

Operating Manual



Range selector keypad

1337 758 101b

Subject to alterations in design

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Please read this operating manual carefully before driving your vehicle.

When operating the shift system, please note the special instructions provided in the vehicle manufacturer's operating manual.

You need the additional ZF-Intarder Operating Instructions, order number 6085 758 102, for servicing and maintaining the ZF-Intarder.

Your vehicle is fitted with a **ZF-ASTronic** automatic shift system. The more you familiarize yourself with this system, the more economically you can drive your vehicle. This operating manual will provide you with all the information you need to be able to make full use of the advanced technical features of the ZF-ASTronic.

To ensure operating safety, please note the maintenance specifications.

Specialists employed by ZF Customer Services are always available to help with maintenance work on the transmission and are there to assist you should any other problems occur. The relevant addresses can be obtained from ZF in Friedrichshafen.

We would like to wish you pleasant driving with your ZF-ASTronic

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The following safety instructions appear in this manual:

NOTE

Refers to special processes, techniques, data, etc.

CAUTION

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



DANGER !

This is used when lack of care could lead to personal injury and damage to property.

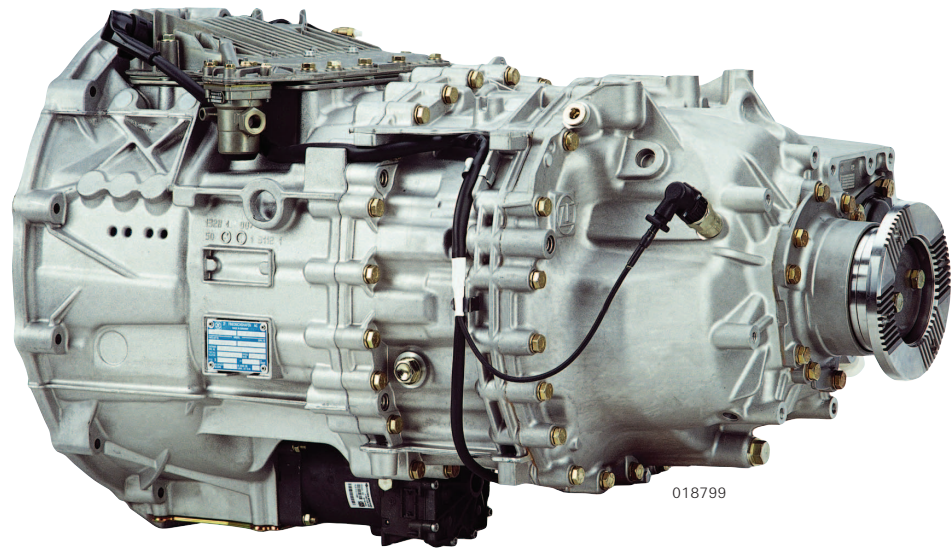


ENVIRONMENTAL HAZARD !

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

- **Request safety information for the products concerned from your local environmental protection authority and follow any instructions herein at all times.**
 - **Always collect used oil in a suitably large container.**
 - **Always dispose of used oil, clogged filters, lubricants and cleaning agents in accordance with environmental protection laws.**
 - **Always observe manufacturer instructions when dealing with lubricants and cleaning agents.**
-

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1 Description of system

1.1 General description

The ZF-ASTronic automatic transmission system is adapted to the engine via a standard dry clutch. The clutch is controlled via the transmission system; there is no clutch pedal.

In contrast to powershift transmissions, the power train of the ZF-ASTronic is open

- during shifts;
- at very low speeds, so that the engine does not stall;
- and when the vehicle is not moving.

This means that no drive power is transmitted.



DANGER !

In order to prevent the vehicle from accidentally rolling forward or backward, the brake must be engaged.

The **ZF-ASTronic** consists of a basic transmission and an integrated splitter and planetary group.

The basic transmission is shifted using constant mesh gears. The splitter and planetary groups are synchronized.

The transmission system performs gear shifts automatically.

A **display** in the range selector keypad shows the driver all the system information required (e.g. gear stage, fault codes etc.).

The **transmission actuator** and the **clutch actuation unit** (clutch actuator) are the most important components of the fully automated transmission.

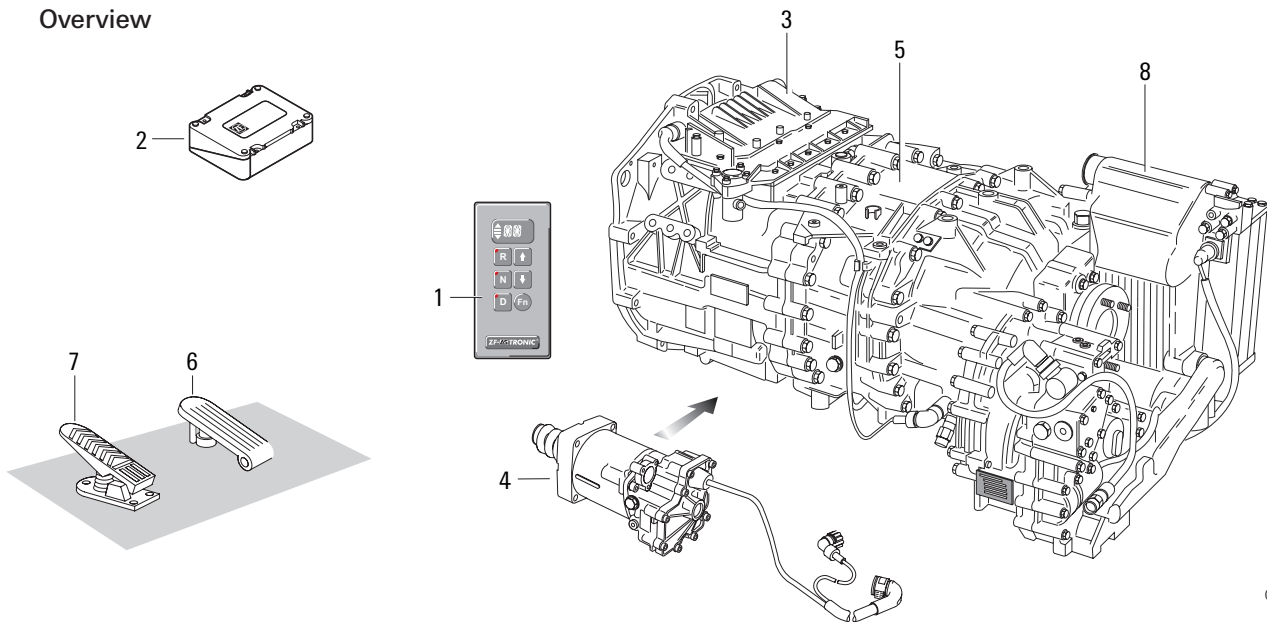
The **transmission actuator** consists of the transmission electronics, shift valves, shift cylinders and sensors.

The **transmission electronics** process all incoming signals and initiate the gear shift via solenoid valves and shift cylinders.

The **clutch actuator** is controlled in an electro-pneumatic manner and is responsible for the entire clutch actuation process.

The **ZF-Intarder** is a hydrodynamic wear-free auxiliary brake integrated into the transmission.

1.2 Overview



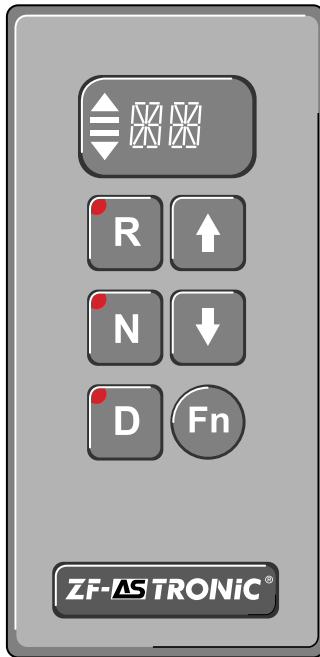
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Key

- | | |
|--|--------------------------|
| 1 Range selector keypad and display | 5 Transmission |
| 2 Electronic Module (optional) | 6 Accelerator |
| 3 Transmission actuator with integrated transmission ECU | 7 Brake pedal |
| 4 Clutch actuator | 8 ZF-Intarder (optional) |

1.3 Range selector keypad

The **range selector keypad** contains 6 keys and a display.



- «**R**» Reverse travel
- «**N**» Neutral (no gears selected in transmission)
- «**D**» Forward travel
- «**↑**» Upshift
- «**↓**» Downshift
- «**Fn**» Switches between manual and automatic mode and vice versa.

LED

Flashing: Transmission function change requested.
If permanently illuminated, function change is complete

Permanently illuminated: Drive range is attained

Display (refer to Section 1.4)

The «**R**», «**N**» and «**D**» only respond once released. If the keys are held down for more than 5 seconds, the shift is ignored.

When pressed, the «**↑**», «**↓**» and «**Fn**» keys respond immediately.

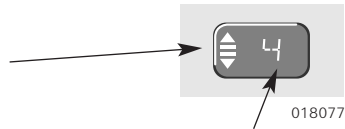
1.4 Display

This operating manual only provides descriptions of those displays associated with transmission functions. For additional displays, refer to the vehicle manufacturer's operating manual.

The display shows the number of the gear selected, the neutral position as well as faults.

1.4.1 Display: Automatic mode

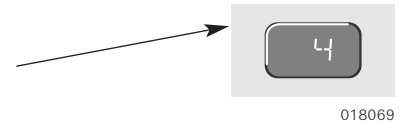
Transmission in automatic mode (2 bars and 2 arrows)



4th gear selected in transmission

1.4.2 Display: Manual mode

4th gear selected in transmission (No bars or arrows are displayed)



1.5 Accelerator

The position of the accelerator does not need to be changed during the shift process.

The clutch is actuated via the electronic transmission control (ECU) depending on accelerator actuation.

During this shift, the engine is influenced by the electronic transmission control (ECU).

1.6 Automatic mode

Actuate the service brake and press the «**D**» button while the vehicle is not moving. The transmission system selects the optimal starting gear.

Once the accelerator is depressed, the clutch closes automatically and then the vehicle starts to move.

The shift system automatically performs upshifts and downshifts during travel.

When in automatic mode, the shift system avoids shifts which result in the engine over-revving or stalling.

The driver can always intervene manually (upshift and downshift) without losing acceleration for example, in difficult driving situations. The driving mode then changes from automatic to manual.

1.7 Manual mode

With the vehicle at a stop, actuate the service brake and press the «**D**» button. By pressing the «**Fn**» key, the shift system switches into manual mode.

The driver can also press the upshift or downshift key to select a setting off gear other than that proposed by the system.

Once the accelerator is depressed, the clutch closes automatically and then the vehicle starts to move. The driver uses the control lever «**↑**» or «**↓**» to select the gears required.

The driver must avoid over-revving the engine.

The engine may stall if the accelerator is depressed in too high a gear.

1.8 ZF-Intarder

Operating Instructions 6085 758 102 are available for servicing and maintaining the ZF-Intarder.

2 Operation

Some deviations from the controls and operating processes are permitted depending on the manufacturer and vehicle type.

Therefore, also consult the vehicle manufacturer's operating manual.



DANGER !

The driver must not leave the vehicle when the engine is running and a gear is selected.

Warning

LED in the R, N and D keys

Flashing: Transmission function change is requested. Here permanently illuminated, the function change is complete.

Permanently illuminated: Drive range is attained.

2.1 Starting the engine

⇨ Engage parking brake

⇨ Switch on "ignition"

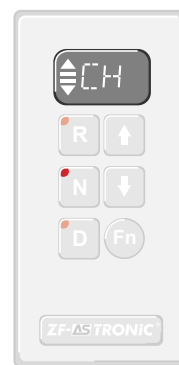
- ↳ Transmission system self-check. «CH» appears on the display. The LED of the «N» key lights up as soon as the neutral transmission shift has been detected.

⇨ Start the engine

- ↳ Self-check is complete. «N» (neutral) appears on the display, transmission is in neutral setting. On startup automode is default the setting.

NOTE

Gear shifts are not possible when the engine is not running.



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2.2 Starting

2.2.1 Forward start

⇒ Actuate the service brake and press the «D» button.

↳ Automatic mode is activated

↳ The display shows the starting gear selected. The LED of the «D» key lights up.
(The system selects the starting gear itself, the clutch remains separated (disengaged).)

⇒ Depress accelerator and at the same time release the parking brake.

↳ Vehicle sets off (clutch closes automatically).



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DANGER !

The vehicle may roll away even if the accelerator is not depressed.

For a dead start on a hill, engage the gear and release the parking brake only when depressing the gas pedal. Otherwise, the vehicle will roll backward.

2.2.2 Backward start

- ⇒ Vehicle must not move.
- ⇒ Actuate the service brake and press the «R» button.
 - ↳ «R» appears on the display (clutch remains disengaged)
The «R» button LED lights up.
- ⇒ Actuate the gas pedal and simultaneously release the brake (clutch engages automatically).
 - ↳ Vehicle drives backward.



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2.2.3 Correcting the starting gear

The system proposes a starting gear. This can be corrected to a gear within the range between minimum and maximum starting gears.

How to undertake a correction:

- ⇒ Press «↑» or «↓» key.
 - ↳ The display shows the starting gear selected.



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DANGER !

**If the vehicle moves, no shift to R will be effected!
Stop vehicle immediately.
Only the display indicates the driving direction
engaged by the transmission.**

2.2.4 Starting with start-traction control (optional)

The vehicle can be equipped with an electronic starting-traction control (Easy Start). Its purpose is to prevent unwanted moving of the vehicle during uphill or downhill dead starts.

- ⇨ Start engine (see 2.1).
- ⇨ Actuate service brake and release parking brake.
- ⇨ Press the «**D**» or «**R**» button.
 - ↳ Automatic operation is activated.
 - ↳ The display shows the starting gear engaged. The «**D**» or «**R**» button LED lights up.
- ⇨ Release service brake.
 - ↳ The service brake remains activated briefly due to the starting-traction control.
- ⇨ Actuate gas pedal.
 - ↳ The brake is released.
 - ↳ Vehicle starts moving.



DANGER !

After release of the brake pedal, the brake remains actuated only briefly. The vehicle can start moving.

NOTE

- The time at which the brake is released depends on the accelerator-pedal position, the clutch position, and the vehicle speed.
- The brake is also released if the transmission is shifted into neutral or if neither the brake nor the gas pedal is actuated within a certain time period.

2.3 Manoeuvring

1st gear (depending on vehicle, 1st and 2nd gear) and R gear are provided as manoeuvring gears for extremely slow travel. Manoeuvring mode is not available in the other gears. For selecting a manoeuvring gear, the current gear may have to be corrected by pressing the «↓» button.

When in manoeuvring mode, the vehicle (accelerator) is very sensitive and clutch control differs from the normal driving mode.

The system detects manoeuvring mode from the position of the accelerator and the low road speed.



DANGER !

**The switch from manoeuvring mode to start mode depends on the accelerator-pedal position and the driving speed.
The vehicle can accelerate.**

The «CL» display appears when the clutch is overloaded.

Maneuvering in 1st or R gear

Maneuvering time is not limited in 1st gear.

CAUTION

If the driver does not respond to the «CL», display, the clutch may be damaged as a result of overload.



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Maneuvering in 2nd gear

Depending on the type of vehicle, the 2nd gear can also be used as a manoeuvring gear. Maneuvering time is limited in this gear. There is a switch from manoeuvring mode to start mode.



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DANGER !

**If the driver does not respond to the «CL», a change is made from manoeuvring mode into setting off mode.
The vehicle may accelerate.**

2.4 Starting to roll on slopes

Precondition: the engine must be running

DANGER !

- If the vehicle starts to roll and no gears are selected – the LED of the «N» key lights up – the engine brake is ineffective!
- Do not allow the vehicle to roll in the opposite direction of travel to that of the gear selected.

If the vehicle rolls forward – with transmission in neutral «N» – once the brake is released and the driver shifts from «N» to «D», then the system selects a gear suitable for the roadspeed. The driveline is then fully engaged.



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2.5 Changing between manual mode and automatic mode

Always possible, even while the vehicle is in motion.

Changing from manual to automatic mode

⇨ Press «Fn» key

Changing from automatic to manual mode

⇨ Press «Fn» key



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2.6 Changing gear

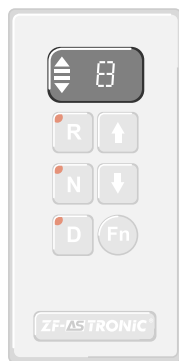
2.6.1 Changing gear in automatic mode

☞ All upshifts and downshifts are performed automatically.

These depend on:

- drive situation
- loading
- accelerator position
- road speed
- engine speed

Arrows and 2 bars = automatic mode; 8th gear is selected.



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2.6.2 Changing gear in manual mode

☞ Press the «↑» or «↓» key.

The shift system stops automatic driving operation if a manual shift occurs. Press the «Fn» button to reactivate automatic driving.

Option: Depending on the type of vehicle and the manufacturer, the shift system switches back to automatic drive operation after a certain amount of time if no other manual shifts are made.

Jumping gears:

Jumping one gear:

☞ Press «↑» or «↓» key twice in rapid succession

Jumping two gears:

☞ Press «↑» or «↓» key three times in rapid succession in the direction required.



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NOTES

- The driver can shift into neutral from any gear at any time. This shift process always takes priority.
- The position of the accelerator must not be changed during the shift process because the engine is automatically controlled.
- A shift command is not carried out if this shift would result in the maximum engine speed (governing speed) being exceeded.



DANGER !

The driver may shift to "Neutral" during travel. If the driver does shift to "Neutral", the driveline is interrupted. The engine brake is then no longer effective.

2.6.3 Engine braking effect when changing gear

The engine brake is deactivated by the system during gear shifts. Once the gearshift is complete, the engine brake is then automatically reactivated.

If the engine brake is actuated, the system switches back into automatic mode so that the maximum engine braking effect is achieved.



DANGER !

The effect of the engine brake is interrupted during gear shifts. The vehicle may accelerate when travelling downhill.

2.7 Changing direction of travel (forward/reverse)

Changing from «**R**» to «**D**» direction of travel

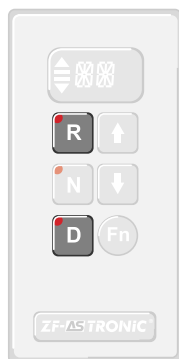
- ⇨ The vehicle must be at standstill
- ⇨ Press «**D**» key



DANGER !

A change in the direction of travel may only be undertaken when the vehicle is at a standstill otherwise the transmission will shift into neutral.

While the LED is flashing, this indicates that the gear change is not yet complete.



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2.8 Stopping vehicle

- ⇨ Do not actuate the accelerator and use the service brake to bring the vehicle to a standstill.
 - ↳ The clutch opens automatically before the vehicle reaches a standstill so that engine “stalling” is prevented.

CAUTION

In order to protect the mechanical parts of the clutch release, the transmission must be shifted to neutral during longer stops (more than approx. 1-2 min., e.g., traffic jam, grade crossing, etc.). This disengages the clutch and the clutch release is not stressed.

- ⇨ Always actuate service or parking brake if the vehicle is not moved.

Changing from «**D**» to «**R**» direction of travel

- ⇨ The vehicle must be at standstill
- ⇨ Press «**R**» key



DANGER !

- If the vehicle is at a standstill with the engine running and a gear selected, the vehicle can be moved by simple depressing the accelerator!
 - Before leaving a vehicle with the engine running, the transmission must be shifted into neutral and the parking brake engaged.
 - Actuating the parking brake during travel on a smooth road surface may result in the engine coming to a standstill. Power-assisted steering is then no longer available!
-

2.9 Switching off engine / parking vehicle

- ⇨ Bring vehicle to a standstill
- ⇨ Engage parking brake
- ⇨ Press «N» neutral key
 - ↳ «N» appears on the display.
LED of «N» key lights up.
- ⇨ Switch off engine via ignition key



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DANGER !

When engine is switched off, transmission goes into neutral, NO gear is selected. The vehicle may roll away if brakes are not actuated.

NOTE

If the transmission is **not** shifted into neutral before the engine is switched off, this is done automatically once the ignition is “Off”.

2.10 Towing

Vehicle manufacturer instructions must be observed when towing!

CAUTION

For towing purposes, always disconnect the propeller shaft flange from the rear axle before setting off. If it cannot be disconnected, remove both axle shafts. Avoid polluting the environment in the event of oil loss.

2.11 Tow-starting

The engine **cannot** be tow-started.

2.12 Clutch protection

«CL» is displayed if there is a risk of clutch overload resulting from several starting processes occurring in a rapid succession or of crawling in too a high starting gear.

NOTE

Select an operating mode in which the clutch will not be overloaded, for example:

- Accelerate vehicle (to close the clutch)
- Stop the vehicle
- Set off quickly in a lower gear
- To conserve the mechanical components of the clutch release device, the transmission should be shifted to neutral if the vehicle stops for long periods of time (for more than approx. 1 to 2 min., for example, in traffic jams, at railway crossings etc.). This closes the clutch and relieves the clutch release device.



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Even though the clutch is automated, the driver still has considerable influence on clutch service life. To keep levels of wear on the clutch low, we would recommend that **when setting off, you always select the lowest gear possible.**

2.13 Engine overspeed protection

The electronics system only allows shifts to be undertaken if they lie within the speeds specified by the vehicle manufacturer. This is done to the benefit of both engine and transmission.



DANGER !

In order to protect the engine from damage caused by overspeed (red area), the system effects an upshift during automatic driving operation and, depending on the vehicle type, also during manual driving operation. The vehicle can accelerate during downhill driving.

Depending on the vehicle type, there is no automatic shift to a higher gear during downhill driving in manual operation. In this case, make sure that the engine speed does not exceed the permissible speed range.

CAUTION

The engine can be damaged if the vehicle accelerates during downhill driving and the engine speed moves into the overspeed range.

2.14 Roller test rig

⇨ Drive onto the roller test rig (brake test rig)

⇨ Press «N» neutral key
Transmission is in neutral

⇨ Once the roller is activated, the system detects the “driving vehicle” status. If a shift is made to «D» with the roller active, a gear appropriate for the speed is selected and the clutch is closed. Automatic shifts are not undertaken because the front axle does not rotate.



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⇨ Reverse gear cannot be selected when the roller is activated.



DANGER !

The vehicle may drive off the roller even if the accelerator is not depressed.

2.15 Displays for ZF-AS Tronic

The display provides information on the status of the transmission.

Operating displays



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- **Automatic mode** is shown in the display by means of 2 bars and 2 arrows. (8th gear is selected in transmission)



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- **Manual mode**
- 4th gear selected in transmission (no bars or arrows)



023509

- **Transmission in neutral position**



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- **Reverse gear of the transmission is engaged.**



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- «CH» = system self-check.
- Display appears when ignition is "On".

Warning indication



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- «AL» = Airless.
- Alternates with the normal display. The transmission compressed air system has insufficient pressure.

NOTE

Only set off once there is sufficient pressure in the pneumatic system. If pressure is too low when the vehicle stops, do not open the clutch otherwise the engine will “stall”.



DANGER !

If shifts are undertaken when pneumatic pressure is too low, the transmission may remain in neutral to ensure that there is no direct drive and that the engine brake is ineffective.



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- «FP» = Accelerator
- Move accelerator into idling position.
- If the display does not go out, there is a system error. Vehicle cannot be driven any further.



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- «CL» = Clutch
- Alternates with the normal display. Clutch is overloaded.
- Remedy: Section 2.13 Clutch protection



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- «CW» = Clutch wear
- Visit nearest specialist workshop to replace the clutch.



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- «HT» = High temperature



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- «EE» = Electronic Error
- Is displayed when the communication of the display with the transmission electronics is disturbed.



023508

- «---» = Display Error
- Is displayed when the communication of the display with the transmission electronics is disturbed.



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- **Stop** the vehicle. The vehicle must not be driven any further. You must visit a workshop.

**DANGER !**

Wherever possible, do not stop the vehicle in danger zones.



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- «**ES**» = Easy Start
- Temporarily, no electronic starting-traction control is available.

**DANGER !**

The vehicle can start moving.



023763

- «**NS**» = Neutral Shift
- Set rotary switch to «**N**» Neutral.

NOTE

Depending on the vehicle type, the transmission can automatically shift to neutral in order to protect the mechanical components of the clutch release after running a certain amount of time.



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- «**TC**» = Transmission Check
- Transmission positions cannot be learned.



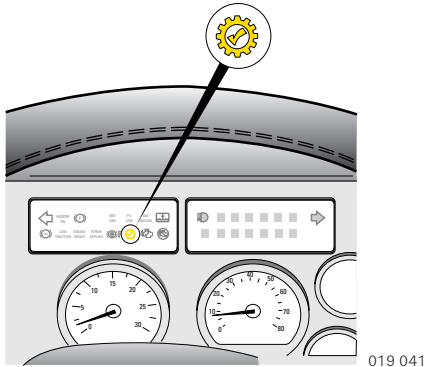
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- «**CC**» = Clutch Check
- Clutch position cannot be learned.

See also Section 2.16

2.16 System faults (error messages)

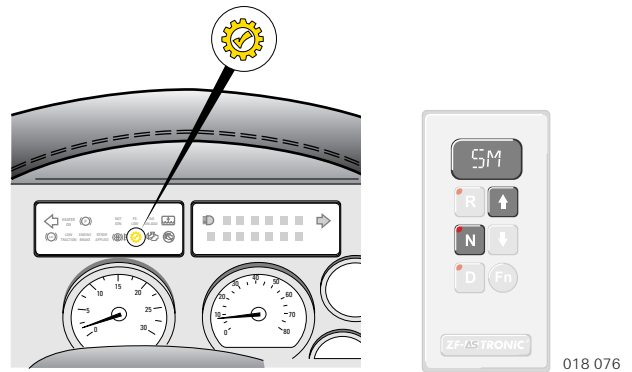
A **system fault** is present if the transmission warning light on the dashboard lights up.



For the driver, this means:

- increased vigilance
- restricted drive comfort, e.g. when setting off and shifting or automatic mode is no longer available
- the vehicle cannot be driven any further
- take vehicle to specialist workshop as soon as possible

A **serious system fault** is present if the transmission warning light on the dashboard lights up and «**SM**» is displayed on the range selector display.



For the driver, this means:

- **vehicle must not be driven any further**
- **stop vehicle**

NOTE

If «**SM**» is displayed on the range selector display without the transmission warning lamp on the dashboard lighting up, the transmission warning lamp is defective.

2.16.1 How should you respond to a system fault?

With the vehicle stationary, the fault message and resultant error response can be deleted if the driver:

- switches off the ignition and waits until the display disappears.
- If the display does not disappear after «ignition OFF», switch off system using main battery switch.
- Switch ignition back on.
- If the fault message is still present, the vehicle must be taken to specialist workshop. When contacting this workshop, the error number(s) must be specified.

To display the present error number:

- ⇒ Switch on ignition
- ⇒ Start to press tip lever towards «N»
- ⇒ Hold down «↑» button
- ⇒ Error number appears on range selector display



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To display error numbers from the error memory:

- ⇒ Switch on ignition
- ⇒ Press the «N» button and actuate the service brake at the same time
- ⇒ Hold down the «↑» button and leave the service brake engaged

The errors saved are displayed on the range selector display one after another.

2.17 Use in sub-zero temperatures

The vehicle manufacturer's specifications should always be observed.

Outside temperature	down to $-20\text{ }^{\circ}\text{C}$	$-20\text{ }^{\circ}\text{C}$ to $-35\text{ }^{\circ}\text{C}$	$-35\text{ }^{\circ}\text{C}$ to $-40\text{ }^{\circ}\text{C}$
Oil grade	in accordance with ZF-List of Lubricants TE-ML 02	in accordance with ZF-List of Lubricants TE-ML 02	in accordance with ZF-List of Lubricants TE-ML 02
Engine start	Permitted	Permitted	Transmission must be preheated before the engine is started.
When starting, note	–	Warm-up phase of at least 10 minutes, with increased idling speed of approx. 1500 rpm.	Preheating e.g. with warm air. This must not exceed $+130\text{ }^{\circ}\text{C}$ on the transmission. CAUTION Do not preheat on transmission or clutch actuator.
Limitations	None	At transmission temperatures in excess of $-30\text{ }^{\circ}\text{C}$, the transmission is operable and all functions are provided. Longer shift times should be expected.	At transmission temperatures in excess of $-30\text{ }^{\circ}\text{C}$, the transmission is operable and all functions are provided. Longer shift times should be expected.

2.17.1 Parking the vehicle at very low temperatures

The vehicle may be parked for a long time or the transmission may be stored at outside temperatures down to $-40\text{ }^{\circ}\text{C}$.

3 Maintenance

Regular maintenance work increases the operational safety of the transmission.

Visual inspection for oil leaks form part of vehicle service monitoring.

When driving with transmissions with a ZF Intarder, the ZF Intarder operating manual 6085 758 102 should be observed.

3.1 Transmission oil

3.1.1 Oil grade

Refer to List of Lubricants TE-ML 02. The ZF List of Lubricants may be obtained from all ZF agents or on the Internet <http://www.zf.com>.

3.1.2 Oil quantities

To ensure accurate oil quantities when changing oil, always conduct the oil filling process as specified (refer to Section 3.2.3).

Oil change		Initial fill after repair	
with Intarder	without Intarder	with Intarder	without Intarder
12 liter	11 liter	21 liter	11 liter

3.2 Oil change

NOTE

Vehicle should be on horizontal ground when oil is changed.

3.2.1 Oil change intervals

To ensure the operational safety of the transmission, compliance must be maintained with the oil change intervals specified in the ZF List of Lubricants TE-ML 02 !

3.2.2 Draining oil

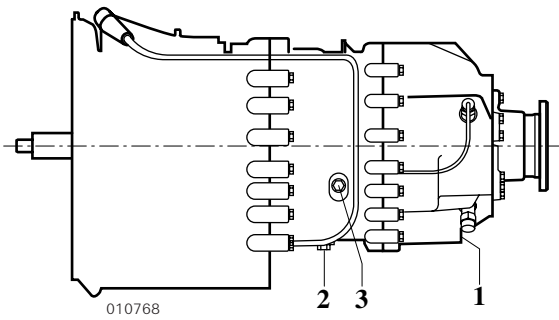
Always change oil after long journeys provided that the transmission oil is still at operating temperature and is still thin.



DANGER !

Risk of burning upon contact with parts and with the transmission oil.

- ⇨ Remove oil drain plugs from transmission (items 1 and 2) and collect transmission oil in a suitable container. Dispose of in an environmentally-friendly manner.
- ⇨ Clean oil drain plug with magnetic plug and replace seal.
- ⇨ Tighten oil drain plugs to the specified torque.



Version: standalone transmission

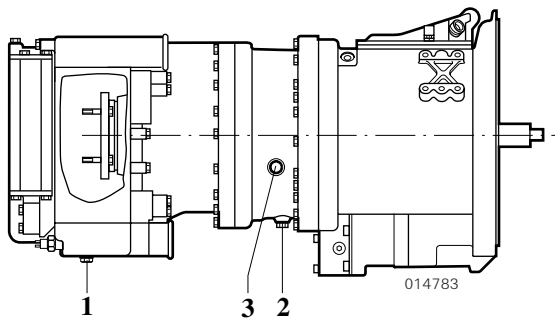
Key

- 1 Oil drain plug
tightening torque $T_A = 60 \text{ Nm}$
- 2 Oil drain plug
tightening torque $T_A = 60 \text{ Nm}$
- 3 Oil fill and overflow measurement point
tightening torque $T_A = 60 \text{ Nm}$

3.2.3 Filling with oil

⇒ Top up with oil through the oil filling point. (item 3).

- ↘ The oil level is correct once the top of the oil has reached the bottom of the filling point or once oil has already started to escape from the filling point.



Version: transmission with Intarder

3.3 Checking oil level

Regularly check the oil level in the transmission:

- ↪ Check oil level when the vehicle is on horizontal ground.
- ↪ Do not check oil level straight after a journey (incorrect measurement). Only undertake the check once the transmission oil has cooled down (<40 °C).
- ↪ Remove oil fill screw (item 3).
- ↪ If the oil level has fallen below the oil filling point, it will have to be topped up (Section 3.2.3).

NOTE

Each time you check the oil, also check for any leakages on the transmission.



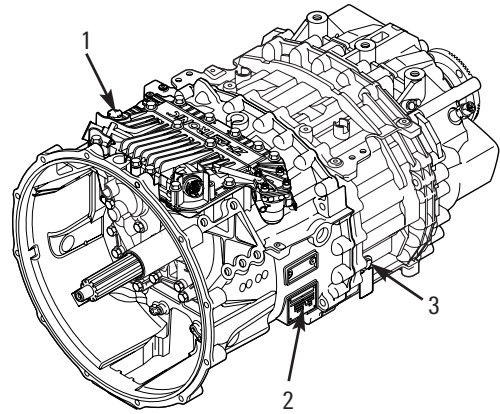
DANGER !

**The transmission will be damaged if it does not contain enough oil.
Risk of accident !**

3.4 Transmission ventilation

The transmission oil heats up during travel. This causes excess pressure which is continually reduced by a breather valve.

Ensure that the breather valve is always functioning correctly. The breather (item 1) must be clean and must not have a plastic cover.



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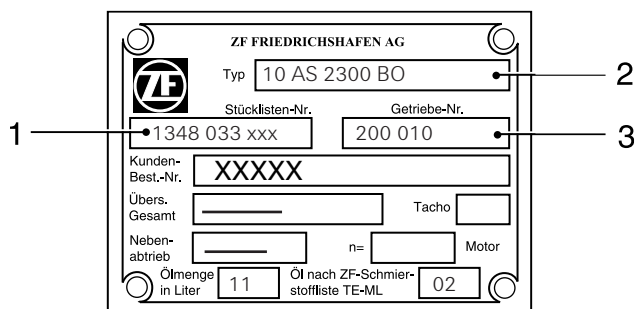
- 1 Transmission ventilation
- 2 Type plate
- 3 Oil fill screw

3.5 Type plate

The type plate contains the most important data. It can be found on the left-hand side of the transmission, when viewed from the output.

The following should always be specified when making enquiries or undertaking repairs:

- 1 parts list no. of transmission
- 2 transmission type
- 3 serial no. of transmission



Type plate (example)

3.6 Visual inspection of wiring

- ⇨ Check wiring for damage.
- ⇨ Ensure that connectors are seated correctly, connectors must be fitted with tension relief.

3.7 Pneumatic system maintenance

The maintenance instructions of the vehicle manufacturer must be observed.

- ⇨ The compressed air reservoir must be drained every week (every day in winter).

NOTE

When the compressed air reservoir is drained, the compressed air cleaner and water separator must also be drained, unless these operate automatically.

