# MAINTENANCE INSTRUCTIONS

# ZF – DROP CENTER AXLE

# AV-132 II / AV-132 II T

5871.214.912 en

# Preface

This documentation has been developed for specialized staff trained by ZF Friedrichshafen AG for repair and maintenance work to be made on ZF units.
Due to the continuous technical upgrading of the product, however, the maintenance of the unit at your disposal may require both deviating work steps and differing setting and testing data.

These maintenance instructions are based on the unit's state-of-the-art at the time of printing.
They were prepared with utmost care in order to avoid errors.
ZF Friedrichshafen AG, however, shall not be liable for any possible errors in figures or descriptions.

ZF Friedrichshafen AG reserves the right to replace these maintenance instructions by a successive edition at any time without advance notice. Upon request ZF Friedrichshafen AG will advise which edition is the latest one.

The owner and the user shall be responsible for complying with the safety instructions and for implementing any maintenance work according to the specified guidelines.

Die ZF Friedrichshafen AG shall not be liable for any incorrect installation, improper handling, insufficient maintenance, improperly and incompetently performed work and any consequential damage resulting thereof.

It is **imperative** to observe the relevant instructions and manuals of the vehicle manufacturer.

Important information regarding technical reliability and operational safety are highlighted by the following symbols:

| | |
|---|---|
| ☞ ***CAUTION*** | This symbol serves as a **reference** to special working procedures, methods, information, use of auxiliaries etc... indicated in these maintenance instructions. |

| | |
|---|---|
| ⚠ ***DANGER*** | This symbol identifies situations in which lacking care might lead to **personal injury or damage to the product**. |


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## 1. Oil grade

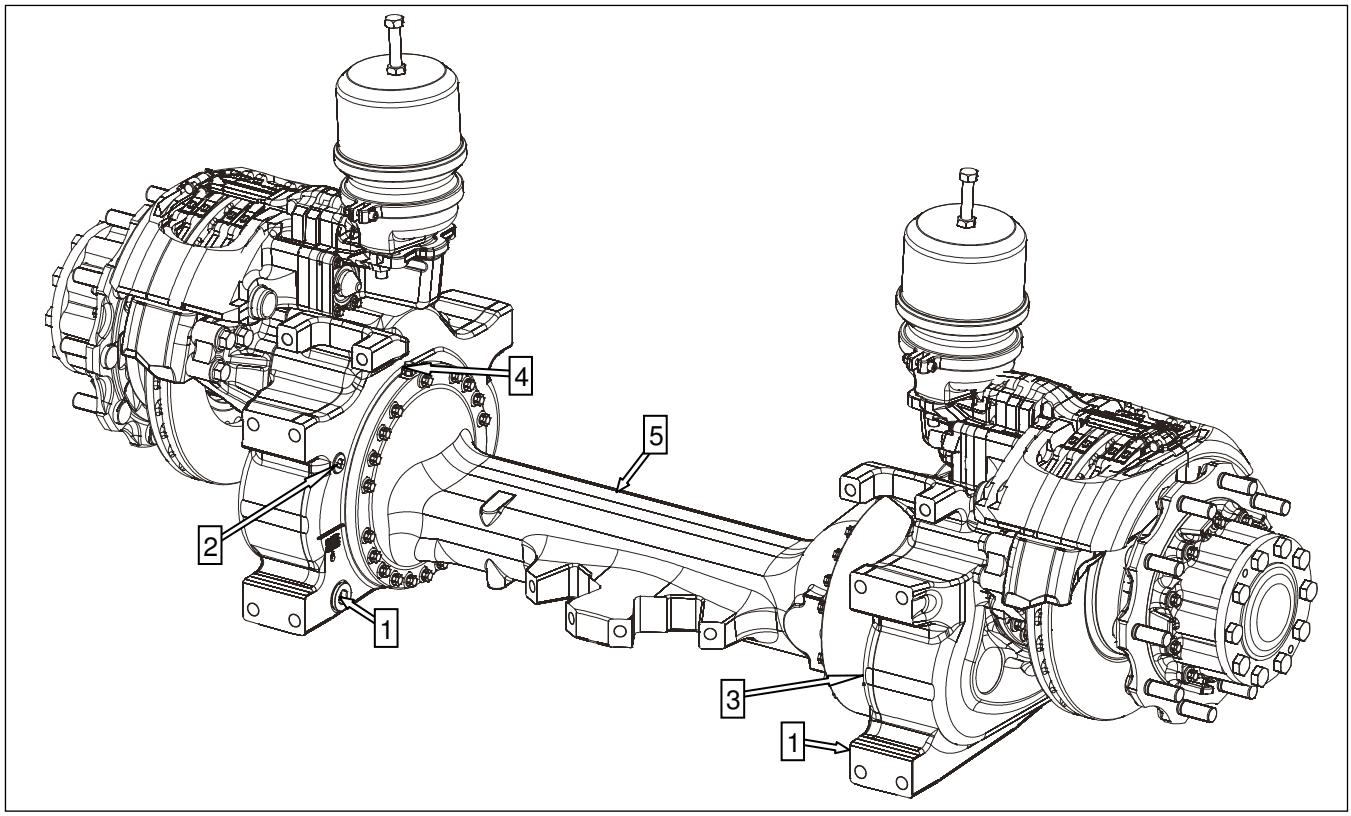
Approved oils for the ZF-Axles AV-132 II / AV-132 II T see ZF- List of Lubricants **TE-ML 12**.

The ZF list of lubricants is being continuously updated and can be obtained or viewed as follows:

- at all ZF plants
- at all ZF Service Centers
- Internet: http://www.zf.com

## 2. Oil change

Precondition for a correct oil change is the horizontal installation position of the axle in every direction.
Place the vehicle in horizontal position.
Carefully clean all drain plugs, filler plugs and level check plugs prior to opening.
Only drain oil immediately after a longer operation period.




**Legend:**

| | | | |
|---|---|---|---|
| 1 = Oil drain hole | M36 x 1.5 Brake housing | Tightening torque | $M_A$ = 130 Nm |
| 2 = Oil filler hole | M24 x 1.5 Axle drive housing | Tightening torque | $M_A$ = 70 Nm |
| 3 = Level check hole | M24 x 1.5 Axle drive housing | Tightening torque | $M_A$ = 70 Nm |
| 4 = Breather(-connection) | | | |
| 5 = Identification plate | | | |

### 2.1 Oil drain

Loosen drain plugs (1) and drain the oil.

**Oil temperature might be extremely high! Risk of burn injuries!**

**Waste oil to be disposed of ecologically and according to the legal provisions!**

### 2.2 Oil filling

Clean the magnetic inserts of the oil drain plug (1), provide with new O ring and install them.

Tightening torque $M_A$ = 130 Nm.

Fill oil into the filler hole (2), until the level of the level check hole (3) on the opposite portal drive has been achieved. The approximate oil fill quantity is indicated on the identification plate.
Check oil level after some minutes and refill, until the specified level is achieved and remains constant.

☞ **Repeat procedure until oil level remains constant!**

Provide oil filler/level check plug with a new O-ring and mount it.

Tightening torque $M_A$ = 70 Nm

## 3. Oil change intervals

In this connection see specifications in the ZF list of lubricants **TE-ML 12.**

## 4. Oil level check

Check oil level at least once per year, in particular, however, when a vehicle has been put into service with new or repaired axles or axle parts.

## 5. Breather (connection)

In case of initial operation and service, check the operability of the breather (connection). Check hose breathing with regard to damage (squeezing, scuffing, bending…).

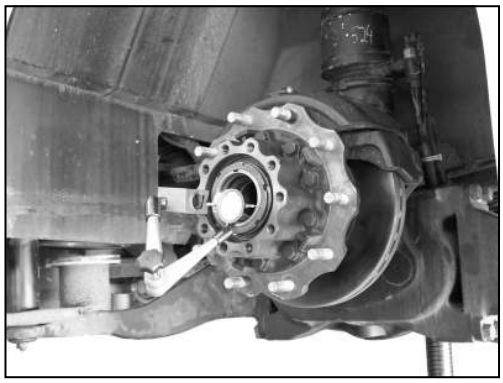
## 6. Check of compact bearing (hub bearing)

### 6.1 Check intervals

Check the bearing when brake disk is changed, in case of any ABS-fault message and if noise rises with increasing speed.

### 6.2 How to check the axial play

Remove the wheels. Loosen screws on the flange shaft and pull out flange shaft. Fix magnetic stand to the hub and position the dial indicator at the circular ring area at front side of the hub carrier. Push hub towards the axle with both hands (do not tilt) and rotate by 20° to 30° in both directions, until the dial indicator pointer remains fix. Calibrate the dial indicator to zero. Use both hands to pull the hub away from the axle (do not tilt) and rotate it by 20° to 30° in both directions, until the pointer remains fix. The difference corresponds to the axial play. Repeat measurements 3 times and calculate the average. Rotate the wheel several times between the measurements.



**If the measured value exceeds 0.20 mm, the compact bearing is worn and must be replaced. Please find further information in the Repair Manual (ZF order number 5871 214 101).**

### 6.3 How to check grease overflow

Check shaft seal at brake disk side with regard to grease overflow.

**A small quantity of grease (slight collar of grease) is permitted and not to be regarded as leakage.**

## 7. Grease change – compact bearing (hub)

**When changing grease within the maintenance interval, dismantle the cpl. compact bearing**

**The required information on disassembly and reassembly of the wheel head (special tools, setting values etc.) is included in the Repair Manual (ZF order number 5871 214 102).**

A complete check of the compact bearing including a grease change is also required outside the maintenance interval, if the following criteria apply:

- Grease overflow at the shaft seal at brake disk side.
  Check the shaft seals during every brake disk change.
- Overheated brake parts (e.g. burnt bellows on pressure piece).

**Only use the grease approved by ZF, see list of lubricants TE ML 12!**

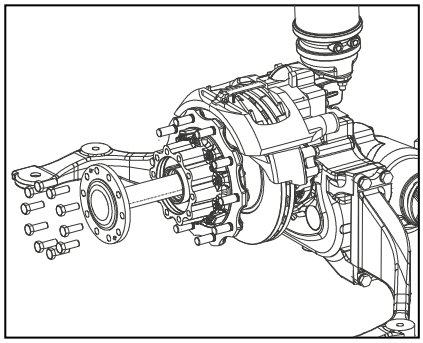
## 8. Wheel bolts and wheel nuts

We would recommend you to replace heavily corroded wheel bolts.

**For tightening torques see vehicle manufacturer.**
**Please take further information from our Service information in the ZF-Service-Line.**

**Never grease/oil the thread of wheel bolts and wheel nuts.**

## 9. Towing



When dismantling both flange shafts before towing, the driveline is disconnected.

☞ **If flange shafts are dismantled, plug both hubs to be oil tight with the below listed parts!**

| | |
|---|---|
| 1x cover | 4472.235.021 |
| 1x O-ring | 0634.303.940 |
| 2x hex. screw | 0636.021.250 (similar to bolted flange shaft connection) |

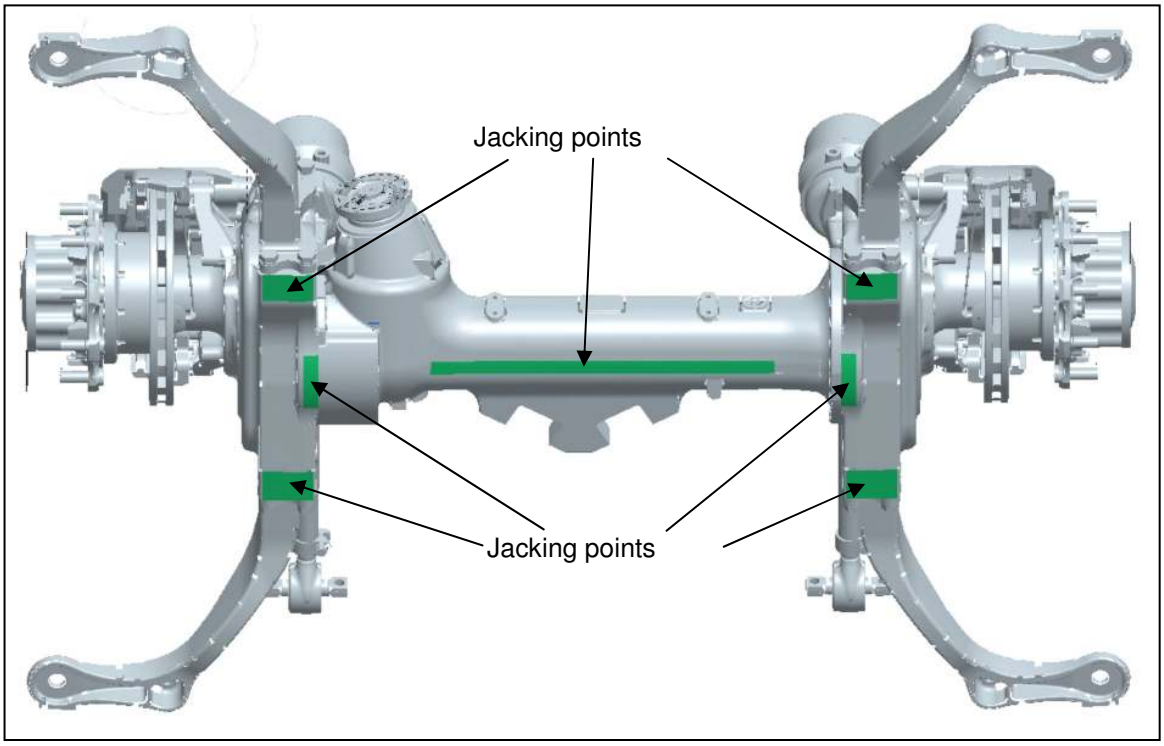
Tightening torque (M18x1.5/10.9) with mounted cover $M_A$ = 100 Nm
Tightening torque (M18x1.5/10.9) with mounted flange shaft $M_A$ = 440 Nm

⚠ **When towing, observe the vehicle manufacturer's specifications, considering the legal provisions!**

## 10. Lifting jack points

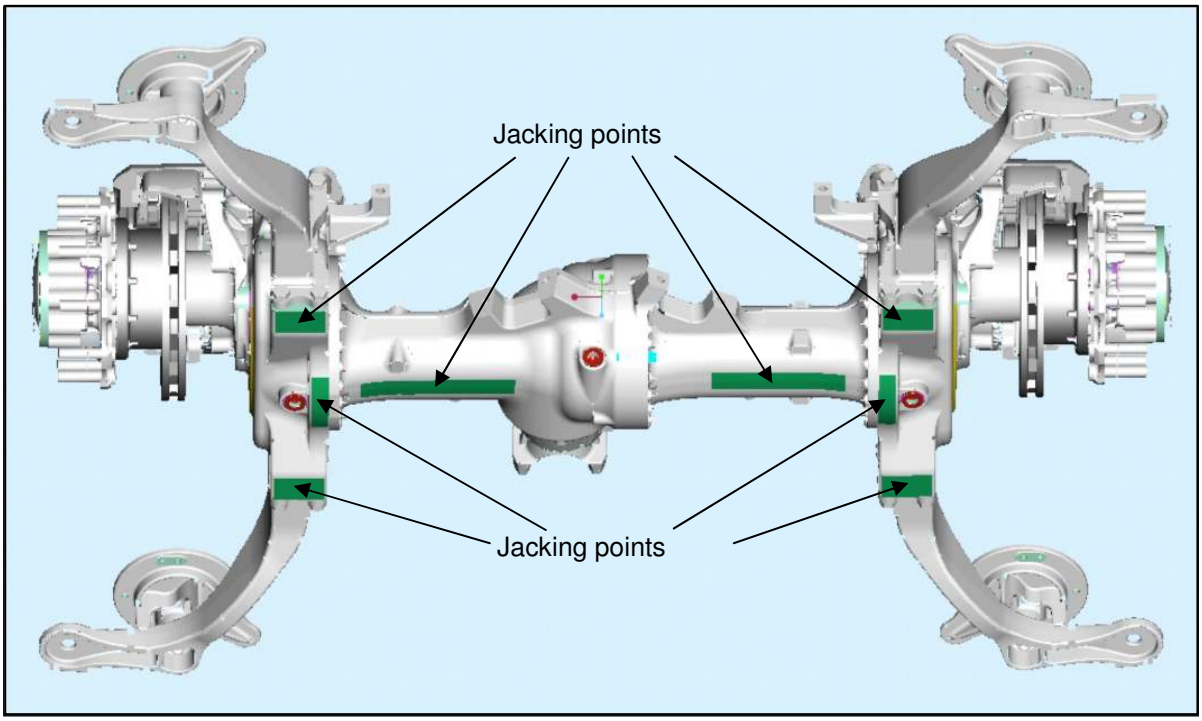
When lifting the vehicle, the maximum axle load must not exceed 10 tons. Ensure that the contact surface of the lifting jacks is at least 35 cm$^2$ each (e.g. 5 cm x 7 cm; or Ø 7 cm). Furthermore, do not position the lifting jacks on other points than those indicated below:

**Jacking points AV-132 II:**

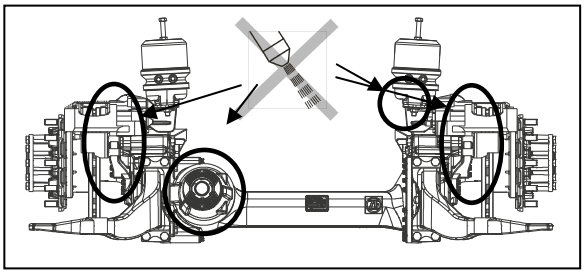



⚠ **Ensure a larger contact surface of 160 cm$^2$ (e.g. 4 cm x 40 cm) for the central location on the axle housing!**

**Jacking points AV-132 II T:**




## 11. Water contamination of axle



In general the AV-132 II/AV-132 II T is **not designed for fording.** Its design only protects against splash water, like in case of normal weather and road conditions.

☞ **You should therefore absolutely avoid:**

- to use high-pressure/steam cleaners in the area of axle sealings (e.g. hubs, input flange) and axle breather
- to drive through washing bays with extremely high amounts of water splashing especially in these areas (extreme underground cleaning).

Water contamination can furthermore be caused by:

- missing, incorrectly routed or damaged breather hose (also refer to Service Information 68/01)
- loose or damaged breather hose connections (also breather connection (4))
- non-functioning, blocked axle breather
- damaged, worn or inoperable sealings
- driving with dismantled flange shafts without suitable protection cover (see chapter 9)

☞ **After severe thunderstorms like torrential rain, flooding, in case of severe weather conditions (extreme impact of ice and snow) and extreme use of grit or when driving through exceptional water accumulations we recommend to check the oil in the axle for water contamination.**
**If any irregularities in the oil have been detected, it is indispensable to also check the grease filling on hub carrier, bearing inner rings of the compact bearing and flange shaft (in this connection refer to Service Info 01/08).**