



ALUMINUM ROLLER-TIP NEEDLE BEARING ROCKER ARMS STUD-MOUNTED TYPE AND BOLT-ON TYPE Instruction Sheet

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF FORD RACING PERFORMANCE PARTS.

Please visit www.fordracingparts.com for the most current instruction and warranty information

!!! PLEASE READ ALL OF THE FOLLOWING INSTRUCTIONS CAREFULLY PRIOR TO INSTALLATION. AT ANY TIME YOU DO NOT UNDERSTAND THE INSTRUCTIONS, PLEASE CALL THE FORD RACING TECH LINE AT (800) 367-3788 !!!

Ford Racing aluminum rocker arms are precision items of high-performance equipment designed to provide an accurate, lightweight valve train that will resist flex and fatigue.

INSTRUCTIONS FOR STUD-MOUNTED TYPE ROCKER ARMS:

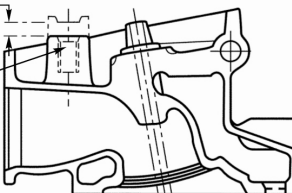
- STEP 1:** Make certain that the flat area on the trunnion of each rocker arm is facing up to correctly contact the hex adjusting nut.
- STEP 2:** When using screw-in rocker arm studs make certain that the rocker arm does not bottom on the base of the stud. Contact in this or any other area that causes binding will damage or destroy components.
- STEP 3:** Screw-in rocker arm studs are recommended for high-performance durability. Accurately machine each rocker stud boss. Drill, tap and chamfer for studs as shown in Fig. 1. Align push rod guide plate and install studs.
NOTE: Some push rod guide plates must be split to allow good push rod alignment.
- STEP 4:** Valve clearance adjustment – mechanical cam. Tighten hex nut to desired setting then tighten locking screw firmly. Re-check clearance.
- STEP 5:** Valve clearance adjustment – hydraulic cam. Tighten hex nut to 1/2 to 3/4 turn past noisy operation then tighten locking screw firmly (for anti-pump up lifters, follow manufacturers recommendations).

HEAD MODIFICATION FOR ROCKER ARM STUDS

Pedestal type cylinder heads can be modified for rocker arm studs (351/351M/400 illustrated). Machine at right angles to the existing hole, not the bottom of the head. The valves operate at compound angles. With 302/351W type pedestals, measure from the top of the pedestal.

Mill 0.300" Parallel
to Original Surface

Drill – 0.376" - 0.372"
Dia. x 0.88" Deep
Tap – 7/16"
14 UNC 2-B Thread 0.68" Deep
Chamber – 0.469" Dia. x 60°



All 302/351W	.230"
All 351C/351M/400	.300"
1973-1995 429/460	.300"
1968-1972 429/460	.230"

INSTRUCTIONS FOR BOLT-ON TYPE ROCKER ARMS:

The bolt-on rocker assemblies are designed to be used as a direct replacement for stock rocker arms on standard engines with hydraulic camshafts and lifters. Do **NOT** use with anti-pump up lifters.

No cylinder head pedestal machining or additional components such as guide plates and rocker studs are required.

Engines with non-standard components, particularly performance camshafts, may need additional minimal machining or grinding of the pedestal inserts or different length push rods.

INSTALLATION:

!!! WARNING! FOLLOW THESE INSTRUCTIONS CAREFULLY! DEPARTURE FROM THIS PROCEDURE MAY RESULT IN DAMAGE TO OTHER COMPONENTS!!!

- STEP 1:** Remove rocker arm cover and turn engine to number one cylinder, top dead center, both valves closed.
- STEP 2:** Remove stock rocker arms, fulcrums and bolts from number one cylinder.
- STEP 3:** Use engine oil to lubricate push rod cup, roller tip and bearing areas before installation.

Factory Ford shop manuals are available from Helm Publications, 1-800-782-4356



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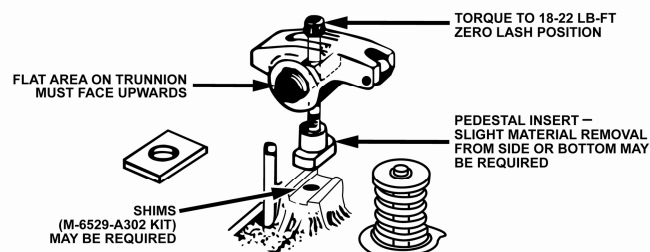
- STEP 4:** Replace each rocker arm individually, placing the pedestal insert underneath the trunnion with the flat area of the trunnion up. Insert the bolt thru the assembly screwing into the cylinder head. Tighten until the push rod is seated in the rocker arm cup. This is the zero lash position. Using your fingers, you should be able to turn the push rod with no resistance and no up-and-down clearance. If clearance still exists, see **CORRECTIVE ACTION**.
- STEP 4a:** Pedestal fits into pedestal channel on 302/351W.
- STEP 5:** Because of machining variations in the cylinder heads, the bolt holes may not be correctly centered between the machined groove. If necessary, file or sand the required amount from the side of individual pedestal inserts.
- STEP 6:** Starting with the zero lash position, tighten the bolt to 18-22 lb-ft. It should fall between one quarter to one turn for correct lifter preload.
- STEP 7:** If this exceeds one turn, you should place a shim from Ford Racing M-6529-A302 Shim Kit between the cylinder head and the pedestal insert, then reassemble. Select the appropriate shim thickness to achieve correct lifter preload (STEP 6).
- STEP 7a:** Put shim between pedestal and channel for 302/351W.
- STEP 8:** Turn engine so that the next cylinder in the firing order is top dead center on compressions stroke, both valves closed. Follow the instructions given in STEP 2 thru STEP 7 and do the same for each of the remaining cylinders in firing order.
- STEP 9:** Start the engine and check to see that oil is flowing from each rocker arm and the engine idles quietly and smoothly. Install rocker arm cover.

TAPPET NOISE

Engines with standard components should run quietly without tappet noise. If engine operation was not noisy before installation of the rocker arms but is now, simple corrective action is necessary. See instructions below.

CORRECTIVE ACTION: Likely causes of noisy operation are due to variation in the calculated length of the shims required being affected by either wear or engine rebuilding processes such as block, cylinder head, valve grinding, or more commonly, performance camshafts with reduced base circle diameter. All of these factors change the valve train length. Corrective action is to remove material from the pedestal inserts.

- STEP 1:** With engine idling, place feeler gauge under each rocker arm and valve tip to determine the noisy arm and amount of clearance.
- STEP 2:** Clearance can be eliminated by modification to the supporting pedestal insert under the rocker arm. This is carried out preferably by turning in a lathe or grinding material from the pedestal insert length. As they are not hardened it is possible to reduce their height by carefully filing of the bottom of the insert. This **MUST** be square to the original surface.
- STEP 3:** The amount of material to be removed from the pedestal insert is determined by multiplying 0.4 times the clearance then adding .025 inches. Example: Clearance = .060" x 0.4 = .024" + .025" = .049" to be removed.
- STEP 4:** Should engine operation be quiet but run erratically, this is due to one or more tight tappets causing complete valve closing. Refer to STEP 6 and STEP 7. Correction requires shim between the cylinder head and the pedestal insert. Ford Racing M-6529-A302 Shim Kit should be used to achieve proper lifter preload (STEP 7).



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