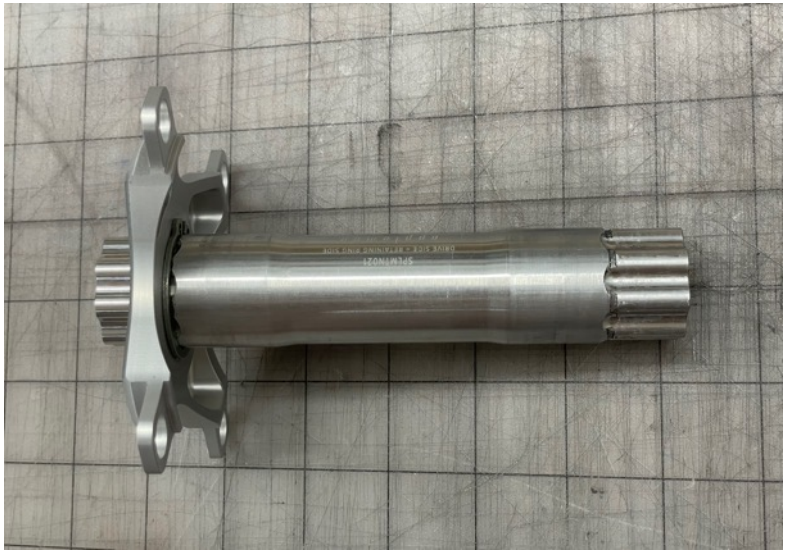
appleman

Appleman 2XR Tandem Crankset Installation Instructions

Rev A

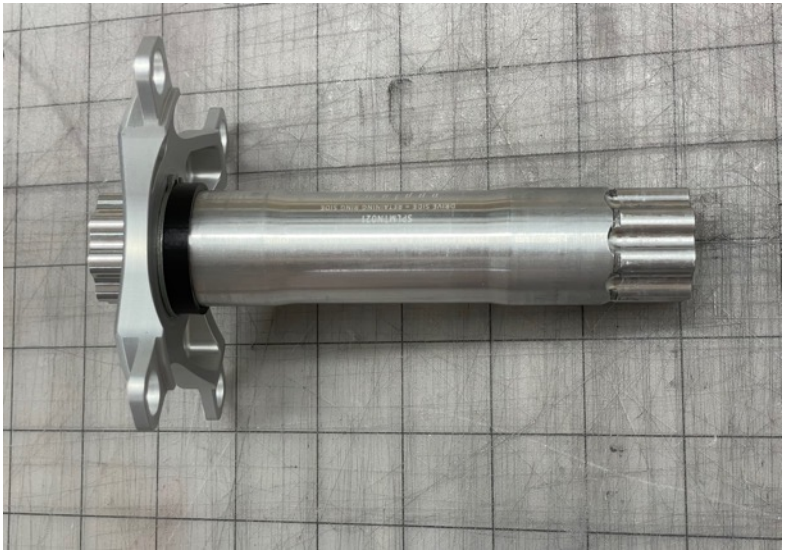


Appleman 2XR Crankset Tandem Stoker Installation

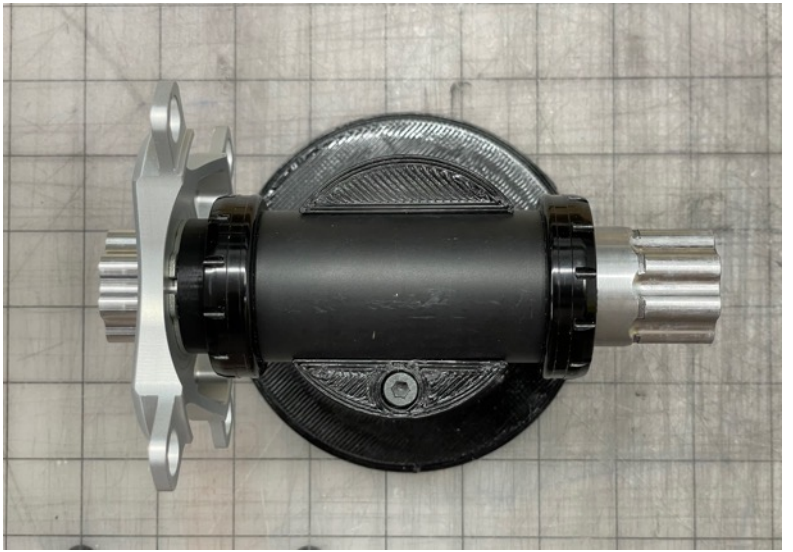
Appleman 2XR Tandem cranks have spindles have special treatment.

The left/timing-chain side spiders are semi-permanently bonded on with retaining compound (factory applied) to the spindle

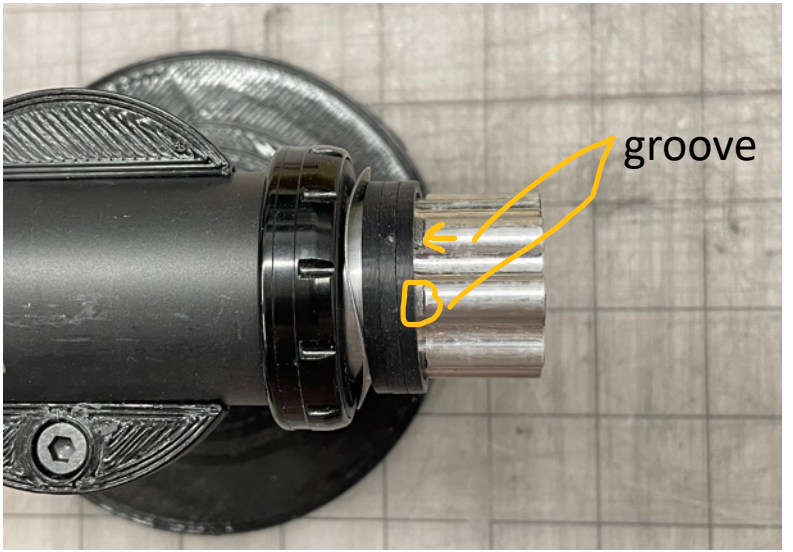
Do not attempt to remove these spiders from the spindle!



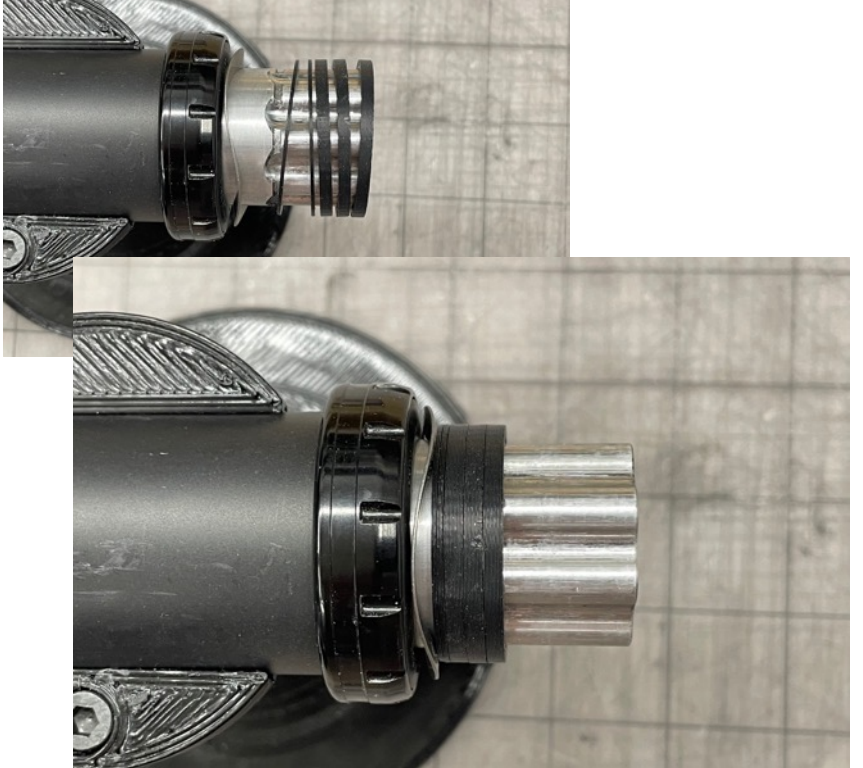
- Slide on the smaller of the two spacers onto the spindle
  (Note: this may be marked as the ”drive side” on the spacer and that is ok)



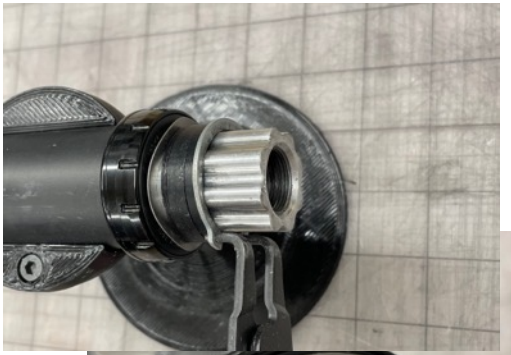
- Apply a thin layer of quality grease to the WHOLE spindle, under the spacer, bearing surfaces and relieved section (this helps prevent corrosion)
- Slide the spindle into the frame so the timing spider is on the time side of the frame



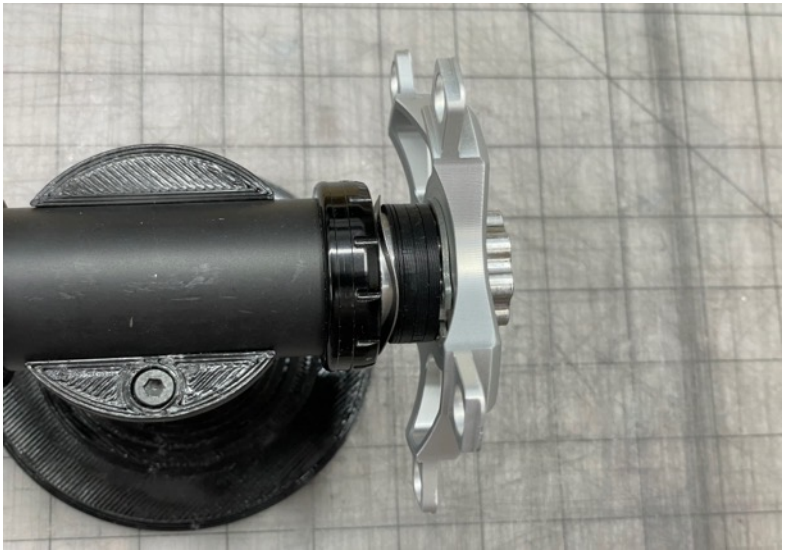
- Slide on the wave washer on the right side of the spindle
- Slide a sufficient number of 2.5mm spacers on the spindle so that the retaining ring groove begins to become covered by the spacers



- Remove spacers
- Install 2-4 shims so that the groove on spindle is *just* covered by the spacers
- NOTE: install shims inboard of the spacers so that they do not fall in the spindle groove when the wave spring gets compressed

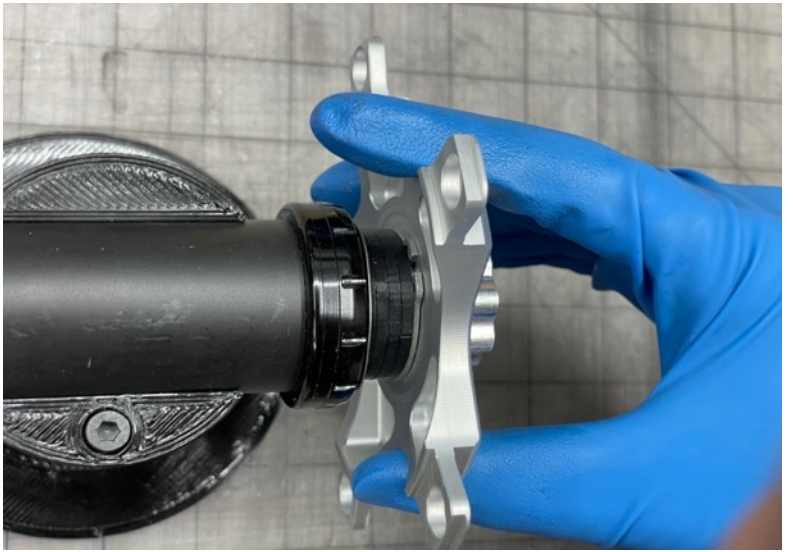


- Wear safety glasses. Use retaining ring pliers to install the retaining ring onto the spindle
- Ensure that retaining ring opening is centered over the valley of the spindle lobe (in yellow)



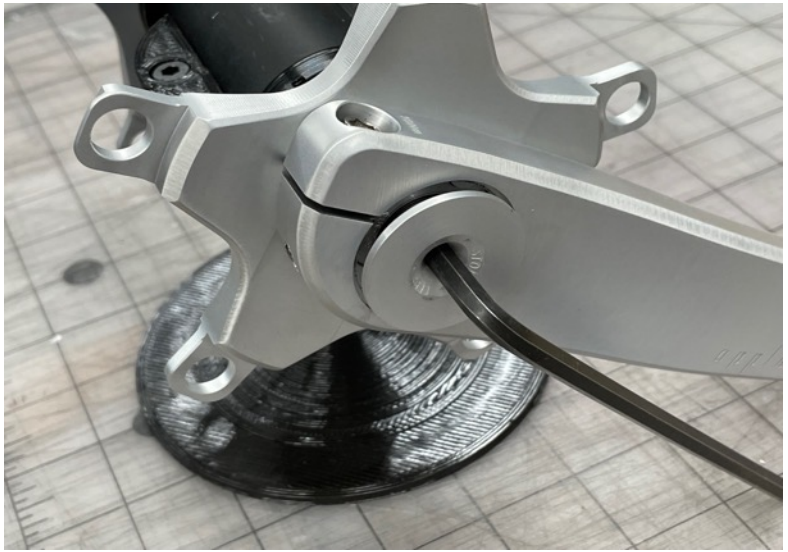
Seat the Retaining Ring (2 ways)

- Way #1: By hand
- Way #2: Using Crank Arm + Spindle Bolts
- IMPORTANT: Wave washer should be *mostly* compressed, but *never fully compressed!* You should be able to see some of the spindle between the waves of the wave spring
- IMPORTANT: If you see the wave spring getting fully compressed, stop tightening and remove a shim from the stack



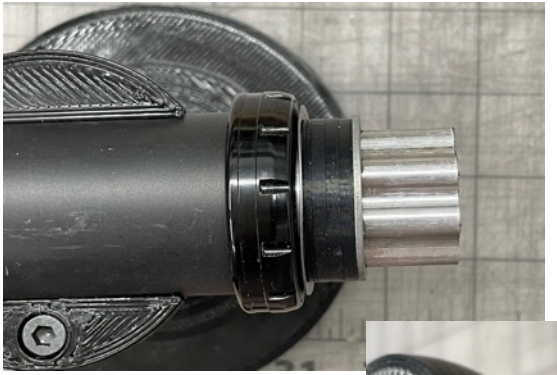
Way #1: By Hand

- Slide the right side spider onto the spindle
- Gently squeeze together the left and right spiders compressing the wave washer
- The retaining ring should evenly clip in to the spindle groove
- If this doesn’t work, try Way#2



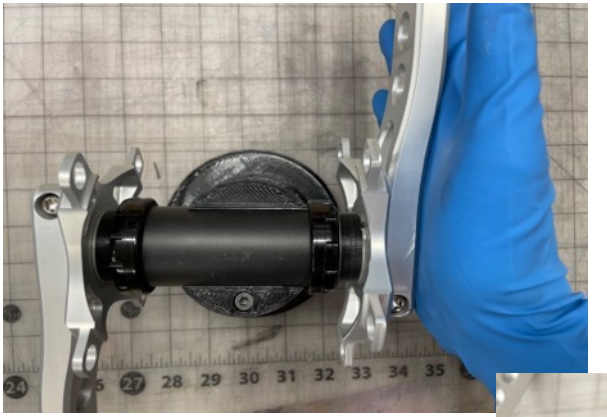
Way #2: Using Crank Parts

- Slide the right/drive side spider on the spindle
- Slide the Right Crank Arm onto the spindle
- Slowly thread the spindle bolt into the spindle. This will begin to compress the wave spring and seat the retaining ring
- You should see/hear a faint click when the ring snaps into the spindle groove



- Remove spindle bolt, crank arm, and spider
- Inspect the retaining ring that it is evenly in the spindle groove
- Inspect that the wave washer is mostly compressed (not fully) and that you can see some of the spindle between waves.

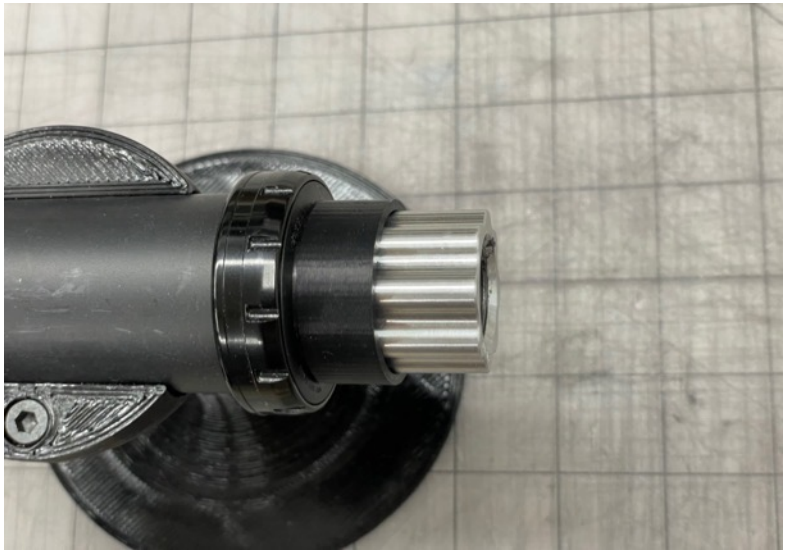
1. Apply grease to all metal on metal areas, lobes, spider, spindle, crank arm, underside of spindle bolt head, etc…
2. On the left side, slide the crank arm onto the spindle
3. Screw in the left stoker spindle bolt, using a torque wrench, tighten to 5Nm
4. Using a torque wrench, tighten crank arm spindle bolt to 10Nm
5. Slide on Right/Drive side spider onto the spindle and then repeat steps 1-3 for the right/drive side components



- Check crankset for side to side play by pushing the crank arms right to left and left to right.
- If excess play is detected, then the wave washer needs more preload force applied to it by adding more shims
  - Remove the spindle bolt, crank arm and spider on the wave washer side
  - Use the retaining ring plier to gently remove the retaining ring
  - Add the necessary shims
  - Follow retaining ring installation instructions in this instructions to complete the crank install

Appleman 2XR Tandem Captain Crankset Installation Instructions

1. Apply grease to all metal on metal areas, lobes, spider, spindle, crank arm, underside of spindle bolt head, etc…
2. On the left side, slide the crank arm onto the spindle
3. Screw in the left captain spindle bolt, using a torque wrench, tighten to 5Nm
4. Using a torque wrench, tighten crank arm spindle bolt to 10Nm



- Slide spindle through the captain bottom bracket (left to right/non-drive to drive side)
- Slide on the wider spacer (may be labeled as ”non-drive”, this is normal)
- Slide on captain Right Crank Arm

- Begin to screw in the Right spindle bolt
- This bolt preloads the crankset
- Only tighten the Spindle Bolt enough to remove side to side play from the crankset, <1Nm.
  - NOTE: Excess preload force will damage bearings
- Check for play by move the crank right/left.
- If there is side to side play, remove the crank arm and add shims next to the spacer to take up play space

- Ensure side to side play has been removed from crankset
- Using a torque wrench, tighten crank arm pinch bolt to 10Nm
- Using a torque wrench, tighten the spindle bolt to 5Nm

If you have questions or are unsure of anything during the installation process, please stop and contact Appleman Bicycles for help.