CHECKING PISTON-TO-VALVE CLEARANCE

Introduction

RHS™ strongly urges you to check the piston to valve clearance on the larger street cams and all race cams. The easiest and most accurate way to check this is to place strips of modeling clay on top of one piston, and then rotate the engine over by hand with the cylinder head bolted in place and all of the valve train components adjusted. If there is any resistance during rotation of the crankshaft, STOP! The piston has probably hit the valve. Then you must decide whether to fly cut the piston, or exchange the cam for a profile that will fit into your engine. **Note: Minimum piston to valve clearance is .080" on the intake and .100" on the exhaust valves. If aluminum connecting rods are being used, add a minimum of .030" to these suggested clearance figures. Aluminum rods will stretch and expand more than steel rods.**

Checking Piston to Valve Clearance

Note: Be sure to check piston to valve clearance *after* the cam has been degreed. The positioning of the cam in the engine will greatly affect the piston to valve clearance.

Step 1: With the camshaft installed, remove the cylinder head from the block. Clean the combustion chamber and the top of the piston and valve reliefs. The cleaner the piston, the better the clay will stick to it.

Step 2: Apply a strip of model clay 3/8" to ½" wide approximately ¼" thick to the pistons. The clay strip should be long enough to run across both the intake and exhaust valve reliefs. Applying a small amount of oil to the clay will prevent it from sticking to the valves as they press into it.

Step 3: Reinstall the cylinder head with the head gasket that is going to be used. It will not be necessary to torque the head yet. All head gasket manufacturers can tell you what the compressed thickness of their gasket will be. Measure the gasket before you install it permanently and add the difference to the piston to valve clearance. Install a sufficient number of head bolts to secure the head in place while you are rotating the engine. Install the pushrods, lifters and rocker arms on the cylinder you have prepared for the clearance check.

Step 4: Adjust the rocker arms to their suggested clearance. If the camshaft you are checking uses hydraulic lifters, you must temporarily use solid lifters in their place. Hydraulic lifters bleed down and will provide a false measurement. Once the hydraulic lifters are replaced with solid lifters, adjust the lash to "zero." Be sure not to pre-load the valve spring. Be sure to reinstall the hydraulic lifters before starting the engine.

Step 5: Now turn the engine over by hand in the normal direction of rotation. Be sure to rotate the engine over two times. This will be one complete revolution of the camshaft and assure you of an accurate reading on both the intake and exhaust. Remove the cylinder head from the block. Do this gently, so the clay is not disturbed. It may be stuck to the valves or combustion chamber, so be careful.

Step 6: With a razor or sharp knife, slice the clay cleanly -lengthwise through the depression, and peel half of it off the piston. The clay's thickness in the thinnest area will represent the minimum piston to valve clearance.

Step 7: To accurately check the thickness, use a set of dial calipers. The clay can also be measured close enough with a thin steel rule.

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