

# SUZUKI

SAMURAI SIDEKICK, GEO TRACKER 1986-96

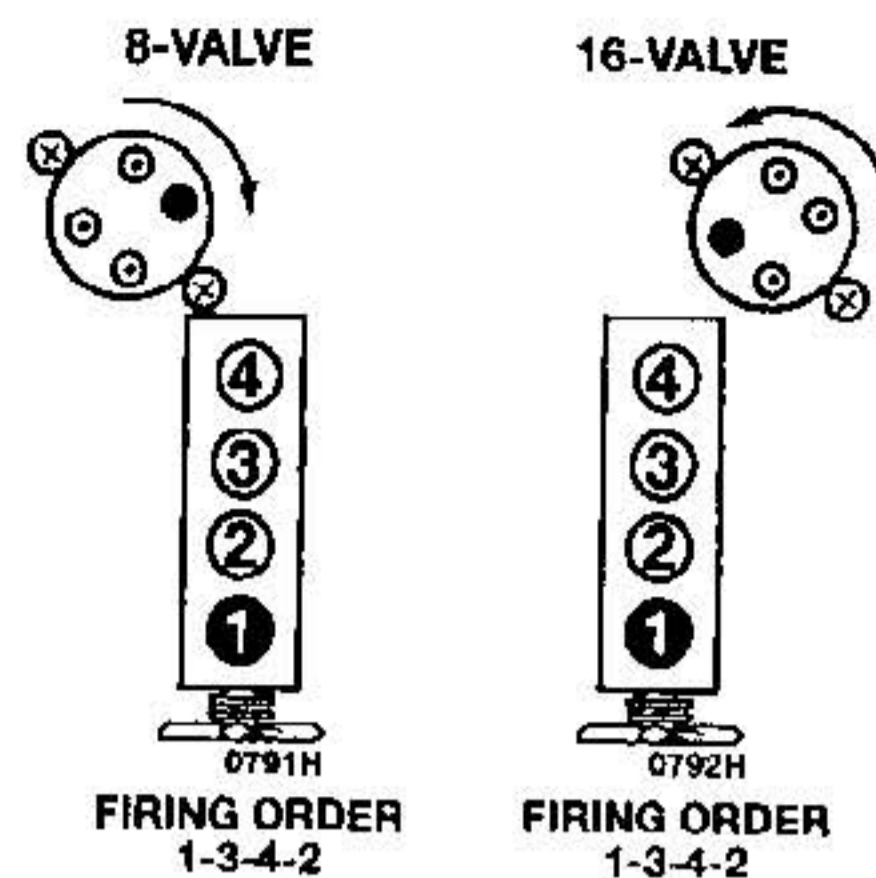
## Timing Belt



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## Torque specifications (continued)

	Ft-lbs
Camshaft sprocket bolt	41 to 46
Cylinder head bolts	
8-valve engine	46 to 50
16-valve engine	
Step 1	25
Step 2	40
Step 3	48 to 50
Crankshaft pulley bolts	7.5 to 9
Crankshaft pulley center bolt	52
8-valve engine	52
16-valve engine	76 to 83
Oil pump gear plate bolts	7.0 to 8.5
Oil pump-to-block bolts	7.0 to 8.5
Oil pan bolts/nuts	7.0 to 8.5
Flywheel/driveplate bolts	58
Timing belt cover	7.0 to 8.5
Rear main oil seal housing bolts	8
Rocker arm shaft retaining screws	7 to 8.5
Timing belt tensioner bolt	17.5 to 21.5
Timing belt tensioner nut	7 to 8.5



The blackened terminal shown on the distributor cap indicates the number one spark plug wire position

Cylinder location and distributor rotation

## 1 General Information

This Part of Chapter 2 is devoted to in-vehicle repair procedures for the engine. All information concerning engine removal and installation and engine block and cylinder head overhaul can be found in Part B of this Chapter.

Models through 1991 are equipped with an 8-valve engine (two valves per cylinder). Some 1992 and later models are equipped with a 16-valve engine (four valves per cylinder). Other than the valve components, the two engines are very similar.

The following repair procedures are based on the assumption that the engine is installed in the vehicle. If the engine has been removed from the vehicle and mounted on a stand, many of the steps outlined in this Part of Chapter 2 will not apply.

The Specifications Included In this Part of Chapter 2 apply only to the procedures contained in this Part. Part B of Chapter 2 contains the Specifications necessary for cylinder head and engine block rebuilding.

## 2 Repair operations possible with the engine in the vehicle

Many major repair operations can be accomplished without removing the engine from the vehicle.

Clean the engine compartment and the exterior of the engine with some type of degreaser before any work is done. It will make the job easier and help keep dirt out of the internal areas of the engine.

Depending on the components involved, it may be helpful to remove the hood to improve access to the engine as repairs are performed (see Chapter 11, if necessary). Cover the fenders to prevent damage to the paint. Special pads are available, but an old bedspread or blanket will also work.

If vacuum, exhaust, oil or coolant leaks develop, indicating a need for gasket or seal replacement, the repairs can generally be made with the engine in the vehicle. The intake and exhaust manifold gaskets, oil pan gasket, crankshaft oil seals and cylinder head gasket are all accessible with the engine in place.

Exterior engine components, such as the intake and exhaust manifolds, the oil pan (and the oil pump), the water pump, the starter motor, the alternator, the distributor and the fuel system components can be removed for repair with the engine in place.

Since the cylinder head can be removed without pulling the engine, valve component servicing can also be accomplished with the engine in the vehicle. Replacement of the camshaft, timing belt and sprockets is also possible with the engine in the vehicle.

In extreme cases caused by a lack of necessary equipment, repair or replacement of piston rings, pistons, connecting rods and rod bearings is possible with the engine in the vehicle. However, this practice is not recommended because of the cleaning and preparation work that must be done to the components involved.

## 3 Top Dead Center (TDC) for number one piston – locating

Refer to illustrations 3.6, 3.8 and 3.9

**Note:** The following procedure is based on the assumption that the spark plug wires and distributor are correctly installed. If you are trying to locate TDC to install the distributor correctly, piston position must be determined by feeling for compression at the number one spark plug hole, then aligning the ignition timing marks as described in Step 8.

1 Top Dead Center (TDC) is the highest point in the cylinder that each piston reaches as it travels up-and-down when the crankshaft turns. Each piston reaches TDC on the compression stroke and again on the exhaust stroke, but TDC generally refers to piston position on the compression stroke.

2 Positioning the piston(s) at TDC is an essential part of many procedures such as rocker arm removal, camshaft and timing belt/sprocket removal and distributor removal.

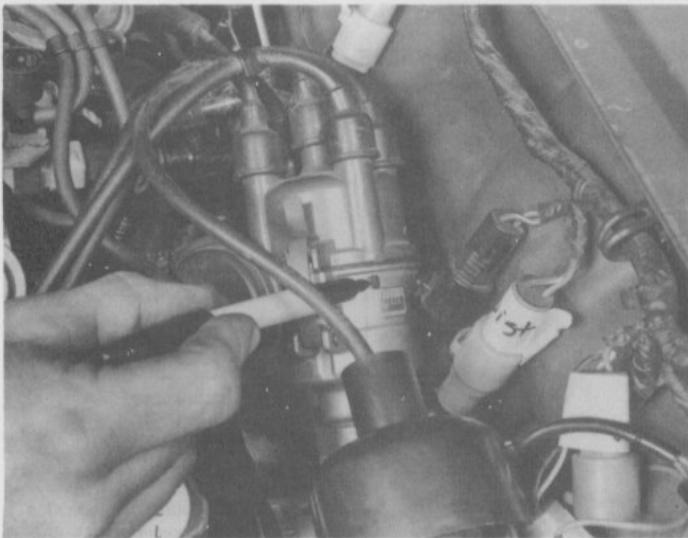
3 Before beginning this procedure, be sure to place the transmission in Neutral and apply the parking brake or block the rear wheels. Also, disable the ignition system by detaching the coil wire from the center terminal of the distributor cap and grounding it on the block with a jumper wire. Remove the spark plugs (see Chapter 1).

4 In order to bring any piston to TDC, the crankshaft must be turned using one of the methods outlined below. When looking at the front of the engine, normal crankshaft rotation is clockwise.

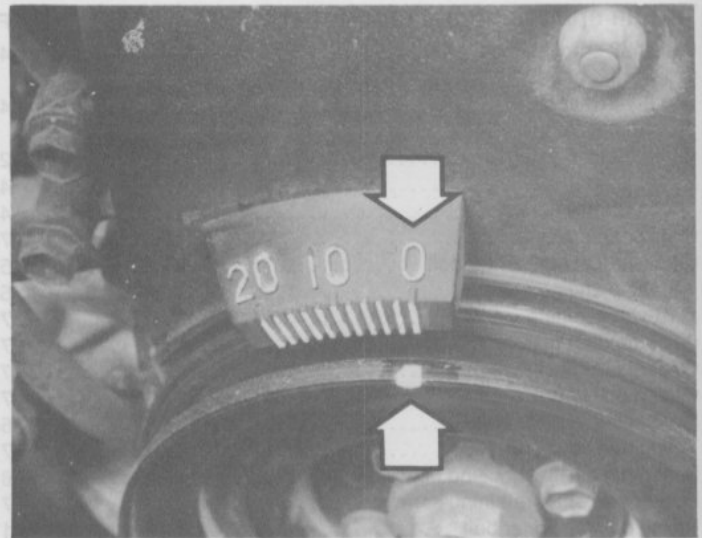
- The preferred method is to turn the crankshaft with a socket and ratchet attached to the bolt threaded into the front of the crankshaft.
- A remote starter switch, which may save some time, can also be used. Follow the instructions included with the switch. Once the piston is close to TDC, use a socket and ratchet as described in the previous paragraph.
- If an assistant is available to turn the ignition switch to the Start position in short bursts, you can get the piston close to TDC without a remote starter switch. Make sure your assistant is out of the vehicle, away from the ignition switch, then use a socket and ratchet as described in Paragraph a) to complete the procedure.

5 Note the position of the terminal for the number one spark plug wire on the distributor cap. If the wire isn't marked, follow the plug wire from the number one cylinder spark plug to the cap.

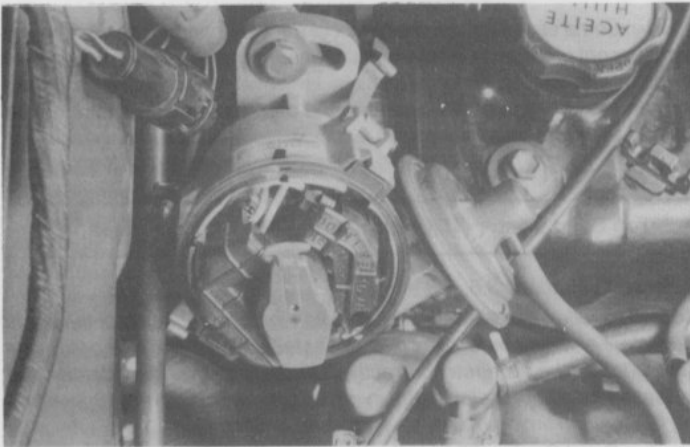




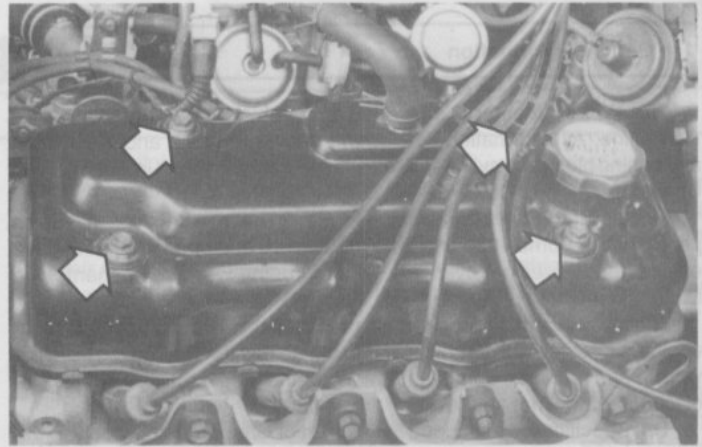
**3.6** Make a mark on the distributor housing below the number one terminal on the cap



**3.8** Turn the crankshaft until the notch in the pulley is aligned with the 0 on the timing belt cover (arrows)



**3.9** When the number one piston is at Top Dead Center on the compression stroke, the rotor should point toward the mark you made on the distributor



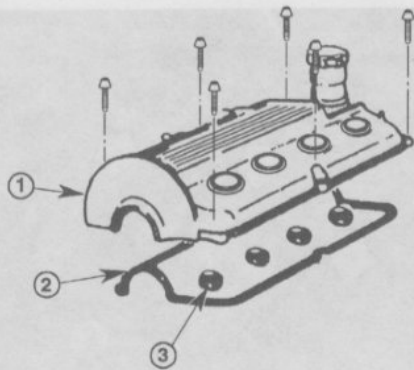
**4.5a** Camshaft cover bolt locations (8-valve engine)

- 6 Use a felt-tip pen or chalk to make a mark on the distributor body directly under the terminal (see illustration).
- 7 Detach the cap from the distributor and set it aside (see Chapter 1 if necessary).
- 8 Turn the crankshaft clockwise (see Paragraph 3 above) until the notch in the crankshaft pulley is aligned with the 0 on the timing plate (located at the front of the engine) (see illustration).
- 9 Look at the distributor rotor – it should be pointing directly at the mark you made on the distributor body (see illustration). If it is, go to Step 12.
- 10 If the rotor is 180-degrees off, the number one piston is at TDC on the exhaust stroke. Go to Step 11.
- 11 To get the piston to TDC on the compression stroke, turn the crankshaft one complete turn (360-degrees) clockwise. The rotor should now be pointing at the mark on the distributor. When the rotor is pointing at the number one spark plug wire terminal in the distributor cap and the ignition timing marks are aligned, the number one piston is at TDC on the compression stroke.
- 12 After the number one piston has been positioned at TDC on the compression stroke, TDC for any of the remaining pistons can be located by turning the crankshaft and following the firing order. Mark the remaining spark plug wire terminal locations on the distributor body just like you did for the number one terminal, then number the marks to correspond with the cylinder numbers. As you turn the crankshaft, the rotor will also turn. When it's pointing directly at one of the marks on the distributor, the piston for that particular cylinder is at TDC on the compression stroke.

#### **4 Camshaft cover – removal and installation**

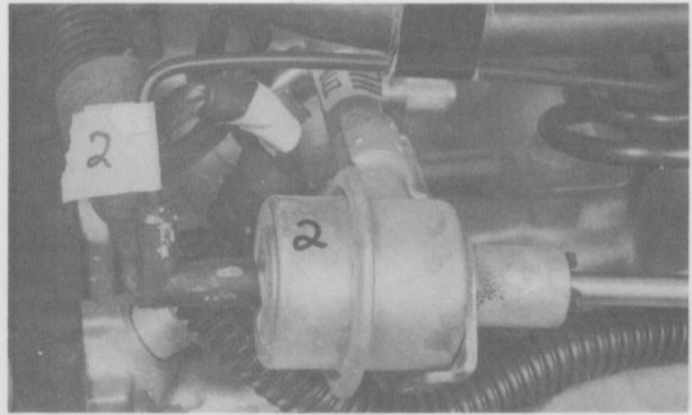
*Refer to illustrations 4.5a and 4.5b*

- 1 Disconnect the negative cable from the battery.
- 2 On throttle body fuel-injected models, remove the air intake case from the throttle body (see Chapter 4). On multi-port fuel-injected models, remove the air intake pipe.
- 3 On multi-port fuel-injected models, remove the PCV hose from the camshaft cover. Also on multi-port fuel-injected models, disconnect the accelerator and (if equipped) cruise control cables from the throttle body.
- 4 Detach the spark plug wires from the plugs, unclip the wire loom from the top of the cover, then set the wires aside, leaving them attached to the loom. Disconnect the breather hose from the camshaft cover.
- 5 Remove the camshaft cover bolts and lift the cover off (see illustrations). If the cover sticks to the cylinder head, tap on it with a soft-face hammer or place a block of wood against the cover and tap on the wood with a hammer.
- 6 Thoroughly clean the camshaft cover and remove all traces of old gasket material. On 16-valve engines, be sure to remove the spark plug opening O-rings.
- 7 Install a new gasket and, if equipped, O-rings on the cover, using RTV to hold them in place. Place new grommets, if equipped, in the bolt holes in the cover, install the cover, then install the bolts.
- 8 Working from the center out, tighten the bolts to the torque listed in this Chapter's Specifications.

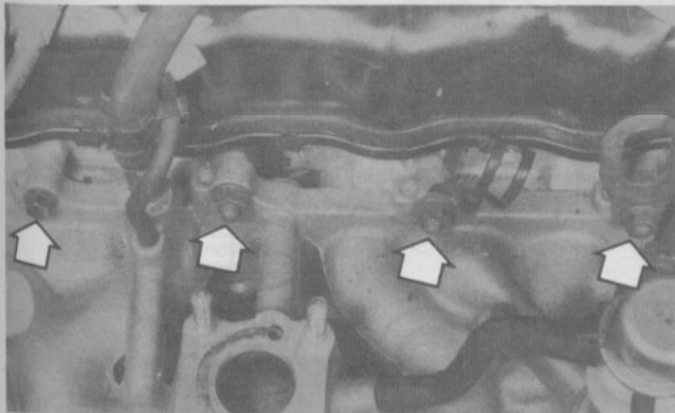


4.5b Camshaft cover mounting details (16-valve engines)

- 1 Camshaft cover                      3 O-rings  
2 Gasket



5.4 Label the connections before detaching them



5.9 The intake manifold has eight mounting bolts/nuts – four upper (arrows) and four lower (hidden by the manifold in this photo)

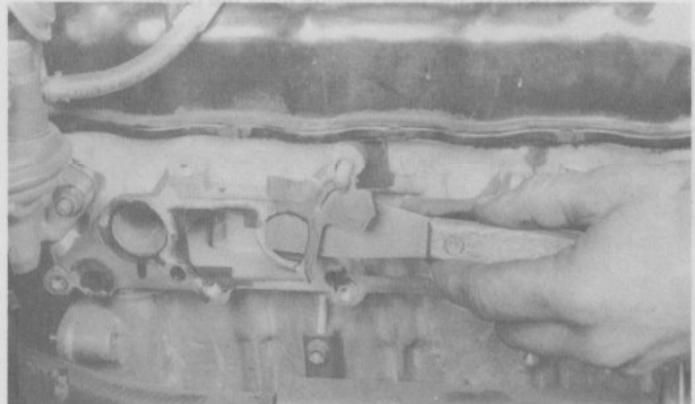
9 The remaining steps are the reverse of removal. When finished, run the engine and check for oil leaks.

#### 5 Intake manifold – removal and installation

Refer to illustrations 5.4, 5.9 and 5.10

**Note:** The intake manifold can be removed with the throttle body and plenum assembly still attached. If, however, you plan to remove the plenum and throttle body anyway (for example, if you're replacing the manifold), it may be easier to remove the throttle body and intake plenum before you begin removing the manifold (see Chapter 4 for the throttle body and plenum removal procedures).

- 1 Disconnect the negative cable from the battery and relieve the fuel injection system pressure (see Chapter 4).
- 2 Drain the cooling system (see Chapter 1). If the coolant is in good condition it can be reused.
- 3 Remove the air cleaner (carbureted models), air intake case (throttle body fuel-injected models) or disconnect the air intake pipe (multi-port fuel-injected models) (see Chapter 4).
- 4 Clearly label, then disconnect all hoses, wires, brackets and emission lines which run to the carburetor/throttle body and intake manifold (see illustration).
- 5 Disconnect the fuel lines and cap the fittings to prevent leakage (see Chapter 4). On carbureted models, disconnect the line at the carburetor. On throttle body fuel-injected models, disconnect the lines at the throttle body assembly. On multi-port fuel-injected models, it may be necessary to raise the vehicle and support it securely on jackstands, since the line connections are usually at the lower rear of the engine compartment. Also, on multi-port fuel-injected models, use a back-up wrench when disconnecting the fuel feed line.



5.10 Remove all traces of old gasket material – scrape gently to avoid gouging the aluminum

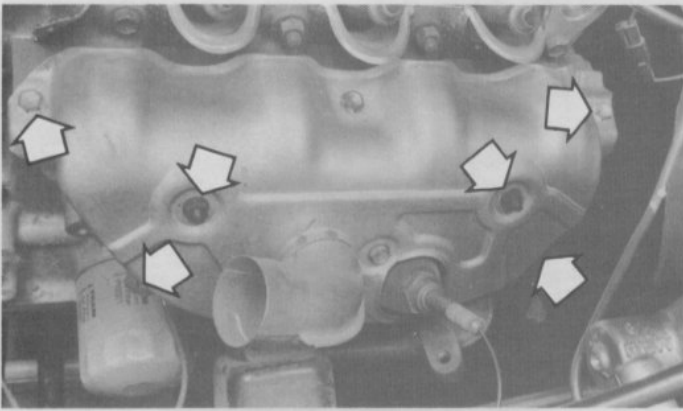
- 6 Disconnect the throttle cable from the carburetor/throttle body (see Chapter 4).
- 7 Detach the cable which runs from the carburetor/throttle body to the transmission (automatic transmission only) and the cruise control cable, on vehicles so equipped.
- 8 On multi-port fuel-injected models, unbolt and remove the three brackets that attach the intake manifold/intake plenum assembly to the engine.
- 9 Using a socket, ratchet and long extension, unscrew the bolts and nuts and remove the intake manifold from the engine (see illustration). If it sticks, tap the manifold with a soft-face hammer. **Caution:** Do not pry between gasket sealing surfaces or tap on the carburetor/throttle body. If there are any clamps under the bolts or nuts, note their locations before you remove them so they can be returned to their original locations.
- 10 Thoroughly clean the manifold and cylinder head mating surfaces, removing all traces of gasket material (see illustration). Be very careful not to scratch or gouge the delicate aluminum gasket surfaces on the manifold and cylinder head. Gasket removal solvents are available from auto parts stores and may prove helpful.
- 11 Install the manifold, using a new gasket and tighten the bolts and nuts in several stages, working from the center out, until you reach the torque listed in this Chapter's Specifications.
- 12 Reinstall the remaining parts in the reverse order of removal.
- 13 Add coolant, run the engine and check for leaks and proper operation.

#### 6 Exhaust manifold – removal and installation

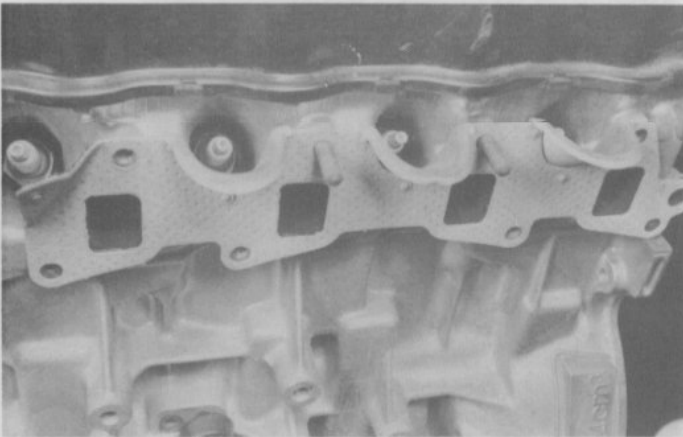
Refer to illustrations 6.6, 6.7 and 6.11

**Warning:** Allow the engine to cool completely before following this procedure.

- 1 Disconnect the negative cable from the battery.
- 2 Set the parking brake and block the rear wheels. Raise the front of the vehicle and support it securely on jackstands.



6.6 Apply penetrating oil and remove the nuts/bolts (arrows), then remove the heat shields from the manifold



6.11 Slip the gasket over the studs with the spark plug wells facing outward

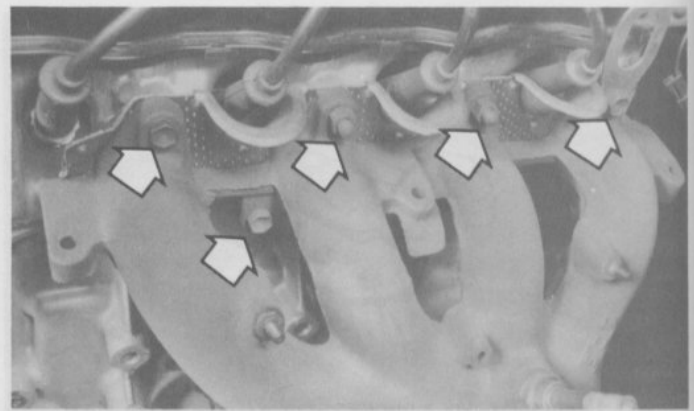
- 3 Working from under the vehicle, remove the nuts that secure the exhaust system to the bottom of the exhaust manifold. Apply penetrating oil to the threads to make removal easier.
- 4 On fuel injected models, remove the air cleaner assembly (see Chapter 4).
- 5 Unplug the oxygen sensor wire (see Chapter 1).
- 6 Remove the fasteners that secure the heat shields to the exhaust manifold and to each other (see illustration). Remove the heat shields.
- 7 Apply penetrating oil to the threads, then remove the exhaust manifold mounting nuts/bolts (see illustration).
- 8 Slip the manifold off the studs and remove it from the engine compartment.
- 9 Clean and inspect all threaded fasteners and repair as necessary.
- 10 Remove all traces of gasket material from the mating surfaces and inspect them for wear and cracks.
- 11 Install a new gasket (see illustration), install the manifold and tighten the nuts in several stages, working from the center out, to the torque listed in this Chapter's Specifications.
- 12 Reinstall the remaining parts in the reverse order of removal.
- 13 Run the engine and check for exhaust leaks.

## 7 Timing belt and sprockets – removal, inspection and installation

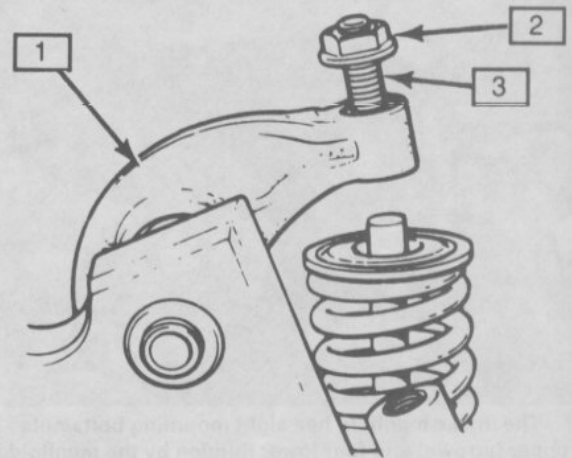
### Removal

Refer to illustrations 7.4, 7.8a, 7.8b, 7.8c, 7.9, 7.10, 7.11, 7.14, 7.15a, and 7.15b

**Warning:** The air conditioning system is under high pressure. Do not loosen any fittings or remove any components until after the system has been



6.7 Remove the exhaust manifold nuts/bolts (arrows) – three of the lower ones are hidden from view in this photo



7.4 On 8-valve engines, loosen the locknut and back off the valve adjustment screw

- |   |            |   |                  |
|---|------------|---|------------------|
| 1 | Rocker arm | 3 | Adjustment screw |
| 2 | Locknut    |   |                  |

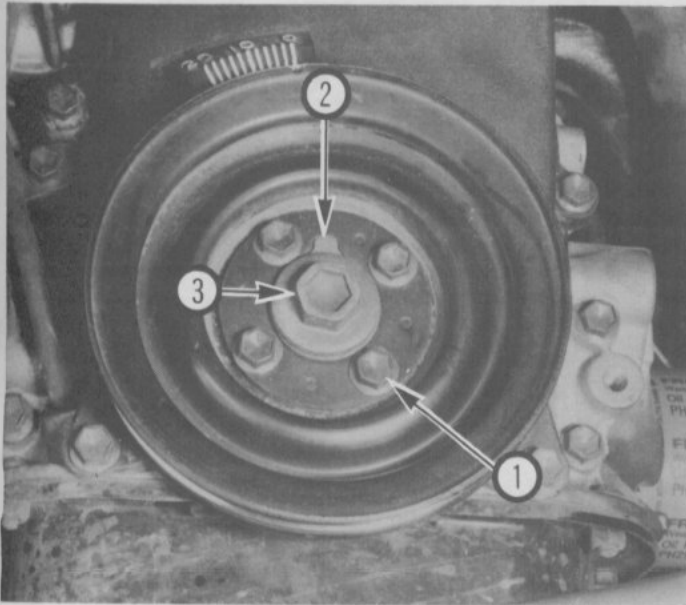
discharged by an air conditioning technician. Always wear eye protection when disconnecting refrigerant fittings.

**Caution 1:** Do not try to turn the crankshaft with the camshaft sprocket bolt and do not rotate the crankshaft counterclockwise.

**Caution 2:** Do not bend, twist or turn the timing belt inside out. Do not allow it to come in contact with oil, coolant or fuel. Do not utilize timing belt tension to keep the camshaft or crankshaft from turning when installing the pulley bolt(s). Do not turn the crankshaft or camshaft more than a few degrees (necessary for tooth alignment) while the timing belt is removed.

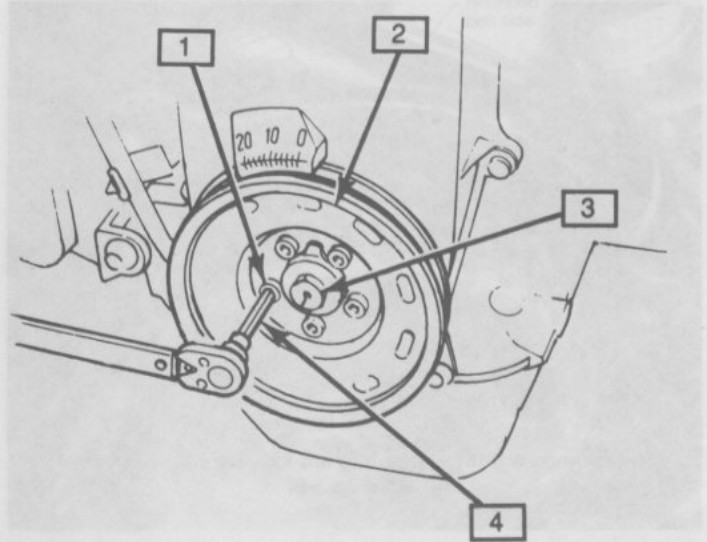
- 1 On air conditioned models, if necessary for clearance, have the refrigerant discharged by an air conditioning technician (see Warning above), then detach the hose from the suction pipe on the compressor (the suction pipe is the larger diameter pipe).
- 2 Position the number one piston at Top Dead Center (see Section 3).
- 3 Disconnect the negative cable from the battery.
- 4 On 8-valve engines, remove the camshaft cover (see Section 4). Loosen the locknuts and back off the valve adjustment screws until they're not in contact with the valves (see illustration).
- 5 Set the parking brake and block the rear wheels. Raise the front of the vehicle and support it securely on jackstands.
- 6 Loosen the four water pump pulley nuts, then remove the drivebelts (see Chapter 1).





7.8a Samurai crankshaft pulley mounting details

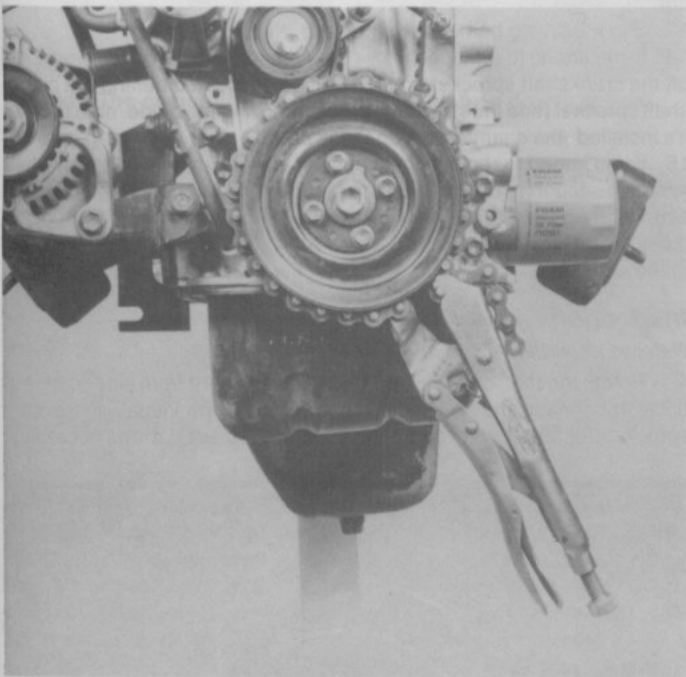
- 1 Crankshaft pulley bolts
- 2 Indexing notch
- 3 Center bolt



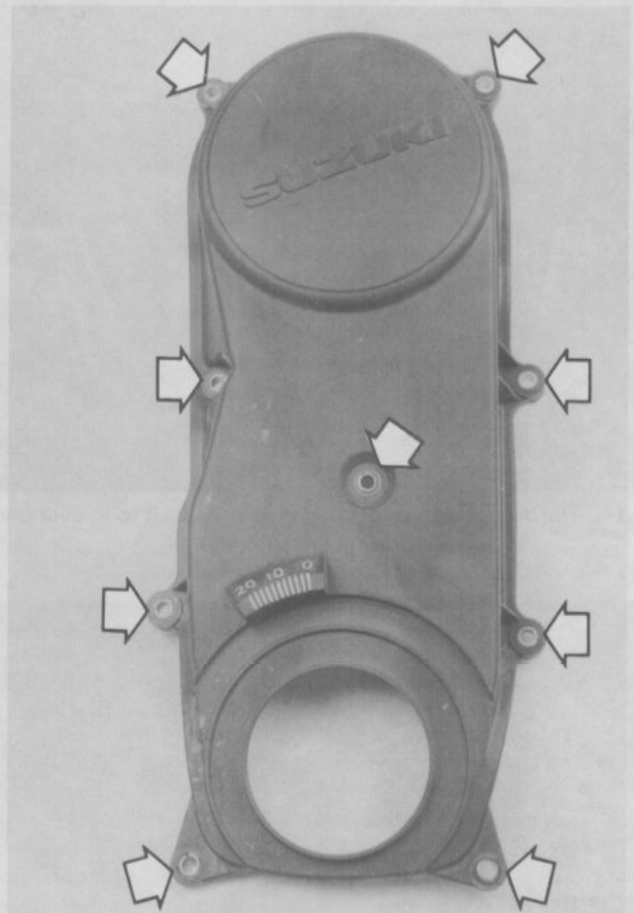
7.8b Sidekick/Tracker crankshaft pulley mounting details

- 1 Crankshaft pulley bolt
- 2 Crankshaft pulley
- 3 Center bolt
- 4 5 mm hex drive (used to remove the pulley bolts)

2A



7.8c Wrap duct tape or a rag around the pulley and grip it with a chain wrench

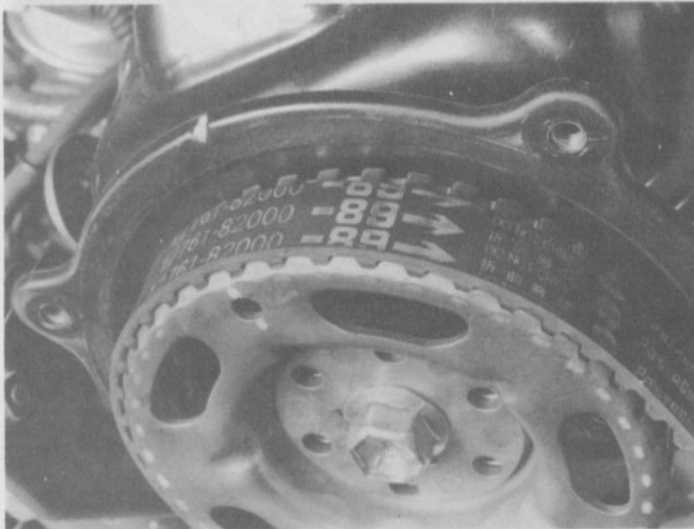


7.9 Timing belt cover bolt locations (arrows) – cover removed for clarity

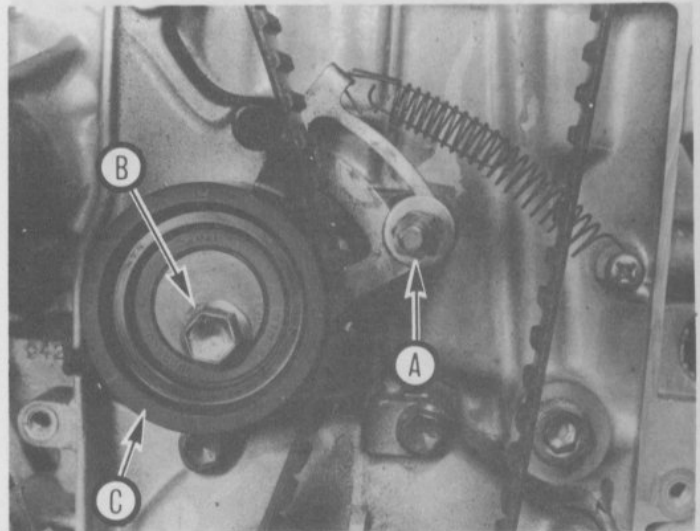
- 7 Remove the fan, fan shroud and water pump pulley (see Chapter 3).
- 8 Remove the crankshaft pulley bolts (see illustrations). **Note:** If you're only replacing the timing belt, it's not necessary to remove the crankshaft center bolt; however, if you will be removing the crankshaft sprocket to replace the oil pump or oil seal, you must remove the center bolt. Do this before you remove the pulley bolts. The center bolt is very tight, so, to break it loose, remove the splash pan from beneath the front of

the engine, wrap a rag or duct tape around the pulley and attach a chain wrench to hold the pulley in place (see illustration). Use a breaker bar and socket to loosen the bolt.

9 Remove the bolts that secure the timing belt cover and lift the cover off (see illustration).

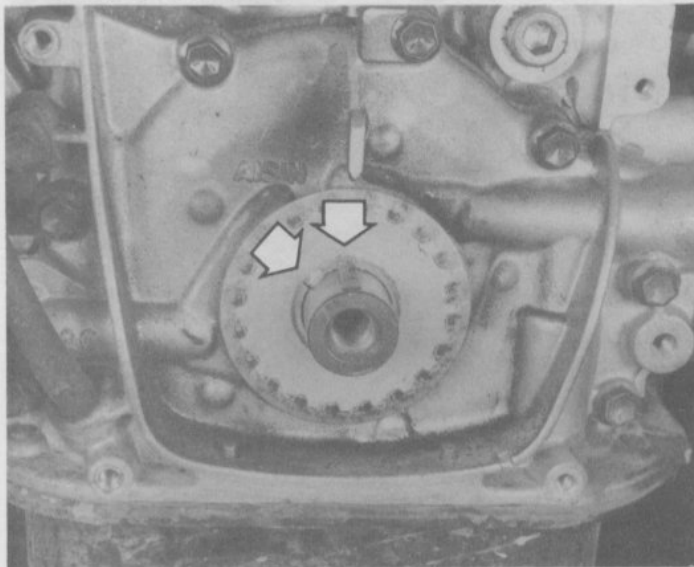


7.10 If the timing belt doesn't have arrows like these to indicate direction of rotation, paint one on

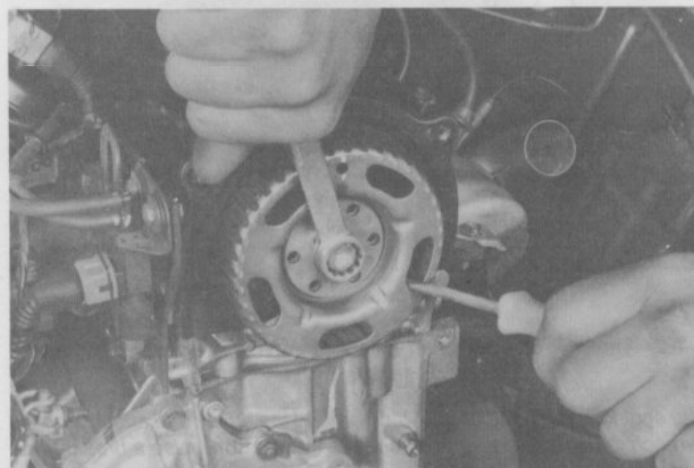


7.11 Loosen the adjusting nut and pulley bolt and move the tensioner pulley as far as possible towards the water pump

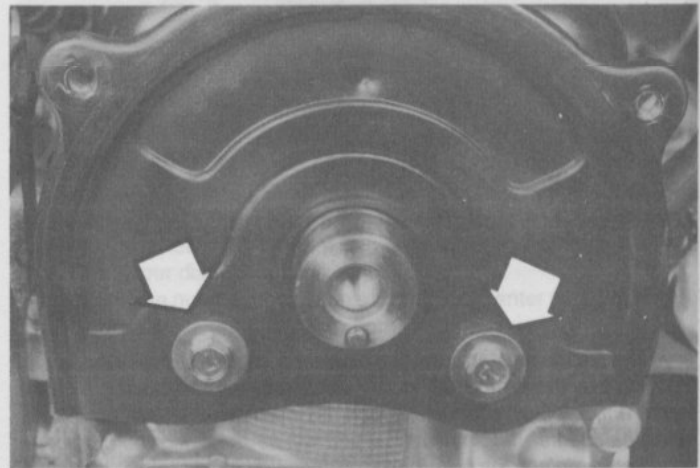
A Adjusting nut    C Tensioner pulley  
B Pulley bolt



7.14 The belt guide has a notch which allows it to fit over the crankshaft key (arrows)



7.15a Hold the camshaft sprocket from turning with a large screwdriver



7.15b To get to the camshaft seal, remove the two mounting bolts and detach the cover (arrows)

10 If you plan to reuse the timing belt, and it doesn't already have arrows painted on it, paint one on to indicate the direction of rotation (clockwise) (see illustration).

11 Loosen the adjusting nut and pulley bolt. Move the tensioner pulley towards the water pump as far as possible (see illustration).

12 Temporarily secure the tensioner pulley by tightening the adjusting nut.

13 Slip the timing belt off the sprockets and set it aside.

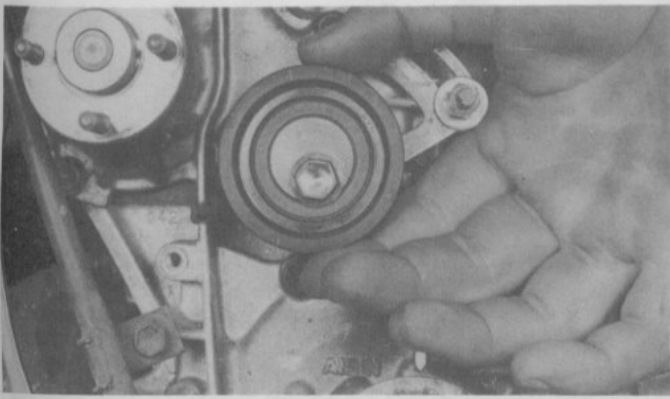
14 If you intend to replace the oil pump or crankshaft front oil seal, slide off the crankshaft sprocket and the belt guide located behind the crankshaft sprocket (see illustration). When removing the guide, note the way it's installed (the chamfered side faces out).

15 If you intend to replace the camshaft oil seal, unscrew the camshaft sprocket securing bolt and slide the sprocket off – a large screwdriver inserted through a hole in the sprocket will keep it from turning while you remove the bolt (see illustration). Unbolt the cover (see illustration) to get at the seal.

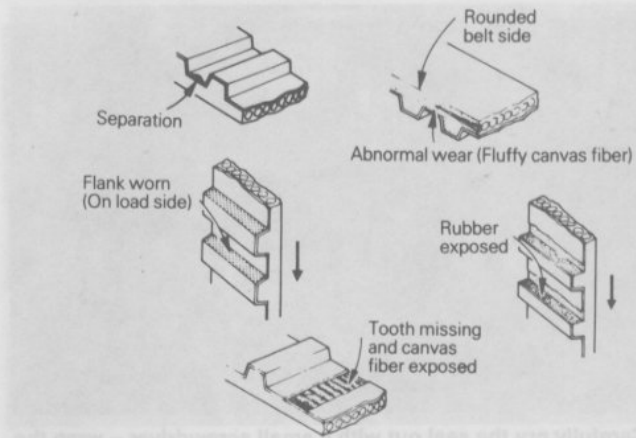
### Inspection

Refer to illustrations 7.16 and 7.17

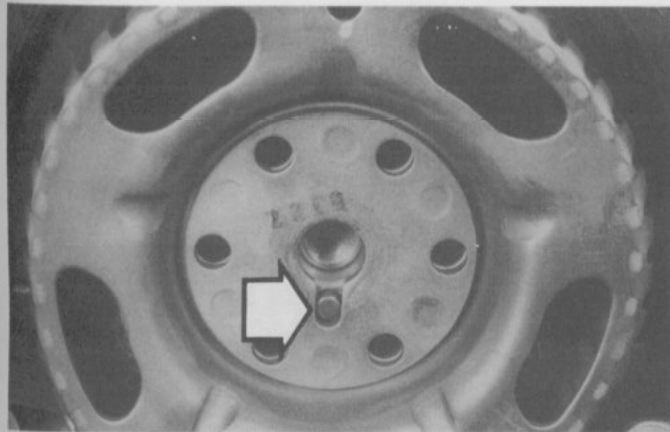
16 Rotate the tensioner pulley, by hand and move it from side-to-side to detect roughness and excess play (see illustration). Visually inspect the sprockets for any signs of damage and wear. Replace parts as necessary.



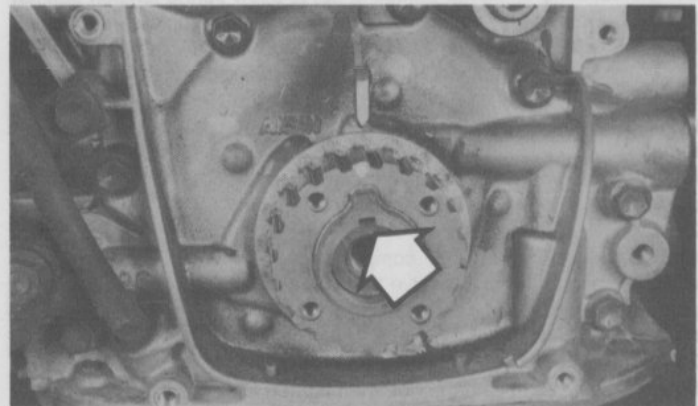
7.16 Check the tensioner pulley for roughness and excess play



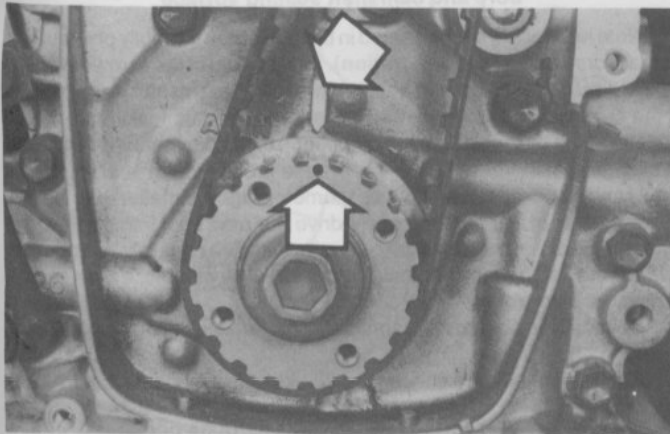
7.17 Carefully inspect the timing belt for the conditions shown here



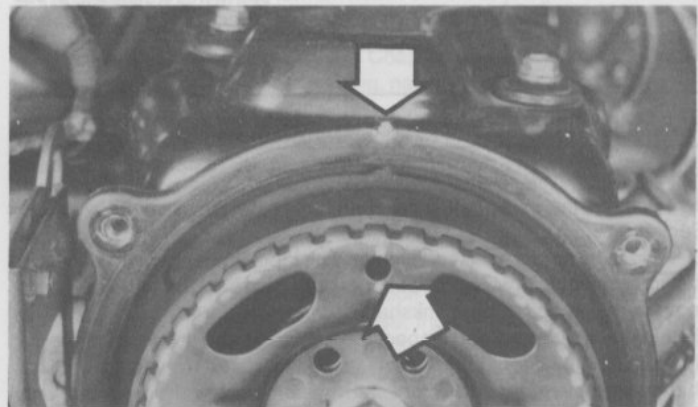
7.18a The camshaft sprocket is indexed by a dowel (arrow)



7.18b The crankshaft sprocket has a slot (keyway) which must align with the key in the crankshaft



7.19a The mark on the lower timing belt sprocket must align with the mark on the engine front cover (arrows)



7.19b The timing mark on the camshaft sprocket must align with the V mark on the camshaft seal cover (arrows)

17 Inspect the timing belt for cracks, separation, wear, missing teeth and oil contamination (see illustration). Replace the belt if it's worn or damaged. **Note:** Unless the engine has very low mileage, it's common practice to replace the timing belt with a new one every time it's removed. Don't reinstall the original belt unless it's in like-new condition. Never reinstall a belt in questionable condition.

**Installation**

Refer to illustrations 7.18a, 7.18b, 7.19a and 7.19b

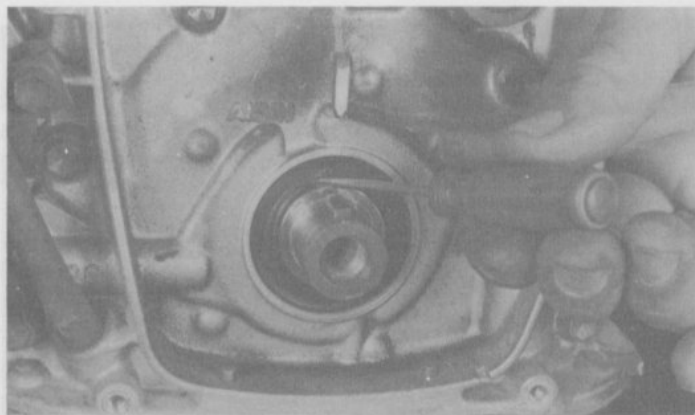
**Note:** Earlier models use timing belts with squared-off teeth, while later models have rounded teeth on the belt. Be sure to use the correct belt type, since it must match the pulleys.

18 Reinstall the camshaft seal cover and timing belt sprockets, if they were removed. Note that the camshaft sprocket is indexed by a dowel (see illustration). Slip the belt guide onto the crankshaft before installing the crankshaft sprocket—the chamfered side of the guide faces away from the belt. The crankshaft sprocket has a keyway which matches the key on the crankshaft (see illustration).

19 Align the valve timing marks located on the camshaft and crankshaft sprockets (see illustrations). **Note:** On 16-valve engines, there's an "E" adjacent to the timing mark.

20 Slip the timing belt onto the crankshaft sprocket. While maintaining tension on the side of the belt opposite to the tensioner, slip the belt onto the camshaft sprocket.





**8.2** Carefully pry the seal out with a small screwdriver – wrap the tip with tape to prevent damaging the seal bore and crankshaft sealing surface

21 Release the tensioner adjusting nut to allow spring tension against the belt. Rotate the crankshaft clockwise two complete revolutions (720-degrees). Retighten the nut.

22 Temporarily install the crankshaft pulley, taking care to align the notch in the pulley with the raised area on the sprocket. Install the crankshaft pulley bolts and the center bolt, if removed. Tighten the center bolt to the torque listed in this Chapter's Specifications. When tightening the bolts, hold the crankshaft in place using the method discussed in Step 8. Remove the pulley, leaving the center bolt in place.

23 Using the bolt in the center of the crankshaft sprocket, turn the crankshaft clockwise through two complete revolutions (720-degrees). Recheck the alignment of the valve timing marks. If the marks do not align properly, loosen the tensioner, slip the belt off the camshaft sprocket, align the marks, reinstall the belt, and check the alignment again.

24 Tighten the tensioner bolt and nut to the torque listed in this Chapter's Specifications. Start with the nut, then tighten the bolt.

25 Reinstall the remaining parts in the reverse order of removal.

26 On eight-valve engines, set the valve clearances with the engine cold (see Chapter 1).

27 Start the engine, allow it to reach normal operating temperature, set the ignition timing and, on eight-valve engines, check the valve clearance (see Chapter 1). Road test the vehicle.

## 8 Crankshaft front oil seal – replacement

Refer to illustrations 8.2 and 8.4

1 Remove the timing belt, crankshaft sprocket and inner belt guide (see Section 7).

2 Wrap the tip of a small screwdriver with tape. Working from below, use the screwdriver to pry the seal out of its bore (see illustration). Take care to prevent damaging the crankshaft and the seal bore.

3 Thoroughly clean and inspect the seal bore and sealing surface on the crankshaft. Minor imperfections can be removed with emery cloth. If there is a groove worn in the crankshaft sealing surface (from contact with the seal), installing a new seal will probably not stop the leak. Try installing a repair sleeve which fits over the crankshaft sealing surface. These are normally available at larger auto parts stores.

4 Lubricate the new seal with engine oil and drive the seal into place with a hammer and socket (see illustration).

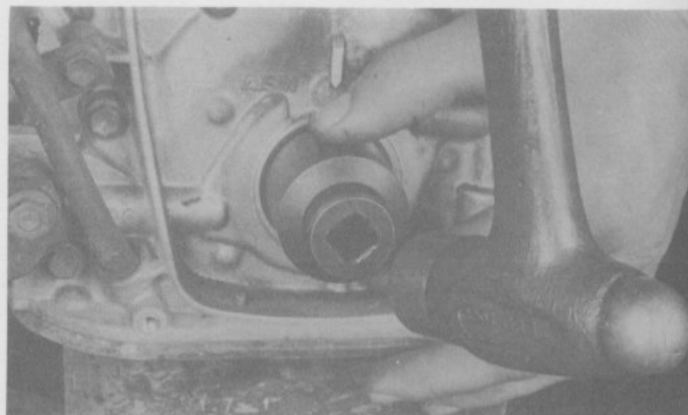
5 Reinstall the timing belt and related components as described in Section 7.

6 Run the engine, checking for oil leaks.

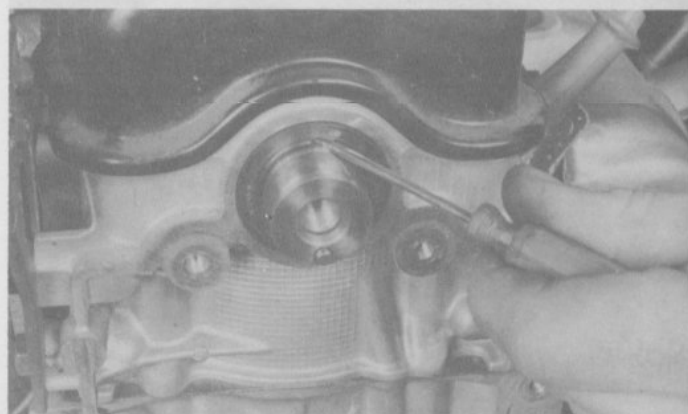
## 9 Camshaft oil seal – replacement

Refer to illustrations 9.3 and 9.5

1 Remove the timing belt, camshaft sprocket and camshaft seal cover (see Section 7).



**8.4** Install the new seal by gently tapping it into place with a socket and a small hammer



**9.2** Carefully pry the camshaft oil seal out with a small screwdriver – wrap the tip with tape to prevent damaging the seal bore and camshaft sealing surface

2 Note how far the seal is seated in the bore, then carefully pry it out with a small screwdriver (see illustration). Wrap the tip of the screwdriver with tape so you don't scratch the bore or damage the camshaft in the process (if the camshaft is damaged, the new seal will end up leaking).

3 Clean the bore and coat the outer edge of the new seal with engine oil or multi-purpose grease. Apply moly-base grease to the seal lip.

4 Using a socket with an outside diameter slightly smaller than the outside diameter of the seal, carefully drive the new seal into place with a hammer (see illustration). Make sure it's installed squarely and driven in to the same depth as the original. If a socket isn't available, a short section of pipe will also work.

5 Reinstall the seal cover, camshaft sprocket and timing belt (see Section 7).

6 Run the engine and check for oil leaks at the camshaft seal.

## 10 Rocker arms and shafts – removal, inspection and installation

**Note:** This procedure also includes camshaft removal and installation on 16-valve engines.

### Removal

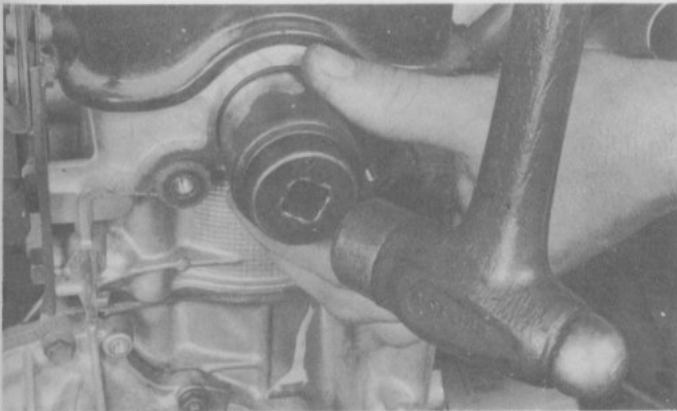
1 Disconnect the negative cable from the battery.

2 Remove the radiator (see Chapter 3).

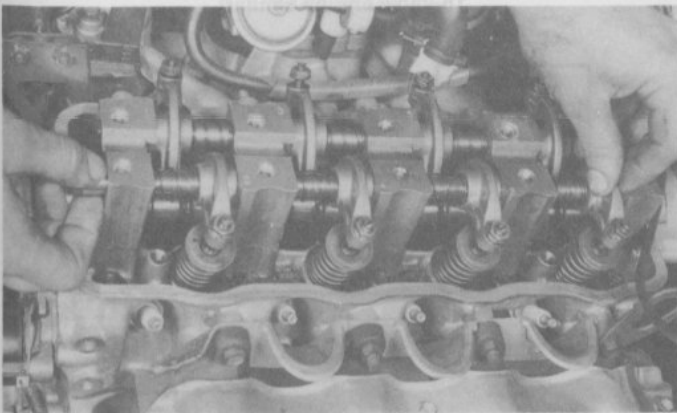
3 Set the number one piston at top dead center and remove the camshaft cover (see Sections 3 and 4).

4 Loosen the locknuts and back off the valve adjustment screws until they're not in contact with the valves (see illustration 7.4).

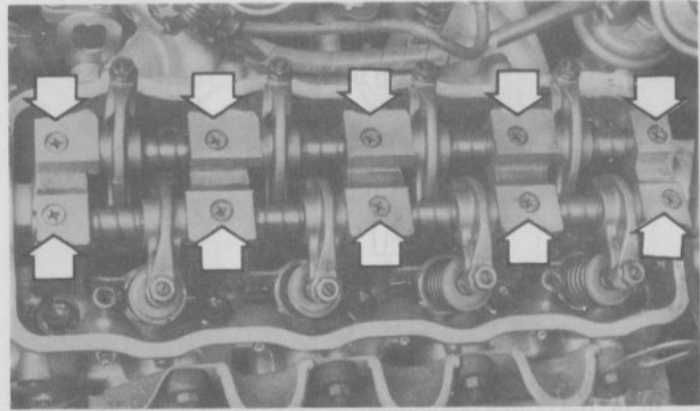
5 Remove the timing belt and camshaft sprocket (see Section 7).



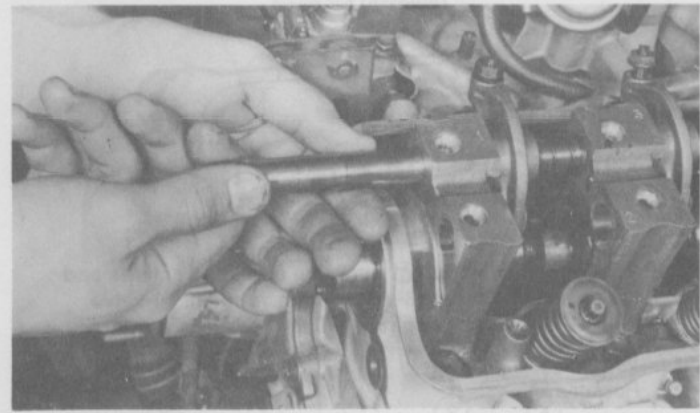
9.4 Gently tap the new oil seal into place with a socket and a small hammer



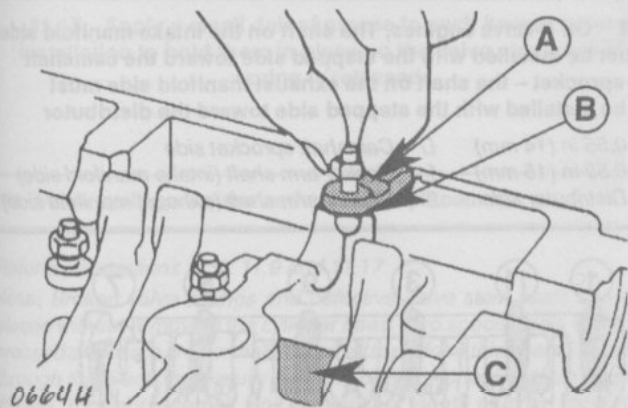
10.8 Push the rear of the rocker arm shaft until it protrudes enough at the front to grip it



10.6 Remove the ten retaining screws (arrows)



10.9 Slowly pull the shaft out the front of the cylinder head



10.16 Detaching an intake valve rocker arm (16-valve engines)

- A Intake rocker arm      C Rocker arm shaft  
B Clip

### Eight-valve engines

Refer to illustrations 10.6, 10.8 and 10.9

- 6 Remove the ten rocker arm shaft retaining screws (see illustration).
- 7 Number the rocker arms with a scribe. Start with number one at the front and criss-cross until all are marked. When you are done, the rocker arms on the intake manifold side should be numbered 1, 3, 5, 7 and the ones on the exhaust manifold side should be marked 2, 4, 6, 8.
- 8 Push the rear of one rocker arm shaft until it protrudes enough at the front to grip (see illustration).
- 9 Slowly pull each rocker arm shaft out the front of the engine (see illustration). Lift the rocker arms and springs out of the head as they are released from the shaft.

### Sixteen-valve engines

Refer to illustrations 10.16 and 10.19

- 10 Remove the radiator grille (see Chapter 11) and remove the hood latch and front upper member (the long, narrow panel the hood latch is attached to).
- 11 Remove the distributor (see Chapter 5) and housing (see Cylinder head—disassembly in Chapter 2B). **Note:** Position a drain pan under the housing before removing it, since a small amount of oil usually flows out when the housing is removed.
- 12 Remove the camshaft cover, timing belt and camshaft sprocket (see Sections 4 and 7).
- 13 Reverse the order shown in illustration 10.24 to loosen the camshaft bearing cap bolts, until they are all loose, then remove them and lift the camshaft bearing caps and camshaft off the cylinder head. **Note:** The camshaft bearing caps must be installed in their original locations, with the same ends facing forward. The caps should be numbered and an arrow on each cap should point toward the front of the engine. If the caps are not marked, mark them before disassembly.
- 14 Remove the timing belt inner cover and, using a hex-drive tool, unscrew the rocker arm shaft plug from the front of the cylinder head.
- 15 Mark the intake and exhaust rocker arms so they can be returned to their original locations on reassembly.
- 16 Taking care not to bend the clips, remove the intake rocker arms. Keep the rocker arms in order so they can be reinstalled in their original positions (see illustration).
- 17 Remove the rocker arm shaft bolts, which are at the top of the cylinder head, just above the rocker arm shaft.
- 18 Push the rocker arm shaft out of the cylinder head, toward the distributor opening, and detach the O-ring on the end of the shaft. Install a new O-ring when reinstalling the shaft.