



NOTE: Grease all surfaces that touch each other during installation or use. Grease entire spindle surface including lobes and bearing surfaces Grease threads, under bolt heads, all metal mating surfaces etc... Proper greasing will ensure durability and maintainability of the cranks. **BONUS:** pinch bolts, retaining ring, spindle bolt threads have factory grease applied.

- 1 - Slide SPIDER on RETAINING RING side of greased SPINDLE
- 2 - Slide RIGHT CRANK ARM on greased SPINDLE, align to markings on SPIDER
- 3 - Using a torque wrench, tighten DRIVE SPINDLE BOLT on SPINDLE to 5Nm
- 4 - Using a torque wrench, tighten RIGHT PINCH BOLT to 10Nm

IMPORTANT: Ensure that all bearing surfaces of SPINDLE have been greased

- 5 - Slide DRIVE SPACER on SPINDLE (*NOTE: The ROAD spindle does not use a drive spacer*)
- 6 - Slide the SPINDLE through the bottom bracket bearings and ensure the DRIVE SPACER/RETAINING RING is seated against the bearing seals

IMPORTANT: Ensure SPIDER and RIGHT CRANK ARM are on the drive side of the bike

- 7 - Slide on NON-DRIVE SPACER on SPINDLE
- 8 - Slide LEFT CRANK ARM on greased SPINDLE
- 9 - Gently tighten NON-DRIVE SPINDLE BOLT on SPINDLE to less than <1Nm to apply a very light preload force to the bottom bracket bearings and prevent side to side play while riding. Do not overtighten as this could harm the bearings. If the NON-DRIVE SPINDLE BOLT bottoms out, shims will be required, continue installation. *Note: Cranks may creak without sufficient preload.*

NOTE: Appleman 2XR Cranks have been designed with a built-in 1.5mm of play adjustment, but some frame/bottom bracket combinations may require shims.

- 10 - Using a torque wrench, tighten NON-DRIVE PINCH BOLT to 10Nm
- 11 - Using a torque wrench, Tighten Non DRIVE SPINDLE BOLT to 5Nm

IMPORTANT: Check for any side to side play of the crankset in the bottom bracket bearings by trying to slide it back and forth. Note the amount of movement.

If you have no play or side to side movement, then you have just successfully installed the Appleman 2XR Crankset! Woo woo!

- 12 - If any movement side to side play is found repeat steps 5-11 but add sufficient number of 1mm shims until play is removed.

TIP: Shims can be added equally to the left and right sides of the bottom bracket to keep the crankset centered with the bike

NOTE: adding excessive shims push out the crank arm from the spindle, reducing the engagement of the crank arm and spindle lobes. The *full width* of the crank arm lobes must be engaged with the spindle lobes.

MAINTENANCE:

- Check all bolt torques after first ride and every 50 hours of riding time.
 - Completely remove and regrease all crank parts at least once each year. If you ride in wet , salty, or sloppy conditions more often is recommended.
 - A drop of chain lube or oil will help prevent rust on the black oxide pinch bolts. The more often your bike is wet, the more often this is recommended.
- BONUS TIP:** One time/year, remove and regrease your bottom bracket, seat post, and any other threaded or press fit components to keep them from corroding and getting stuck in your frame.