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LS SERIES SHAFT MOUNT ROCKER ARM SYSTEM INSTALLATION INSTRUCTIONS

PART NUMBERS:
3534631, 3534632, 3536431, 3536432

<i>COMPONENTS</i>	<i>QTY</i>
ROCKER ARM STEEL PEDESTALS	2
ROCKER ARMS (PAIRS)	8
ROCKER ARM SHAFTS – CHROMOLY STEEL	8
LOW-HEAD CAP SCREW, 12-POINT M8-1.25 X 25MM	16
ROCKER ARM SHAFT BOLTS - T-45 TORX® SOCKET HEAD, 5/16"-18 X 1.250"	24
3/8"-24 VALVE LASH ADJUSTER SCREWS	16
3/8"-24 12-POINT VALVE LASH ADJUSTER LOCK NUTS	16
VALVE LASH LOCK NUT WASHERS – 3/8"	16
ROCKER STAND SHIMS (LS1-LS2-LS6) 0.040"/0.080" THICK	8
ROCKER STAND SHIM WASHERS (LS3-L92) 0.040" / 0.80" THICK	16
SHAFT HEIGHT GAUGE	1
ASSEMBLY LUBE	1

Tool requirements

- 3/8" drive socket wrench
- 14 mm 12-point socket
- T-45 Torx® driver
- 7/16" 12-point socket
- Thread chaser tool
- Assembly lube and/or lubricating oil
- Pump-style oil can
- Calipers or depth gauge
- Torque wrench

WARNING TO INSTALLER: Minor machining may be required to the pushrod bore holes and/or cylinder head top rail for proper pushrod and rocker body clearance. Installation of this rocker system requires modification of all factory valve covers, or the use of a properly machined valve cover spacer, or PRW brand pre-machined and relieved valve covers specifically designed for these rocker arm systems (recommended). Stock valve covers must have the baffle(s) removed in order to clear this rocker system.

Under no circumstance should the rocker system be modified. Warranty is void if it is evident that the rocker arms have come in contact with valve covers or cylinder head.

Shaft Rocker Arm System Preparation:

Please read these instructions carefully before beginning your installation. Also, take a moment to review the limited warranty information. If there are any questions or problems during the installation, please do not hesitate to contact the PRW Customer Service Hotline at 1-888-377-9779, between the hours of 7:00 AM and 4:00 PM PT (10 AM – 7 PM ET, 9 AM – 6 PM CT, 8 AM – 5 PM MT) Monday through Friday.

- 1) Confirm that all parts are included by comparing to the parts list.
- 2) Make certain that you have all the tools necessary to complete the project.
- 3) Assembly lube and/or lubricating oil should be readily available for installation.

Shaft Rocker Arm System Installation:

STEP 1: All PRW products are manufactured and maintained in a clean environment and inspected carefully before shipping to our customers. That said, it is important that the installer inspect carefully and remove any foreign objects or debris that may impair the performance of the product prior to installation.

STEP 2: Thoroughly inspect both cylinder heads to ensure there are no obstructions that may impair the rocker stands from bolting into place on an even plane.

STEP 3: If installed, remove any rocker arm studs from the cylinder heads. Inspect all rocker stud bolt holes to ensure that the threads have not been damaged during removal of the studs. Utilize a thread chaser to assure the threads are clean to mount the rocker stands securely to the cylinder head.

STEP 4: Verify that all rocker stand bolts can be threaded to operational depths through the rocker shafts and into the rocker arm stud holes, prior to applying torque to any of the rocker stand bolts. Confirm adequate depth for rocker stand bolts with calipers or a depth gauge. Check rocker arm shaft bolts to be certain that none extend beyond the depth of the rocker arm stand when installed. If too long, the bolts should be shortened using a bench grinder. Be sure to clean up any modified threaded bolt ends with a thread chaser after grinding.

STEP 5: If longer than stock valve stems are being utilized, rocker stand shims will be required. If required, make certain to utilize equal thickness combinations of shims under each pair of rocker stud holes. Two (2) thicknesses of rocker arm pedestal shims are included (0.100" and 0.050") and eight (8) of each are included with each kit. Carefully inspect the rocker arm geometry to ensure that the roller tip is centered (or slightly over center) and nearly parallel to the valve spring retainer. Shims should be added under the rocker stand to raise the shaft proportionate to the added length of the valve stems (See Page 2). Shimming the heads will not be required if cylinder heads are equipped with standard length intake and exhaust valves.

DETERMINE CORRECT STAND HEIGHT

Install the rocker stands on the cylinder head using the M8-1.25 x 25mm low-head cap screws. The stands should be placed on the head so the stamped letters face the valve stem. Remove a rocker arm from one of the shafts and place that shaft on a stand. Take the shaft height gauge supplied with the kit and place it on the valve stem as shown in Figure 1.

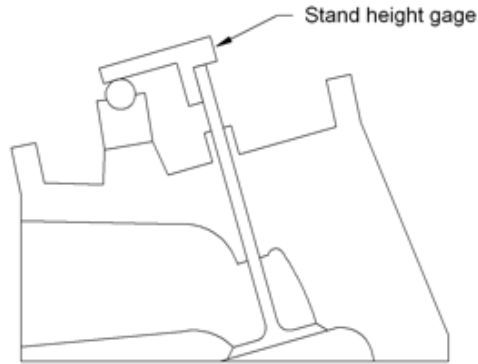


Figure 1

The gauge should contact the top of the valve and the rocker shaft as shown in Figure 1.

If the gauge contacts the shaft before touching the top of the valve stem, as shown in Figure 2, remove a corresponding amount of material from the stud bosses on the cylinder head. This will lower the rocker stand on the cylinder head.

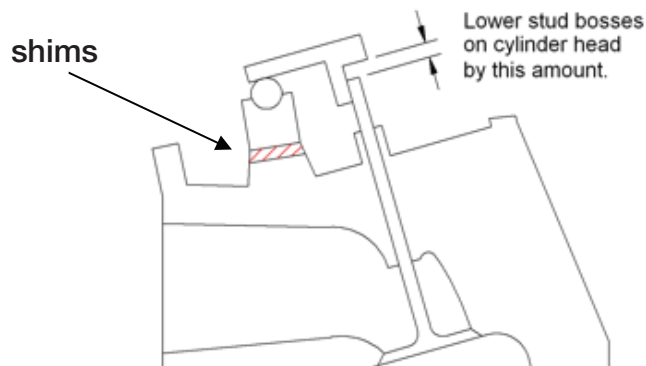


Figure 2

If the gauge contacts the top of the valve stem and does not touch the rocker shaft, as shown in Figure 3, add a corresponding amount of shims between the stand and the cylinder head. This will raise the rocker stand and shaft to the correct height.

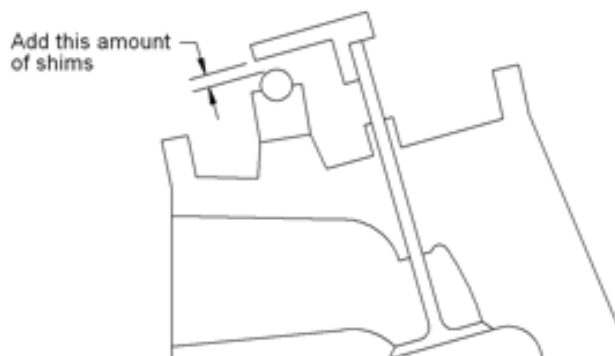


Figure 3

NOTE: The shaft height gauge supplied with this assembly is manufactured for 0.550" of valve lift. For lifts less than 0.550", the shaft height should be raised by half the difference, and for lifts greater than 0.550", the shaft height should be lowered by half the difference. (i.e.: For 0.650" lift, the shaft should be 0.050" lower than the gauge, and for 0.500" lift, the shaft should be 0.025" higher than the gauge).

STEP 6: Torque the M8-1.25 x 25mm pedestal mount 12-point low-head cap screws to the OEM or cylinder head manufacturer's specifications. Do not exceed the specifications provided on Page 4. Any bolts that thread into an intake runner should be coated with a thread sealant such as PRW Vibra-Tite® or Loctite®.

STEP 7: Install the rocker arms onto the rocker arm pedestal one pair at a time. If pushrod length has already been determined and pushrods installed, back the adjusters out until the base of the adjuster seats against the rocker body. If pushrod length has not been verified, please refer to the section (after STEP 10 below): Pushrod Length -- Checking to Determine Proper Length to determine the appropriate pushrod lengths. Once completed, install the pushrods, and continue STEP 7 as detailed below.

Make certain that the number 1 cylinder is at TDC (Top Dead Center) and the pushrods are properly seated in the valve lifter at one end and the valve lash adjuster at the other. The rocker arms should rest in the pedestal/stand without any pressure between the valve lash adjuster and pushrod. Install the 5/16" Torx® head machine screws through the rocker shafts into the rocker stands; hand-tighten until snug and then torque to specifications detailed on Page 5. Upon installing the first pair of rocker arms, rotate the crankshaft 90 degrees and install the next pair of rockers. Follow the engine firing order until all rocker arms have been installed.

NOTE: *Never attempt to install or remove rocker arm shaft machine screws while valve spring pressure exerts a load. Attempting to do so may seriously damage the shaft or other component parts.*

STEP 8: Place a few drops of oil on the valve lash adjuster threads prior to installation in each rocker arm. Tighten the adjuster against the pushrod by hand until bottomed out. Back the adjuster out 1 turn. Thread the adjuster nut onto the 12-point valve lash adjuster and tighten to 12-14 ft-lbs to seat the adjuster.

NOTE: It is critical that the adjuster is backed out one full turn before applying torque to the adjuster lock nut. Failure to do so may result in damage to the adjuster and rocker arm.

STEP 9: Once the valve lash adjuster has been seated, loosen the adjuster nut and set the adjuster for valve lash. Retighten the adjuster nut to 12-14 ft-lbs.

NOTE: DO NOT run the rocker arm with the adjuster bottomed-out. Doing so will result in damage to the rocker arm and other engine components. The rocker arm should not be operated with the adjuster screw more than one turn up or down, from the initial adjuster position. Doing so can cut off the critical flow of oil to the rocker arm, resulting in premature rocker arm failure.

STEP 10: To confirm proper adjuster oiling function, using pump-style oil can against the oiling hole in the adjuster, pump the handle until oil comes out of the oil passage behind the rocker arm roller tip.

Pushrod Length -- Checking to Determine Proper Length

1. With the number 1 cylinder at TDC (Top Dead Center), seat the provided pushrod length checkers in both exhaust and intake valve lifters.

a. Be aware the base circle may be different between the intake and exhaust camshaft profiles.

- b. It is necessary to check both for proper individual pushrod length.
2. With the valve lifter on camshaft base circle and valve lash adjuster rotated clockwise 1 turn out from the seated position, install the rocker pair over the number one cylinder with the length checkers in place. TIP: You may wish to mark the checkers "I" and "E" (for intake and exhaust) to easily identify after removal.
3. Tighten the Torx® machine screws through the shaft and into the stand until snug.
 - a. Do not attempt to install or remove rocker arms under load.
 - b. To do so will likely result in serious damage to the rocker arm shaft, bearings, and/or the rocker body.
4. Adjust the pushrod length checkers to required fitment and proper length.
 - a. Remove the rocker pair from the stand and then remove the pushrod length checkers.
 - b. Record the lengths required for reference and order the appropriate quality Intake and Exhaust pushrods from your Racing and Performance parts dealer.

SPECIAL NOTE: *Maximum recommended spring pressures for the PQX Shaft Mount Rocker Arm System is 275 lbs closed; and 700 lbs open. The rocker arms will clear up to 1.550" diameter valve spring. Pushrods selection is important; these are critical parts. High quality aftermarket 4130 chromoly steel 11/32" diameter pushrods, with 210 degree ball ends are recommended. Custom length pushrods are readily available from PRW, or Manton Pushrods, or other custom manufacturer directly. Extra care must be exercised to assure pushrod bore holes are properly "clearanced" for 1.8 Ratio rocker arm systems.*

Post Installation Maintenance:

The synchronized oil system must be inspected periodically for obstructions that may prevent proper rocker arm oiling. After the valve has been adjusted to camshaft specifications, verify that the 12 pt. adjuster nut has retained 12-14 ft-lbs torque.

NOTE: *Severe engine damage may occur if the adjuster nut should come loose while the engine is operating.*

TORQUE SPECIFICATIONS	
M8-1.25 x 25mm 12-point Pedestal Bolts	240 Inch-lbs with Moly Lube
5/16" Shaft Bolts	26-28 ft-lbs with Oil
3/8" – 12-point Adjuster Nut	12-14 ft-lbs with Oil

WARNING:

1. Do not re-tap rocker body adjuster hole. Doing so will damage the rocker arm beyond repair!
2. Do not over-tighten adjuster nuts or modify adjuster counterbore!
3. Do not degrease rockers and/or run without proper lubrication.
4. Do not run valve lash adjusting screw out past two threads from seated position!
5. Do not allow pushrods to come in contact with cylinder head!
6. Do not run with rough or damaged pushrod tips!
7. Do not loosen shaft bolts under spring loads!

Limited Warranty

Performance Quotient and PRW Industries, Inc. ("PRW") 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.

PRW'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. PRW assumes no liability for any errors relative to tolerances, component selection, or installation.

There is absolutely no warranty on the following:

- i. Any parts used in racing applications, or;
- ii. Any product that has been physically altered, improperly installed or maintained, or;
- iii. 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 and no warranties which extend beyond the description of the face hereof.

PRW 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 may give you specific legal rights. You may also have other legal rights, which vary from state to state.