



## Rod Stretch

**Theory:** A rod stretch gauge measures the actual stretch of the rod bolt, giving the most accurate information on the bolt's preload, since no other variables factor in the measurement.

**Reality:** a rod stretch gauge measures the actual stretch of the rod bolt, giving the most accurate information on the bolt's preload. However, this gauge is yet another tool to buy, and it's generally not cheap. And if you plan to build only one or two engines over the next few years, you may feel money is better spent elsewhere. Rod bolts have one of the few open-seat bolt holes in most engines. It's therefore one of the few areas that actually allows a stretch gauge to be used.

Engine building myth shattered: Connecting-rod bolts rarely fail. Or, more accurately, they're rarely to blame when engines have what is usually referred to as rod or rod-bolt failure. More often than not, the nuts back themselves out slowly, due to incorrect torquing procedures. Which the question arises, "What's the best way to torque rod bolts?"

The best way (but one that isn't always done), is with a rod-bolt stretch gauge. This gauge is a beautiful device for the pro engine builder and buck-up hobbyist. But is it feasible for the homebound engine builder? There's an appropriate tool for every task, and connecting-rod bolts go best with a rod-bolt stretch gauge.

You can quite reliably tighten rod bolts with a torque wrench, but this process assumes a few things. First, you must use the specified lubricant to give accurate torque readings. Second, you must use an accurate wrench. Without insulting every home mechanic, not everyone has one. Third, a specific procedure in torquing the bolts is required with most rod bolts for an accurate job.

Mostly though, the strongest reason for using a rod-bolt stretch gauge is simple from an engineering standpoint. At a certain amount of bolt stretch, a given alloy and a given bolt diameter will create a specific preload. Assuming that a certain torque on the nut will create that preload is not always precise. It may be accurate enough, or even very accurate, but the bolt threads, the nut face, and the cap's nut surface all affect this friction. Each bolt is designed to stretch a specific amount when it sees a certain loading. With a torque wrench, you're only measuring the friction, not the preload.

Note: See rod stretch gauge in products section.

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