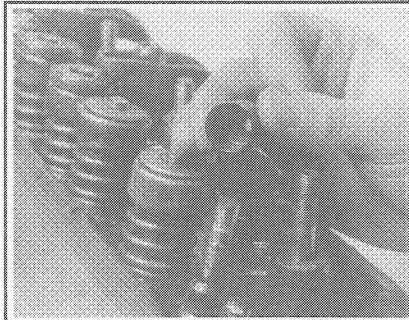


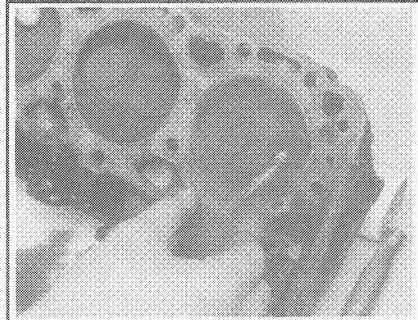
TCCS3140

**Fig. 191 Remove the valve seal from the valve stem—O-ring type seal shown**



TCCS252

**Fig. 192 Removing an umbrella/positive type seal**



TCCS3141

**Fig. 193 Invert the cylinder head and withdraw the valve from the valve guide bore**

➔Due to engine varnish, the retainer may stick to the valve locks. A gentle tap with a hammer may help to break it loose.

4. Remove the valve locks from the valve tip and/or retainer. A small magnet may help in removing the locks.

5. Lift the valve spring, tool and all, off of the valve stem.

6. If equipped, remove the valve seal. If the seal is difficult to remove with the valve in place, try removing the valve first, then the seal. Follow the steps below for valve removal.

7. Position the head to allow access for withdrawing the valve.

➔Cylinder heads that have seen a lot of miles and/or abuse may have mushroomed the valve lock groove and/or tip, causing difficulty in removal of the valve. If this has happened, use a metal file to carefully remove the high spots around the lock grooves and/or tip. Only file it enough to allow removal.

8. Remove the valve from the cylinder head.

9. If equipped, remove the valve spring shim. A small magnetic tool or screwdriver will aid in removal.

10. Repeat Steps 3 through 9 until all of the valves have been removed.

**4.6L Engine Heads**

➔ See Figures 194 thru 198

Whether it is a single or dual overhead camshaft cylinder head, the disassembly procedure is relatively unchanged. One aspect to pay attention to is careful labeling of the parts on the dual camshaft cylinder head. There will be an intake camshaft and followers as well as an exhaust camshaft and followers and they must be labeled as such. In some cases, the components are identical and could easily be installed incorrectly. DO NOT MIX THEM UP! Determining which is which is very simple; the intake camshaft and components are on the same side of the head as was the intake manifold. Conversely, the exhaust camshaft and components are on the same side of the head as was the exhaust manifold.

Most cylinder heads with cup type camshaft followers will have the valve spring, retainer and locks recessed within the follower's bore. You will need a C-clamp style valve spring compressor tool, an OHC spring removal tool (or equivalent) and a small magnet to disassemble the head.

1. If not already removed, remove the camshaft(s) and/or followers. Mark their positions for assembly.

2. Position the cylinder head to allow use of a C-clamp style valve spring compressor tool.

➔It is preferred to position the cylinder head gasket surface facing you with the valve springs facing the opposite direction and the head laying horizontal.

3. With the OHC spring removal adapter tool positioned inside of the follower bore, compress the valve spring using the C-clamp style valve spring compressor.

4. Remove the valve locks. A small magnetic tool or screwdriver will aid in removal.

5. Release the compressor tool and remove the spring assembly.

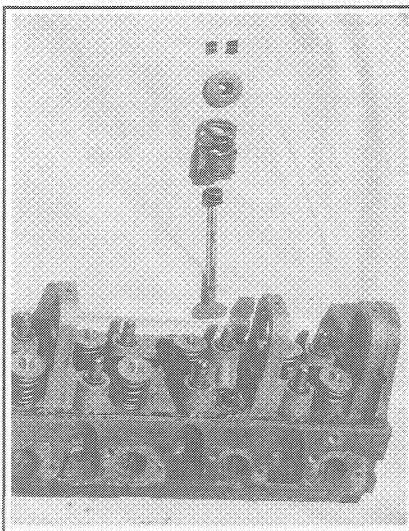
6. Withdraw the valve from the cylinder head.

7. If equipped, remove the valve seal.

➔Special valve seal removal tools are available. Regular or needlenose type pliers, if used with care, will work just as well. If using ordinary pliers, be sure not to damage the follower bore. The follower and its bore are machined to close tolerances and any damage to the bore will effect this relationship.

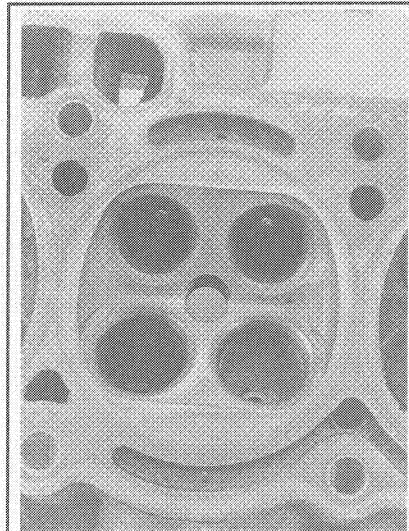
8. If equipped, remove the valve spring shim. A small magnetic tool or screwdriver will aid in removal.

9. Repeat Steps 3 through 8 until all of the valves have been removed.



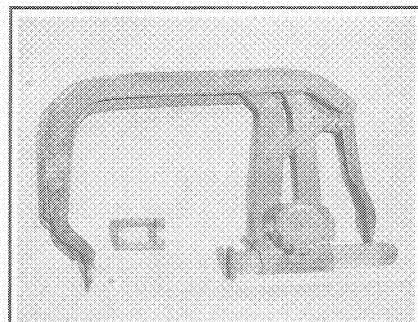
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**Fig. 194 Exploded view of a valve, seal, spring, retainer and locks from an OHC cylinder head**



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**Fig. 195 Example of a multi-valve cylinder head. Note how it has 2 intake and 2 exhaust valve ports**



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**Fig. 196 C-clamp type spring compressor and an OHC spring removal tool (center) for cup type followers**