GENERAL

ax4n transmission rebuild manual

Published: September 19, 2026 | Index ID: #-

Introduction

For owners of the popular **AX4N** automatic transmission, a worn clutch, slipping gears, or a sudden loss of power can be a frustrating and costly problem. Rather than buying a brand new unit, many mechanics and DIY enthusiasts opt for a transmission rebuild. A rebuild restores the gearbox to factory like performance, extends its life, and saves thousands of dollars. This article serves as a comprehensive, step by step guide—essentially an *AX4N transmission rebuild manual*—that walks you through every stage of the process, from preparation and disassembly to reassembly and testing.

What Is the AX4N Transmission?

The AX4N is a 4 speed automatic gearbox produced by a leading German automaker for use in front wheel drive vehicles. Known for its durability and smooth shifting, the AX4N has been a staple in many mid size cars, SUVs, and crossover models. Key features include:

- Internal torque converter with a lock up clutch.
- Dual clutch planetary gear set.
- Hydraulic control system with a valve body and pump.
- Integrated cooling system.

Because of its design, the AX4N is relatively compact yet packed with complex components that require precise alignment and correct torque settings during a rebuild.

Why Rebuild the AX4N?

Several symptoms may indicate that a rebuild is necessary:

- Frequent gear slippage or delayed engagement.
- Unusual noises such as whining, clunking, or ticking.
- Check engine light with transmission codes (e.g., P0700, P0735).
- Visible fluid leakage or burnt smell from the transmission.

Rebuilding addresses wear in clutch packs, bands, seals, and internal bearings. It also allows you to replace worn components and update the hydraulic system, restoring the transmission’s original performance and reliability.

Tools and Supplies You’ll Need

Before you begin, gather the following equipment and parts. Having everything on hand reduces downtime and prevents mistakes.

Tools

1. Torque wrench (0.8–2.0 /Nm range for small bolts).
2. Socket set (metric 8–25 /mm, with extension bars).
3. Ratchet and breaker bar.
4. Hose clamps and a set of replacement clamps.

5. Spudger or plastic pry tool (to avoid scratches).
6. Transmission jack or hydraulic lift (to support the vehicle).
7. Shop rags, microfiber towels, and a vacuum cleaner.
8. Small screwdrivers (Phillips and flathead).
9. Wrench for the drain plug (typically 10 /mm).
10. Gear puller (for the output shaft, if needed).

Replacement Parts

- New clutch packs (front & rear).
- New bands (if applicable).
- New seals and gaskets (input shaft, output shaft, valve body).
- New torque converter (optional but recommended for optimal performance).
- New hydraulic pump and pump seals.
- Transmission fluid (appropriate viscosity, e.g., 75W 90).
- New filter (if the model includes one).

Always consult the manufacturer's part numbers or a reputable parts distributor to ensure compatibility.

Step by Step Rebuild Process

Below is a detailed, chronological guide that covers every critical step of the rebuild. Follow each section carefully, and refer to the diagrams in the official service manual if you have access.

1. Safety First

Park the vehicle on a level surface, engage the parking brake, and disconnect the battery. Use jack stands or a hydraulic lift to support the car securely. Keep the work area well ventilated and wear safety glasses and gloves.

2. Remove the Transmission

1. Drain the fluid: Place a drain pan under the transmission pan. Remove the drain plug, let the fluid drain completely, and then replace the plug. This prevents spillage during removal.
2. Disconnect the driveshaft: Loosen the driveshaft clamp, remove the bolts, and set the shaft aside. Keep the bolts for re installation.
3. Detach the transmission from the engine: Remove the torque converter bolts, disconnect the input shaft, and unbolt the transmission from the engine mounting brackets. Use a transmission jack to hold the unit in place.
4. Lift the transmission: Carefully lift the transmission out of the vehicle, ensuring it is supported and stable. Place it on a clean, flat surface or a dedicated workbench.

3. Disassembly

Disassembling the AX4N requires systematic removal of components. Keep a labeled container for small parts.

1. Remove the input shaft: Use a socket or a specialized puller to extract the shaft. Note the orientation of the splines.
2. Take out the torque converter: Loosen the converter bolts, then carefully lift the converter off the input shaft. Inspect the converter for cracks or warping.
3. Separate the valve body: Remove the bolts that secure the valve body to the transmission housing. Detach the hydraulic lines and label them for reassembly.
4. Open the housing: Unscrew the main housing bolts and gently pry the housing halves apart. Use a pry bar if necessary, but avoid damaging the seals.
5. Remove the gear set: Take out the planetary gear set, noting the position of the front and rear clutches. Inspect the gears for wear or damage.

6. Extract clutch packs and bands: Remove the clutch packs, noting the order. Take the bands out as well, checking for fraying or corrosion.

7. Take out the bearings and seals: Inspect all bearings for wear, and replace them if necessary. Remove all old seals and gaskets from the housing, input shaft, output shaft, and valve body.

8. Clean the interior: Use a shop vacuum and a clean rag to remove all debris. Check the interior for any hidden damage or corrosion.

4. Inspection and Cleaning

Before reassembling, perform a thorough inspection of every component. Replace any parts that show signs of wear or damage.

- Clutch plates should be free of cracks and have a uniform thickness.
- Bands should not be excessively worn or frayed.
- Bearings should spin smoothly without noise.
- Seals and gaskets must be intact and free of cracks.
- Hydraulic pump should be inspected for internal wear.

Clean all parts with a suitable solvent or a transmission cleaner. Ensure all surfaces are free from oil, dirt, and old seal residue.

5. Reassembly

Reassembly is essentially the reverse of disassembly, but with strict adherence to torque specifications.

1. Install new seals and gaskets: Place fresh gaskets on the housing, input shaft, output shaft, and valve body. Use a gasket sealer if recommended.

2. Reinstall the gear set: Position the planetary gear set, ensuring proper alignment of splines and bearings.

3. Fit the clutch packs: Install the new clutch packs in the correct order, taking care not to twist them. Use a clutch pack alignment tool if available.

4. Place the bands: Attach the bands and ensure they are seated correctly.

5. Insert the torque converter: Align the converter with the input shaft and secure it with the bolts. Tighten to the specified torque.

6. Reattach the valve body: Connect the hydraulic lines and secure the valve body to the housing. Verify that all connections are tight and leak free.

7. Reassemble the housing: Snap the housing halves together and bolt them in the correct order, tightening in a criss cross pattern.

8. Install the input shaft: Insert the shaft, ensuring the splines are fully seated. Tighten the shaft bolts to specification.

9. Reattach the driveshaft and transmission to the engine: Reverse the removal steps. Make sure the torque converter is properly seated on the engine crankshaft.

6. Torque Specifications

Following the manufacturer's torque tables is crucial for long term reliability. Below are common torque values for the AX4N; always verify against the latest service manual.

- Input shaft bolts: 0.8 /Nm (1.0 /ft lb).
- Torque converter bolts: 1.5 /Nm (2.0 /ft lb).
- Housing bolts: 1.2 /Nm (1.7 /ft lb).
- Valve body bolts: 0.9 /Nm (1.3 /ft lb).
- Output shaft bolts: 1.0 /Nm (1.4 /ft lb).

7. Fluid Fill and Leak Check

With the transmission reassembled, fill it with fresh fluid. Use a funnel to avoid spills. Then, run the engine and shift through all gears to circulate the fluid. Inspect all connections for leaks. Tighten any loose fittings as needed.

8. Testing and Troubleshooting

After the rebuild, it's essential to test the transmission in the vehicle.

- Start the engine and let it idle.
- Shift through all gears, noting any hesitation or unusual noises.
- Check the transmission temperature gauge for normal operating range.
- Monitor the fluid level over several days of driving.

If issues persist—such as slipping or delayed engagement—inspect the following:

- Clutch pack alignment.
- Band tension.
- Hydraulic pump pressure (use a pressure gauge).
- Valve body seals.

Correcting these factors often resolves lingering problems.

Maintenance Tips to Extend Transmission Life

A rebuilt AX4N can perform like new for years if you follow these maintenance practices:

- Change the transmission fluid every 15,000–20,000 miles (or as recommended).
- Replace the filter (if equipped) during each fluid change.
- Inspect for leaks at the input and output shafts annually.
- Use only manufacturer specified fluid to ensure proper hydraulic pressure.
- Avoid aggressive driving habits that cause excessive gear wear.
- Keep the cooling system clean and maintain proper coolant levels.

Common Pitfalls and How to Avoid Them

- Skipping torque specs: Even a slight under torque can lead to premature wear or overheating.
- Using old seals: Reusing old gaskets often results in leaks.
- Improper clutch pack alignment: Misaligned packs cause uneven wear and noise.
- Ignoring fluid contamination: Dirty fluid can damage bearings and seals.

Resources and Further Reading

For more detailed schematics and torque tables, consult the following sources:

- Official manufacturer service manual (PDF or printed).
- Online forums dedicated to the vehicle model (e.g., CarTalk, AutoZone Community).
- Professional repair shops offering transmission rebuild services.
- Automotive parts distributors for OEM parts.

Conclusion

Rebuilding the AX4N transmission is a rewarding project that restores the gearbox's performance and saves you a significant amount of money. With the right tools, a careful approach, and adherence to torque specifications, you

can complete the rebuild successfully. Remember to maintain the transmission with regular fluid changes and inspections to keep it running smoothly for years to come.

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