

ZF Aftermarket Service Information

Oil Filling Specification 8HP | 8P
Draining Oil | Filling Oil | Oil Level Check

Product Automatic Transmission
8HP | 8HP 4 MH | 8HP PH | ...

Document number 1087.754.107c



AFTERMARKET



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1 Preface and Notes

This document replaces all previous "Oil Filling Specification" documents for 1st to 4th generation ZF automatic transmissions 8HP and 8P.

Filling quantity

When purchasing a ZF Aftermarket oil change kit suitable for the transmission, the oil quantity required to fill the transmission is included. Other container sizes are available separately from ZF Aftermarket.

The information provided refers to filling via the filler hole. When using a flushing unit and filling via the oil cooler connections, a larger oil quantity than the one included in the ZF kit may be required.

Temperature range

Observe the specified transmission temperatures. Transmissions deviating from the general temperature range are listed separately. A temperature outside the specified range when checking the oil level leads to incorrect filling, malfunction and possible failure of the transmission.

Oil level check and filling

Perform the listed steps in the specified sequence from 1 to n. To set the oil level, the torque converter, clutches and thermostat circuits must be filled. This is taken into account in the instructions, temperature data and waiting times. The **filling** instructions do not refer to the oil level check but to the refilling of a previously drained transmission.

Maintenance recommendations

Approved transmission oils and information on change intervals can be found in the latest version of the ZF List of Lubricants.

Weblink: <https://aftermarket.zf.com/> – Search term "Lubricants"

NOTICE

The use of a non-approved lubricant can lead to property damage.

⇒ Only use lubricant from the currently valid ZF List of Lubricants.

CAUTION

Risk of burns due to contact with hot oil.

Slight or moderate injury possible.

⇒ Wear protective goggles.

⇒ Wear protective gloves.

⇒ Wear protective clothing.



CAUTION

Environmental pollution!

Oil in the soil, groundwater, and sewage system leads to environmental pollution.

- ⇒ Collect oil in a suitably large container.
- ⇒ Dispose of used operating supplies, cleaning agents, and filters in accordance with local applicable regulations.
- ⇒ Request the material safety data sheets for the respective products from the responsible environmental protection agency and observe them.



2 Requirements

Requirements for oil level check and refilling

All the requirements must be met.

- No active limp-home mode (transmission and vehicle)
- Switch electrical loads off or on according to the vehicle manufacturer's specifications
- Align vehicle on lifting platform with $\pm 0.2^\circ$ deviation (reference measurement, e.g., on horizontal, level hall floor)
- Connect test device to determine transmission temperature and engine speed. If available, start the suitable routine of the test device and follow instructions.



3 Temperature Range

Observe the specified temperature range. A deviating operating temperature leads to an incorrect fill which can result in malfunctions or damage to the transmission.

To increase the transmission temperature, let the vehicle engine run with drive position **P** engaged.

Variant	Minimum temperature	Maximum temperature
General Rear-wheel drive X all-wheel drive Basic transmission 8HPxxA	30°C	50°C
All-wheel distributor transmission and differential 8HPxxAxx	30°C	50°C
Hybrid 8P70H 8P75(X)PH	40°C	50°C
BMW	40°C	50°C
8HP70L Iveco	30°C	40°C
BeGas Motor Marshall Engines 8HP70	30°C	40°C
8HP76X Jaguar Land Rover, engine variant AJ20 (P6 D6)	55°C	60°C
8HP70 Maserati	50°C	60°C

Tab. 1



4 Oil Level Check and Oil Filling

4.1 Oil level check – basic transmission

1. Start the vehicle engine.
2. Shift transmission to **P**, let engine run at 2000 rpm for 30 seconds, then allow engine to return to idle speed.
3. Check idle speed and adjust where necessary. Follow the vehicle manufacturer's instructions.
4. Engage the drive positions **P, R, D, 1** (manual) and **2** (manual) one after the other. Wait at least 10 seconds before shifting to the next position. Then engage drive position **P**.
5. Check transmission temperature and adjust where necessary.
6. Open oil fill screw plug.
7. If no oil escapes from the hole for the screw plug, top up oil.
8. If oil is escaping, allow oil to run out until it stops flowing.
9. Screw in new screw plug, clean area around the hole and check transmission for leakages.
10. Switch off vehicle engine.



Observe specified temperature range to avoid incorrect filling. (*refer to Chapter Temperature Range, page 6*)



4.2 Oil level check – all-wheel distributor transmission and differential



The viscosity of the transmission oil for the all-wheel distributor transmission and the differential prevent the oil from draining quickly. Observe the listed waiting times.

1. Switch off vehicle engine.
2. Wait approx. 15 minutes.
3. Check transmission temperature and adjust where necessary.
4. Open oil fill screw plug.
5. If no oil escapes from the hole for the screw plug, top up oil until it overflows and wait approx. 5 minutes. Top up oil again until it overflows.
6. If oil is escaping, wait approx. 5 minutes.
7. Screw in new screw plug, clean area around the hole and check transmission for leakages.



Observe specified temperature range to avoid incorrect filling. (*refer to Chapter Temperature Range, page 6*)



4.3 Filling the transmission – basic transmission

1. Open oil fill screw plug.
2. Fill in transmission oil until oil runs out of the filler hole.
3. If installed, actuate integrated electric oil pump (IEP) for at least 10 seconds and switch it off again.
4. Start the vehicle engine.
5. Fill in transmission oil until oil runs out of the filler hole.
6. If equipped with additional oil cooler(s), also fill the cooler(s). For this purpose, increase transmission temperature to over 75°C and lower it again to the specified level.

→ Perform oil level check (*refer to Section Oil level check – basic transmission, page 7*).



4.4 Filling the transmission – all-wheel distributor transmission and differential



The viscosity of the transmission oil for the all-wheel distributor transmission and the differential prevent the oil from draining quickly. Observe the listed waiting times.

1. Open oil fill screw plug.
2. Fill in oil until it overflows, then wait approx. 5 minutes.
3. Overfill approx. 200 ml and immediately screw in the screw plug.
4. Drive the vehicle at least 4 km at a speed of at least 50 km/h.

→ Perform oil level check (*refer to Section Oil level check – all-wheel distributor transmission and differential, page 8*).



5 4th Generation 8HP Automatic Transmission

With 4th generation 8HP automatic transmissions, oil level checks, oil fills and oil changes are only possible with an (OEM) test device. To do this, select the appropriate routine in the test device and follow the instructions.



Fig. 1



6 Annex

6.1 Screw plugs – rear-wheel drive and X all-wheel drive

 The graphics show the position of the specified screw plugs as an example. The actual transmission may differ visually.

Screw size	Screw drive	Torque
Filler hole / oil level check hole	Internal hex 8 mm	35 Nm $\pm$ 3.5 Nm
Oil pan oil drain plug	Internal hex 10 mm	8 Nm +1 Nm

Tab. 2 Screw plug tightening torques

Oil filling and oil level check

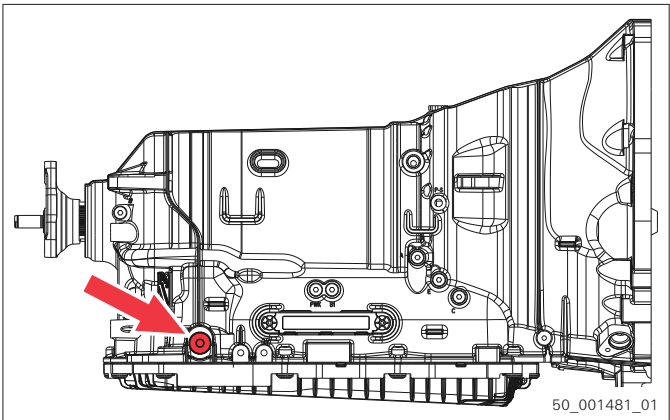


Fig. 2

Draining oil

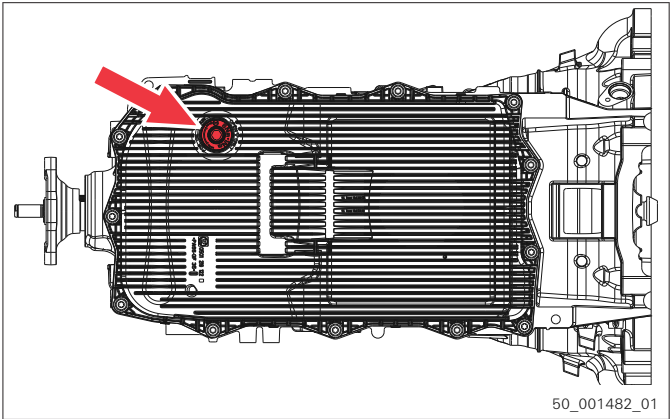


Fig. 3



6.2 Screw plugs – all-wheel distributor transmission and differential

i The graphics show the position of the specified screw plugs as an example. The actual transmission may differ visually. The same applies to the screw plug and the screw drive.

Screw	Screw size	Screw drive	Torque
Filler hole / oil level check hole Basic transmission	M22x1.5	Internal hex 10 mm	30 Nm $\pm$ 3 Nm
Filler hole / oil level check hole Front axle drive	M18x1.5	Internal hex 8 mm	27 Nm $\pm$ 2.7 Nm
Filler hole / oil level check hole Differential	M18x1.5	Internal hex 8 mm	27 Nm $\pm$ 2.7 Nm
Oil pan oil drain plug (threaded bolt)	M10x1	Internal hex 5 mm	12 Nm $\pm$ 1.2 Nm
Oil pan oil drain plug (bayonet fitting)	-	Internal hex 8 mm	8 Nm +1 Nm
Front axle output oil drain plug	M12x1.5	Internal hex 6 mm	12 Nm $\pm$ 1.2 Nm
Differential oil drain plug	M10x1	Internal hex 5 mm	8 Nm $\pm$ 0.8 Nm

Tab. 3 Screw plug tightening torques

Oil filling and oil level check – basic transmission

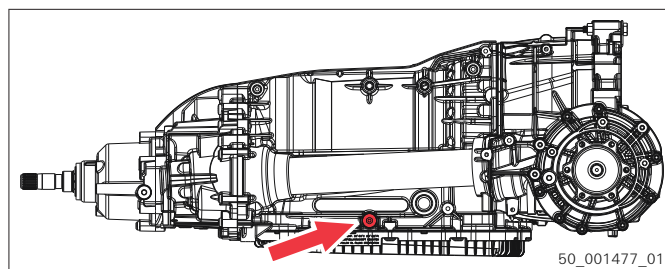


Fig. 4

Oil filling and oil level check – all-wheel longitudinal distributor transmission

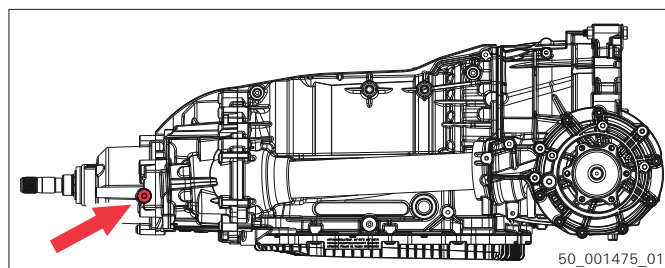


Fig. 5

Oil filling and oil level check – front axle differential

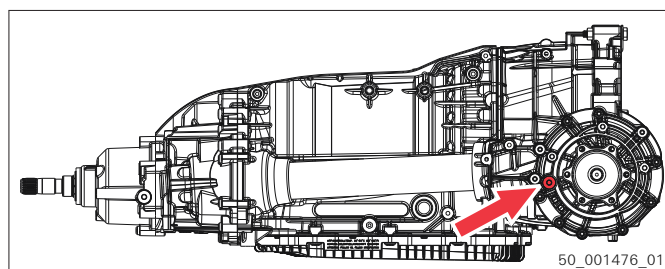


Fig. 6



Oil draining – basic transmission

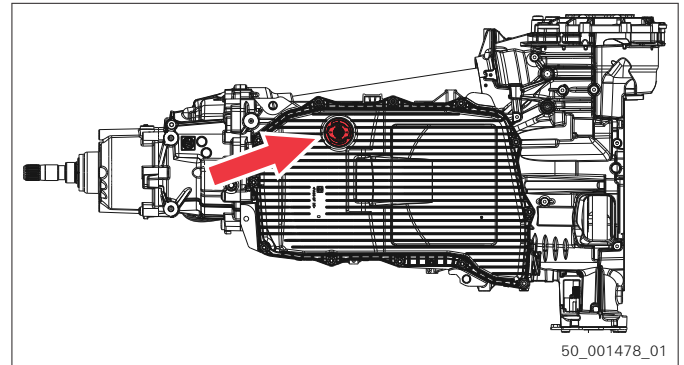


Fig. 7

Oil draining – all-wheel longitudinal distributor transmission

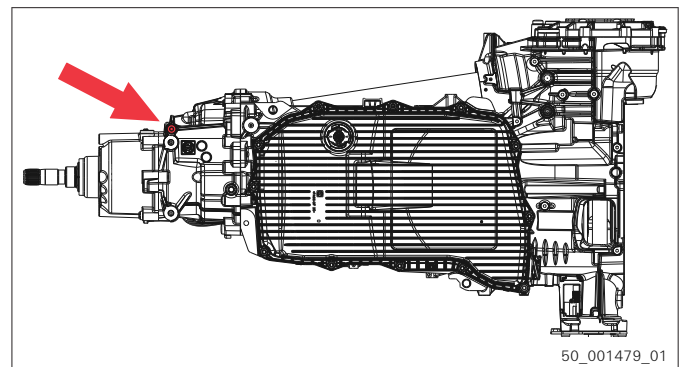


Fig. 8

Oil draining – front axle differential

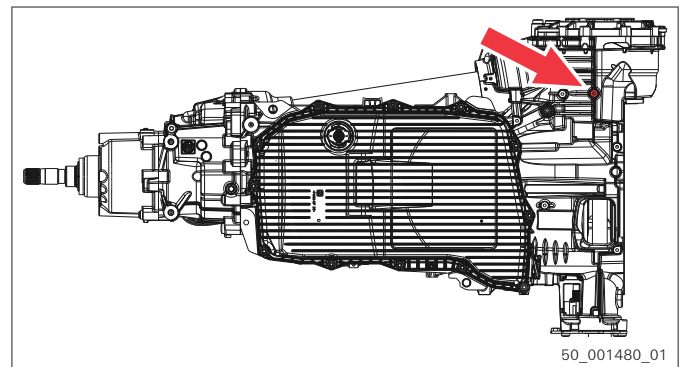


Fig. 9



6.3 4th generation 8HP screw plugs

i The graphics show the position of the specified screw plugs as an example. The actual transmission may differ visually. The same applies to the screw plug and the screw drive.

Screw size	Screw drive	Torque
Filler hole / oil level check hole	Internal hex 8 mm	35 Nm $\pm$ 3.5 Nm
Plastic oil pan oil drain plug	Internal hex 8 mm	8 Nm +1 Nm
Plastic oil pan oil drain plug	Internal hex 10 mm	5 Nm +1 Nm
Aluminum oil pan oil drain plug	Internal hex 12 mm	17Nm $\pm$ 1.7 Nm

Tab. 4 Screw plug tightening torques

Oil filling and oil level check – rear-wheel drive

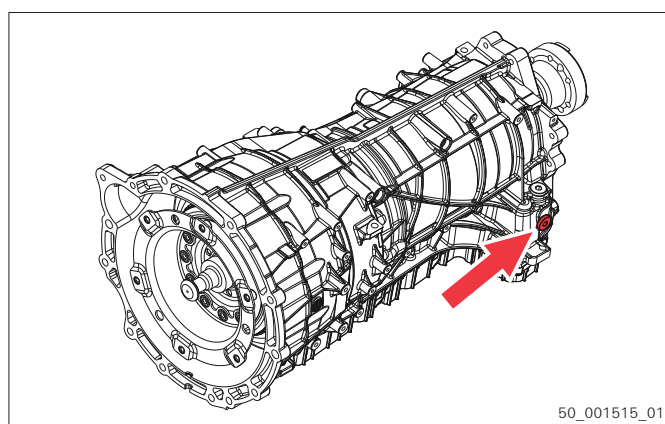


Fig. 10

Oil filling and oil level check – X drive (variant)

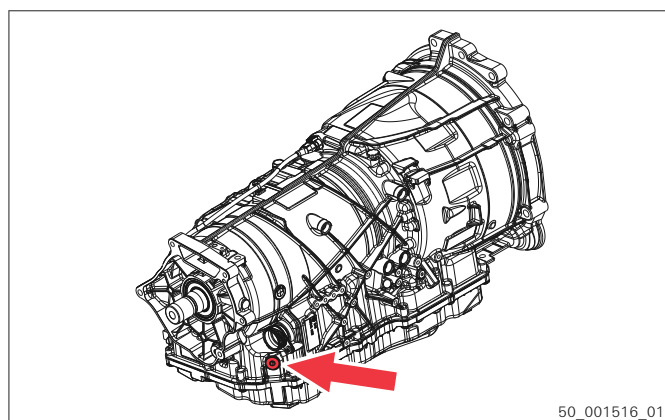


Fig. 11