Moyer Marine inc.

Measuring and replacing valve guides

PARTS

GENERAL: The clearance between valve stems and valve guides is quite critical. If this clearance is too small, exhaust valves are prone to stick. If the clearance is too large, manifold pressure is prone to draw oil-rich vapor from the valve chamber along the stems of intake valves and into the combustion chamber. This condition leads to carbon buildup on compression rings, spark plugs, and the valves themselves. **Measuring clearances and replacing valve guides requires removal of the head and valves** (*see photos reverse side.)*

Measuring valve stem to valve guide clearance: The .3145" and .3165" plug gauges in our online catalog are used in a go/no-go process to measure your clearances. The .3145" gauges are marked with green tape and the .3165" gauges are marked with red tape for easy reference. Below are the three possible test results with our recommended remedial actions:

1. The green gauge goes into the guide with minimum resistance, but the red gauge will not go into the guide:
   Indication: This condition is normal.
   Remedial action: None, valve guides do not need to be replaced. The diameter of the hole in the guide is at least .3145" but less than .3165" (a nominal .003" to .004" clearance between valve stem and guide).

2. The green gauge will not go into the guide:
   Indication: The hole in the guide is too small.
   Remedial action: Clean and/or ream guide and recheck with green gauge. If the green gauge will then go through, guides do not have to be replaced.

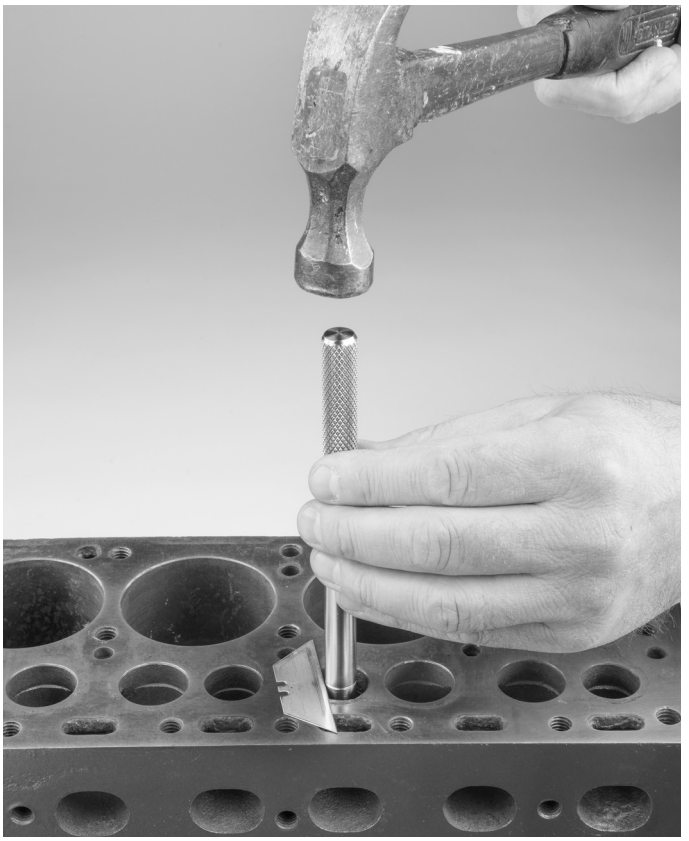
3. The red gauge goes into the guide with minimal resistance:
   Indication: The hole in the guide is too large.
   Remedial action: Remove and replace with new guide.

Replacing worn valve guides: Old guides are driven down and out from the top of the block using our valve guide punch and a medium sized hammer. **Please note, if you plan on leaving your camshaft installed, you will have to remove the adjustable bolt from the top of the tappet to make space for the old guide to move free from the block.**

The new guides in our online catalog are lightly grooved on the inside for their entire length except for the upper 3/8" (resembling fine threads) for all but approximately 3/8" on one end. **The non-grooved end of the guide is to be installed in the up position.**

New guides are driven in to a depth of .940" below the top deck of the block. Our valve guide punch has a reference mark at .940" to use when seating the new guides. Simply lay a razor blade or other straight edge across the valve opening and stop hammering when the mark on the punch lines up with the straight edge.

Reaming valve guides: If the green gauge will not fit into the guide, our reamer can be used to fine tune the ID of the guide to the minimum diameter of .3145". **Please note that our reamer is designed to be used by hand. Using an electric drill to rotate the reamer can easily lead to oversized valve stem to guide clearances.** New valve guides from our online catalog are pre-machined to fit without the need for reaming after installation. However, slight variations in the diameter of the hole in your block might leave the ID of the guide slightly undersized. We therefore recommend using the green gauge to check your new guides after installation, reaming the guide as necessary.



Installing new guide using depth mark

Measuring valve stem to valve guide clearance

Reaming valve guide