

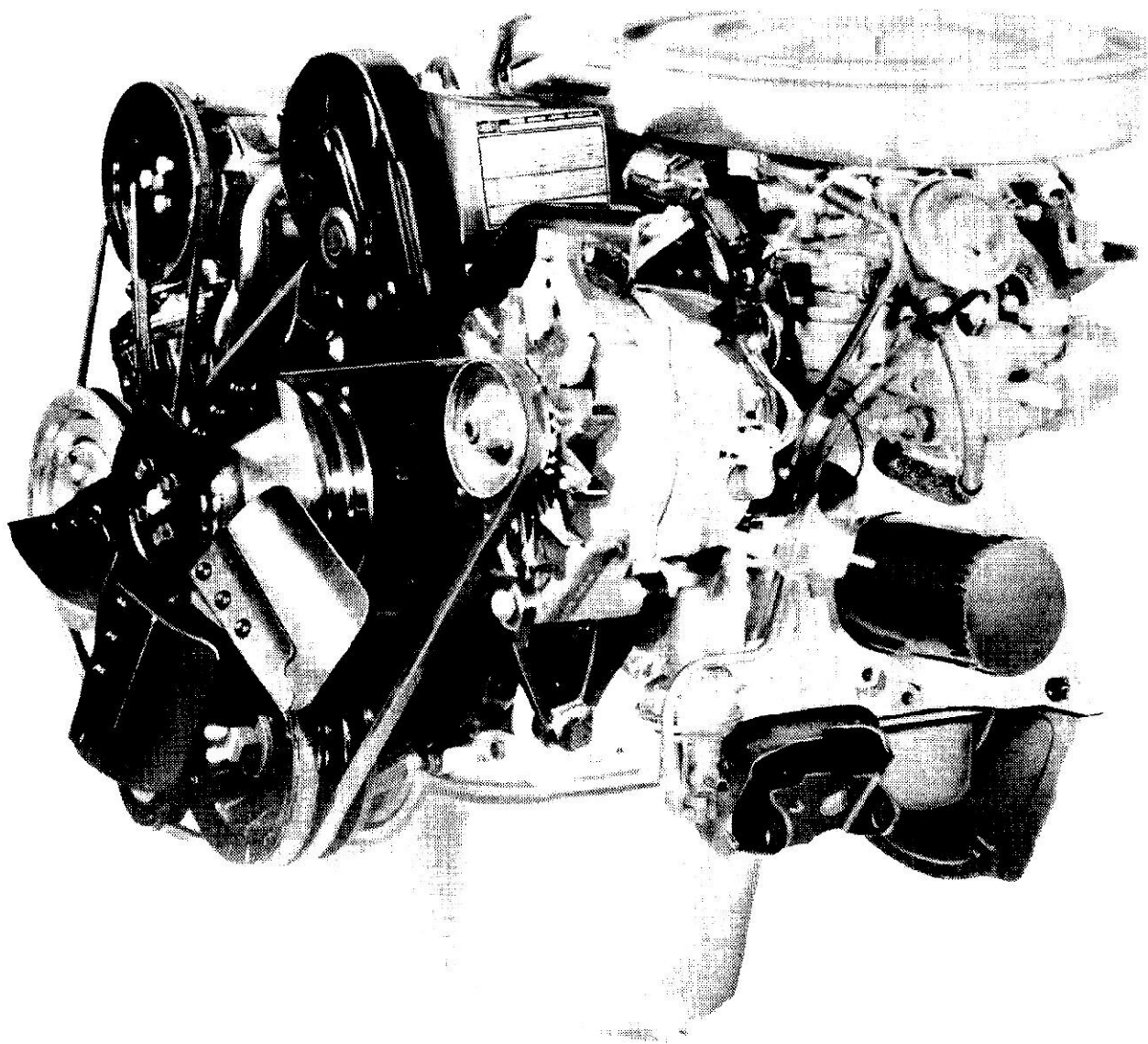


FIG. 1 Left Front View—2.3L I-4 Engine

CRANKCASE VENTILATION SYSTEM

This engine is equipped with a positive, closed-type crankcase ventilation system re-cycling crankcase vapors to the intake manifold.

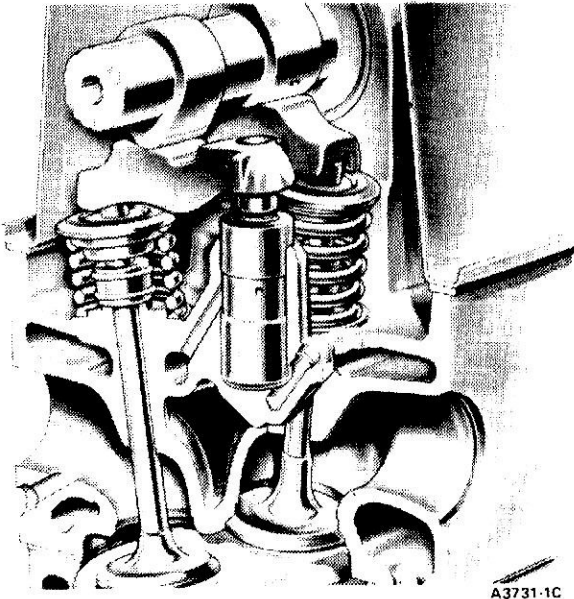


FIG. 2 Valve Train Lubrication System

ADJUSTMENTS

CAUTION: Do not operate engine with hood open until the fan has been first examined for possible cracks and separation.

VALVE CLEARANCE—HYDRAULIC VALVE LASH ADJUSTERS

1. Position the camshaft so that the base circle of the lobe is facing the cam follower of the valve to be checked (Fig. 3).
2. Using the tool shown in Fig. 3, slowly apply pressure to the cam follower until the lash adjuster is completely collapsed. Hold the follower in this position and insert the proper size feeler gauge between the base circle of the cam and the follower.
3. If the clearance is excessive, remove the cam follower and inspect for damage.
4. If the cam follower appears to be intact, and not excessively worn, measure the valve spring assembled height to be sure the valve is not sticking.
5. If the valve spring assembled height is correct, check the dimensions of the cam shaft following the procedure under Checking Camshaft Lobe Lift in Part 21-01.
6. If the camshaft dimensions are to specifications, remove, clean and test the lash adjuster, following the procedures given in Part 21-01.

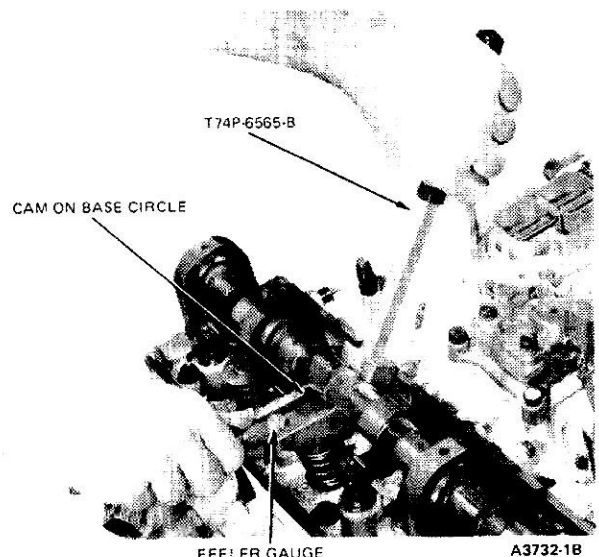


FIG. 3 Checking Hydraulic Valve Lash Adjuster

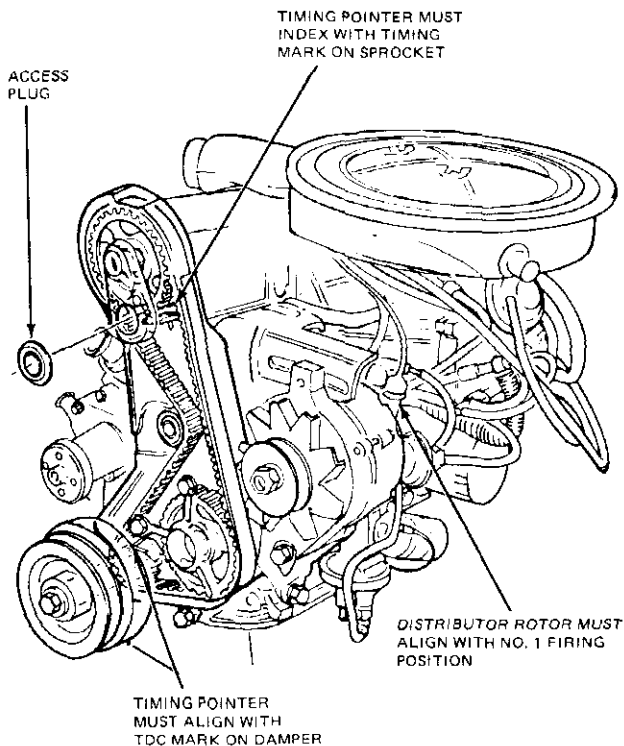
7. Re-install the lash adjuster and check the clearance. Replace damaged or worn parts as necessary.

NOTE: For any repair that requires the removal of the camshaft follower (rocker arm), each affected hydraulic lash adjuster must be collapsed after re-installation of the camshaft follower, and then released. This step must be taken prior to any rotation of the camshaft.

CAMSHAFT TIMING

Checking Timing

An access plug is provided in the cam drive belt cover so that camshaft timing can be checked without removal of the cover or any other parts.



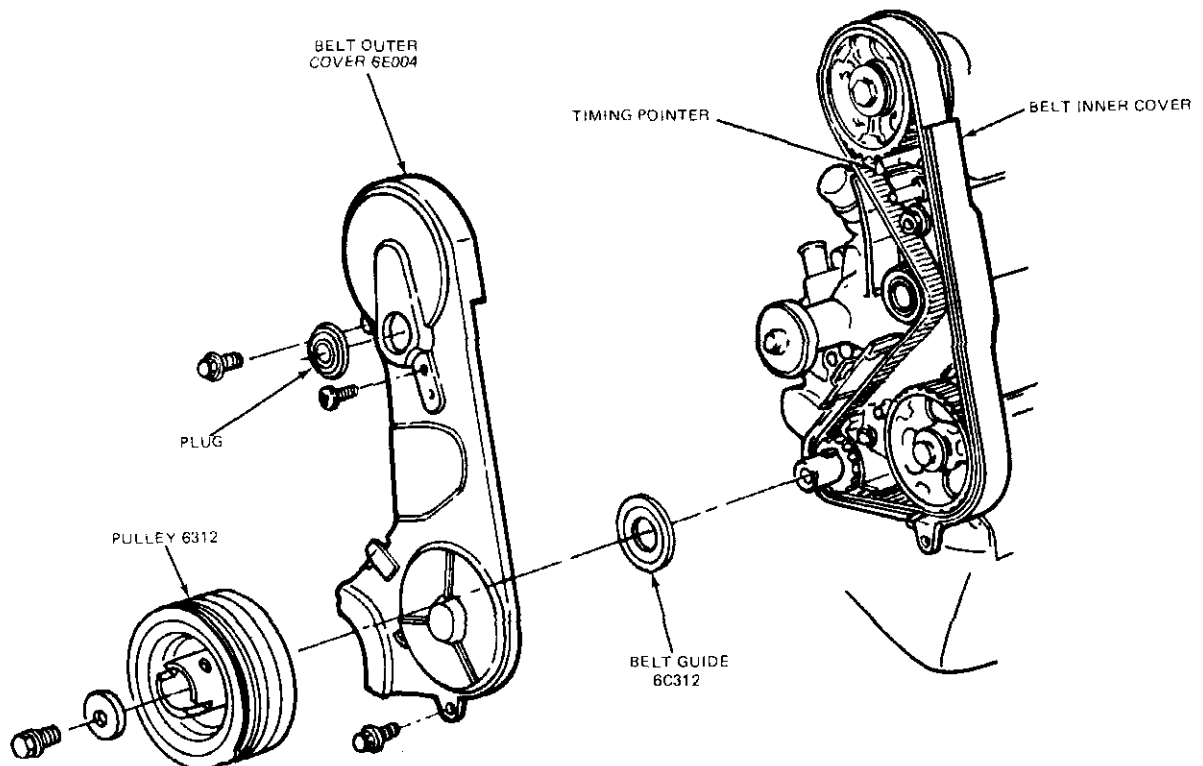
A3373-1B

FIG. 4 Camshaft Drive Train Installation

1. Remove the access plug (Fig. 4) from the cam drive belt cover.
2. Set the crankshaft to TDC by aligning the timing pointer on the belt cover with the O mark on the crankshaft damper. **Always turn the engine in the direction of normal rotation. Backward rotation may cause the timing belt to jump time, due to the arrangement of the belt tensioner.**
3. Look through the access hole in the belt cover to be sure that the timing mark on the cam drive sprocket (Fig. 4) is lined up with the pointer on the inner belt cover.
4. Remove the distributor cap and check that the distributor rotor is facing the No. 1 position on the distributor cap.
5. Install the distributor cap.
6. *Install the belt cover access plug.*

Adjusting Timing

1. Refer to Fig. 5 and remove the timing belt outer cover.
2. If the belt timing is incorrect, loosen the belt tensioner adjustment screw (Fig. 6), position the tool shown on the tension spring rollpin and release the belt tensioner. Tighten the adjustment screw to hold the tensioner in released position.
3. Remove the crankshaft damper and belt guide (Fig. 5).
4. Remove the drive belt and inspect it for wear or damage. If the belt is damaged, replace it.
5. Position the crankshaft sprocket and the camshaft sprocket as shown in Fig. 4. Remove the distributor



A3735-2D

FIG. 5 Timing Belt Outer Cover, Crankshaft Belt Guide and Pulley Installation

cap and set the distributor rotor to No. 1 firing position by turning the auxiliary shaft.

6. Install the timing belt over the crankshaft sprocket and then counterclockwise over the auxiliary and camshaft sprockets. Align the belt fore and aft on the sprockets.
7. Loosen the tensioner adjustment bolt to allow the tensioner to move against the belt. To be sure that the belt does not jump time during rotation in Step 8, remove the spark plugs.
8. Rotate the crankshaft two complete turns in normal rotation to remove the slack from the belt. Torque tensioner adjustment and pivot bolts to specifications. Re-check the alignment of the timing marks (Fig. 4).
9. Install the crankshaft damper and belt guide (Fig. 5).
10. Install the timing belt outer cover and the spark plugs.
11. Start the engine and check the ignition timing. Adjust the ignition timing to specification as required.



FIG. 6 Releasing Belt Tension—Typical

REMOVAL AND INSTALLATION

CAUTION: Do not operate engine with hood open until the fan has been first examined for possible cracks and separation.

When installing nuts or bolts (refer to torque specifications), oil the threads with light-weight engine oil. Do not oil threads that require oil-resistant or water-resistant sealer.

ENGINE

Removal

1. Raise the hood and secure it in the vertical position.
2. Drain the coolant from the radiator and the oil from the crankcase.
3. Remove the air cleaner and the exhaust manifold shroud.
4. Disconnect the ground cable from the battery.
5. Remove the radiator upper and lower hoses.
6. Remove the radiator and fan.
7. Disconnect the heater hose from the water pump and carburetor choke fitting.
8. Disconnect the alternator wires from the alternator, the starter cable from the starter, and the accelerator cable from the carburetor. On a vehicle with air conditioning, remove the compressor from the mounting bracket, and position it out of the way, leaving the refrigerant lines attached.
9. Disconnect the flexible fuel line at the fuel pump line and plug the fuel line.
10. Disconnect the coil primary wire at the coil. Disconnect the oil pressure and the water temperature sending unit wires from the sending units.
11. Remove the starter.
12. Raise the vehicle. Remove the flywheel or converter housing upper attaching bolts.

13. Disconnect the muffler inlet pipe at the exhaust manifold. Disconnect the engine right and left mount at the underbody bracket. Remove the flywheel or converter housing cover.

On a vehicle with a manual-shift transmission, remove the flywheel housing lower attaching bolts.

On a vehicle with automatic transmission, disconnect the converter from the flywheel. Remove the converter housing lower attaching bolts.

14. Lower the vehicle. Support the transmission and flywheel or converter housing with a jack.
15. Attach the engine lifting hooks to the existing lifting brackets. Carefully lift the engine out of the engine compartment. Install the engine on a work stand.

Installation

1. If clutch was removed, re-install per Group 16. Carefully lower the engine into the engine compartment.
2. Make sure the studs on the exhaust manifold are aligned with the holes in the muffler inlet pipe.
On a vehicle with automatic transmission, start the converter pilot into the crankshaft.
On a vehicle with a manual-shift transmission, start the transmission main drive gear into the clutch disc. It may be necessary to adjust the position of the transmission in relation to the engine if the input shaft will not enter the clutch disc. **If the engine hangs up after the shaft enters, turn the crankshaft in the clockwise direction slowly (transmission in gear), until the shaft splines mesh with the clutch disc splines.**
3. Install the flywheel or converter housing upper attaching bolts. Remove the engine lifting sling hooks.
4. Remove the jack from the transmission. Raise the vehicle.

5. Install the flywheel or converter housing lower attaching bolts.

On a vehicle with automatic transmission, attach the converter to the flywheel and torque the attaching nuts to specifications.

6. Install the flywheel or converter housing dust cover.
7. Install the engine left and right mount to the underbody bracket.
8. Remove the plug from the fuel line and connect the flexible fuel line to the fuel pump line. Install the exhaust manifold to muffler inlet pipe nuts. Torque the nuts to specifications.
9. Lower the vehicle. Connect the oil pressure and the engine temperature sending unit wires. Connect the coil wires. Connect the accelerator cable.
10. Install the starter motor. Connect the starter cable. Connect the alternator wires. Connect the heater hose to the water pump and the carburetor choke housing.
11. Install the pulley, fan, and drive belt. Adjust the drive belt tension. On a vehicle with air conditioning, install the compressor on the

mounting bracket, and adjust the belt tension to specification. Install the fan and the radiator. Connect the radiator upper and lower hoses. Fill and bleed the cooling system. Fill the crankcase with the proper grade and quantity of engine oil.

12. Connect the battery ground cable.

13. Operate the engine at fast idle and check all gaskets and hose connections for leaks.

14. Install the air cleaner and connect the positive closed type crankcase ventilation hose.

ENGINE FRONT SUPPORTS

NOTE: Whenever self-locking fasteners are removed they must be replaced by new self-locking fasteners (marked * in Figs. 7, 8 and 9).

Removal

1. Remove the fan shroud attaching screws.
2. Support the engine using a wood block and jack placed under the oil pan.
3. Remove bolt attaching fuel pump shield to LH engine support bracket if so equipped.

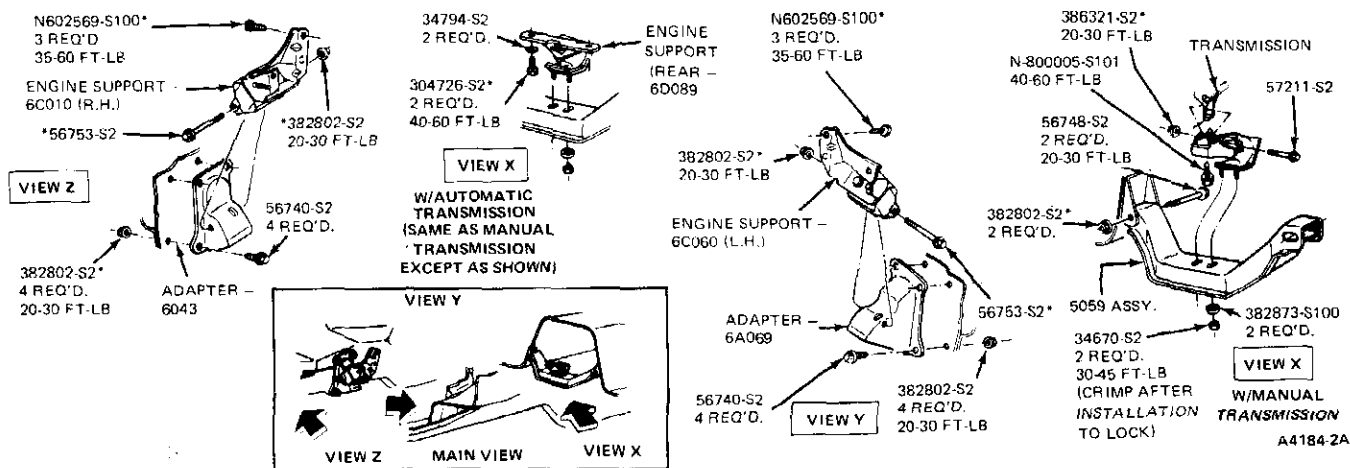


FIG. 7 Engine Supports—Pinto/Bobcat

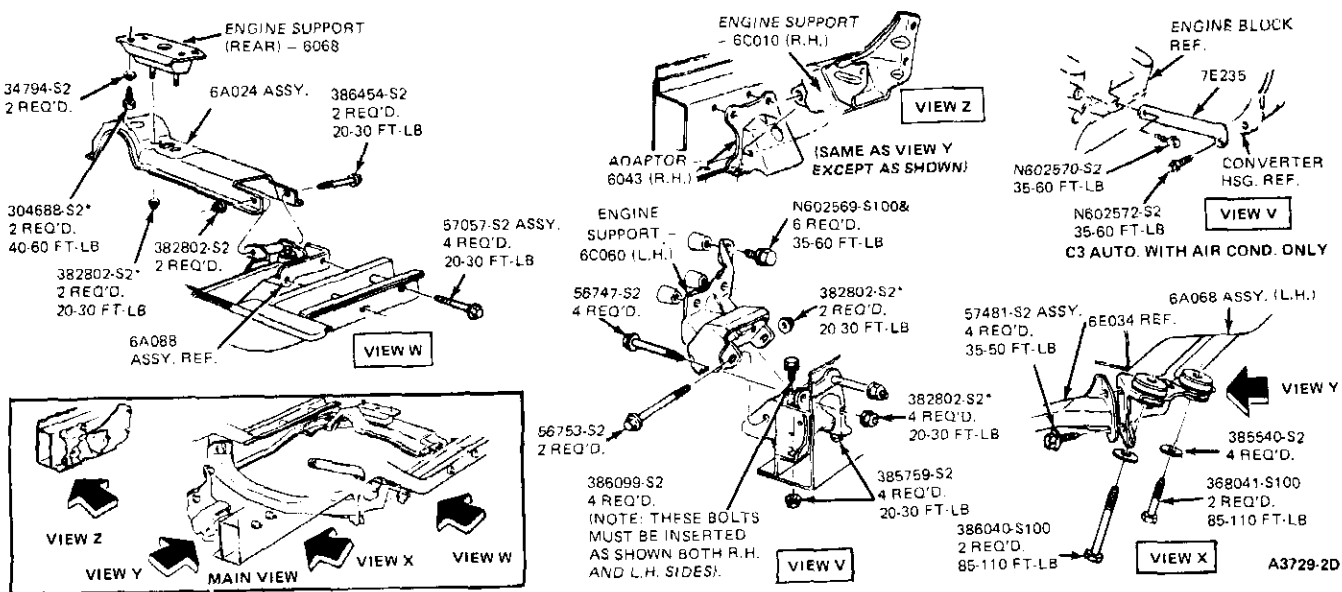


FIG. 8 Engine Supports—Mustang II

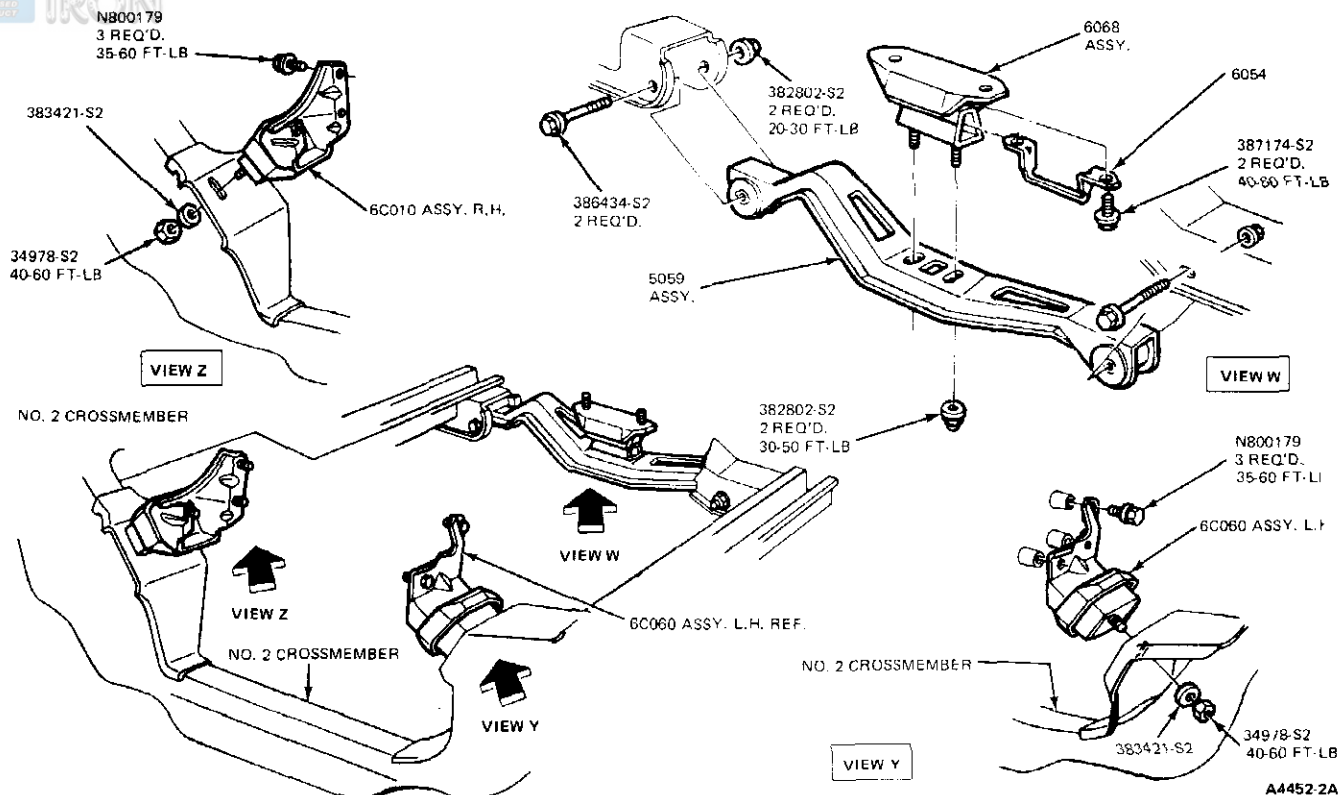


FIG. 9 Engine Support—Fairmont/Zephyr

4. (Pinto/Bobcat/Mustang II) Remove the through bolt and nut attaching the insulator to the support bracket. Raise the engine sufficiently to lift the insulator free of the bracket. Remove the nuts and bolts attaching the bracket to the siderail and remove the bracket.

(Fairmont/Zephyr) Remove the nuts and washers attaching the insulators to the No. 2 crossmember pedestals. Lift the insulator sufficiently to disengage the insulator stud from the crossmember.

5. Remove the bolts attaching the insulator and bracket assembly to the engine. Remove the insulator and bracket assembly.

Installation

1. Position the insulator and bracket assembly to the engine install the attaching bolts and torque to specification.
2. (Pinto/Bobcat/Mustang II) Position the support bracket to the siderail and install the attaching fasteners. Torque fasteners to specification. Lower the engine until through bolt holes line up. Install through bolt and nut and torque to specification.
(Fairmont/Zephyr) Lower engine until stud bottoms in slot. Install nut and washer and torque to specification.
3. Install bolt attaching fuel pump shield to LH bracket if so equipped and torque to specification.
4. Remove the jack and wood block from the oil pan.
5. Install fan shroud attaching screws and torque to specification.

ENGINE REAR SUPPORT

PINTO/BOBCAT/MUSTANG II/FAIRMONT/ZEPHYR

Removal

1. Place a block of wood and a jack under the transmission.
2. Remove the two nuts attaching the insulator to the crossmember. Raise the transmission sufficiently to lift the insulator from the crossmember.
3. Remove the two bolts and nuts attaching the crossmember to the frame side rails and remove the crossmember.
4. On those vehicles so equipped, remove the fasteners attaching the exhaust hangers to the rear engine mount.
5. Remove the two bolts attaching the insulator to the transmission and remove the insulator (and retainer, if so equipped).

Installation

1. Position the insulator (and retainer, if so equipped) to the transmission. Install the two attaching bolts and torque to specification.
2. If required, install the fasteners attaching the exhaust hanger to the insulator and torque to specification.
3. Install the crossmember to the frame rails and torque the attaching nuts and bolts to specification.
4. Lower the transmission and install the insulator to crossmember attaching nuts and torque to specification.

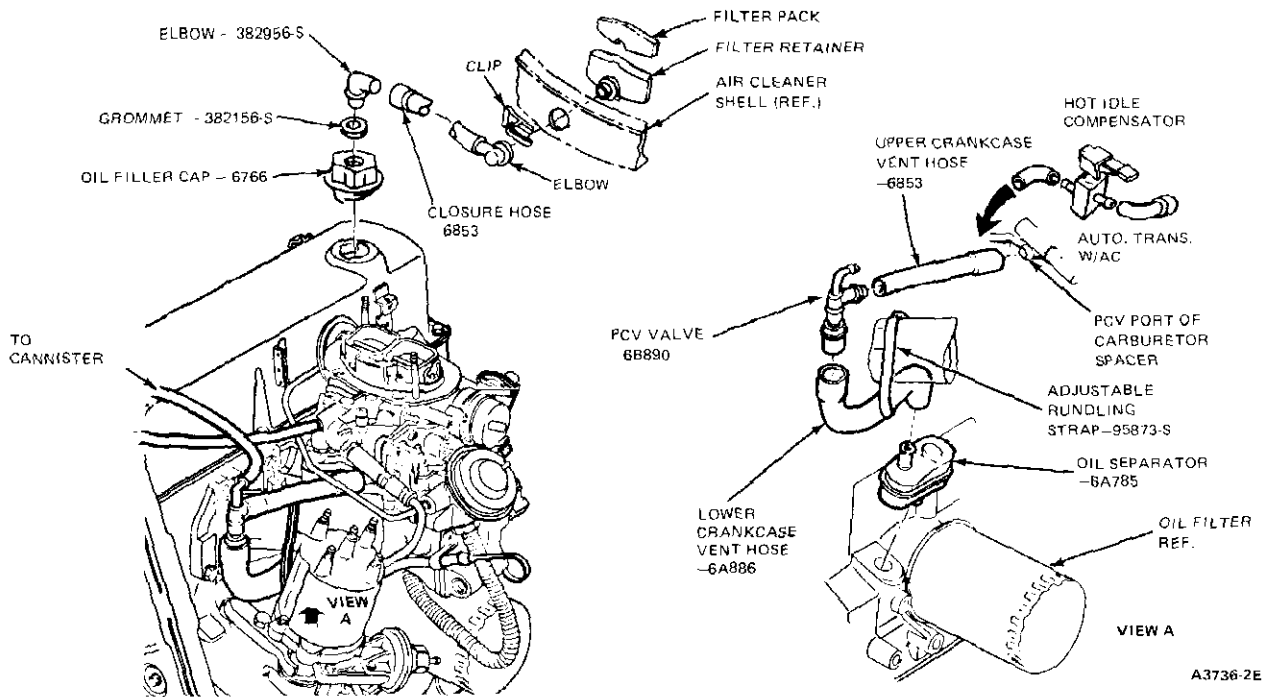


FIG. 10 Positive Crankcase Ventilation System

5. Remove the jack and wood block from under the transmission.

CRANKCASE VENTILATION SYSTEM

The positive crankcase ventilation system components are shown in Fig. 10. Disconnect and connect points are shown on the illustration.

VALVE ROCKER ARM COVER

Instructions for removal and installation of the rocker arm cover and gasket are given in Fig. 11.

VALVE ROCKER ARM (CAM FOLLOWER) AND HYDRAULIC LASH ADJUSTER

Removal

1. Remove the valve rocker arm cover and associated parts as required.
2. Rotate the camshaft so that the base circle of the cam is facing the applicable cam follower.
3. Using the tool shown in Fig. 3, collapse the lash adjuster and/or depress the valve spring if necessary and slide the cam follower over the lash adjuster and out.
4. Lift out the hydraulic lash adjuster.

Installation

1. Rotate the camshaft so that the base circle of the cam is facing the applicable cam follower.
2. Place the hydraulic lash adjuster in position in the bore.
3. Using the tool shown in Fig. 3, collapse the lash adjuster as necessary to position the cam follower

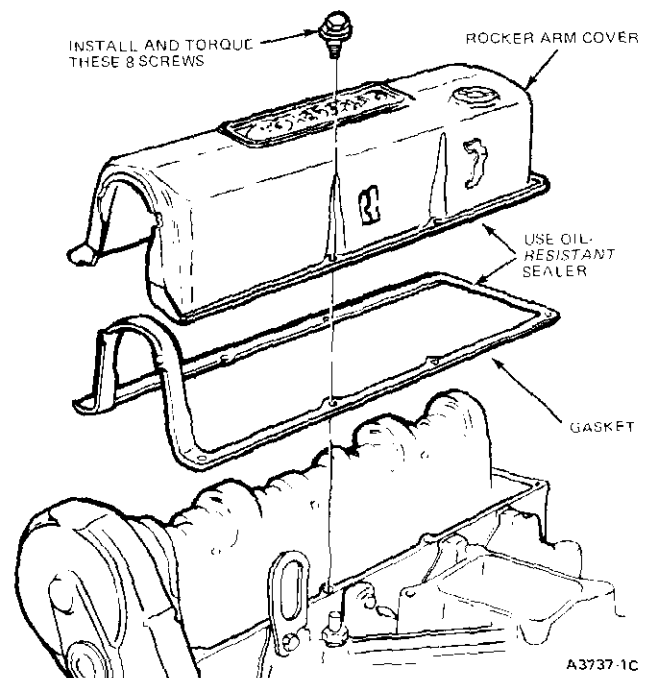


FIG. 11 Installing Valve Rocker Arm Cover—Typical

over the lash adjuster and the valve stem. It may also be necessary to compress the valve spring, using the tool shown in Fig. 12.

4. Before rotating the camshaft to the next position, be sure the lash adjuster just installed is fully compressed and released.