder front cover; then install the pump.
3. Install the attaching bolts and torque them to specifications.
4. Connect the radiator hose, heater hose and water pump by-pass hose at the water pump.
5. Install all the accessory brackets which attach to the water pump. Place the water pump pulley on the water pump shaft.
6. Install the power steering pump and drive belt if so equipped. Install the alternator and drive belt. Install the air conditioner idler pulley bracket and drive belt if so equipped.
7. Position the fan shroud, if so equipped, over the water pump pulley and install the spacer or fan drive clutch and fan. Install the shroud attaching bolts. Install the carburetor air inlet tube.
Adjust the drive belts to the specified belt tension.
8. Fill and bleed the cooling system. Operate the engine until normal operating temperatures have been reached and check for leaks.

CYLINDER FRONT COVER AND TIMING CHAIN

Removal

1. Refer to Water Pump Removal. Perform all steps except removal of the pump. Leave it attached to the front cover.
2. Drain the crankcase.
3. Remove the crankshaft pulley from the crankshaft vibration damper. Remove the damper attaching screw and washer. Install the puller on the crankshaft vibration damper (Fig. 24) and remove the vibration damper.

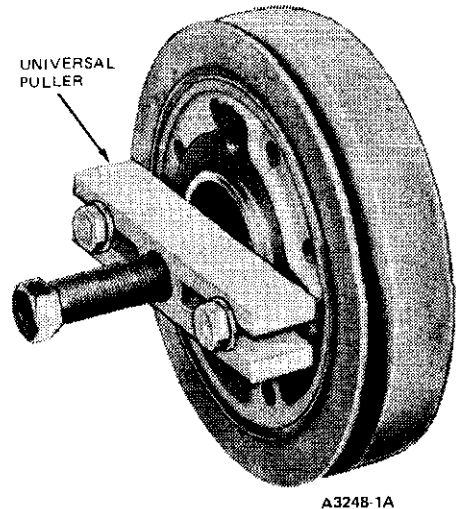


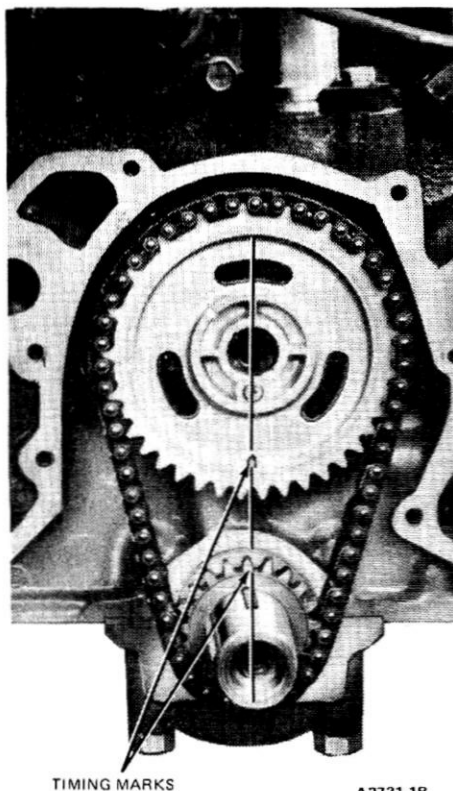
FIG. 24 Removing Crankshaft Vibration Damper

4. Disconnect the fuel pump outlet line from the fuel pump. Remove the fuel pump attaching bolts and lay the pump to one side with the flexible fuel line still attached.
5. Remove the oil level dipstick.
6. Remove the oil pan to cylinder front cover attaching bolts. Use a thin blade knife to cut the oil pan gasket flush with cylinder block face prior to separating the cover from the cylinder block. Remove the cylinder front cover and water pump as an assembly.

NOTE: Cover the front oil pan opening while the cover assembly is OFF to prevent foreign material from entering the pan.

If a new cylinder front cover is to be installed, remove the water pump and dipstick tube from the old cylinder front cover and install them on the new cover (except Fairmont/Zephyr).

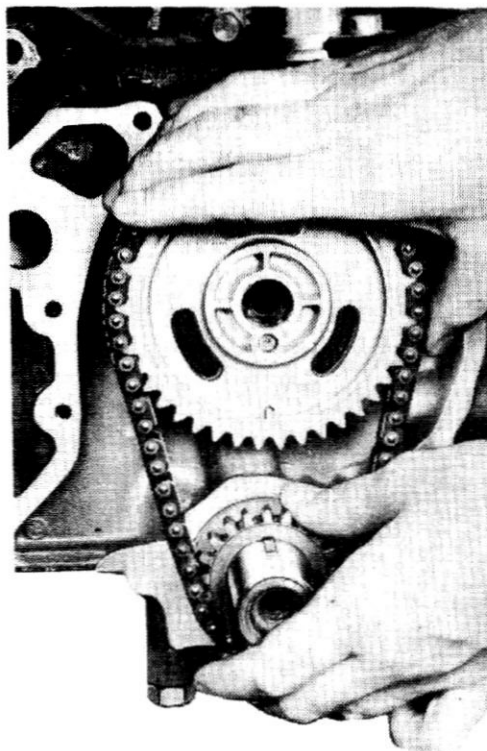
7. Discard the cylinder front cover gasket. Remove the crankshaft front oil slinger.
8. Check the timing chain deflection (refer to Part 21-01).
9. Crank the engine until the timing marks on the sprockets are positioned as shown in Fig. 25.
10. Remove the camshaft sprocket cap screw, washers and fuel pump eccentric. Slide both sprockets and the timing chain forward, and remove them as an assembly (Fig. 26).



TIMING MARKS

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FIG. 25 Aligning Timing Marks



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FIG. 26 Removing or Installing Timing Chain

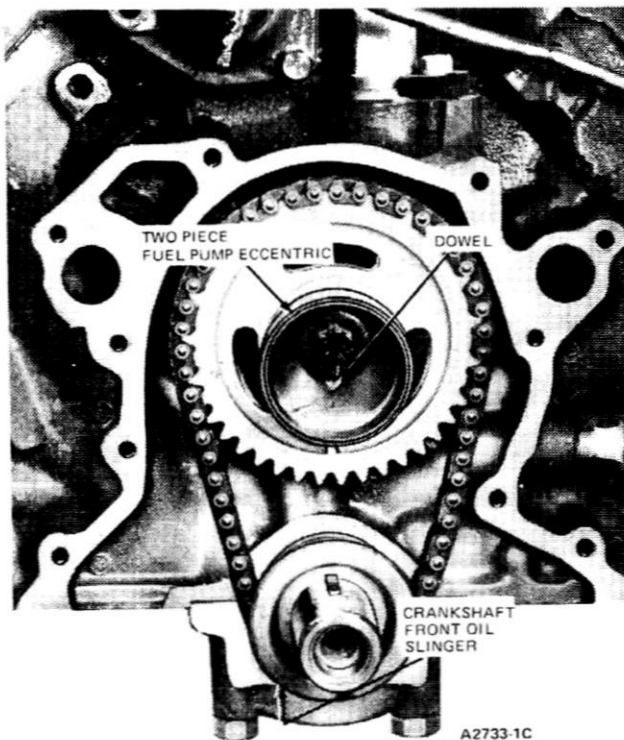
Installation

1. Position the sprockets and timing chain on the camshaft and crankshaft simultaneously (Fig. 26). Be sure the timing marks on the sprockets are positioned as shown in Fig. 25.
2. Install the fuel pump eccentric, washers and camshaft sprocket cap screw. Torque the sprocket cap screw to specifications. On 5.8L (351 CID) engines, install the crankshaft front oil slinger (Fig. 27).
3. Clean the cylinder front cover, oil pan and the block gasket surfaces.
4. Install a new oil seal in the cylinder front cover following the procedures under Front Oil Seal Removal and Installation.
5. Lubricate the timing chain with engine oil.
6. Coat the gasket surface of the oil pan with sealer, cut and position the required sections of a new gasket on the oil pan, apply RTV sealer (Part C3AZ-19526-A or equivalent) at the corners. Install pan seal as required.

NOTE: Contact cement (Part B9AE-191508-A or equivalent) is recommended to hold the seals and gaskets in position during assembly.

Coat the gasket surfaces of the block and cover with sealer, and position a new gasket on the block.

7. Position the cylinder front cover on the cylinder block. Use care when installing the cover to avoid seal damage or possible gasket mislocation.
8. Install the cylinder front cover to seal alignment tool into proper position.



A2733-1C

FIG. 27 Fuel Pump Eccentric and Front Oil Slinger Installed—5.8L (351 CID) Shown

9. It may be necessary to force the cover downward to slightly compress the pan gasket. This operation