

REPLACEMENT CONNECTING ROD BOLTS

TECH NOTE: ROD BOLTS

Unquestionably the most important fasteners in any engine are the connecting rod bolts, as they hold the key to the entire rotating assembly. A broken bolt will lead to catastrophic engine failure. As you can imagine, the most critical joint is where the connecting rod halves mate. The rod bolts must support the primary tension loads caused by each rotation (or cycle) of the crankshaft. When the crank rotates, the big end of the connecting rod essentially becomes oval-shaped and the rod bolts bend. As the crankshaft continues to rotate, the rod becomes round again. With alternating tension loads and cyclic bending of the bolts, it is very important to install fasteners that are able to exert a clamping force greater than the load imposed upon the joint (tension).

In addition to utilizing a rod bolt with sufficient strength to withstand the tremendous cyclical strains placed upon it, it is absolutely imperative that the bolts be properly tightened. The preferred method of monitoring the correct amount of tension is through use of a stretch gauge. This is far more accurate than using a torque wrench. Moreover, through subsequently checking the rod bolts length at tear-downs, it is possible to determine if it has been stressed beyond safe limits and must be replaced.

Choose From Three ARP Replacement Rod Bolts:

Because factory connecting rods (or aftermarket versions of OEM rods) are used in a variety of applications from rebuilt stock motors to modified powerplants used in circle track, marine and drag racing engines – including those with superchargers and/or nitrous oxide injection systems – ARP offers replacement rod bolts in three different models. All of them are substantially better than the stock OEM and most aftermarket bolts.



GOOD: STANDARD HIGH PERFORMANCE BOLTS

A premium grade 8740 alloy chrome moly steel is used to manufacture ARP High Performance connecting rod bolts. This material is heat-treated to provide a tensile strength in the 200,000 psi range, which is substantially stronger than the OEM bolts. Cycle testing shows ARP High Performance rod bolts to be nearly five times more reliable than stock bolts.



BETTER: WAVE-LOC® HIGH PERFORMANCE BOLTS

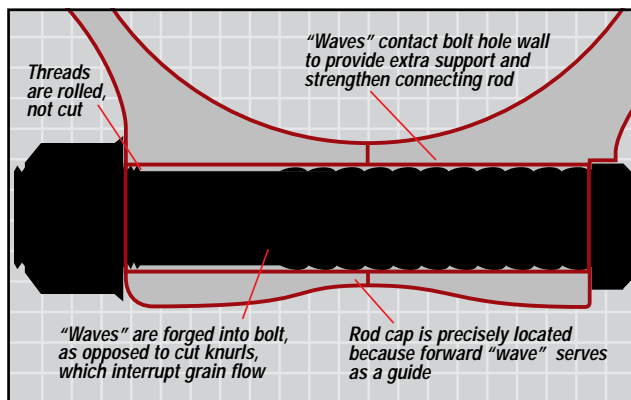
The same heat-treated 8740 chrome moly steel is used to make these rod bolts as ARP's standard High Performance rod bolts. The big difference is in the shank design, with ARP's exclusive (and patented) Wave-Loc technology providing substantial benefits. Because there are fairly wide tolerances in factory bolt holes, the bolt must be able to fit snugly and a knurl is applied. Unfortunately, these knurls cut deep into the bolt material, leaving sharp edges and enormous "stress risers" that promote failure. That's why ARP developed the Wave-Loc design that features symmetrical waves and provides an effective interference fit without creating stress risers in the bolt or the rod.



BEST: "PRO" SERIES WAVE-LOC BOLTS

For the most severe applications, in conjunction with aftermarket I-beam rods, ARP has developed the "Pro" Series Wave-Loc bolts. These ultra heavy-duty rod bolts are made from a special material designated ARP2000. It has approximately 200% the fatigue life of 8740 chrome moly steel and has a tensile strength of about 220,000 psi, and is capable of more than 12,000 lbs. clamping force.

ADVANTAGES OF WAVE-LOC ROD BOLTS:



- Wave-Loc surface contacts the rod and cap for optimum alignment and reduction of fluctuating stress – which strengthens the rod itself!
- Provides snug fit for all OEM connecting rods despite wide range of factory rod bolt hole tolerances.
- Available for most applications.
- Superior material grain flow because of patented Wave-Loc surface design as compared to knurled bolts that have sharp edges and "built-in" stress risers.
- Galling and scoring of the rod is virtually eliminated because there is only smooth contact and absolutely no "digging."