Drivetrain Upgrade Installation Guide

Dear Freedom Chair rider:

- These freewheels will give you great riding performance! The clicking sound they make is normal.
- **Important: Installation of this upgrade should be done by a skilled bicycle mechanic.** Do not attempt to do this at home. It requires uncommon tools and mechanical finesse. If you are unsure about whether you can do this yourself, do not attempt installation.

Notes for the bike shop:

- The freewheels are held in place by a custom torque coupling assembly. The assembly rotates around two bearings (one inboard, and one outboard). There are two of these assemblies per chair, one per side. They enable us to mount two freewheels on the chair, enabling the chair to ratchet itself forward, without having the left freewheel unscrewing itself.
- For this upgrade, the assemblies are to be wholly removed and replaced with the upgraded parts provided in this package. If the customer doesn't plan on using the old assemblies, please use the included shipping label to return them to GRIT for reprocessing.
- The upgraded assemblies are marked with tape and an arrow indicating "forward" that points toward the front of the chair. Install the assemblies so the arrows point toward the front of the chair. **NOTE: The left and right assemblies are identical. When correctly installed, one will be "flipped" but they will both ratchet in the same direction.**

Tools required:

- 13mm wrench
- #3 Phillips head screwdriver (or similar)
- Circlip (C-clip) removal tool or needle nose pliers (use eye protection when using these)
- Flathead screwdriver (for prying)
- Rubber mallet (for gentle tapping)

Installation instructions:

1. Please read all of these instructions first.

2. Remove the rear wheels using the quick-release wheel-axle push-button.
3. Loosen the chains sufficiently to derail the chain (see instructions on the last page). Remove and save the chain.
4. On each side of the chair:
    - 4.1. Note the direction of freewheel rotation and ratcheting. The freewheels transmit torque from the chain moving the chair forwards, and ratchet backwards.
    - 4.2. Remove the circlip that holds the assembly axially in place on the shaft.
    - 4.3. Slide the assembly off of its shaft. This may require some light prying with a flathead screwdriver between the assembly and the axle vertical side. Be careful to avoid jamming during removal.
    - 4.4. Grab the correct upgrade assembly part. The arrow "forward" should point towards the front of the chair. The tape should be outboard, farthest from the center of the chair. The freewheel should pull the chair forward, and ratchet backwards.
    - 4.5. Gently slide the upgrade assembly onto the shaft. Be careful to avoid jamming. If it is a tight fit, gently tap with a rubber mallet to slide it on. DO NOT FORCE IT. Make sure it goes on straight and does not jam. If it goes on perfectly straight, it will slide without any resistance. If it's at all angled, it will jam and be harder to slide on.
    - 4.6. Double-check that the freewheel ratchets the chair in the forward direction. The arrow should point forward and the tape should be on the outside of the chair.
    - 4.7. Re-attach the circlip in its slot on the shaft. Test circlip attachment by attempting to pull the upgrade assembly outboard. The circlip should be resting in its slot and resisting the axial movement of the upgrade assembly. Two extra circlips have been provided, though the originals should suffice.
    - 4.8. Remove the green tape from the assembly.

5. Reattach the chains and tighten them using the chain tension screws (see instructions on the last page). Tighten the seat in place.
6. Reattach the wheels using the quick-release wheel-axle push-button pins.
7. If the customer does not want to keep them, please use the included return shipping label to send the old assemblies back to GRIT for reprocessing.

How to loosen and tighten the chain

1. The seat is attached to the base frame by four vertical bolts. Loosen these bolts with a #3 (or any available) Philips screwdriver and a 13mm wrench or socket. The bolts just need to be loose enough to allow the seat to slide relative to the base frame. See Figures 4.2a and 4.2b.

2. The chain tightness is controlled by two setscrews, one on each side of the chair. Use a #3 (or any available) Philips screwdriver to rotate these screws. Tightening the screws will tighten the chain, and visa versa. Tighten the chains until they can be squeezed together with the fingers but do not sag. See Figure 4.2. If the freewheels have difficulty rotating, or a grinding noise is heard, the chains are too tight. **Balance the tightness of both sides of the seat. Adjust the tightnesses together!**

3. When the chain tightness is appropriate, tighten the four bolts to secure the seat to the base frame.

(a) Four bolts must be loosened (and later retightened) to slide the seat.

(b) Use a #3 (or any available) Philips screwdriver and a 13mm wrench or socket to loosen the bolts.

(c) The chain tightness is controlled by two setscrews, one on each side of the seat. Both must be rotated the same amount.

(d) Use a #3 (or any available) Philips screwdriver to tighten the setscrews until the desired chain tension is reached.

Figure 4.2: Adjusting the chain tension on the Freedom Chair.