## THE PREVENTIVE MAINTENANCE SERIES

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## Valve Guide and Rocker Arm Issues

Corvair engines were designed with a good valve guide, rocker-arm, pushrod combination, which racers usually improve on, but you will get good long term performance from the stock items with reasonable maintenance. The incidence of bad guides is not very common unless there is a maintenance problem or the guides are affected by one of the issues discussed below.

To begin with, most replacement valve lifters are not designed like the original Corvair lifters which had a very deep pocket for the pushrod and a full one turn adjustment which compensated for the Corvair engine's aluminum expansion. Most of the new lifters sold today will only tolerate a one half turn and are shallow so that completely flat lifters with minimum adjustment can allow the pushrod to jump up on the ledge of the lifter (this would hold the valve open). Accurate valve adjustment is always very important but more so with replacement lifters. Remember that a lifter that is noisy cold but is quiet hot is not out of adjustment, it just required running for a while to pump back up -10 to 15 minutes in some cases. A lifter that is quiet cold but noisy hot is out of adjustment and may contribute to some of the issues described later in this article.

Pressurized oil in the lifter galleries is metered through the valve lifter, travels up the pushrod and exits out of the pushrod end inside the valve cover. Since Corvair valve guides, valve stem ends and rocker arm ends are located above the end of the push rod, a hole in the side of the pushrod provides a spray of lubrication upwards through a hole in the rocker arm as the pushrod rotates. If you install your pushrods backwards you invite rapid wear on the above mentioned items. Also keep in mind that the pushrod guides have the holes cut at an angle and if you install them backwards they put a significant amount of pressure on the pushrod. The "U" stamped on the guide faces outwards.

Corvair valve guides are a cast iron alloy with aftermarket bronze guides available for extreme service. Valve stem seals are installed on intake valves to limit oil being sucked in to the intake system, but no seals are used on exhaust valves. Lead in the gas use to lubricate the exhaust guides but they seem to survive reasonably well without it. As long as oiling in the valve cover is adequate and rocker-arms do not move off the center of the valve stem onto the edge, valve guides have a good life span. However, since most of our 50 year old cars were serviced by someone else early in their life it would be a good idea to pull valve covers and check the pushrod oiling, check the "U" on the pushrod guides and most important, check that the rocker arms are not sitting off on the side of the valve stem where they will cause valve guide failure from the sideways pressure. If you find one sitting on the edge of a valve stem, remove the rocker arm and check for an indentation at the valve end of the rocker arm and possibly a bad wear pattern on the ball and the socket – you can dress up minor issues on the end with a cutoff wheel and sandpaper. For deep wear areas or bad balls, you must replace the parts. Check for a bent pushrod and check the valve stem, if the rocker is off to the side the stem probably has a distinctive wear pattern on one side – again you can carefully dress up the end of the valve stem with a cutoff wheel so that it is square with the rocker. FC engines that have valve rotators installed can still have a valve stem with the entire edge rounded over from a bent pushrod or badly worn rocker arm.

A bad exhaust guide will mimic a clicking lifter – the exhaust gas fires down the valve stem and exits into the valve cover area. An attempt to adjust the lifter will result in no (or temporary) change in the noise and you will eventually hold the valve open once the lifter is tightened beyond its adjustment span. A bad guide will cook the oil on the valve spring (usually visible with the cover off) and will cause your fresh oil change to darken quickly. If you wind up with a valve job because of bad guides, obviously check all parts of the valve train before re-using them and check that the rocker arms are running true when the engine is back to running condition.