INSTRUCTIONS

# Hydraulic Roller Lifters

**Applicable Part Numbers: 850-16, 851-16, 853-16, 854-16, 856-16, 857-16, 900-16, 8920-16, 8921-16, 8931-16, 8934-16, 8953-16, 8954-16, 8957-16, 8959-16, 8960-16**

Thank you for choosing COMP Cams® products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information.

The following instructions cover the correct procedures for installing COMP Cams® Hydraulic Roller Lifters. Before beginning installation be sure that your engine's oil system is clean and free of sludge or other contaminants such as silicon fragments. Sludge or contaminants in the oil system can cause premature failure of your new hydraulic lifters. The hydraulic roller lifters can be used with adjustable and non-adjustable valve train setups. Through various testing we have discovered that the recommended lifter pre-load should be set ½ turn of the wrench on the rocker arm adjusting nut past zero lash for optimal performance.

**Setting Hydraulic Lifter Pre-load:**
The correct amount of lifter pre-load is important to help efficiently control the valve train. Insufficient pre-load will cause valve train noise, while too much pre-load may damage the hydraulics of the lifter or cause low manifold vacuum. By following the steps listed below you will help ensure proper engine performance and reliability.

**Instructions:**

1. **Lifter cleaning**: Remove your new COMP Cams® lifters from the packaging. The lifters need to be cleaned with mineral spirits or parts washing solvent first to remove any debris from shipping or handling. Also check to ensure that the wheel rolls smoothly. **NOTE: Rollers may feel as though the wheels drag more than expected due to the grease packing for assembly and break-in. This is normal. WARNING:** The wheel needle bearings are pre-greased with special OE grease. While cleaning, be careful to **NOT** blow out this grease for this is very vital to initial break-in. Also do **NOT** clean with aerosol cleaners! And do **NOT** allow the wheel to be spun by compressed air.

2. **Lifter preparation**: It is not necessary to "pre-pump" hydraulic lifters full of engine oil prior to installation and valve adjustment. It is actually undesirable to do so as the "pumped up" lifters will cause the valves to open during the adjustment process, rather than positioning the lifter plunger in its operating position as it is supposed to do. Next, soak the lifters with COMP Cams® Break-In Oil (Part #1590) or equivalent for at least two hours. Doing so ensures that the lifters are adequately lubricated on their outer surfaces prior to installation. It may also result in a quieter engine start-up as the oil in the bath may displace some air from the lifter's plunger reservoir. When you install the lifters, make sure they fit well. Any excess clearance or tight lifters can cause damage to the camshaft, leading to engine failure. Verification of lifter to lifter bore clearance is recommended. **Note: Contact your engine builder or block manufacturer for your specific clearances.**

3. **Setup:** With your cam installed, simply place the prepped lifters into the lifter bores. If you are using hydraulic rollers with a link bar, pay close attention to which direction the link bar faces. The link bars on retro-fit lifters should face the valley of the block (**except for 8920-16, in which link bars must face the cylinder side of the block instead of the valley**). If the link bar has an arrow on it, make sure the arrow is pointing upward (↑). If your engine block was originally equipped with hydraulic rollers, make sure the lifter roller wheel is positioned to roll along the camshaft lobe. Failure to do so will result in camshaft damage and improper oiling. Now that the lifters are in place, you can begin to install the pushrods and rocker arms.

4. **Pushrod and rocker arms:** Clean all pushrods thoroughly because most engines oil through the center of them. If the original pushrods are being used, be especially sure that they come clean inside and out. Apply a small amount of COMP Cams® Engine Assembly Lube (Part #102) or an equivalent lube on each end of the pushrods, and install them into the engine. Clean all rocker arms thoroughly. If the original rocker arms are being used, examine each one for excessive wear, and replace any that are questionable. Apply a small amount of lube on all contact areas of the rocker arm. With a clean rag or towel, wipe the tips of the valves clean and apply lube to the areas where the rocker arms will come in contact with them. Also be sure to check the valve stem tips for excessive wear. Next, install the rocker arms. Make sure the pushrod is in the lifter and the rocker arm seat when making valve adjustments.

5. **Adjusting pre-load:** COMP Cams® Hydraulic Roller Lifters can be used with adjustable and non-adjustable valve train designs. However, each type of valve train has its own set of procedures for setting pre-load. This section is divided into two parts: Section I describes adjusting pre-load with an adjustable valve train, while Section II explains adjusting the valves using a non-adjustable valve train.

   **Section I. Setting pre-load with ADJUSTABLE ROCKER ARMS**
   Turn the engine in the normal direction of rotation. Start with cylinder number (1) one. When the exhaust valve begins to open, adjust the intake valve to the correct pre-load. To reach zero, take the pushrod between your finger tips and move it up and down while you tighten the rocker arm. Once you feel the pushrod has no more vertical slack, you are at zero pre-load. Make sure the pushrod is in the lifter and the rocker arm seat when making valve adjustments. As stated before, the **recommended** setting is ½ turn of the wrench on the rocker arm adjusting nut past zero. Now you can move on to the exhaust valve on the same cylinder. Begin by rotating the engine over again until the intake valve reaches maximum lift and is almost all the way back down. Then set the exhaust valve using the same method as the intake (½ turn of the wrench past zero). Continue adjusting the valves on each cylinder in this manner until all the valves are adjusted.

   **Section II. Setting pre-load with NON-ADJUSTABLE ROCKER ARMS**
   A different procedure and measurement is required to set hydraulic lifter pre-load on engines with non-adjustable rocker arms. First, install the pushrods and torque all the rocker arm bolts down in the proper sequence and to the correct torque specification. Rotate the engine by hand in the normal direction of engine rotation until both the exhaust and intake valves have opened and closed completely. Allow a couple of minutes for the lifters to bleed down.

Using the valve cover gasket surface on the head as a reference point, place a mark on the pushrod. The smaller, more defined the mark, the more accurate the measurement. Be sure the reference point you choose for the first mark is easily accessible and easy to duplicate. The pushrod will be marked twice. It must be measured from the same reference point and angle for the measurement to be accurate.

Loosen the rocker or rocker shaft bolts. Leave the rockers on the head so that they will support the pushrods. Be sure the pushrods are standing free in the lifters and do not have any pre-load. Using the same reference point, place a second mark on the pushrod. Make sure the angle and reference point are the same as the first mark.

You now have two marks on the pushrod: one with the assembly bolted into place as the engine will run, and one with the lifter unloaded. The distance between these two points will represent the amount of lifter pre-load. If the pre-load is not within .020" to .080," adjustment is necessary. The simplest way to accomplish this is by using different length pushrods. When measuring to find the correct length needed, be sure to include the pre-load that the lifter requires (.020" to .080"). If the engine uses pedestal-mount rockers, shims can be placed under the pedestal to reduce the pre-load. The stands on shaft-mounted rockers can also be shimmed in this manner. Longer pushrods will be needed in the case of insufficient pre-load.

In most cases, only one intake and one exhaust pushrod will need to be checked. If the valve stem heights are not equal, then pre-load will have to be checked on each valve. If you do need custom-length pushrods, call CAM HELP® at 1-800-999-0853. COMP Cams® offers a variety of pushrods in most lengths.

6. **Engine Start-up:** After the lifters are installed, it is **NOT** recommended that the engine sit for a long period of time prior to initial startup, in an effort to help prevent the breakdown of the oil film. If this is a new engine build or your engine has not recently been run, be sure to prime the oil system before initial start-up. This will ensure that your new lifters do not run dry while your oil pump is building pressure. Even with a primed oil system, it is not uncommon to hear slight noise from your new hydraulic lifters during the initial warm-up cycle or after the engine has sat for several days. This noise could last several minutes. During this time the lifters are cycling oil and filling their reservoirs, no damage will occur to the lifters or engine during this time as long as the RPM is kept below 3500 and the engine is not operated under full load. Important: please monitor oil pressure as it should rise into the operating range within the first few seconds of start-up; otherwise, the engine should be stopped and the oiling problem investigated.

7. Please follow the link below for further information regarding the importance of care and cleanliness when installing COMP lifters in your engine. https://youtu.be/thMhEjniJGg

**Social Media**

Stay up-to-date with the latest COMP Performance Group™ company and product information by following us on any of our social media platforms.


## Limited Warranty

Competition Cams, Inc. warrants that all of its products are free from defects in material and workmanship, and against excessive wear for a period of (1) one year from the date of purchase. This **limited warranty** shall cover the original purchaser.

**Competition Cams, Inc.'s obligation under this warranty is limited to the repair or replacement of its product.** To make a warranty claim, the part must be returned within (1) one year of purchase to the address listed below, freight prepaid. Items covered under warranty will be returned to you freight collect.

**It is the responsibility of the installer to ensure that all of the components are correct before installation. We assume no liability for any errors made in tolerances, component selection, or installation.**

**There is absolutely no warranty on the following:**

A) **Any parts used in racing applications;**

B) **Any product that has been physically altered, improperly installed or maintained;**

C) **Any product used in improper applications, abused, or not used in conjunction with the proper parts.**

**There are no implied warranties of merchantability or fitness for a particular purpose.** There are no warranties, which extend beyond the description of the face hereof. Competition Cams, Inc. will not be responsible for incidental and consequential damages, property damage or personal injury damages to the extent permitted by law. Where required by law, implied warranties or merchantability and fitness are limited for a term of (1) one year from the date of original purchase.

This warranty gives you specific legal rights and you may also have other legal rights, which vary from state to state.