



Installation Instructions for Red Shift Shovelhead Cams

Congratulations on your purchase of a Red Shift Cam. Before installation of this cam, certain areas must be checked for adequate clearance when installing this cam, and modifications must be made if proper clearances are not available in present form.

When installing any camshaft with increased timing and lift, valve to valve clearance must be checked at piston top dead center. This is easy to do on an unassembled head. Clamp the head (gently) in a vise on its side. Insert both valves in the guides, bottomed on the valve seats. Measure the valve stem from the top of the guide to the top of the valve. Using the specifications provided, open the intake valve the specified amount, then the exhaust valve. The distance between the open valves must be a minimum of .050". If more clearance is needed, the valve must be recessed further into the head. This is done before any valve spring packing. Make sure you recalculate for a modified rocker ratio if yours is different from the stock specifications shown.

Rotate the cam in the case and check clearance between the last lobe and pinion race. Clearance should be a minimum of .060". Remove material from the case insert and race if needed for clearance. This is also a good time to install a new Torrington brand cam bearing. Install cam, set end play to .008"-.015". Install one lifter block with lifters and slowly roll the engine over to check each lifter travel in the lifter block. With a lifter at max lift on the cam, check for an additional minimum of .060" of lifter travel. If there is not adequate clearance or the lifter roller tops out in the lifter block, carefully file the roller slots in the lifter blocks for clearance. Check for .060" cam lobe (to lifter block bottom side) clearance for the opposite cylinder's cam lobes. Once all clearances have been made, install the other lifter block and repeat the above steps.

These cams are designed to be used with solid lifters or quality aftermarket hydraulic units. Do not use original equipment design hydraulic lifters as they will not perform adequately.

Set the heads up to the TDC and travel specifications shown below. Use a quality valve spring kit with seat pressure set at a minimum of 180-200 pounds, and coil bind a minimum of .030" over valve lift. Use clay to check clearance between rocker arms and valve spring collars (on the underside of the arm), and top spring collar clearance between the collar and the rocker box inside wall, especially on the exhaust side. Check clearance between rocker arms and rocker boxes at full lift on the pushrod side. Valve-to-piston clearance must be at least .060", checked using lightweight checking springs in place of the valve springs for accurate readings.

Cam Notes and Specifications

509S Notes: 80" high output grind. Works best with ported heads, high flow carb and pipes and 9.5-10.5:1 compression.

550S Notes: Best choice for small strokers and Sidewinder kits. We recommend setting compression to 10+:1 for street and 12+:1 for race-only use with this grind.

580S Notes: Torque cam for small strokers & Sidewinder engines. Very strong low and mid-range power, peaking at approximately 5,800 rpm. Compression should be 9.8-10:1.

624S Notes: 96" & up engines. Compression should be 10.5:1 or higher. Roller rockers recommended.

631S Notes: Hot Street/Race engines, 98+ inches. Broad TDC lift requires extensive headwork, high compression; roller rockers, solid lifters recommended.

Cam Model	Cam ID	Valve Lift	Tappet Clearance (if solid)	Timing @.053 Open/Center/Close	T.D.C. at Valve	Rocker Ratio	Min Seat Pressure
509S	Int	.510"	.001-.002"	25/100/45	.185"	1.42	180#
	Exh	.510"	.001-.002"	46/100/26	.182"	1.42	180#
550S	Int	.550"	.002-.003"	33/103/58	.226"	1.42	180#
	Exh	.550"	.002-.003"	64/109/28	.185"	1.42	180#
580S	Int	.580"	.001-.002"	23/104/51	.190"	1.42	180#
	Exh	.580"	.001-.002"	59/112/15	.135"	1.42	180#
624S	Int	.625"	.002-.004"	26/106/58	.198"	1.42	200#
	Exh	.625"	.002-.004"	62/110/22	.170"	1.42	200#
631S	Int	.631"	.002-.004"	33/107/68	.230"	1.42	220#
	Exh	.631"	.002-.004"	75/114/27	.190"	1.42	220#

This product is legal in California only for racing vehicles which may never be used upon a highway.

1/08 Thank You for Purchasing a Zippers Performance Product!

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