28 Spark plug check and replacement (every 100,000 miles or 60 months, whichever comes first)

Note:
On vehicles manufactured before 03/2007, the spark plugs should be replaced after a maximum of 60,000 miles. The later platinum spark plugs have a longer life span.

Note:
On 2.0L models, the gap is preset from the factory and not adjustable.

1 The correct functioning of the spark plugs is vital for the correct running and efficiency of the engine. It is essential that the plugs installed are appropriate for the engine (see this Chapter's Specifications). If the correct type are used, and the engine is in good condition, the spark plugs should not need attention between scheduled replacement intervals.

2 Remove the mounting bolts and the engine cover for access to the ignition coils. Remove the individual ignition coils (see Chapter 5).

3 It is advisable to remove the dirt from the spark plug recesses, using a clean brush, vacuum cleaner or compressed air before removing the plugs, to prevent dirt dropping into the cylinders.

4 Unscrew the plugs using a spark plug socket and extension bar **(see illustrations)** . Keep the socket aligned with the spark plug - if it is forcibly moved to one side, the ceramic insulator may be broken off. As each plug is removed, examine it as follows.

28.4a Tools required for spark plug removal, gap adjustment, and installation

1 Spark plug socket - This will have special padding inside to protect the spark plug's porcelain insulator

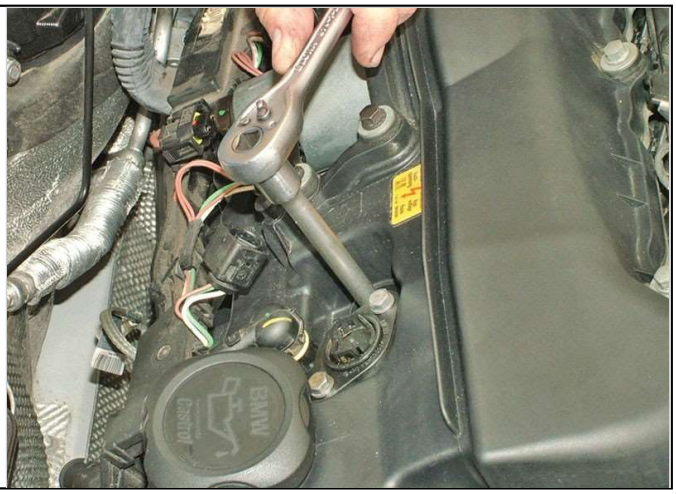
2 Torque wrench - Although not mandatory, using this tool is the best way to ensure the plugs are tightened properly

3 Ratchet - Standard hand tool to fit the spark plug socket

4 Extension - Depending on model and accessories, you may need special extensions and universal joints to reach one or more of the plugs

5 Spark plug gap gauge - This gauge for checking the gap comes in a variety of styles. Make sure the gap for your engine is included

28.4b Unscrew the spark plugs from the cylinder head



5 Examination of the spark plugs will give a good indication of the condition of the engine (see the chart on the inside back cover of this manual). If the insulator nose of the spark plug is clean and white, with no deposits, this is indicative of a weak mixture or too hot a plug (a hot plug transfers heat away from the electrode slowly, a cold plug transfers heat away quickly).

6 If the tip and insulator nose are covered with hard black-looking deposits, then this is indicative that the mixture is too rich. Should the plug be black and oily, then it is likely that the engine is fairly worn.

7 If the insulator nose is covered with light tan to grayish-brown deposits, then the mixture is correct, and it is likely that the engine is in good condition.

8 When buying new spark plugs, it is important to obtain the correct plugs for your specific engine (see this Chapter's Specifications).

9 The recommended spark plugs are of the multi- electrode type, and the gap between the center electrode and the ground electrodes cannot be adjusted. However, if single-electrode plugs are being installed, the gap between the ground and center electrode must be correct. If it is too large or too small, the size of the spark and its efficiency will be seriously impaired. The gap should be set to the value given by the spark plug manufacturer.

10 To set the gap on single- electrode plugs, measure it with a feeler gauge or wire gauge, then bend the outer plug electrode until the correct gap is achieved **(see illustration)** . The center electrode should never be bent, as this may crack the insulator and cause plug failure. If using feeler gauges, the gap is correct when the appropriate-size blade is a firm sliding fit.

28.10 Measure the spark plug gap with a feeler gauge or a wire gauge

11 Special spark plug electrode gap adjusting tools are available from most auto parts stores, or from some spark plug manufacturers.

12 Before installing the spark plugs, check that the plug exterior surfaces and threads are clean. It is often very difficult to insert spark plugs into their holes without cross-threading them. To avoid this possibility, put a short length of hose over the end of the spark plug **(see illustration)** .

28.12 A length of rubber hose that fits a spark plug well can be used to get spark plugs started without cross-threading

13 Remove the rubber hose (if used), and tighten the plug to the specified torque (see this Chapter's Specifications) using the spark plug socket and a torque wrench. Install the remaining plugs in the same way.

14 Install the ignition coils as described in Chapter 5 .