

**Haynes**  
*shows you how*

---

**BMW 3-Series (92-98) & Z3 (96-98) Haynes Online Manual**

## 23 Spark plug replacement

03:38

**Caution:**

This video is for familiarization purposes only. Read below for specific information on your vehicle.

### General

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 (the suitable type is specified at the beginning of this Chapter). If this type is used, and the engine is in good condition, the spark plugs should not need attention between scheduled replacement intervals. Spark plug cleaning is rarely necessary, and should not be attempted unless specialized equipment is available, as damage can easily be caused to the firing ends.

### Four-cylinder engine

2 The spark plugs are located under a cover in the center of the cylinder head.

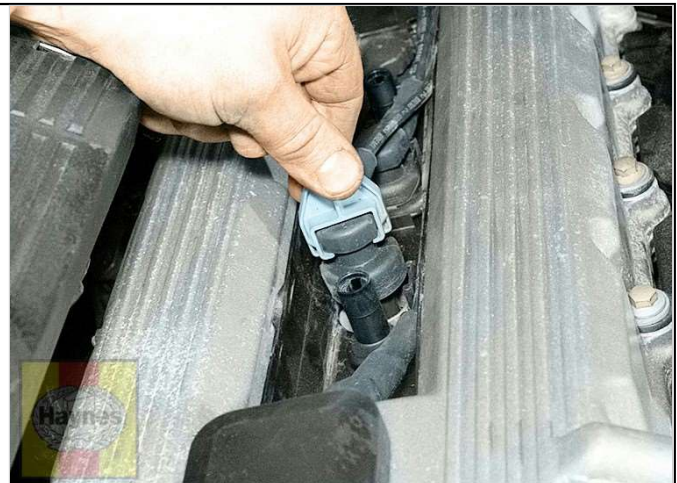
3 Working at the top of the valve cover, twist the two fasteners, and remove the spark plug cover from the center of the valve cover (see illustration) .

### 23.3 Removing the spark plug cover - six-cylinder engine



4 If the marks on the spark plug wires cannot be seen, mark the leads 1 to 4, corresponding to the cylinder the lead serves (No 1 cylinder is at the timing chain end of the engine). Using the plastic tool provided (clipped into the end of the spark plug wire plastic housing), pull the spark plug wires from the spark plugs (see illustration) .

### 23.4 Pull the spark plug wires from the spark plugs using the tool provided - six-cylinder engine



5 It is advisable to remove any 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.

6 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.

### 23.6a Tools required for spark plug removal, gap adjustment and installation



### 23.6b Unscrew the spark plugs using a spark plug socket



7 Examination of the spark plugs will give a good indication of the condition of the engine. 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).

8 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, as well as the mixture being too rich.

9 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.

10 When buying new spark plugs, it is important to obtain the correct plugs for your specific engine (see Specifications).

11 The spark plug electrode gap is of considerable importance as, 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 in the Specifications at the beginning of this Chapter (see illustration) .

### 23.11 Measuring the spark plug gap with a wire gauge



12 To set the gap, measure it with a feeler 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 nothing worse. If using feeler gauges, the gap is correct when the appropriate-size blade is a firm sliding fit.

### 23.12 Measuring the spark plug gap with a feeler blade

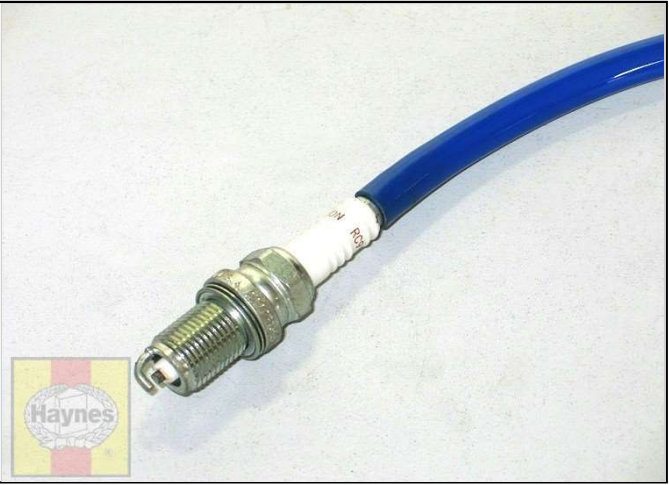


13 Special spark plug electrode gap adjusting tools are available from most auto parts stores, or from some spark plug manufacturers.

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



**23.14 A length of rubber hose will save time and prevent damaged threads when installing the spark plugs**



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

16 Connect the spark plug wires in their correct order, and clip the lead removal tool into position in its holder.

17 Install the spark plug cover, and secure with the fasteners.

## Six-cylinder engine

18 The spark plugs are located under the ignition coils in the center of the cylinder head.

19 Remove the ignition coils (see [Chapter 5B](#) ).

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

21 Unscrew the plugs using a spark plug wrench and extension bar (see illustration 23.6b) . Keep the socket aligned with the spark plug - if it is forcibly moved to one side, the ceramic insulator may be broken off.

22 Proceed as described in Steps 7 to 15.

23 Install the ignition coils (see [Chapter 5B](#) ).