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IMPORTANT: READ THESE DIRECTIONS COMPLETELY BEFORE INSTALLATION.

CAUTION: WHEN USING HIGHER THAN STOCK RATIO ROCKER ARMS, RECHECK YOUR ENGINE FOR PISTON TO VALVE CLEARANCE AND VALVE SPRING COIL BIND. HIGHER RATIOS CAN ALSO CAUSE THE PUSHRODS TO BIND IN THE CYLINDER HEAD OR GUIDEPLATE.

stud and guideplates. Factory aluminum heads require the guideplates to be replaced with pre 1987 factory aluminum guideplates or Crane 11650-1 guideplates. Both applications require the use of heat-treated guideplates and heat treated pushrods. Do not use self-aligning rocker arms with pushrod guideplate equipped heads.

Most Gen V and Gen 6 big block Chevrolet engines are equipped with shoulder bolt mounted, non-adjustable, rocker arms. To install these rocker arms, you must also install Crane Conversion Rocker Arm Studs 99152-16. They work with the factory Gen V and Gen 6 guideplates.

Before you start, we recommend that you also have available:

All necessary gaskets and sealers.

A bottle of Crane Cams Engine Assembly Lube, 99008-1

Optional Accessories:

Crane Kool Nuts, 99768-16 (3/8") or 99769-16 (7/16") for optimum rocker arm life and stable adjustment.

SPECIAL INFORMATION ON LATE MODEL CHEVROLET ENGINES

Newer small block Chevrolet V-8 cylinder heads are factory equipped with "Self-Aligning" rocker arms. These rocker arms have a stamped recess on the valve tip end to guide the rocker arm on the valve stem and allow the rocker arm to guide the pushrod. (See Figure 1.) Some Crane rocker arms are designed for non self-aligning applications only. Self-aligning heads must be converted, as described below, before these rocker arms can be installed.

TO IDENTIFY SELF-ALIGNING HEADS: Cast iron self-aligning heads have a large round hole for the pushrod to pass through.

Aluminum heads have pushrod guideplates that have 3/8" wide pushrod slots or no guideplates at all.

CONVERTING SELF-ALIGNING HEADS: Cast iron heads require the stud bosses to be milled, then drilled and tapped for screw-in

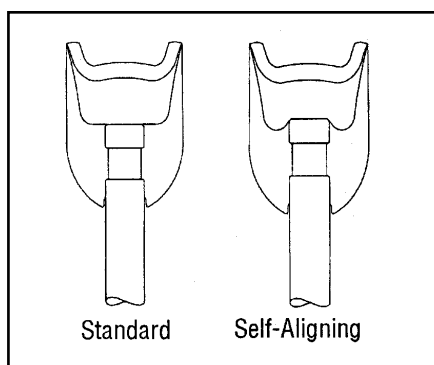


Figure 1

INSTALLING STUD MOUNTED ROCKER ARMS

1. Remove the valve cover. Many engines made after the mid 1970's use a bead of a silicone sealer rather than a gasket to seal the valve cover. Because of this, you will probably find it necessary to carefully pry the valve cover off of the engine. Use caution in prying as you may warp or bend the cover. Check the cover on a flat surface before reinstalling it to make sure that it is flat and will seal properly. Also, make sure that you clean out any buildup inside the cover before reinstalling it.
2. Following the sequence of adjustment outlined below for your engine, when the time comes to adjust the rocker arm, remove your old rocker arm. Use a squirt can to fill each pushrod with engine oil after it is installed in the lifter, then install the new rocker arm and matching components and adjust it individually. Coat the rocker arm and components liberally with Crane Engine Assembly Lube 99008-1 before installation. Do not use a moly paste type lube during installation.

We recommend installing the pushrods and rocker arms on one cylinder at a time and adjusting the valves on that particular cylinder. Do not tighten the adjusting nut down before adjusting the valves. If the adjustment is too tight, it can cause the valve to hit the piston when you turn the engine over, resulting in bent valves, bent or broken pushrods, rocker arm studs to be pulled out of the head, and premature cam wear.

Make sure that the pushrod is **in the tappet** and **in the rocker arm seat** when making valve adjustments.

For hydraulic lifter camshaft adjustment, turn the engine in

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the normal direction of rotation until the exhaust pushrod starts to move up, then adjust the intake valve to zero lash with no preload, then between 1/2 to 1 turn more. Turn the engine over again until the intake pushrod goes all the way up, and then comes almost all the way back down. Now, set the exhaust valve to zero lash then between 1/2 to 1 turn more. Continue above procedure for each cylinder until all valves are adjusted. Use the same adjustment on every rocker arm.

Note: Zero Lash means no preload and no lash or clearance.

This procedure will give you the correct lifter preload for any hydraulic lifter cam with adjustable rocker arms. If the adjustment procedures are followed correctly for hydraulic lifter cams, no further adjustment is necessary for the life of the cam.

If your engine is equipped with bottleneck studs, as are some Ford and Pontiac models, you may find that the adjusting nut will bottom out before you obtain proper lifter preload. If this problem occurs, you can either use a spacer washer between the adjusting nut and the pivot ball or use a slightly longer pushrod. The spacer washer **MUST** fit over the shoulder or bottleneck portion of the stud. Crane offers special locking adjusting nuts for bottleneck studs with 3/8x24 threads, part number 99768-16. They are counterbored to fit over the bottleneck/shoulder area.

The same adjustment procedure should be used for mechanical lifter cams. Instead of lifter preload, you must use the clearance specs on the cam card for your cam. Mechanical lifter cams require a second adjustment after break-in, then periodically at tune-up time for the life of the cam. **Self-aligning rocker arms can not be used with mechanical lifter cams.**

3. After you have properly adjusted your rocker arms, you need to check for sufficient clearance.

Your new Crane rocker arms have the same length, or longer, of a slot than your stock rocker arms. Check for clearance between the end of the slot and the rocker arm stud or pedestal. You should have at least .060" when the valve is either fully open or fully closed. (See Figure 2.) An easy and accurate way to check this is to use lightweight checking springs and a fully primed hydraulic lifter.

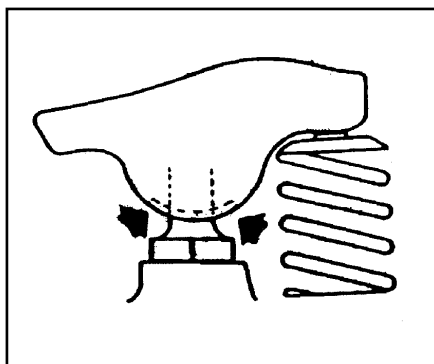


Figure 2

Standard valve springs will cause the lifter to "bleed down" and give you a false reading. This step is especially important when you are installing higher ratio rocker arms or if

you are replacing the camshaft and/or hydraulic lifters at the same time. Which mechanical lifters, you do not need to use checking springs.

Additional clearance can be gained by using different length pushrods, available from your Crane Cams dealer. Keep in mind that pushrod length has an effect on rocker arm geometry. An excessively long or short pushrod may cause the rocker arm tip to run off of the valve stem tip at the beginning or the end of its travel. If sufficient clearance is still not available, contact your Crane Cams Technical Consultant for assistance.

4. Check to insure that you have at least .040" clearance between the underside of the rocker arm and v a l v e spring/retainer combination. (See Figure 3.) This clearance is normally the least when the valve is closed, but you should check it

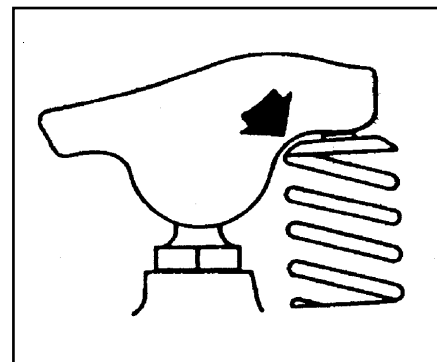


Figure 3

throughout the rocker arm's travel. Using slightly longer pushrods, available from your local Crane Cams dealer, will normally eliminate any clearance problems. Repeat step 2 after changing pushrods.

5. Recheck your engine for spring coil or "stacking" if you are using higher than stock ratio rocker arms or if you also replaced the camshaft. You can multiply your rocker arm ratio by the cam lift to find your new gross valve lift. To avoid problems, we recommend that you check spring travel by depressing the spring assembly by using an on-head spring compressor, or pry bar, with the piston rotated down and out of the way. Do not check spring travel by turning the engine if you are using hydraulic lifters. You would need to use a mechanical lifter to prevent "bleed down" with this method. Your valve train must have the capability to travel at least .060" more than the full valve lift of the cam you are using.
6. Pour motor oil over the assembled rocker arms to insure adequate lubrication at initial engine start. Under absolutely no circumstances should you attempt to install and start the engine without first pre-lubricating the rocker arms and components! Clean all parts and gasket surfaces. Install new gaskets and reassemble the engine.

If for any reason you don't understand these instructions or have a question about installation, contact one of our Technical Consultants.

Remember: Always wear eye protection whenever working on any machinery.