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Thank you for a Swing Axle Seal Kit from Ross Wulf

Rear Axle Dual Lip Oil Seal

Install Rear Axle Oil Seal:

Your rear axle seal is a rubber-covered (elastomer-coated) metal case design with dual lips (primary sealing lip + auxiliary/dust lip) and a garter spring on the primary lip. This is a standard TC configuration (double lip with spring). The rubber covering on the OD improves bore sealing and retention.

Clean the Bearing Cover / Housing Thoroughly clean the seal bore, chamfer, and all mating surfaces. Remove any burrs, nicks, old sealant, or debris from the seal seating area. Make sure the chamfer (tapered lead-in edge, ideally 15–30°) is smooth and free of marks. Use fine emery cloth if necessary to correct minor imperfections. A clean environment is essential to prevent contamination that could damage the seal lip or cause leaks.

□ **Inspect and Prepare the Spacer (Outer) Seal Race** Check the outer diameter sealing surface (where the primary seal lip contacts).

- Surface must be free of grooves, deep scratches, or scoring deeper than 0.005" (0.13 mm).
- Lightly polish with 320–400 grit emery cloth in the circumferential direction to achieve a smooth, even finish (target Ra 0.4–0.8 µm). Do not remove excessive material.
- **Nominal OD: 44.50 mm**
 - **Maximum allowed: 44.5 mm (1.752")**
 - **Minimum allowed: 44.4 mm (1.748")** If the spacer (outer) seal race is worn below the minimum diameter or has deep damage, replace it.

□ **Prepare the Viton Seal** Carefully remove the garter spring from the primary (inner) lip (pry gently with a small pick or screwdriver — it is the thin metal ring in the groove). **Must lubricate the outer diameter (rubber-covered case):** Apply a thin, even coat of the gear oil used in the transmission (the fluid being retained) to the entire outer diameter of the seal. Lubrication is required for **all** rubber-covered seals to ease installation, reduce friction during pressing, prevent damage to the elastomer coating, and promote proper seating without distortion (aligned with general radial shaft seal guidelines). As our preferred option, Curil T can also be used here instead—it serves as both a lubricant during install and a non-hardening sealant for added bore sealing, is fully compatible with Viton/FKM and gear oil, and is commonly used in VW applications for this purpose. Do **not** use silicone-based sealants, RTV silicones, petroleum jelly, or other unrelated products on the OD or lips—they can cause elastomer swelling, migration, poor adhesion, contamination of the gear oil, or long-term degradation of the Viton material.

□ **Press the Seal into the Bearing Cover** Install the oil slinger if your year has one. Orient the seal so the primary sealing lip faces inboard (toward the transmission / differential side when installed — auxiliary lip faces outboard for dust exclusion). Another way to look at it is the open U shape faces the transmission (inboard) and the flat surface with the dimensional numbers faces the axle nut (outboard). Use a **hydraulic press** (strongly recommended for controlled, even force) or a suitable seal driver/large socket that contacts **only the outer metal flange / reinforced area** of the seal (as close as possible to the OD — never apply force to the inner lips, garter spring area, or outer edge). Press the seal straight, perpendicular, and evenly into the bore. Apply steady pressure until the seal is **fully seated** against the internal shoulder (bottomed out squarely). Check for proper seating: the seal case should be flush and

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parallel to the housing face with no cocking, tilting, or gaps. Improper seating can cause distortion, leaks, or premature failure.

□

Reinstall the Garter Spring and Apply Lip Lubrication Carefully place the garter spring back into its groove on the primary lip. Ensure it seats evenly and fully around the circumference without twisting or damage. **Now lubricate the lips** (after pressing and spring reinstall):

- For the dual-lip design: Partially fill the space between the primary sealing lip and the auxiliary (dust) lip with a small amount of compatible grease or the retained gear oil to approximately 40% of the available volume. This reduces frictional moment, prevents dry running or corrosion on the auxiliary lip, and improves contaminant exclusion. Avoid over-filling to prevent excess from migrating outward.
- DO NOT pack the rear bearing with grease – a layer of grease will prohibit gear oil from flowing to the seal and spacer. This will cause the seal to heat up and fail.

□ **Install the Spacer (Outer) Seal Race** Lightly lubricate the outer diameter of the spacer (outer) seal race with gear oil (the fluid being retained). Before putting on the axle, insert the spacer (outer) seal race into the primary lip (confirm correct orientation). Take extreme care not to damage or distort the lips during insertion.

The bearing cover assembly with seal is now ready for installation onto the vehicle per the factory manual.

Rear Axle Seal & Cover Re-Assembly

The Ross Wulf Swing Axle Seal Kit with Hardened Steel Shim includes everything you need to complete the installation. Please note: (2) Felpro Style gaskets are included – 1 gasket is used on Beetle applications, and 2 gaskets are used on Bus with reduction box applications.

DO make sure all surfaces are cleaned and prepped. This includes the backing plate mating surfaces. Make sure the bearing cap and bearing housing sealing surfaces are free of grooves, deep scratches, or scoring deeper than 0.005" (0.13 mm). Lightly polish with 320–400 grit emery cloth to achieve a smooth, even finish (target Ra 0.4–0.8 µm). Do not remove excessive material. Use Brake Clean or suitable cleaner for all surfaces.

DO NOT coat Felpro style gaskets with gasket maker or sealant of any kind. The gaskets are high quality and are designed to absorb gear oil, expand and seal. Use of any sealant will cause the system to fail.

DO NOT coat O-rings or washers with oil. Make sure all of the assembly items other than oil seal in the cap are completely clean and dry.

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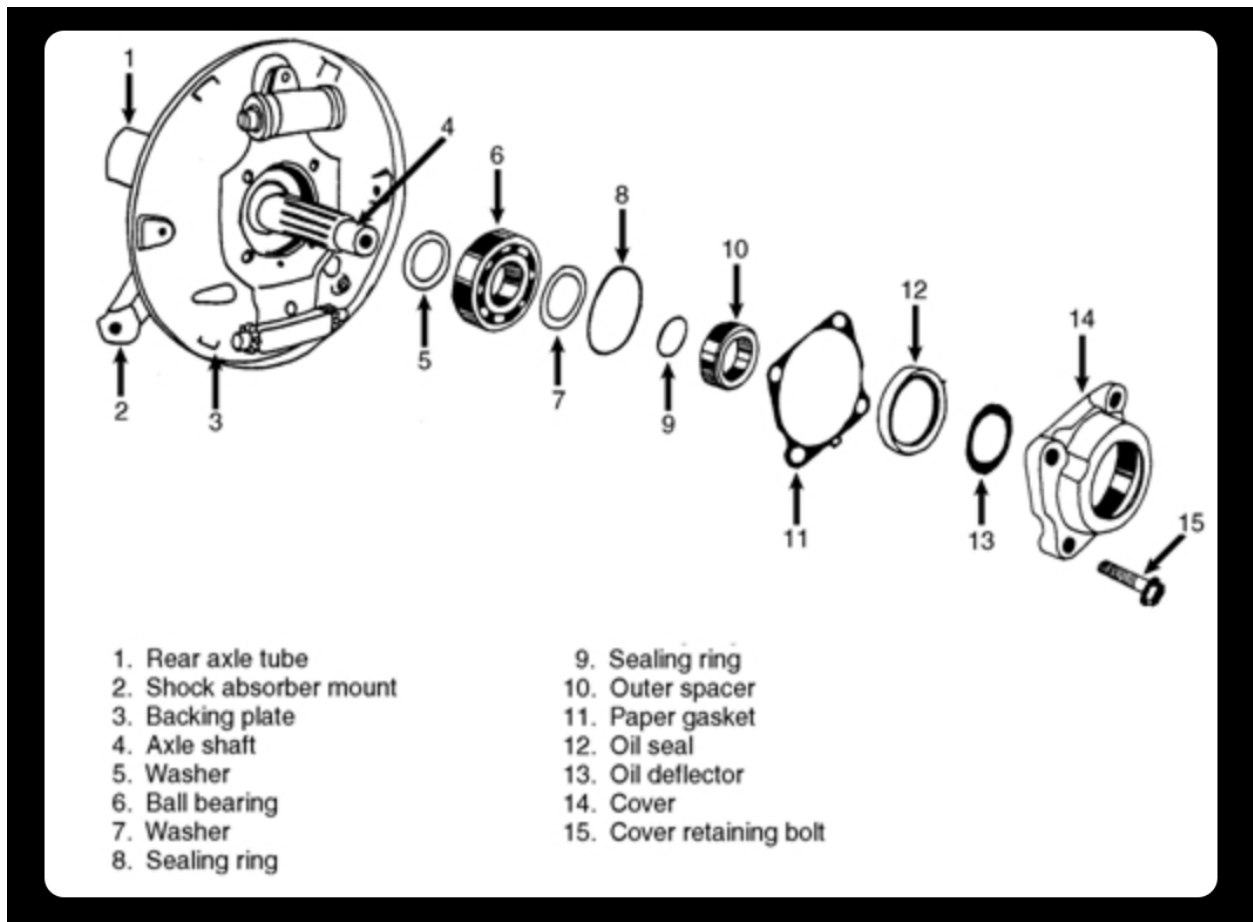


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ORDER of Operation

Please follow the diagrams below, and note that the order of assembly for Beetle or straight axle Bus is:

- A. Large O-Ring
- B. Steel Washer
- C. Small O-ring
- D. Gasket
- E. Bearing Cap & Spacer



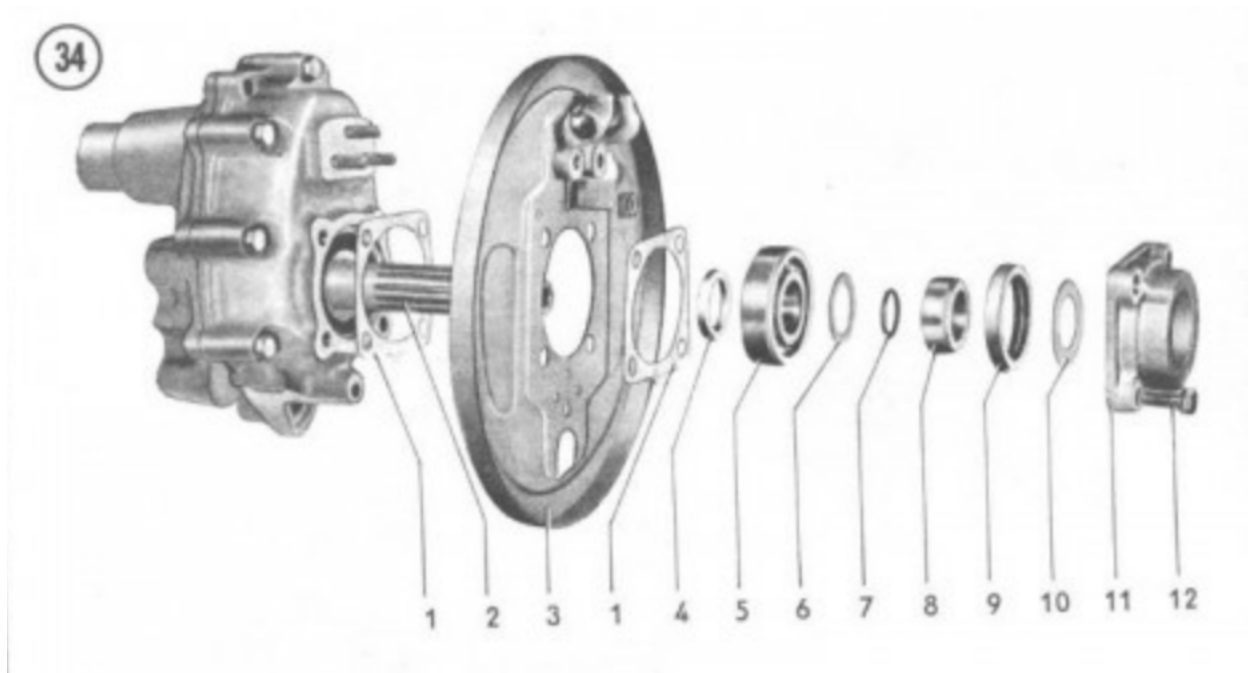
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Bus with Reduction Boxes order of operation:

- A. Gasket
- B. Backing Plate
- C. Gasket
- D. Steel Washer (Bearing and Rear Spacer already installed)
- E. Small O-Ring
- F. Bearing Cap & Spacer



Additional assembly videos can be found on our Facebook thread

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