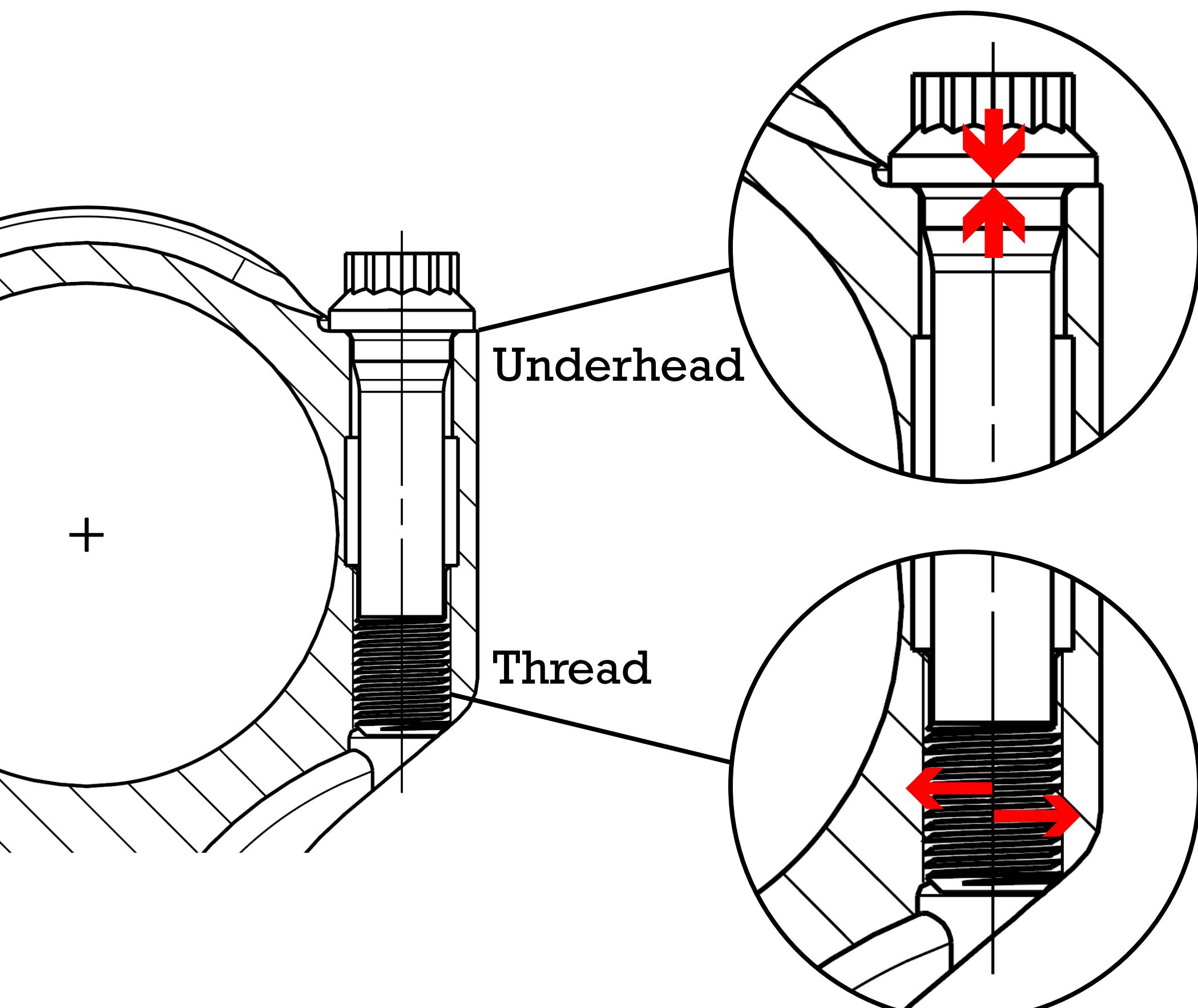


About rod-bolt lubricant



A

Underhead

Extreme pressure from the under-head of the bolt

B

Thread

Friction between the mating threads when clamp load applied

Why A use lube

Facts About Extreme Pressure Lubricants

Industry has discovered that many petroleum products or lubricants combined with lead or graphite will work up to a certain amount of pressure, but that when the operation requires extreme pressure, all ordinary lubricants break down and allow metal-to-metal contact with consequent scoring, frictional heat, work and cutting tool damage.

CMD anti-scoring lubricants are not ordinary lubricants. They are compounded of highly refined petroleum products containing no lead, graphite or minerals. They will not corrode the finest surfaces nor will they mulify with cooling liquids. But these facts are not the most remarkable feature of CMD lubricants. The truly outstanding property of CMD is its ability to withstand extreme pressures! The thousands of firms who have used CMD have discovered that commonly used lubricants will provide a lubricating film at pressures of 500, 1000, 5000 and even 10,000 psi. By contrast, CMD EXTREME PRESSURE lubricants are regularly used from 40,000 to 50,000 psi.

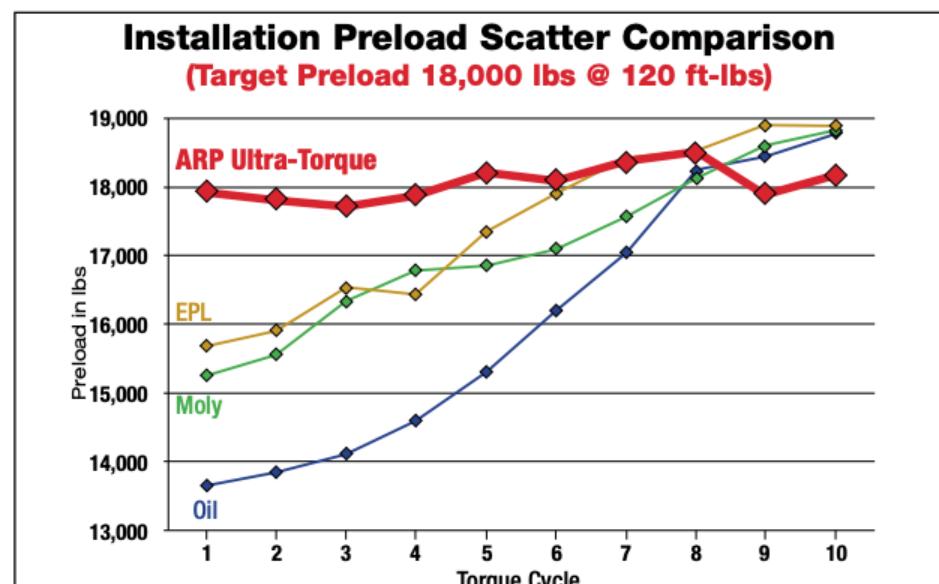


Why B use lube

TECH

The Lubricant Is The Key

The main factor in determining friction in a threaded fastener is the lubricant used, and therefore influences the torque required for a particular installation. One of the most overlooked aspects of choosing a fastener assembly lubricant is...the lubricant's ability to "control" the normal function of friction inherent in all high performance engine fasteners. As discussed earlier in this section, friction is at its highest point when a new fastener is first tightened. This "friction" inhibits the fasteners ability to achieve the required preload on the first several cycles. In fact, ARP's in-house Research and Development department has proven that new fasteners using motor oil and other commonly used lubricants such as Moly and EPL typically require 5-7 cycles before final torquing to level out the initial friction and achieve the required preload. Slicker lubricants may reduce the required torque by as much as 20-30% to achieve the desired preload, but compromise in areas of major importance such as preload repeatability, and may yield the fastener prematurely. Typically, the slicker the lubricant, the greater the "preload scatter" or preload error there will be during installation.



The bottom line: Preload repeatability and preload consistency from a fastener to fastener perspective, should be the number one consideration when choosing a fastener assembly lubricant. Remember even the best fastener is only as good as its installation. Preload repeatability is the foundation for maintaining round housing bores, and preload consistency ensures the same preload from one fastener to another across a large area, such as the deck surface of a cylinder block. These two fundamentals are the cornerstone of every successful fastener installation and that's why ARP's engineering team set out to develop the "ultimate" fastener lubricant. The result of several years of extensive R&D is a remarkable new assembly lube called ARP Ultra-Torque®. As shown in the graph above, ARP Ultra-Torque® clearly provides the repeatability and preload consistency that no other fastener assembly lubricant on the market can provide today. For more information on ARP Ultra-Torque® see page 109.

Before & After



Test Conditions

Connecting Rod:

Material: AISI 4340

Hardness: 40-41HRC

Rod Bolt:

Size: 7/16"-20 x 1.600"

Material: ARP2000

A

Underhead

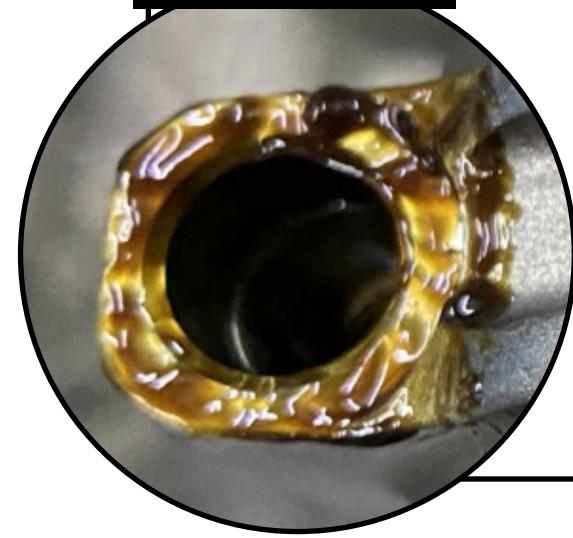
Before installing bolts



Prepare

with CMD lub

with other lub



Tighten the bolts using a torque wrench, be sure to use the same value

After releasing bolts

with CMD lub

with other lub



WIN!

Galling



Torque = 80NM

After tightening bolts

with ARP lub

with other lub



WIN!

Stretch = 0.0045"



Stretch = 0.0030"

Conclusion

Based on CMD and ARP specifications, we believe CMD lubricant is superior for underhead lubrication. It can handle extreme pressure, won't break down, and prevents metal-to-metal contact. Meanwhile, ARP lubricant is more suitable for thread lubrication as it provides repeatability and preload consistency, which help achieve the required bolt stretch.