Camshafts

1. Always use new lifters when installing a new camshaft.

The bottoms of the lifters are spherically ground, and the cam lobes are ground with taper across the face of the lobe. The mating of these two surfaces ensures that the lifter will rotate, thus reducing the chance of premature wear. If the lifter does not rotate, or if you install used lifters on a COMP Cams® camshaft, early failure will almost certainly result, and ***your warranty will not be valid.***

2. Check piston to valve clearance.

Insufficient clearance will render the engine inoperable. A minimum clearance of .100" on the intake valve and .125" on the exhaust must be maintained. Keep in mind that when you advance or retard the cam, it dramatically changes clearance. Also, most of our High Energy Cams™, Magnum Cams, and Xtreme Energy Cams™ are ground with 4 degrees advance already in them. Always check clearance with the cam degreed in the correct position. For instructions on checking piston to valve clearance, see our camshaft installation sections on page 378.

3. Be sure to use the recommended valve springs for the camshaft being installed.

Incorrect pressure or incorrect spring application will almost certainly lead to a worn out cam. Most aftermarket cams have higher than stock lift. Therefore, stock valve springs will "coil-bind" or "stack" before the cam reaches full lift, causing the cam to fail immediately. This happens because there is not enough installed height with the stock springs. When a new cam is installed, always check the springs for "coil-bind". With the valve at full lift, check the clearance between the coils. Maintain a minimum of .060" between the coils at this point.

When excessive spring pressure causes cam failure, it can be the result of incorrect springs, as well as short valves, improper retainers and many other factors unrelated to the camshaft or valve springs. The only way to ensure the correct pressure is to actually check the installed height and pressure. Refer to the instructions in the valve spring box for this procedure.

4. Lubricate the camshaft prior to break-in.

The first few minutes are the most critical period in the life of a camshaft. For this reason, COMP Cams® has developed a special lubricant (included with each flat tappet camshaft - Part #103) for the purpose of camshaft break-in. Spread a generous amount of this special lube on the cam lobes, distributor gear and fuel pump lobe. Also lube the bottom of the lifter. In flat tappet race cams where double springs are recommended, it is very beneficial to remove the inner springs prior to cam break-in. This limits the amount of force on the cam during this critical period. To ensure that the engine is pre-oiled correctly, use a priming tool (Part #4921 Small Block and Big Block Chevrolet only) and an electric drill before initial start-up. Also, if you are building several engines, our 1.2 ratio Hi-Tech™ Break-In Rocker Arms (Part #1112-16 Small Block Chevrolet only) save time, eliminating the need to change springs prior to break-in.

5. Be sure to read installation instruction brochure PRIOR to installation.

A little time spent reading the proper procedures for camshaft installation can save a great deal of time and money in the long run.

Rocker Arms

1. Be sure to lubricate ball pivot and stud with special lubricant (Part #102 or Part #106).

Like the camshaft, the first few minutes of a rocker arm's use is the most critical. Failure to lubricate this area upon installation will cause excessive wear and damage.

2. Use new pushrods.

Just like lifters match camshaft lobes, pushrod tips wear to match the pushrod seat in the rocker arm. Failure to change pushrods will result in improper contact between the old pushrod and the new rocker arm, causing damage to each. We recommend the use of our RP Kits found on the page of your specific cam section.

3. On fully rollerized rocker arms, be sure to use correct diameter polylocks.

Using the wrong sized polylocks will cause bearing failure in the trunion. Ensure that the rocker arm body clears the polylock on all sides throughout the cam lift cycle. Roller rocker arm trunions always have one side with a flat around the hole in the center of the trunion where the rocker stud is to stick through. This flat should always face up when installing the rocker over the stud. Also, be sure that the bottom surface of the polylock mates squarely with the flat on the trunion, and not at an angle.

4. Check valve cover clearance.

Normally, it is not possible to use stock valve covers with roller rocker arms because the polylocks make the roller rocker arms taller.

Valve Springs

1. Once the valve springs have been installed, it is important to check for coil bind.

This means that when the valve is fully open, there must be a minimum of .060" clearance between the coils of both the inner and outer springs. If this clearance does not exist, you must change either the retainer or the valve to gain more installed height or change to a spring that will accommodate more lift.

2. Always check for clearance between the retainer and the inside face of the rocker arm.

This will be most evident while the valve is on the seat. Rocker arms are designed to clear specific spring diameters, so you should check to see that you have the proper rocker arm/retainer combination. This situation can also be the result of improper rocker geometry and may be corrected with different length pushrods or a different length valve.

3. Before removing the retainers, measure the distance from the bottom of the retainer to the top of the valve seal.

This distance must be greater that the lift of the valve. If not, the guide must be machined. This a very common cause of early camshaft failure.

4. Use only the valve springs that will give the recommended spring pressure with the valve both on the seat and at maximum lift.

Pushrods

1. When using guide plates, be sure to use hardened pushrods.

Failure to upgrade pushrods will cause the sides of the pushrods that touch the guide plates to become worn and will weaken the entire piece. Also, be sure that the correct end is interfacing with the guide plate. Some two-piece pushrods are only hardened at one end.

2. When installing our Magnum Rocker Arms, be sure to install new pushrods.

The old pushrods will show radius wear, making the old set incompatible with the precision pushrod seat of the new rocker arms.

3. Be sure that there is proper piston to valve clearance.

Bent pushrods, among other things, will surely result if a piston and valve touch. See the camshaft installation instructions preceding this section.

Timing Sets

1. Be sure bottom gear is square with the crankshaft when installing.

Improper installation of gears can result in cracked or completely broken gears. We suggest using our Part #4789 Crank Gear Installation Tool to push the gear on with our Part #4920 Balancer Installation Tool (see page 335). Do not use a hammer and punch as the pressures cannot be evenly applied.