

with a rearward (or forward) motion that is parallel to centerline of the crankshaft. **Do not insert feeler at outboard edge and move inward toward carburetor** (perpendicular to the crank centerline). This will produce an erroneous "feel" that will result in excessively tight valves.

- d. Using the same method, adjust the No. 1 exhaust valve lash so that a 0.018" feeler has a light to moderate drag and a 0.019" feeler is very tight.
- e. Adjust the remaining valves, in firing order (1-4-2-5-3-6) by positioning the cam according to the following chart:

To adjust both valves for cylinder #	1	4	2	5	3	6
The intake valve must be opening for cylinder #	5	3	6	1	4	2

CA4094-1A

19. Clean all gasket material from cylinder heads and rocker arm cover gasket surfaces.
20. Disconnect negative battery cable from battery.
21. Reinstall rocker arm covers using new gaskets and torque attaching screws to specification.
22. Reposition vacuum hoses to their original positions.
23. Reinstall PCV valve in rocker arm cover.

REMOVAL AND INSTALLATION

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

ENGINE ASSEMBLY

Removal

Remove or disconnect Thermactor system parts that will interfere with removal or installation of the engine.

1. Disconnect the battery, drain the cooling system and remove the hood.
2. Remove the air cleaner and intake duct assembly.
3. Disconnect the radiator upper and lower hoses at the radiator.
4. Remove the fan shroud attaching bolts and position the shroud over the fan. Remove the radiator and shroud.
5. Remove the alternator and bracket. Position the alternator out of the way. Disconnect the alternator ground wire from the cylinder block.
6. Disconnect the heater hoses at the block and water pump.
7. Remove the ground wires from the cylinder block.
8. Disconnect the fuel tank to fuel pump fuel line at the fuel pump. Plug the fuel tank line.

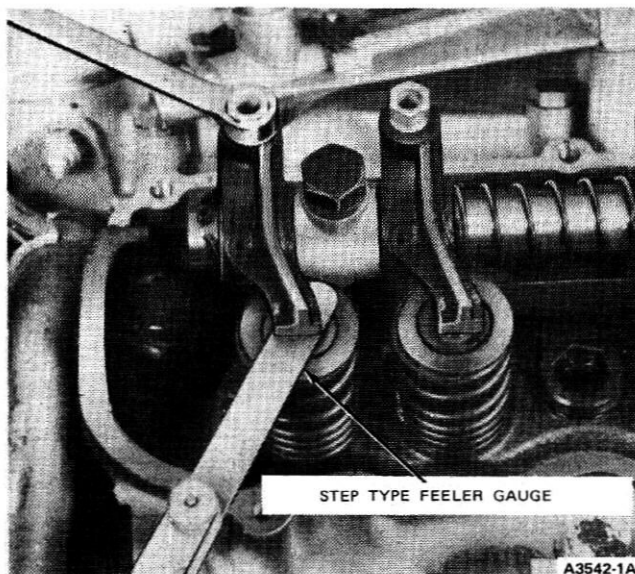


FIG. 4 Adjusting Valve Lash

24. Replace wiring harnesses on rocker arm covers.
25. Reinstall electric choke assist wire to choke cap.
26. Reinstall spark plug wires on spark plugs and attach to retaining clips on rocker arm covers.
27. Reinstall alternator drive belt and tighten to specification.
28. Reinstall thermactor components.
29. Reconnect battery cable.
30. Reinstall air cleaner assembly and torque wing nut(s) to specification.
31. Start engine and check for oil and vacuum leaks.

9. Disconnect the accelerator cable or linkage at the carburetor and intake manifold.
10. Disconnect the primary wires from the ignition coil. Disconnect the brake booster line. Disconnect the wiring from the oil pressure and engine coolant temperature senders.
11. Raise the vehicle and secure with safety stands.
12. Disconnect the muffler inlet pipes at the exhaust manifolds.
13. Disconnect the starter cable and remove the starter.
14. Remove the engine front support through-bolts.
15. If equipped with automatic transmission, remove the converter inspection cover and disconnect the flywheel from the converter.

Remove the kickdown rod.

Remove the converter housing-to-cylinder block bolts and the adapter plate-to-converter housing bolt.

On vehicles equipped with a manual transmission, remove the clutch linkage.

16. Lower the vehicle.
17. Attach engine lifting sling, Tool No. T53L-300-A and hoist to lifting brackets at exhaust manifolds.
18. Position a jack under the transmission.

19. Raise the engine slightly and carefully pull it from the transmission. Carefully lift the engine out of the engine compartment so that the rear cover plate is not bent or components damaged. Install the engine on a work stand.

Installation

If clutch pressure plate and disc have been removed, install by following procedures in Group 16.

1. Attach engine lifting sling (Tool No. T53L-300-A) and hoist to lifting brackets at exhaust manifolds. Remove engine from work stand.
2. Lower the engine carefully into the engine compartment. Make sure the exhaust manifolds are properly aligned with the muffler inlet pipes.

On a vehicle with a manual-shift transmission, start the transmission main shaft 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 slowly (transmission in gear) until the shaft splines mesh with the clutch disc splines.** On a vehicle with an automatic transmission, start the converter pilot into the crankshaft.

3. Install the clutch housing or converter housing upper bolts, making sure that the dowels in the cylinder block engage the flywheel housing. Remove the jack from under the transmission.
4. Remove the lifting sling.
5. On automatic transmission equipped vehicles, position the downshift rod on the transmission and engine.
6. Raise the vehicle and secure with safety stands.
7. On a vehicle with an automatic transmission, position the transmission linkage bracket and install the remaining converter housing bolts. Install the adapter plate-to-converter housing bolt. Install the converter-to-flywheel nuts and install the inspection cover. Connect the kickdown rod on the transmission.

On a vehicle with a manual transmission, remove the pilot studs, then install the clutch lower housing bolts and connect the clutch linkage to the cylinder block.

8. Install the starter and connect the cable.
9. Connect the muffler inlet pipes at the exhaust manifolds.
10. Install the engine front support through bolts.
11. Lower the vehicle.
12. Install the ground wire. Connect the ignition coil primary wires, then connect the coolant temperature sending unit and oil pressure sending unit. Connect brake booster line.
13. Install the accelerator linkage. Connect the vacuum lines. Connect the fuel tank line at the fuel pump.
14. Connect the ground cable at the cylinder block. Connect the heater hoses to the water pump and cylinder block.
15. Install the alternator and bracket. Connect the alternator ground wire to the cylinder block. Install

the drive belt and adjust the belt tension to specifications.

16. Position the fan shroud over the fan. Install the radiator and connect the radiator upper and lower hoses. Install the fan shroud attaching bolts.
17. Fill and bleed the cooling system. **See Part 27-01 for detailed cooling system instructions.** Fill the crankcase with the proper grade and quantity of oil. Connect the battery.
18. Operate the engine at fast idle until it reaches normal operating temperature and check all gaskets and hose connections for leaks. Adjust ignition timing and idle speed.
19. Install the air cleaner and intake duct. Install and adjust the hood.

ENGINE FRONT SUPPORTS—(FIGS. 5 AND 6)

The procedures given apply to either a right or left installation. Whenever self-locking fasteners are removed, they must be replaced with new self-locking fasteners (marked * in Fig. 5 and 6).

Removal

1. Remove the fan shroud attaching screws.
2. Support the engine using a wood block and a jack placed under the oil pan.
3. Remove the through-bolt and lock nut attaching the insulator to the insulator support bracket.
4. Remove the support bracket (between front engine mount and frame side rail) attaching bolts and nuts.
5. Raise the engine sufficiently to remove the support bracket.
6. Remove bolt attaching fuel pump shield to LH engine bracket if required.
7. Remove the engine insulator assembly to cylinder block attaching bolts and lockwashers. Remove the engine mount assembly.

Installation

1. Position the engine mount to the cylinder block. Install the bracket bolts and torque to specifications.
2. Install the bolt attaching fuel pump shield to LH bracket (if required) and torque to specification.
3. Install the support bracket to the frame side rail with attaching bolts and locknuts. Torque to specifications.
4. Lower the engine until the engine mount insulator lines up with the support bracket to allow installation of the through-bolt. Install the through bolt and locknut and torque to specifications.
5. Remove the jack and wood block from the engine oil pan.
6. Install the fan shroud attaching screws and torque to specifications.

ENGINE REAR SUPPORT—(FIGS. 5 AND 6) ALL MODELS

Removal

1. Place a block of wood and a jack under the transmission.

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

CRANKCASE VENTILATION (PCV) VALVE

Removal

1. Remove the inlet hose from the air cleaner.
2. Remove the air cleaner.
3. Remove the crankcase vent hose and PCV valve from the rocker cover.
4. Disconnect the canister purge hose from the top port of the PCV valve.
5. Disconnect the vent hose from the remaining port of the PCV valve.

Installation

1. Install the PCV valve in the valve cover.
2. Connect the vent hose and the canister purge hose to the PCV valve.
3. Install the air cleaner.
4. Connect the inlet hose to the air cleaner.
5. Operate the engine and check for leaks.

VALVE ROCKER ARM COVER AND ROCKER ARM

Removal

Remove emission control equipment as necessary to remove cover.

1. Disconnect spark plug wires from spark plugs and rocker arm cover, using the proper plier-type tool to remove the wires from the plugs.
2. Disconnect throttle linkage to carburetor if it interferes with removal operation.
3. Remove rocker arm cover attaching screws. Tap rocker arm cover lightly with a plastic hammer to break gasket seal. Lift off rocker arm cover.
4. Remove rocker arm shaft stand attaching bolts by loosening the bolts two turns at a time, in sequence. Lift off rocker arm and shaft assembly and oil baffle (Fig. 7).

Installation

1. Loosen the valve lash adjusting screws a few turns.
2. Apply SE-type engine oil to the assembly to provide initial lubrication.
3. Install oil baffle and rocker arm shaft assembly to the cylinder head and guide adjusting screws on to push rods (Fig. 7).
4. Install and tighten rocker arm stand attaching bolts to specifications, two turns at a time, in sequence.
5. Adjust valve lash to cold specified setting.

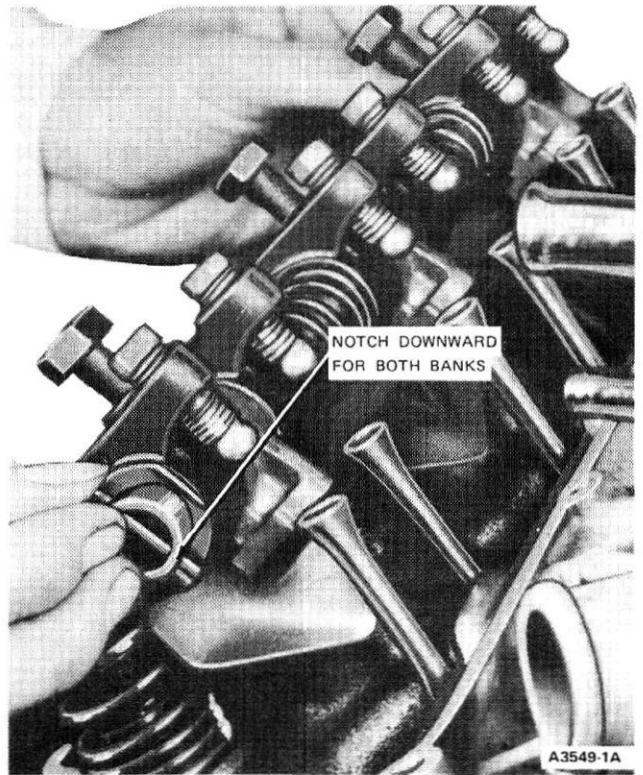


FIG. 7 Removing or Installing Rocker Arm Assembly

6. Clean the valve rocker arm cover and cylinder head gasket surfaces. Coat one side of a new gasket with an oil-resistant sealer and lay cemented side of gasket on the cover. Install the cover, making sure the gasket seats evenly around the head. Tighten the cover attaching bolts to specifications.
7. Install parts removed to gain access to rocker arm cover.
8. Coat inside of each spark plug boot with silicone lubricant, connect spark plug wires and accelerator control cable. Connect throttle return spring.
9. Start engine and run until normal temperature is reached.
10. Run the engine at fast idle and check for oil leaks.

VALVE SPRING, RETAINER AND STEM SEAL

Broken valve springs or leaking valve stem seals and retainer may be replaced without removing the cylinder head provided damage to the valve or valve seat has not occurred.

Removal

1. Remove the air cleaner. Remove the valve rocker arm cover. (Procedure given under Rocker Arm Removal.) Remove the applicable spark plug wire and spark plug.
2. Remove the valve rocker arm shaft. Remove both valve push rods of the cylinder to be serviced. (Procedures given under Cylinder Head Removal.)
3. Install an air line with an adapter in the spark plug hole.
4. Turn on the air supply. **Air pressure may turn the crankshaft until the piston reaches the bottom of the stroke.** Using the valve spring compression tool shown in Fig. 8, compress the valve spring and remove the valve spring retainer locks, spring