

Rebuild for Planetary Gearbox

Tools & Materials Needed:

- Allen keys / hex wrenches
- External and internal snap ring pliers
- Rubber mallet
- Bearing puller / press
- Solvent or degreaser (e.g., isopropyl alcohol or brake cleaner)
- Lint-free cloths
- Synthetic EP grease (e.g., Klüber Microlube GB 00 or Mobilith SHC 220)
- Torque wrench
- Thread locker (medium strength)
- New bearings, seals, or washers if needed

Step 1: Preparation

1. **Disconnect** the gearbox from any motor or mechanical system.
2. **Clean the external housing** to prevent debris from entering during disassembly.
3. **Label or mark** housing parts and fasteners for easy reassembly.

Step 2: Disassembly

1. **Remove end caps** or housing bolts (typically from the front or rear plate).
2. Carefully **pull apart the housing** — do not force it. Use a rubber mallet if needed.
3. **Extract the input and output shafts** gently. Pay attention to gear positioning.
4. **Disassemble the planetary gear sets** (sun gear, carrier, planet gears, and ring gear).

5. Use **snap ring pliers** or **bearing pullers** to remove bearings or internal clips as necessary.
6. Set aside all parts in a clean, organized way.

Step 3: Cleaning & Inspection

1. **Degrease all internal parts** — gears, carriers, shafts, bearings, etc.
2. Inspect for:
 - **Wear or pitting** on gear teeth
 - **Cracked or warped bearings**
 - **Broken or missing retaining clips**
 - **Damaged seals or O-rings**
3. Replace any worn or broken components.

Step 4: Lubrication

1. Apply **fresh grease (Grade 00 synthetic EP)** evenly:
 - Light coating on **all gear teeth**, bearings, and internal surfaces
 - Ensure grease gets **inside the planetary gear teeth** and **needle bearings**
2. Don't over-grease — fill the gear housing to **about 30–50%** of its volume

Step 5: Reassembly

1. Carefully **reinstall the planet gears** into the carrier, ensuring proper alignment.
2. Insert the **sun gear**, carrier assembly, and ring gear in correct order.
3. **Press fit** new bearings or reuse original ones if in good condition.
4. Reinsert any **retaining clips** and **snap rings**.
5. Reconnect **input and output shafts** — apply a small amount of grease to mating surfaces.

6. Apply **thread locker** to housing bolts if needed and torque to manufacturer specs.

Step 6: Final Checks

1. Rotate the gearbox by hand to ensure **smooth, noise-free movement**.
2. Check for **gear binding**, excessive backlash, or resistance.
3. Clean off any excess grease from the outside.

Step 7: Test Run

1. Mount the gearbox on your test setup or motor.
2. Run under light load for a short period:
 - Listen for **unusual sounds** (clicking, grinding)
 - Check for **excessive heat buildup**
3. Gradually increase to operational load and ensure stability.

Optional: Document Rebuild

- Record **replaced parts, grease type/brand, and torque settings** for future reference.
- Note any modifications or observations for preventative maintenance.