



4032 Material Installation Instructions

For Piston, Pin, Lock, Ring and Rail Support (Rails supports only supplied, if required.) Please take a few minutes to read these instructions and installation recommendations



PRIOR TO BALANCING—Please verify that your entire shipment of RaceTec/AutoTec Pistons and related components have been packaged and shipped correctly. If for any reason this package or related components have been damaged or lost in transit, please contact the freight carrier or RaceTec/AutoTec Piston Distributor where the pistons were originally purchased. RaceTec/AutoTec Pistons recommends that the end user or engine builder, completely measure and inspect all parts supplied with this piston kit prior to balancing or final assembly for proper fit, clearance or concealed damage. Any pistons or related components, which have been altered or damaged in any way, are not returnable. Custom pistons are returnable only for manufacturing defects.

PISTON TO CYLINDER WALL CLEARANCE

1. This set of RaceTec/AutoTec Pistons are manufactured from low expansion Aerospace quality 4032 silicon aluminum alloy.
2. The "Gage Point" or skirt measurement point of these pistons is to be taken .300 up from the bottom of the skirt (Fig. 2). Aluminum when subject to temperature fluctuations will expand and contract accordingly. All RaceTec/AutoTec Piston measurements are taken at temperature of 72 degrees Fahrenheit. Please keep temperature variations in mind when performing final machining operations and setting final assembly clearances.
3. The actual running clearance for RaceTec/AutoTec Pistons has been built into the design of the skirt. Normal operational clearances for a RaceTec/AutoTec piston manufactured out of 4032 material will run between .0025-.0045+ depending on actual bore size. (Please refer to table # 1 for further information).
4. Performance applications using power enhancers such as, Superchargers, Turbochargers and Nitrous Oxide will usually require additional piston skirt to cylinder

Table 1

Applications	Bore Range	Min. Clearance
SB Applications	4.000-4.200	.0025-.0035+
BB Applications	4.200-4.600	.0035-.0045+

PISTON DOME TO CYLINDER HEAD AND SPARK PLUG CLEARANCE (fig. 3)—All RaceTec/AutoTec high compression piston designs take into consideration the wide variety of aftermarket cylinder heads available today. We strongly recommend the minimum static clearances between the piston and cylinder head are no less than the following guidelines. Engines with steel connecting rods = .040. Aluminum connecting rods = .060. These static clearances should be checked at Top Dead Center, T.D.C. with the head gasket in place, the piston assembled to the connecting rod and crankshaft, use modeling clay to determine the clearance. Make sure to rock the piston back and forth at T.D.C. to ensure a proper measurement.

VALVE TO PISTON CLEARANCE (V. TO P.)- The actual clearance between the valve and piston is influenced by many factors. Cam Lift, Rocker Arm ratio, Duration, Lobe Separation, valve margins on cylinder heads, Flat or Angle milling of the cylinder head deck surface. RaceTec/AutoTec recommends a minimum clearance of .100 between the valve and piston. This clearance can be checked or verified by using modeling clay. Please make sure to follow your cam manufactures recommendation for setting and checking clearances as well. When checking these tolerances make absolutely sure that the cam has been set or degreed exactly as it will be run in the engine.

CRANKSHAFT COUNTERWEIGHT TO PISTON CLEARANCE—This is the clearance between the bottom of the piston and crankshaft counterweight. Please make sure there is a minimum of at least .060.

PISTON TO CONNECTING ROD CLEARANCE- (fig. 4) Our piston forging designs are intended to work with the majority of aftermarket connecting rods available in the market today. We recommend at least .050 clearance in all directions when all components are assembled together.

WIRE LOCKS - (Standard on most AutoTec and RaceTec Piston assemblies)- Wire locks are installed by taking one end of the wire at the gap or opening and installing it into the receiver wire lock groove of the piston. Make sure to roll or spiral the lock into the receiver groove of the piston. **DO NOT**, under any circumstance kink or squeeze the ends of the wire together to install, this practice can cause immediate failure of the wire to retain it's original shape into the receiver groove. Using a 3/8 or 7/16 flat bottom brass drift punch will greatly help in pushing the wire locks into the grove properly. **IMPORTANT NOTICE**—Once both the wire locks and wrist pin have been installed into the piston we strongly recommend using a brass drift punch to drive the wrist pin back and forth several times. This will help to seat the wire locks into their receiver grooves. **WARNING**; never re-use or re-install wire locks, they are a one time installation part.

SPIRAL LOCKS—Spiral Locks should be gently stretched or pulled apart to approximately .250-.375 so that one edge of the lock can be inserted into the Spiral Lock receiver groove of the piston. Once this is done gently roll or spin the spiral lock so it coils itself into the receiver groove. This procedure should always be done by hand and never forced into the receiver groove with a hand tool. Most pistons using spiral locks will use two (2) locks per receiver groove or a total of 4 locks per piston. **Warning**: never re-reuse or reinstall Spiral locks, they are a one time installation part.

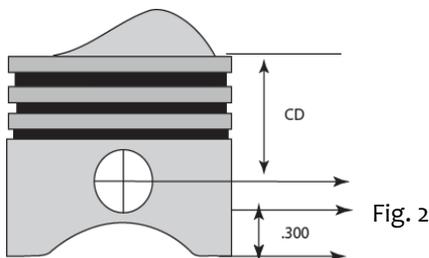


Fig. 2

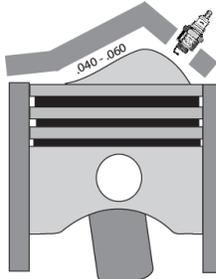


Fig. 3

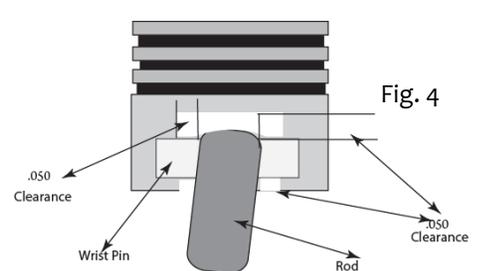


Fig. 4

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