



11.7a When cleaning the cable clamps, all corrosion must be removed (the inside of the clamp is tapered to match the taper on the post, so don't remove too much material)



11.7b Regardless of the type of tool used on the battery posts, a clean, shiny surface should be the result

1

a battery brush or a terminal cleaner and a solution of warm water and baking soda (**see illustration**). Wash the terminals and the top of the battery case with the same solution but make sure that the solution doesn't get into the battery. When cleaning the cables, terminals and battery top, wear safety goggles and rubber gloves to prevent any solution from coming in contact with your eyes or hands. Wear old clothes too - even diluted, sulfuric acid splashed onto clothes will burn holes in them. If the terminals have been extensively corroded, clean them up with a terminal cleaner (**see illustration**). Thoroughly wash all cleaned areas with plain water.

8 Make sure that the battery tray is in good condition and the hold-down clamp bolts are tight. If the battery is removed from the tray, make sure no parts remain in the bottom of the tray when the battery is reinstalled. When reinstalling the hold-down clamp bolts, do not overtighten them.

9 Any metal parts of the vehicle damaged by corrosion should be covered with a zinc-based primer, then painted.

10 Information on removing and installing the battery can be found in Chapter 5. Information on jump starting can be found at the front of this manual. For more detailed battery checking procedures, refer to the *Haynes Automotive Electrical Manual*.

Charging

Warning: When batteries are being charged, hydrogen gas, which is very explosive and flammable, is produced. Do not smoke or allow open flames near a charging or a recently charged battery. Wear eye protection when near the battery during charging. Also, make sure the charger is unplugged before connecting or disconnecting the battery from the charger.

Note: The manufacturer recommends the battery be removed from the vehicle for charging because the gas that escapes during this procedure can damage the paint.

Fast charging with the battery cables connected can result in damage to the electrical system.

11 Slow-rate charging is the best way to restore a battery that's discharged to the point where it will not start the engine. It's also a good way to maintain the battery charge in a vehicle that's only driven a few miles between starts. Maintaining the battery charge is particularly important in the winter when the battery must work harder to start the engine and electrical accessories that drain the battery are in greater use.

12 It's best to use a one or two-amp battery charger (sometimes called a "trickle" charger). They are the safest and put the least strain on the battery. They are also the least expensive. For a faster charge, you can use a higher amperage charger, but don't use one rated more than 1/10th the amp/hour rating of the battery. Rapid boost charges that claim to restore the power of the battery in one to two hours are hardest on the battery and can damage batteries not in good condition. This type of charging should only be used in emergency situations.

13 The average time necessary to charge a battery should be listed in the instructions that come with the charger. As a general rule, a trickle charger will charge a battery in 12 to 16 hours.

14 Remove all the cell caps (if equipped) and cover the holes with a clean cloth to prevent spattering electrolyte. Disconnect the negative battery cable and hook the battery charger cable clamps up to the battery posts (positive to positive, negative to negative), then plug in the charger. Make sure it is set at 12-volts if it has a selector switch.

15 If you're using a charger with a rate higher than two amps, check the battery regularly during charging to make sure it doesn't overheat. If you're using a trickle charger, you can safely let the battery charge overnight after you've checked it regularly for the first couple of hours.

16 If the battery has removable cell caps, measure the specific gravity with a hydrometer every hour during the last few hours of the charging cycle. Hydrometers are available inexpensively from auto parts stores - follow the instructions that come with the hydrometer. Consider the battery charged when there's no change in the specific gravity reading for two hours and the electrolyte in the cells is gassing (bubbling) freely. The specific gravity reading from each cell should be very close to the others. If not, the battery probably has a bad cell(s).

17 Some batteries with sealed tops have built-in hydrometers on the top that indicate the state of charge by the color displayed in the hydrometer window. Normally, a bright-colored hydrometer indicates a full charge and a dark hydrometer indicates the battery still needs charging.

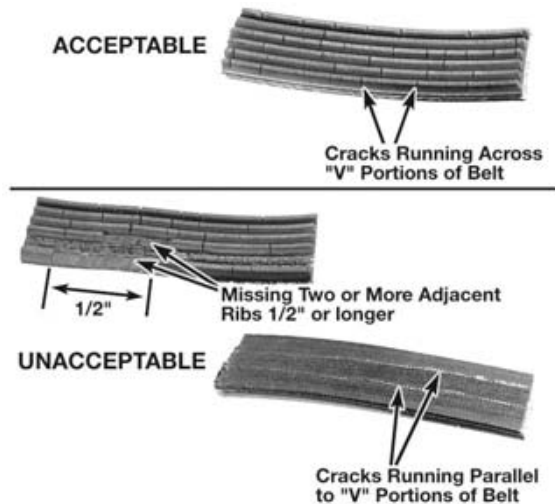
18 If the battery has a sealed top and no built-in hydrometer, you can hook up a digital voltmeter across the battery terminals to check the charge. A fully charged battery should read 12.6 volts or higher.

19 Further information on the battery and jump-starting can be found in Chapter 5 and at the front of this manual.

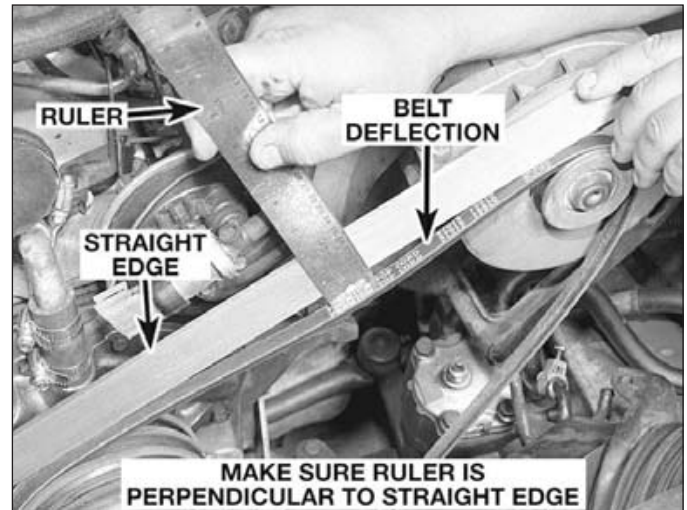
12 Drivebelt check, adjustment and replacement (every 6000 miles or 6 months)

Refer to illustrations 12.2, 12.4, 12.5, 12.6 and 12.8

1 A single serpentine drivebelt is located at the front of the engine and plays an important role in the overall operation of the engine and its components. Due to its function and material make up, the belt is prone to wear and should be periodically inspected. The serpentine belt drives the alternator, power steering pump, water pump and air conditioning compressor.



12.2 Check ribbed (serpentine) belts for signs of wear like these - if it looks worn, replace it



12.4 On four-cylinder engines, a ruler and straightedge can be used to determine the belt deflection (tension) between two pulleys

2 With the engine off, open the hood and use your fingers (and a flashlight, if necessary), to move along the belt checking for cracks and separation of the belt plies. Also check for fraying and glazing, which gives the belt a shiny appearance (**see illustration**). Both sides of the belt should be inspected, which means you will have to twist the belt to check the underside.

3 Check the ribs on the underside of the belt. They should all be the same depth, with none of the surface uneven.

4 On four-cylinder models, belt tension must be checked manually, by pushing on the belt at a distance halfway between two pulleys. Push firmly with your thumb and see how much the belt moves (deflects) (**see illustration**). As rule of thumb, if the distance from pulley center-to-pulley center is between 7 and 11 inches, the belt should deflect 1/4-inch. If the belt travels between

pulleys spaced 12 to 16 inches apart, the belt should deflect 1/4 to 1/2-inch. Belt tension is adjusted by moving the belt idler pulley that is attached to the alternator mount (**see illustration**).

5 On V6 and V8 engines, the tension of the belt is maintained by a spring-loaded tensioner assembly and isn't adjustable. The belt should be replaced when the indexing line is lined up with the projection on the tensioner assembly (**see illustration**).

6 To replace the belt, rotate the tensioner (or loosen the idler pulley on 2.5L engines) to release belt tension (**see illustration**).

7 Remove the belt from the tensioner and auxiliary components and slowly release the tensioner.

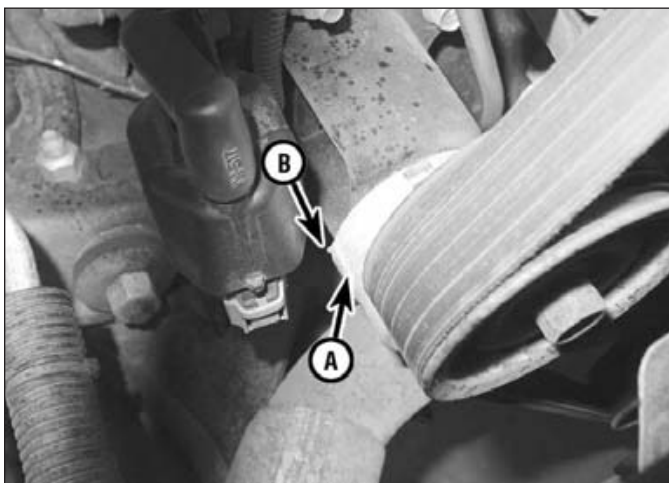
8 Route the new belt over the various pulleys, again rotating the tensioner to allow the belt to be installed, then release the belt tensioner. **Note:** A drivebelt routing decal is

located on the radiator support to help during drivebelt installation (**see illustration**). **Warning:** On 2.5L and 4.7L V8 engines, the water pump operates in reverse rotation. If the belt routing diagram is not followed, the engine could overheat.

13 Underhood hose check and replacement (every 6000 miles or 6 months)

General

Caution: Replacement of air conditioning hoses must be left to a dealer service department or air conditioning shop that has the equipment to depressurize the system safely and recover the refrigerant. Never remove air conditioning components or hoses until the system has been depressurized.



12.5 The serpentine drivebelt tensioner used on V6 and V8 models automatically applies the proper tension on the drivebelt, but it does have limits - the indexing line on the tensioner body (A) must not move beyond point B on the tensioner mount



12.6 Rotate the automatic tensioner (V6 and V8) by turning its center bolt clockwise with a long wrench until the belt can be pulled off the pulley, then release the tensioner