

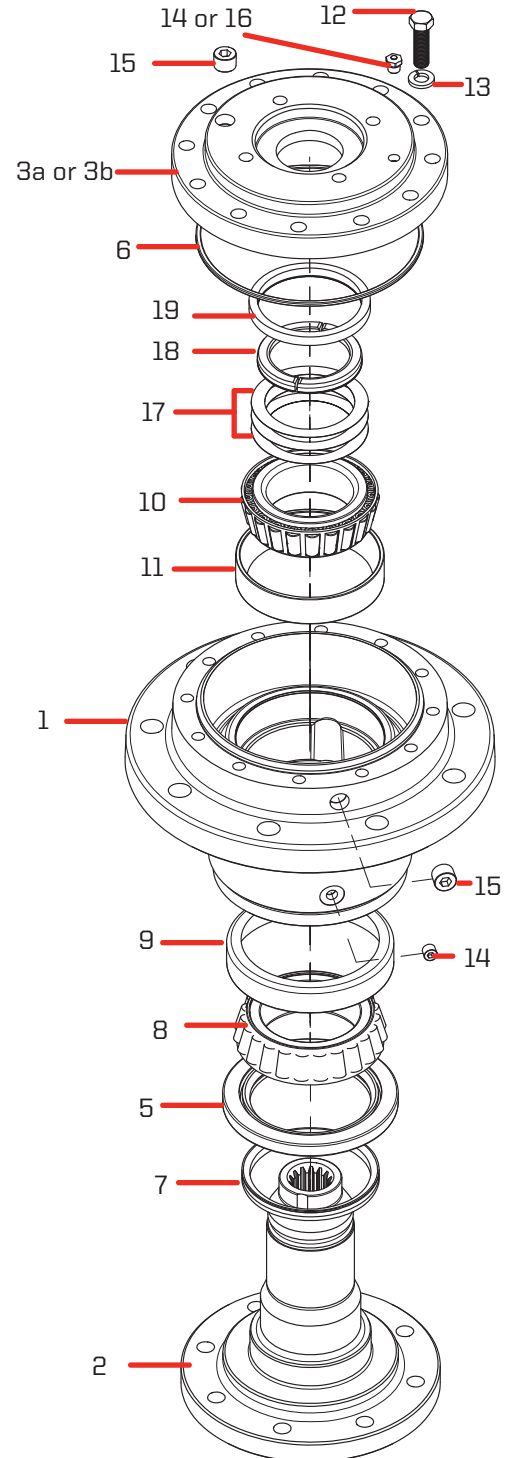


# D4 SPINDLE REBUILD INSTRUCTIONS

## PARTS

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	35-0215	BASE - 70BL
2	1	35-0216	OUTPUT SHAFT - 70BL
3a	1	35-0217	COVER - SAE 'A'
3b	1	35-0214	COVER
4	(1)	30-0131	SEAL KIT (Includes items 5, 6, and 7)
5	1	30-0127	SHAFT SEAL
6	1	33-0125	O-RING
7	1	33-0128	SEAL V-RING
8	1	10-1080	BEARING CONE
9	1	10-1081	BEARING CUP
10	1	10-1078	BEARING CONE
11	1	10-0179	BEARING CUP
12	12	11-2278	HHCS (7/16-20 X 1.5 GR8)
13	12	11-0003	7/16 LOCK WASHER
14	1	21-1793	PIPE PLUG (1/8 NPT)
15	2	21-1161	PIPE PLUG (3/8 NPT MAGNETIC)
16	1	39-0217	RELIEF VALVE (1-5 PSI)
17	**	33-0126	SHIM
18	**	33-0130	SPLIT RING
19	**	33-0129	LOCK RING

\*\*QUANTITY DEPENDENT UPON DESIRED BEARING PRELOAD AND MANUFACTURING TOLERANCES



## REQUIRED TOOLS

- Gear Puller
- Bearing Splitter
- Heel Bar
- Clean Rags
- Various Hand Tools

## REBUILD INSTRUCTIONS

1. Scribe a diagonal line across the outside of the unit from the cover (3a or 3b) to the base (1) before disassembly to aid in the proper positioning of pieces during reassembly.
2. Remove drain plugs (14 and 15) and drain oil from unit. The oil will drain faster and more completely if warm. Tilt the unit so that the drain port in the base (1) points downward to drain as much oil as possible.
3. Remove the twelve hex-head capscrews (12) and lockwashers (13).
4. Remove cover (3).
5. Inspect o-ring (6). Discard the o-ring if damaged or deformed.
6. Remove the lock ring (19) using a heel bar or puller. Do not pry against the bearing cone (10).
7. Remove split ring segments (18) and shims (17).

Caution: Since the output shaft is no longer retained, care should be taken to avoid personal injury. Care should also be taken not to damage the shaft while pressing through base.
8. Set the base (1) with the spindle side down on a plate or table.
9. Press output shaft (2) through the bottom of base by applying a load to top end (internal end) of shaft until it passes through inner shaft bearing cone (10). The shaft seal (5) will also be pressed out and likely damaged.
10. Use a gear puller or bearing splitter to remove the outer bearing cone (8) from the shaft (2). If reusing old bearing cone, do not pull on or damage roller cone.
11. Remove the shaft seal (5) and v-ring seal (7) for inspection or replacement.
12. Inspect inner and outer bearing cups (11 and 9). If cups are damaged, drive them out using a brass drift or remove with a puller.
13. Clean all foreign material from oil plugs (14 and 15).
14. Place base (1) (output side up, opposite shown) on the table.
15. Apply a layer of lithium or general purpose bearing grease to the roller contact surface of outer bearing cup (9).
16. Place outer bearing cone (8) in outer bearing cup (9), large end up.
17. Lubricate inner lip of shaft seal (5) with grease.
18. Press into base (1) with open side of seal toward bearing (8) until seal is against mounting shoulder in base. Be careful not to damage seal when pressing into place.
19. Fit v-ring seal (7) onto the shaft (2) seal diameter and against the shaft shoulder. The thin inner lip should point away from the shoulder.
20. Lubricate inner lip liberally with grease.
21. Press shaft (2), with v-ring seal (6) installed, through shaft seal (5) and outer bearing cone (8) until bearing cone seats against shaft shoulder.

Note: Use care when pressing shaft into place. All pieces must be axially aligned. Use no more than 20,000 lb of press force to avoid damaging the bearing.
22. Flip this assembly, resting it on the end of the output shaft (2).
23. Apply a layer of lithium or general purpose bearing grease to the roller contact surface of the inner bearing cup (11).
24. Press the inner bearing cone (10) (large end up as shown) onto the shaft (2) until it is seated against inner bearing cup.

25. Bearing preload should be set to result in a rolling torque between 55 and 240 in-lbs. Adding shims (17) will increase the preload.
26. Install the Load-N-Lock split ring segments (18) over the shims and into the groove in the output shaft (2).
27. With the Load-N-Lock split ring segments (19) firmly installed, place lock ring (19) over the segments with the side labeled "TOP" facing up.
28. Press lock ring over split ring until they are flush. There will be a "snap" sound when the detent snaps into place.
29. Check the rolling torque again. It may increase with the lock ring in place.
30. Lubricate o-ring (6) and install in the pilot of the cover (3). Noting the scribed line made during disassembly, install the cover.
31. Install the twelve hex-head cap-screws (12) with lockwashers (13).
32. Torque the cap-screws to 80 ft-lb dry or 60 ft-lb if the fasteners are lubricated.
33. Fill the unit with GL5 EP 80/90 gear oil to the proper level listed below using the oil fill hole in the cover (3).
  - Spindle down orientation: Fill to the plug in the base.
  - Horizontal/spindle out the side orientation: Fill to horizontal center line.

## **QUESTIONS AND ADDITIONAL INFORMATION**

Contact Diamond Mowers at 1-888-960-0364 with any questions or for additional information.