Freewheel Disassembly

PLEASE READ ALL THE WAY THROUGH THE INSTRUCTIONS AT LEAST ONCE, WE'RE BEGGING YOU.

Tools required: freewheel removal tool, thin flat blade screwdriver or knife, Park red handled pin spanner, light oil, rag, adjustable wrench or vice, and a little patience.

White Industries freewheels are unique due to the fact that they are designed to utilize a sealed cartridge bearing rather than a loose ball bearing system. White Industries freewheels also utilize an additional moisture seal that is seated on the backside of the freewheel. The seals protect the freewheel from water and debris encountered while on the trail, however, at times the freewheel can become contaminated and it is wise to clean the internals and replace the bearing.

To disassemble the freewheel, first remove the lock ring. The lock ring is the color anodized ring with White Industries engraved into the surface. Please note that the ring is **reverse** threaded. There is a small arrow engraved in the lock ring that points in the direction that it must be turned for removal. The easiest way to remove the lock ring is to leave the freewheel on your wheel. Place the pin spanner in the two holes on the freewheel lock ring, use steady pressure to loosen the lock ring by turning it to the **RIGHT**, also known as **CLOCKWISE** (Fig. 1)

Fig. 1

Fig. 2 Thread ENO axle bolt into here.

Do not remove the lock ring completely, just loosen it ½ a turn. Now, remove the freewheel from your wheel using your freewheel removal tool (Fig.2). You can thread the ENO axle bolt through the freewheel removal tool and into the axle to hold the tool against the notches in the freewheel. Do not tighten the bolt down, just enough to keep the tool from slipping off the freewheel as you apply torque. As soon as the freewheel loosens a bit, remove the axle bolt, and finish unscrewing the freewheel.

Once you've removed the freewheel, you can finish unscrewing the lock ring by hand (Fig. 3).

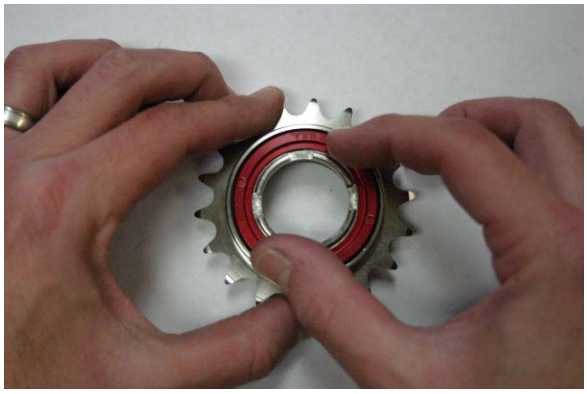

Fig. 3

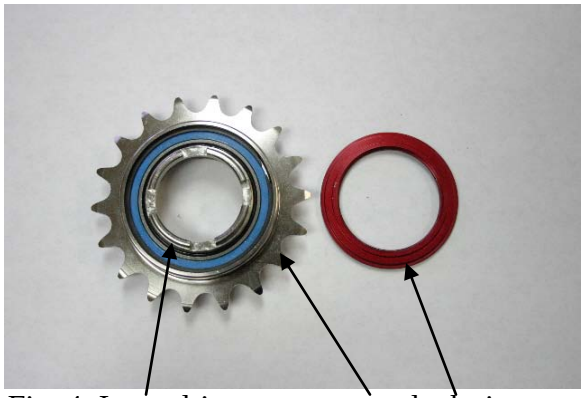

Fig. 4 Inner driver, outer gear, lock ring

Now, cradle the freewheel in your fingertips and use your thumbs to push the inner driver towards the back of the freewheel or away from you (Fig. 5). The inner driver should dislodge from the outer gear. The back seal will pull away from the freewheel.

Fig. 5 Pressing out inner driver

Fig. 6 Bearing, rear seal, inner driver

Once the freewheel is apart, check the spring tension by depressing each pawl (Fig. 7). The pawls should bounce back into place. The driver mechanism should be free of grease and mud. Clean the internal teeth of the outer gear so the pawls have a clean engagement surface. A light oil or dry lube can be used on the pawls and springs before reassembly. DO NOT use grease.

Fig. 7 Checking pawls of inner driver

Check the bearing. The inner race of the bearing should roll smoothly when checked. If the bearing feels gritty or rough, then it should be replaced. To replace the bearing, remove the snap ring and press the bearing out with your thumbs (Fig. 8 and 9). If you can't push it out with your thumbs, a large socket and mallet can be used to tap the bearing free of its bore.

Fig. 8 Removing snap ring.

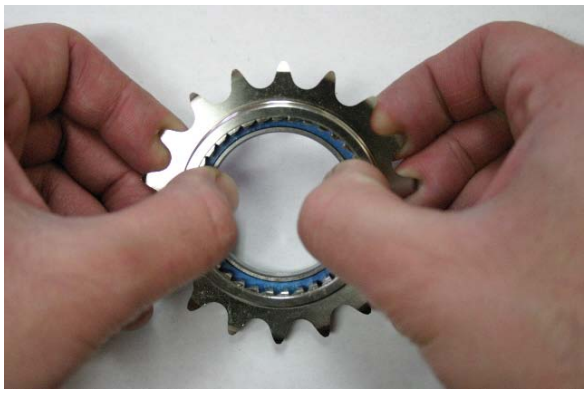

Fig. 9 Pressing out bearing.

Once the bearing is removed a new one can be installed. Find a socket the same diameter as the outer race of the bearing (approximately 51mm in diameter). Place the socket up against the bearing and tap on the end of the socket with a mallet. If you do not have a suitably sized socket, the inner driver can be used to press the bearing into the bearing bore. Remove o-ring from inner driver, take care not to lose any of the pawls or springs (Fig. 10). Ease the bearing into the bearing bore, making sure that the bearing is straight (Fig.11).

Fig. 10 Remove inner driver o-ring

Fig. 11 Start bearing into bore.

Place the outer gear on a hard surface (like a work bench) with the bearing facing down and the driver ring of the outer gear facing up. Use your fingers or the palm of your hand to press the outer gear down evenly which will drive the bearing most of the way into the bearing bore (Fig. 12). Now use the inner driver to press the bearing the remaining few millimeters into the bearing bore. Carefully place the inner driver into the bearing (Fig. 13), set the assembly on your work surface, with the inner driver on the bottom, and press down on the outer gear until the bearing completely seats in the bearing bore (Fig. 14).

Fig. 12 Pressing bearing into bore.

Fig. 13 Place inner driver into bearing.

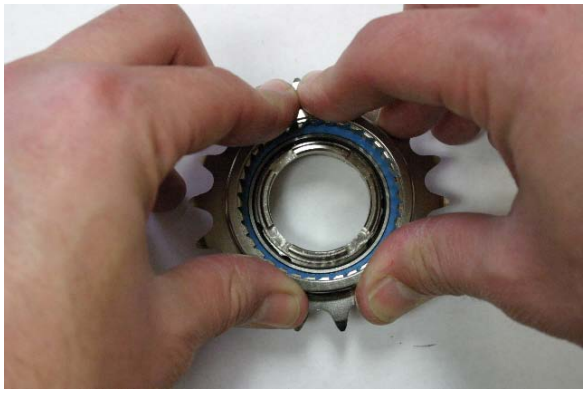

Fig. 14 Seat bearing fully into bore.

Fig. 15 Install inner driver o-ring.

Remove the inner driver and install the inner driver o-ring before you forget (Fig. 15). Install the snap ring that locks the bearing into place (Fig. 16) and make sure that snap ring is seated completely in groove (Fig 17.). **DO NOT FORGET TO INSTALL THE SNAP RING!**

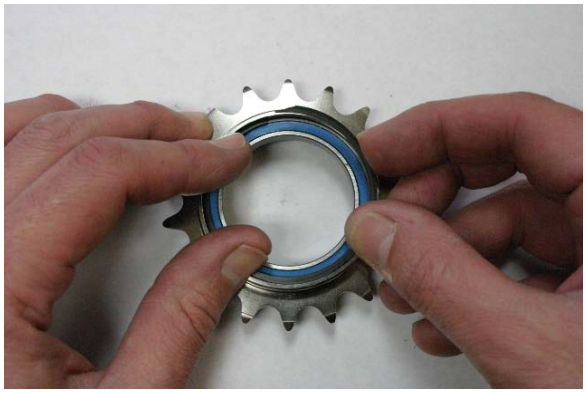

Fig. 16 Install snap ring.

Fig. 17 Snap ring seated properly.

The cleaned driver can be reinstalled by carefully pushing it back into place (Fig. 18). You may need to rotate the inner driver slightly so the pawls drop into the driver ring. Make sure the pawls and springs are in place and engaging the driver ring, by rotating the freewheel by hand. Flip freewheel and press down on outer casing to completely seat the inner driver, you will hear a loud click once it is fully seated (Fig. 19).

Fig. 18 Insert inner driver into outer gear.

Fig. 19 Press down to seat inner driver.

Once the driver is nestled into the outer gear, install lock ring (Fig. 20). Remember to tighten the lock ring by turning it to the **LEFT**. Take care not to cross thread the lock ring. Once the ring is in place, tighten it with the pin spanner wrench (Fig. 21). Lastly, install the seal on the back of your freewheel. Use your finger tips and push the seal into place (Fig. 22). Now that the freewheel is fully assembled check the engagement one last time and then install on the bike.

Fig. 20 Install lock ring.

Fig. 21 Tighten lock ring to left.

Fig. 22 Push rear seal into place.