Product Support Bulletin

Title: Clutch Disassembly & Flywheel Bearing Replacement
Schwinn Elite®, Schwinn SE®, Schwinn IC Elite®, Schwinn Evolution SR®, and Startrac Johnny G Elite®
Date: 11/08/07 ml

Tools Required for Flywheel Removal:

15mm Wrench
Medium Phillips Head Screwdriver
4mm Allen Wrench
10mm Wrench

Additional Tools Required for Clutch Disassembly:

4 Prong BMX Freewheel Remover Tool
Medium Phillips Head Screwdriver
1" Socket, ½" Drive
Extra Long ½" Drive Ratchet
Large Rubber Mallet
Large Steel Hammer
Protective Gloves
Eye Protection

Additional Tools Required for Flywheel Bearing Replacement:

15mm Cone Wrench
17mm Cone Wrench
17mm Wrench
SR-NBI Tool
SR-NBR Tool
SR-P-CBI Tool
Drill
Medium Wire Wheel for Drill
Snap Ring Pliers

To perform the clutch disassembly for the purpose of the flywheel bearing replacement, we must first **begin with the removal of the flywheel.** This is done by removing the outer and inner chain guards. You will use the Allen wrench and Phillips screwdriver for this procedure. Then you will use the 10mm wrench to remove the adjustment brackets. *AT THIS POINT, there is nothing holding the flywheel in place, so using CAUTION, gently lower the flywheel to the bottom of the bike frame and remove the chain. Remove the flywheel from the bike.*

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Start by inspecting the flywheel axle and nuts on both sides of the flywheel. If there is any rust or corrosion on the axle or nuts (BE SURE TO WEAR YOUR GOGGLES) use the wire wheel attached to the drill to remove the rust or corrosion from either or both sides of the axle and nuts. Be sure to protect the exposed threads on the axle that make contact with the floor. This can be done using one of the axle nuts. Cleaning the axle and nuts in this manner and applying a small amount of a Teflon based lubricant to the threads will aid in the removal of hardware during the tear down and reassembly process.

Now it is time to disassemble the clutch. This job is made easier with a partner.
Be sure to make note (mental or written) of the parts removed and the order in which they were removed.

1. Place the 4-prong BMX freewheel tool onto the flanged hub locknut and secure into place using one of the axle nuts. DO NOT OVERTIGHTEN the axle nut against the freewheel tool, FINGER TIGHTEN ONLY.
2. Be sure to follow the same precautions as before to protect the exposed threads on the axle that may make contact with the floor. Again, this can be done using one of the axle nuts. Using the 1" socket and ratchet, place the ratchet at 9 o'clock. Using one hand to stabilize the ratchet, use the other hand to strike the ratchet with the rubber mallet in a downward motion. This is to "break" loose the clutch system. If this cannot be done with the rubber mallet, you may have to use the steel hammer. PRACTICE EXTREME CAUTION WHILE USING THE HAMMER. Keep in mind, the objective is to "break" loose the clutch system. Models that have never had the Smart Release system removed can be quite difficult to loosen.
3. While the clutch assembly is taken apart, make an inspection of the clutch plates. If the wear indicators (black lines in clutch plate) are no longer visible, the clutch plates need replaced. If you see glazed surfaces or lube, this is a sign of possible contamination. Wipe all areas free of lube, including the contact areas of the hub sprocket.

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Now it is time to remove the flywheel bearings. Be sure to make note (mental or written) of the parts removed and the order in which they were removed.

1. Using the snap ring pliers, remove the snap ring from inside of the bearing port, allowing for the removal of the 6000Z bearing later.
2. Turn flywheel over so that the drive side is facing up.
3. Using the 17mm cone wrench on the bottom nut and the 17mm wrench on the top nut keep the bottom nut in place and turn the top nut counter clockwise. It will require you to "break" the nuts apart to get them turning, because these nuts are locked together. It may even be necessary to hold the axle nuts on the underside of the flywheel while removing these nuts on the topside.
4. Remove the top lock nut and the second lock nut closest to the needle bearing.
5. Flywheel can be propped or held vertical for this step. Place an inverted axle nut onto the end of the axle on the drive side. Do not over tighten. To avoid damaging the axle, you do not want any threads of the axle exposed. The axle nut will be used as a strike zone.
6. Strike the inverted axle nut with the rubber mallet. Continue striking the nut until you have driven the 6000Z bearing out of the opposite side of the flywheel.
7. The axle with another bearing attached should come out of the opposite side (non-drive side) of the flywheel.
8. Flip the flywheel over so that the non-drive side is face up.
9. Insert the SR-NBR tool into the flywheel (this tool is directional, be sure to insert the smaller tip) so that it makes contact with the needle bearing at the opposite side.
10. Strike the end of the SR-NBR tool with the rubber mallet. Continue striking the tool until the needle bearing is driven out of the flywheel.

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ADVISORY: IF you are unable to perform the above procedure and the lock nuts cannot be broken loose, there is an alternate method for disassembly.

1. Remove the clutch.
2. Place the flywheel so that the non-drive side is facing up.
3. Remove the axle nuts from the non-drive side.
4. Slide the axle out of the flywheel.
5. Using vise grips clamp the axle on the non-threaded portion and remove the drive side axle nuts.
6. Put the axle through the drive side opening and place an axle nut inverted onto the axle (be sure not to expose the threads of the axle through the inverted nut as mentioned previously) and use the axle nut as your striking zone.
7. Use the axle to remove the 6000Z bearing on the non-drive side by striking the inverted axle nut with the rubber mallet.

Now it is time to install the new flywheel bearings. It is recommended to lubricate the drive side bearing with waterproof grease. The bearing should be thoroughly lubed, however, the grease should not be heavily visible and there should be no globs. Over greasing could cause clutch contamination.

1. Put the drive side bearing into the drive side bearing port. Try pushing the bearing into the bearing port with your fingers while twisting. Bearing should go part way.
2. Put the SR-NBI tool on the outside of the bearing. Best way to do this is with the non-drive side of the flywheel facing down.
3. Using the rubber mallet **only** (metal hammer can damage bearing), tap the bearing into its port. Take caution to tap bearing in straight and evenly. IF bearing is crooked, take out and begin again. DO NOT over hammer. This can cause damage to the bearing.

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4. Turn flywheel over so the non-drive side is face up.
5. Set the 6000Z bearing in its opening on the flywheel.
6. Place the SR-P-CBI tool onto the bearing.
7. With the rubber mallet, gently tap the bearing into place. Take caution to tap bearing in straight and evenly. IF bearing is crooked, take out and begin again. DO NOT over hammer. This can cause damage to the bearing or flywheel.
8. Inspect all axle hardware for any necessary hardware replacement.
9. Put the axle through the drive side of the hub until it becomes seated on the non-drive side. The area where the bearing seats to the axle is shorter on the non-drive side and different than that on the drive side. This is due to the difference in the drive and non-drive side bearings.
10. Working with the non-drive side of flywheel up, place the first nut onto the axle. This should be the 15mm nut. The second to go onto the axle is the thinner 17mm nut, and third is the larger 17mm nut. Adjustments are done after assembly is complete.
11. Place the snap ring back into its groove with the snap ring pliers.
12. Place the flywheel drive side up.
13. Place the inner bearing race into position. It should slide easily and without interference. The inner bearing race belongs over the axle in the center of the drive side bearing.
14. Place the 17mm lock nuts back onto the axle. On both sides, the nuts should be tightened by hand to the inner portion of the axle, and then "locked"/tightened down with the 17mm wrenches. OVER TIGHTENING can cause the axle to feel sluggish or as if it is dragging when it turns. Correct adjustment will give a smooth feel while turning the axle.

Reassembly of the Clutch is the next step. Make sure that all areas are clean before putting the clutch together.

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1. Place adequate spacers onto the flywheel.
2. Place the spring onto the flywheel.
3. Place the inner clutch plate***** onto the flywheel. ***Note:** see step 4.
4. Place the hub sprocket***** onto the flywheel. ***Note:** Hub sprocket is unidirectional. That means there is only one correct way to put the hub sprocket and clutch plates together. To know if the parts are in the right order, first "pre-assemble" the hub sprocket and the flanged hub locknut. Place the flanged hub locknut through the hub sprocket. Picturing it as though it were on the flywheel, the flanged hub locknut should be able to spin clockwise. Once you have these two pieces together correctly, install onto the flywheel.
5. Keep pieces in order and together as you tighten the system.
6. Once the clutch system starts to thread together, lift the spring against the clutch plate as you tighten the system. This will help keep things together and in order as the system is tightened.
7. Tighten by hand as much as possible.
8. Using the 4-prong BMX freewheel tool and the 1" socket with ratchet, tighten further. Keep in mind to use the axle nut to keep the freewheel tool in place while tightening.
9. Again, use the rubber mallet to strike the ratchet. You must get the system very tight and locked down to avoid it loosening during use. Recommended torque for the clutch on the flywheel is 65-75 ft. /lbs.
10. Place the chain back onto the axle and then place the flywheel back onto the frame.
11. Place the brackets back onto the axle and re-thread the chain tensioner bolts until chain is tight.
12. Align the flywheel.
13. Test the unit. If slippage occurs, add more spacers. If it is slipping completely, check the direction of the spring. It is possible it is backward. Correct if necessary.
14. Finish by reinstalling the chain guards and making sure that the flywheel is aligned properly.