

## White Industries ENO Eccentric Rear Hub Instructions

Tools required: 4mm allen/hex wrench, 19mm open end wrench, 9mm open end wrench or bench vise, ENO Eccentric Axle Tool or 10mm socket, bearing puller or drift punch, bearing press, and mallet.

### Disassembly

1. Fixed cog and/or freewheel need to be removed from hub. Remove bolt/washer assembly that affixes the hub to the dropout (Fig.1). Remove the 4mm bolt that attaches the axle end to the axle on the freewheel side of the hub. Use a 19mm open end wrench to hold the flats of the axle end while you use a 4mm hex wrench to remove the bolt (Fig.2). Leave the other 4mm bolt in place so when the axle is removed the entire assembly will come out with the bearing. At this point, you should have removed two 8mm axle bolts, two washers and one 4mm bolt.



Fig.1 Axle end, axle bolt, washer.



Fig.2 Removing 4mm bolt from axle end

2. The axle end is plugged into the axle. If you can't pull it out by hand follow the removal steps **making sure that the axle end you are trying to remove is the one that you took the 4mm bolt from**. Place the axle bolt through the closed end of the 9mm wrench, then slide the axle washer onto the bolt, now thread the bolt into the axle end (Fig.3). Use the wrench as a lever to slowly walk the axle end out of the axle (Fig.4).



Fig.3 9mm wrench installed on axle end.



Fig.4 Removing axle end from hub.

Alternatively, a vise can be used by clamping down on the axle end flats and using the wheel to walk the hub away from the clamped axle end.

3. Place the ENO Eccentric Axle Tool into the end of the axle and use your mallet to tap the axle through the hub shell, this will remove the axle, bearing and axle end as a unit. Make sure that there is towel or work surface of some kind that can capture the axle assembly as it is driven out of the hub shell.



Fig.5 ENO Eccentric Axle Tool



Fig.6 Driving out axle assembly.

As you withdraw the assembly (Fig.7) you will notice some very thin washers that rest between the bearing and the hub shell (Fig.8). If you don't see any washers, then they are on the other side of the hub.



Fig.7 Withdrawing axle assembly.



Fig.8 Washers

A given hub will have between one to four washers. These washers take up some of the clearance within the sealed bearing and help minimize play. Keep track of which side they are on, so they can be installed correctly. If you have more than one washer, make sure they are installed as a group.

**NOTE:** As an alternative method to drive out the axle, you can use a dowel or 10mm socket that is approximately the same diameter as the axle. We recommend using the ENO Eccentric Axle Tool to prevent the axle from being damaged during removal. The dowel will act as a punch. Place the dowel against the end of the axle (side without the axle end attached) and hit the end of

the dowel with a mallet. The axle should be tapped through the shell which will remove the axle, bearing, and axle end.

4. Use a 19mm open end wrench to hold the axle end and a 4mm hex wrench to remove the bolt that affixes the axle end to the axle (Fig.9). Remove the axle end from the axle. Remove the bearing from the axle end by hand (Fig.10).



Fig.9 Removing 4mm bolt from axle end.



Fig.10 Removing bearing from axle end.

5. Remove the remaining bearing in the hub shell with a bearing puller, or use a drift punch with a mallet and tap the bearing out. If you use a drift punch, remember to work from the backside of the bearing outwards.

If you don't have either of these tools, try the following method. Place an axle end into the bearing that is still in the hub shell (Fig.11). Insert the axle from the other end of the hub shell until it seats onto the axle end (Fig.12).



Fig.11 Inserting axle end.



Fig.12 Inserting axle.

Make sure that the axle is oriented so that the holes in the axle and the axle end line up and the 4mm bolt can be threaded into the axle (Fig.13). Once this is done, you can place the ENO Eccentric Axle Tool into the exposed end of the axle (Fig.14) and tap the remaining bearing out of the hub shell (Fig.15).



Fig.13 Installing 4mm bolt.



Fig.14 Placing ENO Axle Tool.



Fig.15 Driving out second bearing.

6. Loosen and remove 4mm bolt from the axle assembly. Slide bearing off of axle end. The hub will now be disassembled, and you should be able to perform any maintenance work desired and renew the bearings.

### Assembly

1. Install the group of thin washers on the freewheel side of the hub shell (Fig.16), the washers should rest on the machined shoulder inside the hub shell (Fig.17). **If you have a bearing press, proceed to Step #2, if you don't have one, proceed to Step #5.**



Fig.16 Washers, machined shoulder.



Fig.17 Washers on machined shoulder.

2. Install new bearing into the freewheel side of the hub shell using a bearing press. Be careful that the washers remain in place while bearing is pressed fully into bore.

3. Place new bearing onto an axle end (Fig.18) and insert into axle. Grease the threads on a 4mm bolt. Install a 4mm bolt and tighten with 4mm hex wrench (Fig.19). You can use the 19mm wrench to hold the flats of the axle end while you tighten the 4mm bolt.



Fig.18 Installing new bearing.



Fig.19 Installing 4mm bolt.

4. Insert axle/bearing assembly into hub shell on the fixed gear side (Fig.20). Start pressing the assembly into the hub shell with the palm of your hand, making sure that the bearing is going into the bore straight (Fig.21). Finish by tapping the axle end with a mallet to fully seat the bearing in its bore. **Proceed to Step # 7.**



Fig.20 Inserting axle assembly.



Fig.21 Tapping axle assembly into shell.

5. Place new bearing onto the axle end (Fig.22) and insert into axle. Grease the threads on a 4mm bolt. Install a 4mm bolt and tighten with 4mm hex wrench (Fig.23). You can use the 19mm wrench to hold the flats of the axle end while you tighten the 4mm bolt.



Fig.22 Installing new bearing.



Fig.23 Installing 4mm bolt.

Insert axle/bearing assembly into hub shell on the freewheel side. Be careful that the washers remain in place while bearing is pressed into bore. Start pressing the assembly into the hub shell with the palm of your hand, making sure that the bearing is going into the bore straight (Fig.24). Finish by tapping the axle end with a mallet to fully seat the bearing in its bore (Fig.25).



Fig.24 Pushing in axle assembly.



Fig.25 Tapping axle assembly into shell.

6. Place new bearing on axle end and press assembly into the hub shell, make sure that bearing is going straight into bore (Fig.26). Fully seat bearing by tapping into place with mallet (Fig.27).

**Proceed to step #8**



Fig.26 Installing axle end/bearing assembly.



Fig.27 Tapping axle end to seat bearing.

7. Plug the remaining axle end into the axle (Fig.28). Push the axle end in as far as you can by hand.



Fig.28 Install axle end into axle.

8. Install the remaining 4mm bolt (Fig.29). Tighten down each of the 4mm bolts. Give each axle end a solid tap with the mallet (Fig.30) and then recheck the 4mm bolts. The bearings should be fully seated in the bearing bores.



Fig.29 Tighten 4mm bolt.



Fig.30 Tapping axle end.

9. Grease or apply anti-seize to the frame bolts and thread the bolts with washers into the axle ends (Fig.31).



Fig.31 Installing axle bolt and washer.

10. Install the hub/wheel and rotate the axle ends to obtain desired chain tension. *Caution:* The brakes may need to be realigned to accommodate correct brake caliper/wheel rim position. A trained bicycle mechanic at your local bike shop can assist you with realigning your brakes. Once in position, tighten the bolts securely.

11. Enjoy

**WARRANTY:** This warranty applies to all products sold by an authorized White Industries Dealer to the original owner. It covers any and all material and workmanship defects for one year from the date of purchase. Bearings are the exception and are warranted for 60 days from the date of purchase. With proper maintenance bearings should last much longer. White Industries limited warranty does not cover 1) normal wear and tear 2) damage, failure or loss caused by misuse, accident, improper assembly or installation 3) parts subjected to use not consistent with the use originally intended for the product.