

Voith Turbo

VOITH

Operating Instructions DIWA Transmissions DIWA.5 DIWA.3E DIWA.3

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1 General

1.1 Symbols

**DANGER****DANGER**

indicates imminent danger for life and health of people.

The non-compliance with this note results in serious damage to your health as well as life-threatening injuries.



WARNING

WARNING

indicates possible danger for life and health of people.

The non-compliance with this note might result in serious damage to your health as well as life-threatening injuries.



CAUTION

CAUTION

indicates a potentially dangerous situation.

The non-compliance with this note might result in minor injuries or property damage.



NOTE

Note

indicates information on the proper handling of the transmission. It does not indicate dangerous situations.



ENVIRONMENT

Environment

indicates a potentially harmful situation for the environment owing to operation, maintenance or repair of the transmission.

- ➔ Meaning: an activity to be performed.
- ↙ Meaning: the result of an activity.
- Meaning: please note especially.

2 Driving instruction

2.1 Start engine



NOTE

Before starting

Secure the vehicle.

→ Apply the parking brake.

When starting the engine, the gear range selector must be in neutral position.

Neutral position



The N-button flashes.

2.2 Blinking Code

The blinking of the gear range selector lighting makes the driver aware of a fault. The different blinking codes inform about type and priority of the fault.

DIWA.5

Fault type	Blinking time	Blinking buttons at gear range selector	Blinking frequency	Measure/remedy
CAN fault CAN connection between gear range selector and electronic control unit is interrupted	Until ignition off	All	Once per second	Limp home function [⇒ Page 24] Please contact the Voith customer service

Fault type	Blinking time	Blinking buttons at gear range selector	Blinking frequency	Measure/remedy
Severe fault Roadworthiness and/or safety are impaired. - Transmission may shift to neutral - Driving to the workshop is possible maybe with limited functions.	10 seconds	All	Twice per second	Shut down vehicle immediately Take the vehicle immediately to the workshop Towing [⇒ Page 28]
Severe fault Roadworthiness and/or safety are impaired. Transmission shifts to neutral	Until ignition off	All	Twice per second	Shut down vehicle immediately Take the vehicle to the workshop Towing [⇒ Page 28]

Fault type	Blinking time	Blinking buttons at gear range selector	Blinking frequency	Measure/remedy
Note The transmission is operated outside the optimum range, e.g. with elevated oil temperature	Until ignition off, or fault does no longer persist	N-button	Once per second	Driving on is possible
The electronic control unit accepts no gear	As long as button remains depressed, or until gear accepted	Depressed button	Once per second	Drive forward [⇒ Page 11] .

DIWA.3 and DIWA.3E

Cause	Effect	Gear range selector active button	Warning lamp transmission oil temperature	Central warning lamp (if any)
Operating error	No gear accepted	Lamp off	Lamp off	Lamp off
Severe fault	Transmission shifts to neutral Driving on may be possible after ignition off/on or after operating the N-button and engaging the gear again	Permanent blinking	---	Permanent blinking
Minor fault.	Driving on is possible maybe with limited functions	Blinking for 10 seconds	---	Permanent blinking

Cause	Effect	Gear range selector active button	Warning lamp transmission oil temperature	Central warning lamp (if any)
Elevated temperature display	Driving on is restricted	---	Lamp on	---
Ignition on	Transmission electronics being initialized	Lamp on	Lamp on for 3 seconds, then off	Lamp on for 3 seconds, then off

2.3 Drive forward



If your vehicle is equipped with a protection against unintentional engaging of gears, this protection has to be activated at first, e.g. step on brake pedal.

- ➔ Please read about the operation of the gear inhibit in the operating instructions of your vehicle.
- ➔ Step on the brake pedal.



→ Then press button D with the vehicle in parking position and the engine at idle speed.



↪ If you release the brake now, the vehicle will start driving.



NOTE

Vehicle does not start driving

Possible causes:

On engagement of a gear the accelerator was activated.

The gear enabling was not activated.

→ Please also read about this topic in the operating instructions of the vehicle.



DANGER

Pressing the N-button during driving

Pressing the N-button while the vehicle is driving, and after this re-engaging a forward gear causes **danger** for **the lives** and **health** of the passengers of the vehicle.

Moreover, engine and transmission may be heavily damaged.

→ While driving, press the N-button in strict emergency situations only.



WARNING

Hill-starting

Vehicle may roll backwards unintentionally.

- Press the D-button
- When hill-starting, activate the accelerator before releasing the brake to prevent the vehicle from rolling backwards.



NOTE

Optimize fuel consumption

Driving in part-load operational range, e.g. no full throttle and no kickdown operation, positively affects the fuel consumption.

Kickdown operation



If faster acceleration is required, push down the accelerator beyond the pressure point (full throttle).

↩ As a result, the transmission will shift at increased speeds.



NOTE

Kickdown operation

increases the fuel consumption.

Driving with the buttons 1, 2, or 3 pressed



The vehicle may be equipped with a six gear range selector. The buttons 1, 2, and 3 are locking buttons.

If several buttons are selected at the same time, the lowest locking button is relevant. For instance, when selecting the buttons 1, 2, 3, and D simultaneously the button 1 is active.

If the buttons 1, 2, or 3 are pressed no upshift is possible.

Button pressed:	No upshift to gear(s):
3	4
2	3 and 4
1	2, 3, and 4



NOTE

Driving with the buttons 1, 2, or 3 pressed
increases the fuel consumption.

2.4 Braking



When activating the brake pedal or the retarder manual switch, the retarder is switched on. The service brake becomes effective by further pushing down the brake pedal.



DIWA.5 and DIWA.3E retarder control**DANGER****High oil temperatures during braking**

In case of high oil temperatures in the retarder (DIWA.5 only) or in the sump (DIWA.3E and DIWA.5) the retarder is automatically controlled, i.e. the brake efficiency of the retarder is reduced.

This operating status is shown on the display of your vehicle.

➔ Please read about the display of this operating status in the operating instructions of your vehicle.

If you have activated the retarder using the retarder manual switch

➔ Push the brake pedal in order to additionally activate the service brake if this display appears.

Slippery driving surface



DANGER

Danger of loosing control of the vehicle

Please note when driving on slippery surfaces: The retarder only acts on the drive wheels.

If your vehicle is not equipped with an antilock braking system (ABS) you have to switch off the retarder in case of adverse road conditions such as ice, snow, or sand to prevent the rear wheels from locking which may result in a loss of control over the vehicle.

➔ Switch off the retarder using the retarder off-switch, if existing.

Off-switch for retarder

- ☐ With the retarder off-switch the activation of the retarder via brake pedal is switched off.
 - ☐ With the retarder off-switch activated, according to vehicle type:
 - the retarder is nevertheless activated if the retarder manual switch is activated.
 - the retarder is not activated if the retarder manual switch is activated.
- ➔ Please read about the operation of the retarder off-switch in the operating instructions of your vehicle.

**NOTE****Vehicles with ABS**

Vehicles with ABS normally do not have a retarder off-switch, since the activation of the ABS automatically deactivates the retarder.

➔ Please read about the location and operation of this switch in the operating instructions of your vehicle.

2.5 Stopping



- During a short halt (traffic lights, bus stop) leave the gear selection button depressed.
- Stop the vehicle with the service brake or the parking brake.

2.6 **ANS activation**

ANS stands for

Automatic **N**eutral at **S**tandstill

Despite engaged drive position, the transmission shifts to neutral, if the following conditions are met:

- The accelerator is in idle position
- A brake signal applies
- Speed of vehicle < 1 km/h
- A forward gear is engaged

The powerflow between engine and transmission is interrupted.

✎ This reduces fuel consumption.

2.7 Limp-home function of DIWA.5

Your vehicle may be equipped with a switch for emergency operation, the limp-home switch. Emergency operation is activated if the gear range selector is defective.

- ➔ Please read about the location of this switch in the operating instructions of your vehicle.
- ❑ Driving vehicles without limp-home function becomes impossible if the gear range selector is defective.

The limp-home switch has three possible positions (neutral, forward, and reverse). It is activated as soon as the gear range selector stops sending signals.

Upon activation the limp-home switch has to be set to neutral for safety reasons. Only then it will function. From the neutral position you can switch to forward emergency operation (1st and 2nd gear) and reverse emergency operation.

2.8 Driving in reverse gear



DANGER

Risk of accident

When driving in reverse gear, observe the legal regulations of the respective country.

If your vehicle is equipped with a protection against unintentional engaging of gears, this protection has to be activated at first.

- ➔ Please read about the operation of the protection against unintentional engaging of gears in the operating instructions of your vehicle.



NOTE

Switching

Switching from forward to reverse and vice versa is only possible after pressing the N-button.

- Press the N-button.
- Press button R with the vehicle in parking position and the engine at idle speed.



DANGER

Risk of accident

Never press the reverse button while driving forward.

2.9 Parking

For longer halt or for turning off the engine:

→ Press N-button



→ Apply parking brake.



2.10 Towing



- ➔ Shift the transmission to idle gear (N-button).
- ➔ Unplug the connecting cable between control and transmission from the electronic control unit.
- ➔ If the transmission is damaged: Dismount the cardan shaft or stub shaft of the rear axle.
- ☐ If no transmission damage is detected, the vehicle can also be towed with the cardan shaft:
 - Max. permissible distance: 10 km
 - Max. permissible speed: 30 km/h.



NOTE

Angle drives

For transmissions with angle drives it is in any case necessary to remove the cardan shaft or stub shaft of the rear axle.

- ☐ If this is not possible, please contact the Voith customer service.

2.11 Environmental information

Shifting programs

With the help of optimum shifting programs you can achieve optimum fuel consumption when using the DIWA transmission.



ENVIRONMENT

Avoid kickdown operation as well as driving with buttons 1, 2, or 3 depressed, since this increases fuel consumption.

Retarder

Using the retarder increases the useful life of the service brake by two or three times.



ENVIRONMENT

The retarder off-switch should not be activated during normal road conditions.

Oil

The effort of disposal and the environmental burden of waste oils are considerably reduced when oils with longer oil exchange intervals are used.

The oils approved for Voith DIWA transmissions are to be found in the H55.6335XX and H55.6336XX lists of lubricants.

Voith Turbo GmbH & Co. KG

Alexanderstraße 2

D-89522 Heidenheim

+49 7321 37 0

+49 7321 37 7618

service-diwa@voith.com

www.voithturbo.com

VOITH
Engineered reliability.