

REPAIR MANUAL

ZF-AS Tronic

Trucks

Repair level 1 - 2

Maintenance, diagnosis, replacement of components

1327 751 101a

CAUTION

The ZF order numbers listed in this document apply to standard ZF products.

Variances are possible depending on the vehicle manufacturer.

The binding ZF order numbers are listed in the relevant parts list – parts list no. can be found on the transmission type plate.

Subject to technical modifications.

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Index	Issue date	Chapter	Initiator	Comments
a			BKS/LKS	Complete revision: Maintenance included, diagnosis extended, repair work updated. Repair manual, level 1-2 divided up into truck 1327 751 101 and bus 1337 751 101

This document has been written for skilled staff who have been trained by ZF Friedrichshafen AG to carry out maintenance and repair work on ZF products.

This manual refers to a volume production ZF product in accordance with the state of development on the date of issue.

However, due to further technical developments, repair work on your unit may require other work practices and other test or adjustment data which are not contained in this manual.

We therefore recommend that you entrust your ZF product to supervisors and fitters who have had their practical and theoretical knowledge updated on a regular basis at our Service-Training-Center.

Service points equipped by ZF Friedrichshafen AG all over the world offer you:

1. Well-trained staff
2. Specified equipment,
e.g: special tools
3. Genuine ZF spares, to our latest specifications

All work performed at these service points is carried out conscientiously and with care.

Warranty:

Repair work carried out at ZF service points is covered by warranty in accordance with the prevailing contractual conditions.

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Damage resulting from work performed by non-ZF staff in an improper and unprofessional manner, together with any follow-on costs caused by such work, is not covered by the contractual liability.

This also applies to instances in which genuine ZF spares have not been used.

SAFETY NOTICE

Companies who repair ZF units are responsible for their own work safety.

To avoid injury to staff and damage to products, all safety regulations and legal requirements which apply to repair and maintenance work must be observed. Before starting work, mechanics must familiarize themselves with these regulations.

Staff required to carry out repairs on ZF products must receive appropriate training in advance. It is the responsibility of each company to ensure that their repair staff are properly trained.

The following safety instructions appear in this manual

NOTE

Refers to special process, techniques, data, use of auxiliary equipment etc.

CAUTION

This is used if other incorrect, unprofessional working practices could damage the product.

⚠ DANGER

This is used when lack of care could lead to personal injury or death.

GENERAL INFORMATION

Read this manual carefully before starting any tests or repair work.

CAUTION

Pictures, drawings and components shown do not always represent the original object but are simply used to illustrate working procedures. Pictures, drawings and components are not to scale and no information about size and weight should be inferred (even within a complete drawing). Always follow the working steps as described in the text.

After completion of repair work and testing, skilled staff must satisfy themselves that the product is functioning correctly.

⚠ THREATS TO THE ENVIRONMENT

Lubricants and cleaning agents must not be allowed to enter the soil, ground water or sewage system.

- **Ask your local environment agency for safety information on the relevant products and adhere to their requirements.**
- **Collect used oil in a suitably large container.**
- **Dispose of used oil, dirty filters, lubricants and cleaning agents in accordance with environmental protection guidelines.**
- **When working with lubricants and cleaning agents, always refer to the manufacturer's instructions.**

CAUTION

The transmission must NOT be hung on the input shaft NOR on the output flange.

In any instances of doubt, always contact the relevant specialist department within ZF After-Sales Service for advice.

Ensure cleanliness and professional work whenever working on the transmission.

The intended tools must be used to dismantle and assemble the transmission.

After removing the transmission from the vehicle, clean thoroughly with appropriate washing agent before opening.

Pay particular attention to the corners and angles of housings and covers when cleaning with appropriate washing agent.

Parts held on with Loctite can be slightly loosened if warmed with a hot air blower.

CLEANING PARTS

Remove old remains of gaskets from all sealing faces. Carefully remove burrs or other similar patches of roughness using an oil stone.

Lube bores and grooves must be free of anti-corrosion agents and foreign bodies. Check that they can move freely.

Carefully cover opened transmissions to prevent the entry of foreign matter.

REUSING PARTS

A competent person must inspect parts such as ball or roller bearings, multi-discs, thrust washers etc. to decide whether they can be reused or not.

Replace parts which are damaged or have suffered from excessive wear.

GASKETS, LOCKING PLATES

Parts which cannot be removed without being damaged must always be replaced with new parts (e.g. gaskets and locking plates).

SHAFT SEALS

Always change shaft seals with rough, ripped or hardened seal lips. Seal contact surfaces must be totally clean and in perfect condition.

REWORKING

Rework may only be carried out on the seal contact surfaces using plunge-cut grinding. Never use an emery cloth. Ensure there are no traces of grinding or rifling from grinding.

If rework is needed on spacer washers or shims etc. because of clearance settings, ensure that the reworked areas contain no face runout and are of the same surface quality.

TRANSMISSION ASSEMBLY

Find a clean site to assemble the transmission.

Gaskets are fitted without the use of sealing compound or grease. When measuring silicon-coated gaskets, take care **not to include** the silicon layer in the measurement.

During transmission assembly, comply with all adjustment data and tightening torques specified in the repair manual.

ZF-AS Tronic

Instructions for carrying out repairs

BEARINGS

If the bearings are fitted while hot, these should be heated accordingly (e.g. in a heating cabinet).

The temperature should be approx. 85 °C and must not exceed 120 °C. All bearings fitted must be coated with operating oil after assembly.

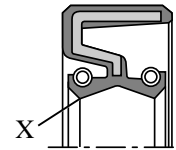
SEALING

If a sealing agent* is to be used for carrying out sealing, comply with the manufacturer's directions for use. The sealing agent should be applied to the surfaces in thin layers and must be spread evenly. Do not allow sealing agent to enter oil ducts and bores. The sealing agent should be wiped off oil-carrying ducts and bores from the surfaces to be sealed near apertures to ensure that no sealing agent penetrates the oil feeds when the surfaces are sealed.

SHAFT SEALS

- a) Apply a thin coat of sealing agent* on outer edge of shaft seals with "steel surround".
- b) **Never apply sealing agent** to shaft seals with "rubber surround" but apply a thin coat of Vaseline 8420 to the outer edge or spray with a lubricant, such as a water-soluble, concentrated washing-up liquid (e.g. Pril, Coin, Palmolive).
- c) Shaft seals with steel and rubber surrounds should be treated as shaft seals (described above in section (b)) on the outer edge of the rubber surround.

- d) Duo shaft seals have two sealing lips. The dust protection sealing lip (X) must face outwards.



- e) Fill the gap between the sealing lips so that it is 60 % filled with grease* (use a grease e.g. produced by Aral such as Aralub HL2 or produced by DEA such as Spectron FO 20).
- f) If possible, heat shaft seal bores to between 40 and 50 °C (this makes fitting easier). Press the shaft seal with mounting or face plate evenly into the relevant installation depth.

RETAINING AGENTS

Retaining agents* may only be used in those places specified in the parts list.

Always comply with the manufacturer's directions of use when using retaining agents (e.g. Loctite).

During assembly, observe all adjustment data, checking data and tightening torques.

TRANSMISSION OIL

After completing repairs, fill the transmission with transmission oil. For the procedure and approved oils, refer to the transmission operating manual and List of Lubricants TE-ML (refer to type plate). These documents are available from all ZF After-Sales Service points and can be found on the Internet at www.zf.com. After filling the transmission with oil, tighten the screw plugs at the oil filling point and the oil overflow to the specified torques.

** refer to consumables*