How to Fix a Frozen Loose Ball Bottom Bracket

How to repair and replace a vintage bike bottom bracket with loose ball bearings.

Written By: Haopeng Zhou

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INTRODUCTION

The bottom bracket on your bicycle has a great chance to be stuck or even frozen due to improper storage or maintenance. This guide will provide a brief introduction about how to repair and replace a vintage bike bottom bracket (with a lock ring and loose ball bearings) to return your bike to working condition. This guide can be applied on almost all bikes with a lock ring bottom bracket. Replacing a loose ball bottom bracket may be difficult if you are unfamiliar with the tools and components, but by following the guide, working slowly, and having patience, this procedure is completely within your grasp, even if you've never worked on a bicycle before!

TOOLS:

- Flathead Screwdriver (1)
- 14mm Drive Socket (1)
- Crank Extractor (1)
- Lockring Wrench (C Spanner) (1)
- Pin Spanner (1)
- Shop Towels or Rags (1)
- Bike Grease (1)

Step 1 — Loose Ball Bottom Bracket



- Remove the dust covers on both sides (drive side and non-drive side) of the crankset with a flathead screwdriver by turning it **counterclockwise**.

There are various types of dust cover. Your dust covers may have Allen or hex interfaces, or your bike may have no dust covers at all!

Step 2



- Remove the crank bolts on either side of the crankset by using the 14 mm drive socket to spin the bolts counterclockwise.

Step 3



- Screw the head of crank extractor into the dust cover hole by hand until it is snug.

  ⚠ Be careful to thread the extractor in gently to avoid cross-threading the crank arms. One way to do this is to move the extractor the wrong way (counterclockwise) at the start until you feel the slight bump of the threads engaging, then start threading the extractor in as normal.

- Screw the handle of the crank extractor into the head.

- Rotate the handle of the crank extractor clockwise until the crank arm is completely loose from the bottom bracket, then remove the crank arm.

- Unscrew the handle and head of the crank extractor from the crank arm and repeat the process on the other side.

Step 4



- On the **left side** (non-drive side) of the bike, place the notch of the lock ring wrench into one of the divots on the lock ring.
- Ensuring that the curve of the wrench is pressed against the lock ring, turn the lock ring counterclockwise.

It's easy for this tool to slip off while trying to apply torque to the lock ring, especially if the lock ring is very tight. Try to apply all of the force in the same plane as the lock ring to avoid slippage.

Step 5



- Screw out the left side (non-drive side) bottom bracket cup by placing a pin spanner into the holes on the face of the cup and turning counterclockwise.

Be sure not to lose any of the ball bearings, as some may fall out as the cup is removed.

Step 6



- Remove the spindle and the ball bearings on both sides.

Be sure to take another peak into the bottom bracket shell to make sure no ball bearings got left behind.

Step 7



- Clean every component including the ball bearings, spindle, bottom bracket cup and inside the frame.

You can clean the parts by letting them soak in a solution of degreaser and water for a few hours, then giving them a thorough wipe down. Try to remove all of the old grease to avoid contaminating the new grease you're about to apply.

You may need to replace the ball bearings if they are broken.

- Inspect the spindle. If you see significant pitting on the surface where the ball bearings would spin, you may want to replace it with a new spindle.

Step 8



- Apply a *lot* of bike grease on the ball bearings and inside of the right (drive side) bottom bracket cup.

  Make the ball bearing cages face outward from the center of the spindle. The arms of the cages should wrap around to the cups rather than inside to the spindle face.

- Insert the spindle with the *excessively greased* drive side ball bearings.

If one side of your spindle is longer than the other side, make sure the longest side is facing right (drive side).

Step 9



- Apply grease on the other bearing balls, and put it onto the spindle with the bearing cage facing outwards.
- Apply a generous amount of grease to the inside of the left side bottom bracket cup.
- Put a light amount of grease on the threads of bottom bracket cup, and screw it into the shell by hand.

ⓘ The tightness of the cup controls the pressure of the bearings with their races between the spindle and cups.

- Adjust the tightness of the non-drive side cup until the spindle spins freely without resistance, but all of the play is eliminated from the spindle. If the spindle moves up and down, you want the cup more tight, and if the spinning doesn't feel smooth, you want to loosen it a bit.

Step 10



- After making sure the cup has the **right tightness** (the spindle can turn smoothly without play), hold the cup in place with the pin spanner and use your hands to screw on the lock ring by turning it clockwise.
- Then, using the pin spanner to hold the cup in place, tighten the lock ring using the lock ring wrench.

  It's crucial to keep the cup as still as possible while you are spinning on the lock ring, or you will lose your setting and have to readjust the cup.

You might need to repeat this process several times in order to find the most suitable tightness. Check that the spindle still spins freely and without play before moving forward.

Step 11



- Thoroughly clean any excess grease off of the spindle.
- Install the right side (drive side) crankset first, and rotate it 180 degrees to install the left side (non-drive side).

ⓘ Follow Step 1 and Step 2 in reverse order to reinstall the screw nuts and dust covers.

Congratulations on finishing your bottom bracket service!