



Instructions for EMPI #21-2309 High Performance Rocker Shaft Kit

Thank you for purchasing our 21-2309 bolt together rocker arm shafts. This kit has been redesigned for greater strength and higher performance. These new shafts come with an integral spacer (machined into the shaft) between the intake rockers instead of an aluminum sliding spacer. This greatly strengthens the assembly and prevents the intake rocker arms from transferring side load to one another reducing valve train wear. Check to see if you have received all of the following: (2) Precision Machined Shafts with Bolts & Washers, (8) .015 Shims, (8) .030 Shims & (2) .060 Shims.

(Your old washers maybe required for setting your geometry they are, on the average .040 and should also be cleaned). Before beginning to determine the following. Does the head have Dual Springs, are the valves stock or have they been relocated, and what size cam is in the motor. This will determine the machining required on the rocker arm itself. If chevy dual springs are used the rocker must be clearanced around the spring. High Performance Cams in general require clearancing and removing material under the chin of the rocker.

We recommend the following tools in setting up your rocker arm geometry: A large set of feeler gauges, a micrometer or vernier caliper, and a 13MM end wrench. Not all shims are the same thickness. Number a piece of paper approximately 1/2" apart from 10-60. Carefully measure your shims and place them over the corresponding number. Assemble (4) rockers and (2) blocks onto each shaft dry (without using Oil) and bolt to head. Using your feeler gauge measure the amount of side play between each rocker and its block. Write down this number on a piece of paper and label accordingly (Intake #1; Exhaust #1; Intake #2; Exhaust #2, do the same for cylinder 3 & 4) This is total side play. Subtract between .005 to .007 from this number for rocker arm side play to prevent binding under heavy load. Using the shim chart that you made earlier combine shims to total the number in thousandths as previously figured.

Example: #1 intake rocker has a total of .035 side play, $.035 - .005 = .030 =$ desired total shim thickness. After determining the desired total shim thickness for all the rockers on each head, determine the location of the rocker arm in relation to the valve. This is a critical factor in proper valve train wear and longevity. Check the location of valve adjusting screw in relationship to the valve. It should be offset from the center between .015 to .020 to allow the valve to rotate while operating resulting in uniform wear and longer life. (In general if the head has factory stock valve locations, factory locations of the rockers against the blocks with shimming on the outsides will normally work).

If the exhaust has been relocated, determine the proper rocker arm location to the valve. Using the feeler gauge determine the space between the rocker and its block. Then the rocker and the bolt washer combo at the end of the shaft. Side play .005 - .007, should be on the outside of the shaft next to the bolt washer combo and not between the rocker arm and the block.

With all calculations done and shims prepared for their locations, disassemble shafts and reassemble (dry) with correct shims. Tighten bolts snug. Check for free movement and correct side play for each rocker. If everything is correct disassemble, heavily lube rockers, washers and shaft with motor oil then reassemble. We recommend using lock-tight or its equivalent on the end bolts but it is not required. Your rocker arm shafts are now complete. The following EMPI products can help you to complete your valve train geometry properly; Part #4031 or #4061 precision valve adjusting screws; #4006 Valve lash caps (Strongly recommend); #21-2315, #21-2330. Or #21-2360 rocker arm stand shims, and #4034 HD cut to length 3/8 pushrods.

99-4013-0/0803



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Example: #1 intake rocker has a total of .035 side play, $.035 - .005 = .030 =$ desired total shim thickness. After determining the desired total shim thickness for all the rockers on each head, determine the location of the rocker arm in relation to the valve. This is a critical factor in proper valve train wear and longevity. Check the location of valve adjusting screw in relationship to the valve. It should be offset from the center between .015 to .020 to allow the valve to rotate while operating resulting in uniform wear and longer life. (In general if the head has factory stock valve locations, factory locations of the rockers against the blocks with shimming on the outsides will normally work).

If the exhaust has been relocated, determine the proper rocker arm location to the valve. Using the feeler gauge determine the space between the rocker and its block. Then the rocker and the bolt washer combo at the end of the shaft. Side play .005 - .007, should be on the outside of the shaft next to the bolt washer combo and not between the rocker arm and the block.

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