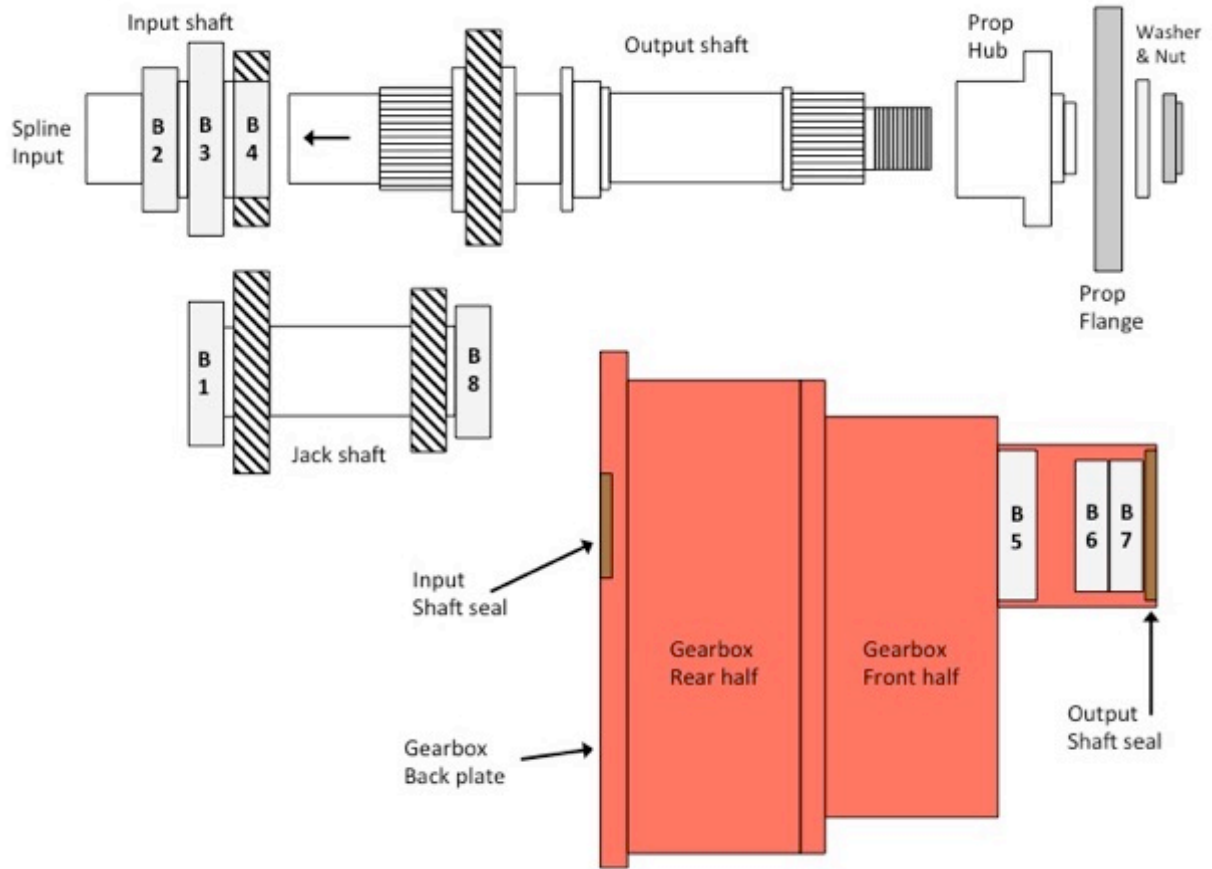


## Gearbox Gen3v4 Internals



### Bearing and Seal Part Numbers

- B1 – SKF 6208C3 (40x80x18 mm)
- B2 – SKF 6208C3 (40x80x18 mm)
- B3 – SKF 6212 (60x110x22 mm)
- B4 – SKF 6007 (35x62x14 mm)
- B5 – SKF 6213C3 (65x120x23 mm)
- B6 – SKF 6012C3 (60x95x18 mm)
- B7 – SKF 6012C3 (60x95x18 mm)
- B8 – SKF 6207 (35x72x17 mm)

Input shaft seal – Harwal 406207ADL (<http://harwal.com/product/21159>)

Output shaft seal – Harwal 9011010ADL (<http://harwal.com/product/23621>)

## Putting the gearbox back together

1. Get the right tools. If you can borrow a professional bearing heater from someone your job is going to be a whole lot easier. It heats a bearing to 230F in less than 40 secs. A shop press and a bearing puller are indispensable as well.



2. Heat bearing B1, freeze jack shaft, put/press B1 on back side of jack shaft.



3. Heat bearing B8, freeze jack shaft, put/press B8 on front side of jack shaft.



4. Heat bearing B3, freeze input shaft, put/press B3 on the back side of input shaft.



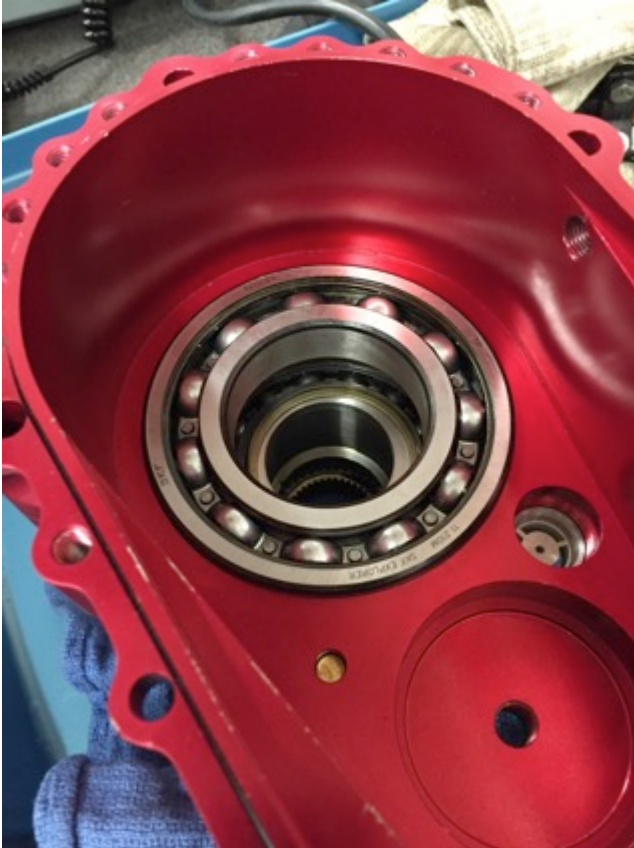
5. Heat bearing B2, freeze input shaft, put/press B2 on the back side of input shaft



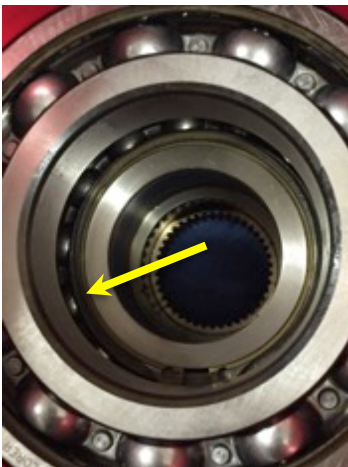
6. Freeze bearing B4, heat input shaft in the oven, put/press B4 into the front side of the input shaft



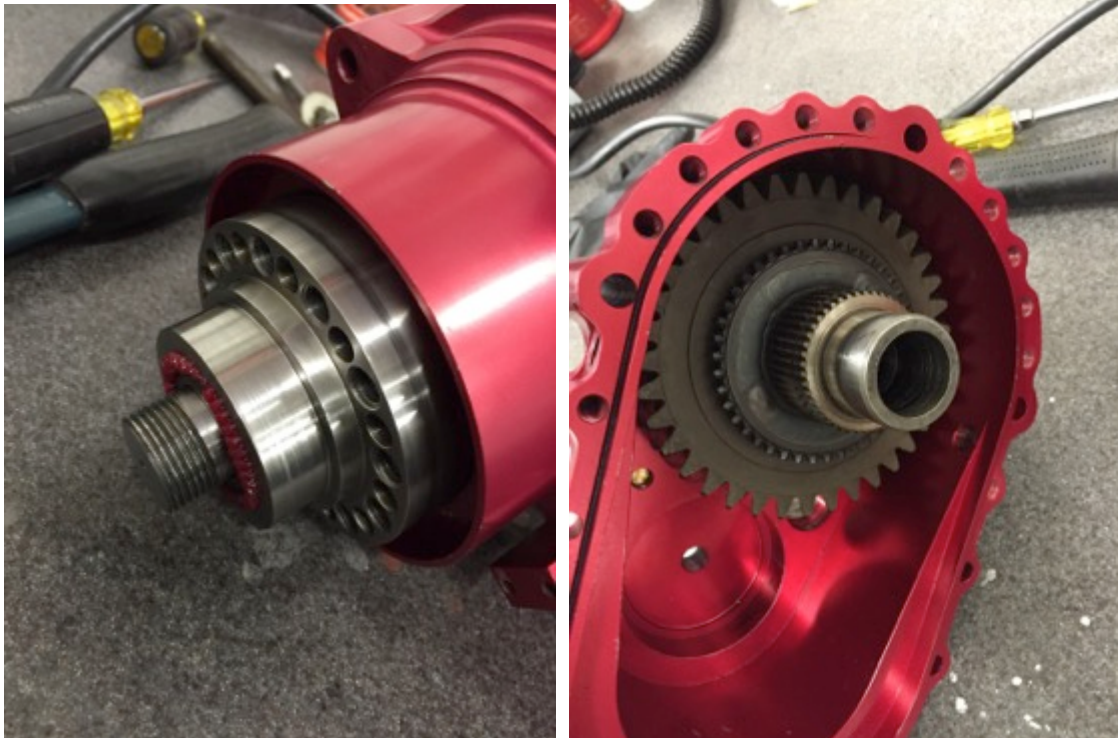
7. Heat the front housing, freeze bearings B6 and B7, press B7 first followed by B6 into the housing where the prop shaft sits
8. Heat the front housing, freeze bearing B5, press B5 into the hole in the housing where B6 and B7 just went in. Other builders might have found a 6213N in their gearbox instead, I found a 6213C3 so that's what I replaced mine with.



9. Freeze the prop flange, while the bearings and the housing are still hot, press the prop flange into the B6 and B7 bearings
10. Clip the snap ring on the prop flange on the inside



11. Heat the front housing with all the bearings and the prop shaft, freeze the output shaft, put some grease on the output shaft front spline, press the output shaft into the housing through all the bearings into the prop spline shaft. Be careful to center the shaft correctly as there is a lip that's in the way (same that made it hard to get the output shaft out of the assembly). This part is probably the most challenging of all.



12. Heat the back housing, freeze the jack shaft and input shaft, put/press the two shafts into the back housing (input shaft first)



13. Make a new seal for between the housing halves. Ends sealed with CA glue.



14. Put the front and back housing back together, use threaded rod to pull them together



15. Put all the allen bolts back in (short ones where you think the long ones go, and long ones where you think the short ones would go) and torque to 210 in-lbs
16. Put the two ½” bolts back in and torque to 210 in-lbs

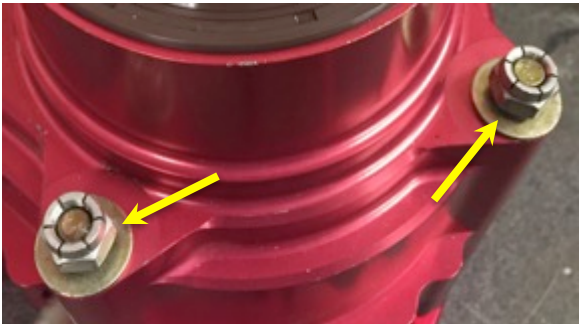
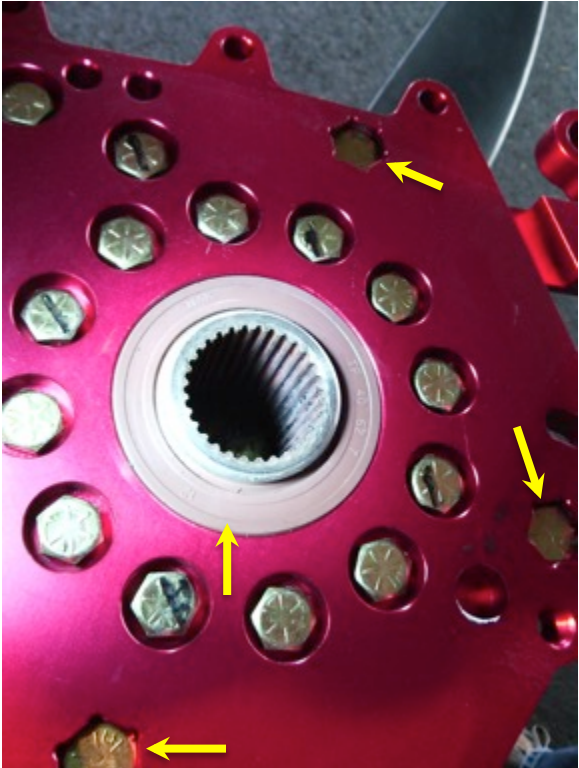


17. Make new 1mm seals for the back plate (2 of them). Ends sealed with CA glue.





18. Put the back plate back on with all the short ½” bolts and torque to 210 in-lbs.
19. Put the 3 long bolts back in and torque the nuts to 250 in-lbs.
20. Put a new viton input shaft seal in.



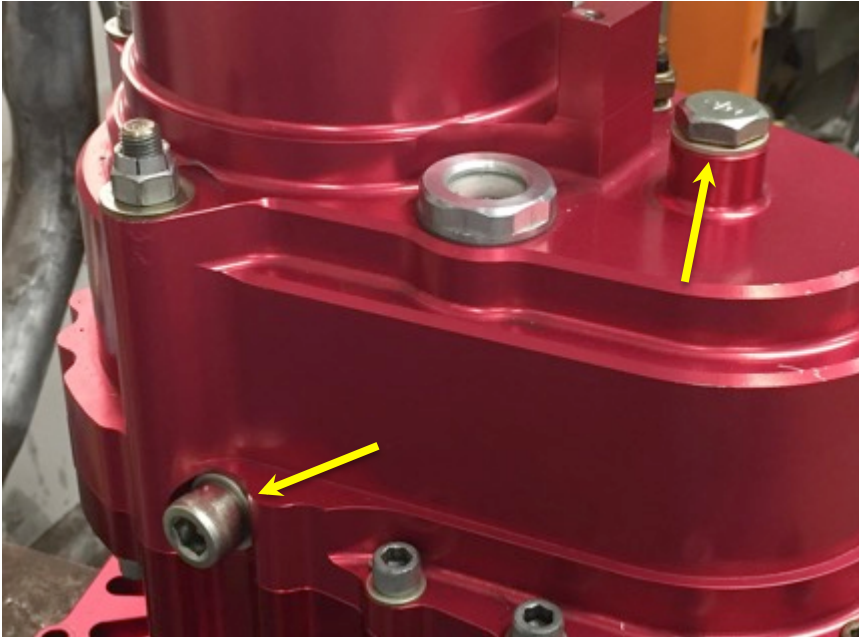
21. Put a new Viton output shaft seal in



22. Put the prop flange on the prop hub with the allen bolts and torque to 210 in-lbs

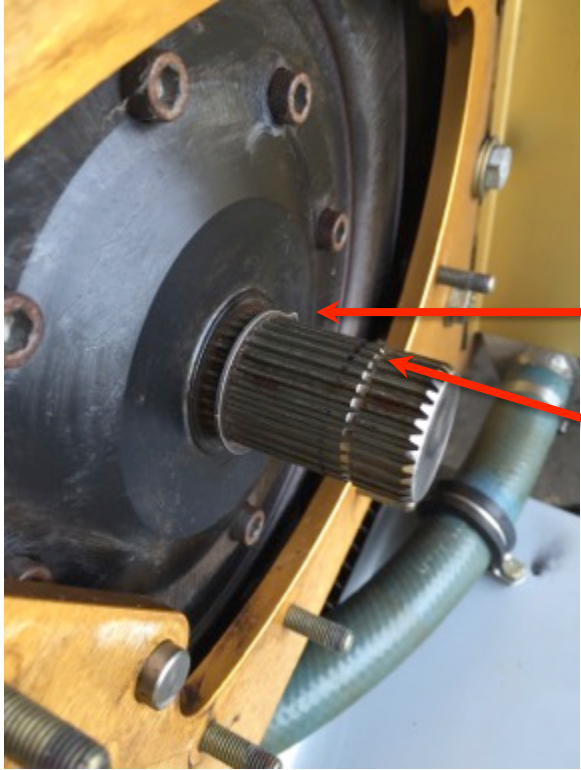


23. Screw the magnetic oil filler drain plug in the bottom of the housing and put the short bolt back in place that was previously used to separate the gearbox halves



24. Fill the gearbox with new 75W90 oil (I decided to give Redline 75W90) until the view glass is half filled
25. Move the gearbox up and down, left and right to get the oil distributed to all the bearings and gears

26. I changed the location of the snap ring on the spline to better make sure the spline cannot slide out of the flywheel adapter too far. I am also not using the pilot shaft on the spline anymore as I suspect it forces too much wear on the female spline shaft teeth. Without the pilot shaft the spline should better self-align with the flywheel adapter and the female spline shaft.



New location. Spline is seated the full ½” into the flywheel adapter and cannot come out any further due to the snap ring location.

Original location. Spline can come almost ¼” out of the flywheel adapter before the snap ring catches on the gearbox side.

27. Install the gearbox back onto the H6 engine plate. Make sure to grease the spline, flywheel adapter and gearbox female spline shaft well before installation.
28. Reinstall the propeller on the gearbox propeller shaft and torque all propeller bolts with 50 ft lbs.
29. Let the prop rotate a couple of times by engaging the starter motor. This will get all the gears and bearings well lubricated before first start of the engine.